South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey, 2005

Commissioned by the Nelson Mandela Foundation

NELSON MANDELA
FOUNDATION
Living the Legacy

With additional financial support from

Research conducted by

Published by HSRC Press
Private Bag X9182, Cape Town, 8000, South Africa
www.hsrcpress.ac.za

First published 2005

ISBN 0-7969-2152-0

Cover photographs by Shelley Christians, Oryx Media
Cover design by Oryx Media
Print management by comPress

Distributed in Africa by Blue Weaver
PO Box 30370, Tokai, Cape Town, 7966, South Africa
Tel: +27 (0) 21 701 4477
Fax: +27 (0) 21 701 7302
email: orders@blueweaver.co.za
www.oneworldbooks.com

Distributed in Europe and the United Kingdom by Eurospan Distribution Services (EDS)
3 Henrietta Street, Covent Garden, London, WC2E 8LU, United Kingdom
Tel: +44 (0) 20 7240 0856
Fax: +44 (0) 20 7379 0609
email: orders@edspubs.co.uk
www.eurospanonline.com

Distributed in North America by Independent Publishers Group (IPG)
Order Department, 814 North Franklin Street, Chicago, IL 60610, USA
Call toll-free: (800) 888 4741
All other enquiries: +1 (312) 337 0747
Fax: +1 (312) 337 5985
email: frontdesk@ipgbook.com
www.ipgbook.com

Suggested citation: Shisana O, Rehle T, Simbayi LC, Parker W, Zuma K, Bhana A, Connolly C, Jooste S, Pillay V et al. (2005) *South African National HIV Prevalence, HIV Incidence, Behaviour and Communication Survey, 2005*. Cape Town: HSRC Press

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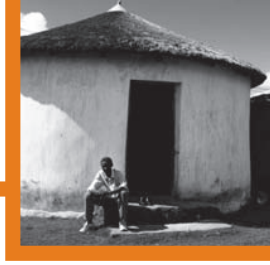

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FOREWORD

The Nelson Mandela Foundation commissioned the first national, household sero-prevalence survey of HIV/AIDS in 2002. That study had significant impact nationally, in the sub-region and internationally. The report received widespread international attention, has been used to build the capacity of other Southern African Development Community (SADC) countries in implementing similar studies, and has impacted on policy, strategy and practice in the area of HIV/AIDS in South Africa. Statistics South Africa currently uses the 2002 household survey to estimate the magnitude of the HIV/AIDS situation in the country.

Since 2002, significant shifts have occurred and South Africa has made great strides: the roll out of a comprehensive programme for the care and treatment of HIV-infected individuals has begun and investment in mass media campaigns aimed at preventing new infections is at an all-time high. The Foundation realised that it was important to assess the extent to which these policies and practices had changed the shape of the pandemic in South Africa by following up on the first survey.

This report on the second national survey of HIV/AIDS reveals a number of key issues, such as:

- South Africans are increasingly being tested to find out their HIV status;
- More people, including older South Africans, are using condoms at higher rates than before; and
- More care and support is being provided to people living with and affected by HIV/AIDS.

It is also encouraging that the public increasingly perceives government as being committed to controlling HIV and publicly recognising that it is a major problem.

It will take unprecedented efforts to change the trajectory of HIV/AIDS in South Africa. A concerted and co-ordinated effort is required to reduce new HIV infections and to limit the impact of AIDS. South Africans have successfully demonstrated the capacity to unite against political oppression. HIV/AIDS is a different enemy, but in a very real sense the tactic needed is the same – collective and co-ordinated action.

We are entering the World Health Organisation's Year of HIV Prevention in 2006. We are confident that this report will make an important and vital contribution in the fight against HIV/AIDS. Policymakers and practitioners now have the data by which to measure progress in this on-going struggle.

Professor Jakes Gerwel
Chairperson
Nelson Mandela Foundation

ACKNOWLEDGEMENTS

To undertake a project of this magnitude requires a collective effort among many people who bring different expertise and experience at different stages. This project would not have been possible without the contribution of many, many people.

We wish to thank all the people of South Africa who willingly opened their doors and their hearts to give us some of the most private information about themselves, all in an effort to contribute to a national effort to contain the spread of HIV/AIDS. Thousands were willing to give a blood specimen to test so as to allow us to estimate the HIV prevalence and incidence in South Africa. We sincerely thank them for this generosity. Without their participation, we would have never been able to provide critical information necessary for planning more effective HIV prevention, treatment and care for HIV/AIDS patients, and ways of mitigating the impact of HIV/AIDS in South Africa.

We are deeply grateful for Mr Nelson Mandela's leadership in encouraging South Africans to participate in this study and for agreeing that his foundation should again lead the effort of HIV/AIDS population-based surveillance. The work of Mr John Samuel and Ms Elaine Mckay as well as the daily support of Ms Bridgette Prince (who later joined the HSRC) greatly contributed to the success of this project. The generous financial contribution of the Nelson Mandela Foundation was crucial in enabling us to conduct this follow-up survey on a larger scale than the one that they supported in 2002.

Without the additional funding from the Swiss Agency for Development and Cooperation as well as from the Human Sciences Research Council, the project would not have been completed. We are very appreciative of their contribution.

The contribution of the USA's Centres for Diseases Control and Prevention (CDC's) to funding and technical support for HIV incidence testing has added immense value to the efforts to monitor whether new infections are still occurring and if so, in which groups and what rate. We are therefore most grateful for their assistance in this regard.

We would like to thank Mr Johan van Zyl for his work on the project as the Quality Control Manager. His enormous experience with large-scale survey research paid enormous dividends for the overall quality of fieldwork that was achieved in this project.

Thanks are also due to all provincial quality control co-ordinators (who are included in the list of contributors to this report) who assisted with quality control throughout the study.

We would particularly like to thank Mrs Kay Moodley who successfully served as the Fieldwork Manager on this project. She worked tirelessly to ensure that the supervisors and their fieldwork teams worked as smoothly as possible during the entire fieldwork period. Thanks are also due to Mr Nhlanhla Sithole for his diligence as the supervisor of the field editors during the course of fieldwork for the survey.

We wish to thank all the nurses who served as supervisors and fieldworkers (listed at the end of the report) for their excellent work in collecting quality questionnaire data and dry blood spots. Thanks are also due to the field editors (also listed at the end of the report) for the excellent quality control role that they played in this survey.

We would like to thank The Global Clinical &Viral Laboratory in Durban for excellent work in testing specimens for HIV antibodies and measuring HIV viral load in the pilot study.

Our special thanks go to the South African National Institute of Communicable Diseases (NICD) in Johannesburg for conducting the pioneering work on BED HIV incidence testing.

We wish to thank Mr Craig Schwabe, Mr Adlai Davids, and Mr Johann Fenske of the HSRC's GIS Centre for their wonderful support in providing good quality maps and directions to selected enumerator areas in which the survey was conducted.

Our thanks also go to Professor DJ Stoker who designed the HSRC's original Master Sample that was used in this survey, and for weighting and benchmarking the data, as well as double-checking and verifying the results.

We also acknowledge the contribution of the Expert Review Panel appointed by the Nelson Mandela Foundation, led by Professor Helen Rees who both advised the research team at the start of the project and reviewed the draft report for technical soundness.

We are also grateful to both Professor Seth Kalichman of the USA and Professor Bertran Auvert of France for technically reviewing the draft report.

We are grateful to Dr Mark Colvin of CADRE, formerly of the MRC, for his input during the conceptual and initial planning phases of this survey.

We would like to thank Ms Marizane Rousseau-Maree and Ms Yolande Shean for their excellent administrative work and Ms Audrey Ohlson for her wonderful financial acumen which greatly assisted us in successfully conducting this survey from start to finish. We would also like to thank Ms Florence Phalatse for her support in Pretoria and Ms Joyce Ringane as well as the data coders for a job well done in processing completed questionnaires.

Our immense gratitude is also due to Maphume Research Services and Business Express Couriers for excellent data capturing and the couriering of research materials respectively.

We would like to give special thanks to Mr Benny Gool and Mr Roger Friedman and their team at Oryx Media for designing the fieldwork flyers free of charge and to Mr Sedick Petersen and his team at Velocity Prints for printing the fieldwork flyers free of charge.

Finally, but not least, we would like to thank our respective families for their unflinching support and love during all the phases of this survey especially during fieldwork.

Olive Shisana, ScD, Principal Investigator
Thomas Rehle, MD, PhD, Co-Principal Investigator
Leickness Simbayi, MSc, DPhil, Scientific Project Director
Ntombizodwa Mbelle, MA, MPh, Project Manager

CONTRIBUTORS

Authors are listed in order of contribution and have all contributed to preliminary planning, conceptualisation, questionnaire-development and/or other preparatory aspects of the methodology, and/or data collection, as well as to data analysis and the writing of the report.

Olive Shisana, ScD
President and Chief Executive Officer
Human Sciences Research Council
Cape Town, South Africa

Thomas M Rehle, MD, PhD
Research Director
Social Aspects of HIV/AIDS and Health Research Programme
Human Sciences Research Council
Cape Town, South Africa

Leickness Chisamu Simbayi, MSc, DPhil
Research Director
Social Aspects of HIV/AIDS and Health Research Programme
Human Sciences Research Council
Cape Town, South Africa

Warren Parker, MA, PhD
Director, Centre for AIDS Development,
Research and Evaluation (CADRE)
Johannesburg (South Africa)

Khangelani Zuma, PhD
Chief Research Specialist
Human Sciences Research Council
Pretoria, South Africa

Cathy Connolly, MSc
BioStatistician
Medical Research Council
Durban, South Africa

Sean Jooste, MA
Research Specialist
Human Sciences Research Council
Cape Town, South Africa

Victoria Pillay, MPh
Senior Researcher
Human Sciences Research Council
Cape Town, South Africa

Arvin Bhana, PhD
Research Director
Child, Youth and Family Development Research Programme
Human Sciences Research Council
Durban, South Africa

Ntombizodwa Mbelle, MA (ELT), MPh
Senior Research Manager
Human Sciences Research Council
Pretoria, South Africa

Azwifaneli Managa, MA
Master's Research Intern
Human Sciences Research Council
Cape Town, South Africa

Shandir Ramlagan, M Dev St
Senior Researcher
Human Sciences Research Council
Cape Town, South Africa

Nompumelelo Zungu-Dirwayi, MA
Ph.D. Intern
Human Sciences Research Council
Cape Town, South Africa

Julia Louw, MA
PhD Intern
Human Sciences Research Council
Cape Town, South Africa

Brian van Wyk, DPhil
Ph.D. Intern
Human Sciences Research Council
Cape Town, South Africa

Tsiliso Tamasane, MA
PhD Intern
Human Sciences Research Council
Cape Town, South Africa

George Petros, MPh
PhD Intern
Human Sciences Research Council
Cape Town, South Africa

Melvyn Freeman, MA
Chief Research Specialist
Human Sciences Research Council
Pretoria, South Africa

Kevin Kelly, MA, PhD
Research Director
Centre for AIDS Development, Research and Evaluation (CADRE)
Grahamstown, South Africa

Patience Tshose, MA
Senior Researcher
Centre for AIDS Development, Research and Evaluation (CADRE)
Durban, South Africa

Lebogang Letlape, MSc (Ed)
Ph.D. Intern
Human Sciences Research Council
Pretoria, South Africa

Evasen Naidoo, B Soc Sci (Hons)
Master's Research Intern
Human Sciences Research Council
Durban, South Africa

Nomvo Henda, MA
Ph.D. Intern
Human Sciences Research Council
Cape Town, South Africa

Ayanda Nqeketo, BA (Hons)
Master's Research Intern
Human Sciences Research Council
Cape Town, South Africa

Bridgette Prince, BA (Hons)
Adjunct Director
Human Sciences Research Council
Cape Town, South Africa

Yolande Shean
Project Administrator
Human Sciences Research Council
Cape Town, South Africa

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ANRS	Agencé Nationale de Recherches sur le Sida
ARV	Antiretroviral
ASSIST	Alcohol, Smoking and Substance Involvement Screening Test
AUDIT	Alcohol Use Disorder Identification Test
CADRE	Centre for AIDS Development, Research and Evaluation
CBO	Community-based organisation
CDC	Centers for Disease Control and Prevention
CI	Confidence interval
CIDI	Composite International Diagnostic Interview
CSW	Commercial sex worker
CVr	Coefficient of relative variation
DBS	Dried blood spot
DPS	Dried plasma spot
FBO	Faith-based organisation
FHI	Family Health International
GIS	Geographical Information System
GPS	Global Positioning System
EA	Enumerator area
EC	Eastern Cape Province, South Africa
FS	Free State Province, South Africa
GP	Gauteng Province, South Africa
HBC	Home-based care
HIV	Human Immunodeficiency Virus
HSRC	Human Sciences Research Council
IQR	Interquartile range
KZN	KwaZulu-Natal Province, South Africa
LP	Limpopo Province, South Africa
MOS	Measure of size
MP	Mpumalanga Province, South Africa
MRC	Medical Research Council
MSM	Men who have sex with men
NGO	Non-governmental organisation
NC	Northern Cape Province, South Africa
NW	North West Province, South Africa
OVC	Orphans and vulnerable children
PEP	Post-exposure prophylaxis
PLWHA	People living with HIV/AIDS

PMTCT	Prevention of mother-to-child HIV transmission
PSU	Primary sampling unit
RHRU	Reproductive Health Research Unit
SAAVI	South African AIDS Vaccine Initiative
SADC	Southern African Development Community
SAHIVAC	South African HIV Vaccine Action Campaign
SAS	Statistical Analysis System
SPSS	Statistical Package for the Social Sciences
SSU	Secondary sampling unit
Stats SA	Statistics South Africa
STI	Sexually transmitted infection
TAC	Treatment Action Campaign
TB	Tuberculosis
UNAID	United Nations Programme for HIV/AIDS
UNICEF	United Nations Children Fund
USAIDS	United States Agency for International Development
USU	Ultimate sampling unit
VCT	Voluntary counselling and testing
VP	Visiting point
VPQ	Visiting point questionnaire
WC	Western Cape Province, South Africa
WHO	World Health Organization

EXECUTIVE SUMMARY

Introduction

Sub-Saharan Africa is severely impacted by the HIV/AIDS pandemic. Recent estimates suggest that of all people living with HIV in the world, six out of every ten men, five out of every ten women, and nine out of every ten children live in sub-Saharan Africa. These figures provide sufficient evidence to make HIV/AIDS both a sub-Saharan and South African priority. Data from the Department of Health's annual national HIV sero-prevalence surveys of women attending antenatal clinics since 1990 provide an estimate of HIV prevalence trends over time in South Africa. These figures indicate that South Africa continues to have the largest number of people living with HIV/AIDS in the world. For this reason, it is critical to understand the determinants that lead South Africans to be vulnerable and susceptible to HIV.

The prevalence and spread of the epidemic is largely determined by many powerful social, political, structural and economic factors, which are described to some extent in the report. An understanding of these factors is critical, not only to develop appropriate surveillance system instruments, but also to understand the epidemic and implement appropriate intervention programmes.

The 2002 Survey

The Human Sciences Research Council (HSRC), in partnership with the Medical Research Council (MRC), Centre for AIDS Development, Research and Evaluation (CADRE), and Agencé Nationale de Recherches sur le Sida (ANRS), conducted South Africa's first national household study of HIV/AIDS (Shisana & Simbayi 2002). The survey included gathering of data on HIV prevalence, behaviour and communication. The 2002 survey was useful in a number of ways. Firstly, it was found that there were important differences between antenatal and population-based HIV prevalence data. Secondly, the population-based survey allowed for analysis of HIV against a range of demographic variables that are not gathered in antenatal surveys – for example, race, residence geotype and marital status. Thirdly, HIV prevalence could be interpreted in relation to knowledge, attitudes, sexual behaviours and general responses to the epidemic. The 2002 survey increased understanding of the gender dynamics of HIV infection, particularly differential infection rates between males and females. Prior to this study, there was no national-level data to inform male/female HIV prevalence ratios. The expanded demographic variables allowed for deeper understanding of HIV prevalence patterns and distribution. Such information is vital to informing interventions and systems of support. It also contributes to improvements in models for projecting existing and future trends in relation to HIV and AIDS.

The 2005 Survey

The present survey is the second in a series of household surveys that allow for tracking of HIV and associated determinants over time using the same methodology. The present survey is also the first national-level repeat survey. The interval of three years allows for an exploration of shifts over time against a complex of demographic and other variables, as well as allowing for investigation of new areas. The findings are intended to inform the national Comprehensive Plan for Prevention, Treatment, Care and Management of HIV/AIDS.

Technological developments have allowed for new biological tests to be conducted on samples gathered in the survey. This 2005 survey provides the first nationally

representative HIV incidence estimates. The addition of HIV incidence testing into the survey protocol allows a simultaneous analysis of HIV prevalence and incidence that significantly improves our understanding of the current dynamics of HIV transmission in South Africa. Such information is vital to informing interventions and systems of support. It also contributes to improving the accuracy of models for projecting existing and future trends in relation to HIV and AIDS.

Objectives of this study

The objectives of this study were to:

- Determine HIV prevalence and incidence as well as viral load in the population of South Africa using linked anonymous HIV testing of dry blood spot (DBS) specimens;
- Gather data to inform modelling of the epidemic in South Africa;
- Identify risky behaviours that predispose the South African population to HIV infection;
- Examine the social, behavioural and cultural determinants of HIV;
- Explore the reach of HIV/AIDS communication and the relationship of communication to response;
- Assess the relationship between mental health and HIV/AIDS and establish a baseline;
- Assess public perceptions of South Africans with respect to the provision of anti-retroviral (ARV) therapy for prevention of mother-to-child transmission and for treating people living with HIV/AIDS;
- Understand public perceptions regarding aspects of HIV vaccines;
- Investigate the extent of the use of hormonal contraception and its relationship to HIV infection.

Methodology

Survey design and sampling

This survey follows the survey conducted in 2002, and focuses on all persons over two years of age living in South Africa and residing in homes. It excludes individuals living in educational institutions, old age homes, hospitals and uniformed service barracks but includes those living in hostels.

The survey design applied a multi-stage disproportionate, stratified sampling approach. As in 2002, the sampling frame for the 2005 survey was based on a master sample consisting of 1 000 enumerator areas (EAs) used by Statistics South Africa (Stats SA) for the 2001 census. The sample was explicitly stratified by province and locality type of the EAs. Locality types were urban formal, urban informal, rural formal (including commercial farms) and rural informal. In the urban formal areas, race was also used as a third stratification variable (based on the dominant race group in the selected EA). The master sample therefore allowed for reporting of results at the level of province, type of locality, age and race group.

The primary sampling unit (PSU) was the EA, the secondary sampling unit (SSU) was the visiting point (VP) or household, and the ultimate sampling unit (USU) was the individual eligible to be selected for the survey. Three persons in each household could potentially be selected, with only one from each of the following age groups: 2–14 years,

15–24 years, and 25 years and older. To meet the criterion of having acceptable estimates by race group, the EA sample had to be allocated disproportionately to the explicit strata. This disproportionate allocation of the EA sample according to race resulted in a considerable overrepresentation of the 'urban formal' locality type in the sample, since the vast majority of Indians and whites live in formal urban areas.

Several innovations were introduced in 2005 for the selection of respondents from the sampled households. Respondent selection in 2002 required at least two visits: an initial visit to enumerate household members and a return visit to interview the respondents randomly selected by an independent person. The selected respondents were often absent on the return visit resulting in a 74% response rate. In 2005, respondent selection and interview were done in a single visit. Fieldworkers enumerated household members, using a random number generator to select the respondent and then proceeded with the interview. This resulted in a substantial improvement in response rate (see section 3.1.2 'Response analysis'). The selection procedure was carefully monitored to ensure that fieldworkers followed the sampling protocol and did not bias selection in favour of those present in the house at the time.

The second change involved the definition of household member. In 2002, any member of the household who spent 'at least four nights a week' was included. The 2005 survey applied the de facto concept 'who slept here last night' (including visitors) in sampling eligible household members. This sampling approach is standard demographic household survey procedure and was also used in the 2001 census. Although change in sampling procedures are not recommended in repeated cross-sectional surveys, it was felt that the changes instituted in 2005 would improve the quality of the data and result in more robust estimates.

Sample size estimation

The sample size estimate for the 2005 survey was guided by two requirements: i) the requirement for measuring change over time, that is, to be able to detect a change in HIV prevalence of five percentage points in each of the main reporting domains – sex, age group, race, locality type, and province; and ii) the requirement of an acceptable precision of estimates per reporting domain – that is, to be able to estimate HIV prevalence in each of the main reporting domains with a precision level of less than ±4%, which is equivalent to the expected width of the 95% confidence interval (CI). A design effect of 2 was assumed. The total sample size required for the 2005 survey was the combination of the sample sizes needed for each reporting domain, also taking into account the sampling design and the expected response rate for HIV in a given reporting domain.

Weighting of the sample

Due to the sampling design of the survey, some individuals have a greater or lesser probability of selection than others. To correct this problem, sample weights were introduced to correct for bias at the EA, household and individual levels and also to adjust for non-response. This process produced a final sample representative of the population in South Africa for gender, age, race, locality type and province.

Questionnaires

Similar questionnaires to those employed in the 2002 survey were used in the 2005 survey. A number of indicators were modified as a product of the analysis of the 2002

questionnaires, and a number of new indicators and modules were added. As in 2002, all questionnaires, information sheets and informed consent forms were translated into relevant local languages and pre-tested during the pilot study.

Collection of blood specimens

Collection of DBS specimens was the strategy used in this survey. This specimen collection strategy was chosen because collection of blood specimens on absorbent paper (Schleicher & Schuell (S&S) 903 Guthrie Cards) offers unique advantages for large-scale population-based surveys. Sufficient blood to saturate the collection paper can be obtained easily by pricking the skin of the heel, finger, or ear, thereby eliminating the need for venipuncture. DBS specimens can be couriered conveniently from the field to the laboratory since they do not require refrigeration.

Whole blood was spotted onto each of the five circles of the Guthrie card, spotting approximately 50 microlitres of blood per circle. Fieldworkers were encouraged to fill all five circles, but at least three circles, without causing discomfort to the person. This was successfully achieved and 100% of blots received in the laboratory were suitable for laboratory testing with both the screening and confirmatory assays.

HIV antibody testing

DBS spots were punched into a test tube pre-labelled with the corresponding laboratory testing barcode number. The punch was decontaminated by punching four blank spots after each DBS spot to ensure no carry over. Each filter paper disc was eluted overnight at 4°C with phosphate-buffered saline (PBS, pH 7.3-7.4). An aliquot of the eluted sample was then used for performing the HIV testing assays, following the manufacturer's instructions.

All samples were first tested with the Vironostika HIV-1 Uniform II Plus O assay (bioMerieux). All HIV positive samples were retested with a second ELISA test (Vitros ECI, Ortho Clinical Diagnostics). A second test was also conducted for 10% of cases where the first test was negative. Any samples testing positive on ELISA test 1 and negative on ELISA test 2 (producing discordant results) were to be submitted to a third ELISA (Biorad HIV 1 + 2) for final interpretation of discordant samples. However, no discordant samples were identified during the testing procedure.

HIV incidence testing

The detection of recent infections was performed using a protocol optimised for the detection using dried blood or serum spots using the BED capture EIA (CEIA, Calypte® HIV-1 BED Incidence EIA, Calypte Biomedical Corporation, Maryland, USA). Tests were performed on confirmed ELISA-positive specimens. An HIV-1-positive specimen for which the confirmatory BED-CEIA gave an normalised OD-n of less than or equal to 0.8 was considered to be a specimen of recent HIV-1 infection, with seroconversion having occurred within the previous 180 days. Otherwise, the specimen was classified as long-term infection.

Ethical considerations

The research proposal was submitted and approved by the HSRC's Research Ethics Committee (REC 5/24/05/04). The committee has Federal Wide Assurance (FWA) for the Protection of Human Subjects accreditation with the USA's Department of Health and Human Services (DHHS).

To comply with internationally accepted ethical standards, the researchers took the following measures:

- No names of individuals were recorded on the questionnaires or on the blood specimen; instead barcodes were pasted on the questionnaires, the laboratory results sheet and the blood specimen.
- The HIV test results and the questionnaires were linked electronically through barcodes, making this a *linked anonymous HIV testing survey*.
- Participants who asked to know their HIV status were given a referral card to visit any of the nearby voluntary counselling and testing (VCT) sites to undergo VCT.
- To ensure confidentiality, data were analysed nationally, provincially and by EA type and not by smaller geographic units. The EA number was deleted from the data files.

Fieldwork preparation and data collection

Several months before the start of the study, various stakeholders such as national and provincial health departments of health, all 54 district mayors throughout the country, union leadership and mine management, provincial farmers' unions, and so forth, were contacted via letters which informed them about the survey and sought their permission to conduct the study in the provinces, districts, hostels and/or area under their influence. In addition, an information sheet was prepared which was used to explain the study to the heads of households selected for participation in the survey.

A total of 142 fieldworkers and 36 supervisors, the majority of whom were recently retired nurses, were recruited and trained. Training was provided on how to conduct interviews on sensitive issues and how to collect DBS specimens for HIV testing. Supervisors were trained to identify the EA using maps, global positioning system (GPS) equipment and co-ordinates, and to select the correct VPs and participants using the Kish's Grid method.

Surveys in the EAs generally took about three days to complete. Most data in urban areas were collected during evenings or weekends. Four visits were made to each VP to optimise response. Although some fieldwork took place over six weeks between October and December 2004, the bulk of the fieldwork was undertaken from mid-January to June 2005.

A quality assurance team, led by a senior researcher with extensive experience in conducting large-scale surveys, and consisting of five other senior HSRC-based researchers, the fieldwork manager as well as nine provincial quality assurance co-ordinators including the field editors' supervisor, periodically reviewed the quality of work in the field.

Data management and analysis

Data were corrected for errors such as substitutions of census EAs and coding errors. Programs were written to address the flow of skip patterns in the questionnaire, and VP questionnaires were matched to the individual questionnaires. Information on age, sex and race of the respondent or non-respondent was corrected if it was missing.

Datasets were then converted to Statistical Package for the Social Sciences (SPSS) and frequency distributions were run to check that all variables contained only values in the accepted range and variable labels. Unweighted data were analysed using SPSS and Statistical Analysis Systems (SAS) computer software. After the datasets were edited,

programs were written to calculate the sample weights. Weighted data were calculated with STATA 8.0 software, taking into account the complex multi-level sampling design and adjusting for HIV testing non-response. STATA software (svy methods) was also used to obtain the estimates of HIV prevalence, significance values (p-values) and confidence intervals (95% CI) that take into account the complex design and individual sample weights. Tables and figures in the report present weighted percentages and unweighted counts.

Results

Response analysis

Every effort was made to ensure that the survey achieved a high response rate. The strategies used included: (i) notifying the population prior to the study and giving adequate explanation to potential respondents; (ii) selecting retired nurses, who are generally respected in communities; (iii) adequately training nurses to conduct interviews on sensitive subjects like HIV/AIDS and sex; (iv) making a maximum of four revisits to the households; (v) using a linked anonymous survey approach; and (vi) ensuring privacy when conducting interviews. Interviews were completed and specimens for HIV testing were taken from eligible respondents in the same session.

Non-response may occur at the household level. Household non-response relates directly to HIV testing non-response. If the household interview is not completed, HIV testing will not occur. The household response rate is found by dividing the number of households/valid VPs with completed interviews by the number of occupied households/valid VPs. Of 13 422 households (VPs) sampled, 12 581 were valid VPs. Invalid VPs consisted of 473 derelict buildings, and 368 households were clearly abandoned. Of the valid 12 581 households/VPs, 10 584 (84.1%) were interviewed. Thus the household response rate for the 2005 survey is 84.1%.

In the 10 584 valid VPs that agreed to participate in the survey, 24 236 individuals (maximum three per household) were eligible for interviews and 23 275 (96.0%) completed the interview. Of the 24 236 eligible individuals, 15 851 (65.4%) agreed to HIV testing and were anonymously linked to the behavioral interviews. The categories of non-response were:

- 7 424 (30.6%) interviewed but refused HIV testing;
- 359 (1.5%) refused both interview and HIV testing;
- 602 (2.5%) absent from the household or missing data.

Thus the overall response rate for HIV testing in the 2005 survey was 55%. The overall response rate is the product of the household response rate and the individual response rate for HIV testing (84.1% × 65.4% = 55%).

HIV testing coverage and non-response was analysed by the main reporting domains: sex, age, race, province, and locality type. In addition to the categories for coverage (tested) and non-response (not tested), the tables break down non-response by reason for non-response: refused or absent. Refused and absent are categories of non-response.

More females (68.3%) than males (62.2%) were tested. Coloureds (72.3%) and Africans (69.8%) were more likely to agree to testing whereas only 45.3% of whites and 51.3% of Indians agreed to be tested. The 25 and above age group was the most compliant

(71.3%), whereas children aged 2–14 years had a much lower HIV testing response rate (54.6%). Amongst the provinces, Northern Cape had the highest compliance (78.8%) while KwaZulu-Natal had the least compliance (56.7%). The highest response rates were found in rural formal settlements (74.5%), and the lowest in urban formal areas (61.7%).

HIV risk-associated characteristics were compared in more detail in survey participants who were interviewed and tested, with those who were interviewed but refused HIV testing in the age group 15 years and older. A large majority, that is, 7 424 (88.5%) of the total of 8 385 individuals who refused to be tested for HIV were interviewed in our survey, resulting in a very high coverage in the analysis of HIV testing non-response. Our analysis suggests that individuals at higher risk for HIV infection were more likely to participate in the survey.

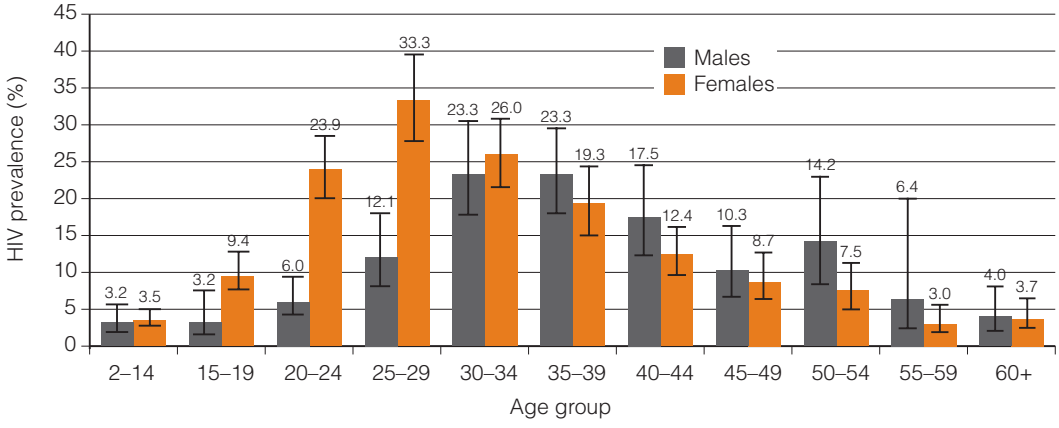
National HIV prevalence

A population-based probability sample is advantageous in generating national estimates of HIV prevalence as almost all age, sex, race and socioeconomic strata of society can be included. The present sample size was large enough to allow for meaningful analysis of the data as a whole, and in the main reporting domains. Estimates of HIV prevalence are based on weighted data to correct for stratified, disproportionate sampling and account for non-response to HIV testing.

HIV prevalence amongst persons aged two years and older is estimated to be 10.8%, with a higher prevalence in females (13.3%) than in males (8.2%). HIV prevalence increases with age from 3.3% in children 2–14 years of age to 16.2% in adults 15–49 years of age. In people 50 years and older, an often neglected age group in surveys, HIV prevalence is estimated to be 5.7%. HIV prevalence by province shows that KwaZulu-Natal, Mpumalanga and Free State have the highest HIV prevalence in South Africa. The lowest HIV prevalence levels were recorded in the Western Cape and Northern Cape.

Figure I shows HIV prevalence by sex and age. HIV prevalence increases dramatically among young females and peaks at 33.3% in the 25–29 age group. In males, the increase in HIV prevalence is more progressive, and peaks at a lower level than for females (23.3% in age groups 30–34 and 35–39). From age group 35–39 onwards HIV prevalence is higher in males than in females.

Figure I: HIV prevalence among respondents aged 2 years and older by sex and age group, South Africa 2005



The findings confirm that South African children have a high HIV prevalence. The rates are high in both males and females. Specifically, the prevalence of HIV among male children aged 2–4 years is 4.9% and 5.3% among female children. Among male children aged 5–9, years the prevalence is 4.2% and 4.8% among females. Among children aged 10–14 years, the prevalence is lowest at 1.6% among boys and 1.8% among girls.

As already observed in the 2002 survey, females are more likely to be living with HIV, and this proportion has increased over time. The largest increase in prevalence is found among females aged 15–24 (12.0% in 2002 compared to 16.9% in 2005). The female to male ratio for HIV infection in 2005 is also highest among youth aged 15–24 years, where the prevalence in females is almost four times that of males (16.9% vs. 4.4%). The results confirm the findings of the Reproductive Health Research Unit (RHRU) Youth Survey conducted in 2003, which found similar HIV prevalence in males and females, 15.5% in females and 4.8% in males.

Race is an important epidemiological variable because it embodies socio-economic contexts that influence risk of HIV infection. In South Africa, Africans live in contexts that increase vulnerability to many illnesses – and HIV is no exception. The overall HIV prevalence among African respondents increased slightly from 12.9% in 2002 to 13.3% in 2005. In African adults aged 15–49 years the corresponding figures are 18.4% in 2002 and 19.9% in 2005. Of African females in this age group, 24.4% were found to be HIV positive in the 2005 survey.

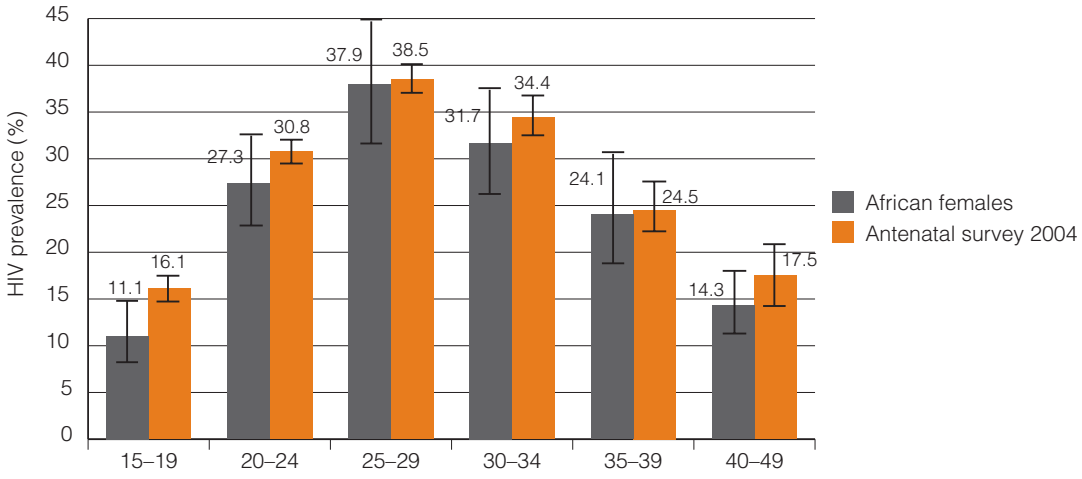
Persons aged 15–49 years living in informal settlements have by far the highest HIV prevalence, 25.8%. Rural informal areas followed with 17.3%, and 13.9% was found in both urban formal and rural formal locality types.

HIV prevalence in females 15–49 compared with the 2004 antenatal survey

HIV prevalence among females in the 15–49 year age group was compared with findings of the annual antenatal survey conducted by the Department of Health in 2004. The overall HIV prevalence in females participating in the 2005 household survey was 20.2%. In the survey sample 23.2% of females who were pregnant in the last 24 months (n = 918), were HIV positive. These figures are lower than the 29.5% HIV prevalence found in the 2004 antenatal survey. However, the household survey included females of all race groups regardless of whether or not they were sexually active, whilst the antenatal survey is only representative of pregnant females using government clinics. Taking into account a differential utilisation rate of these clinics by race and income group (well over 90% of the females in the 2004 antenatal survey were African[1]), a comparison with African females is shown in Figure II.

1 Personal communication, Dr N Makubalo, Department of Health, 2005.

Figure II: HIV prevalence among African females aged 15–49 years in the 2005 household survey compared to females in the 2004 antenatal survey



When the comparison is restricted to African females (n = 3699), the HIV prevalence profile in this survey is similar to the antenatal survey. The overall HIV prevalence among African females in the 2005 household survey was 24.4%, with a higher HIV prevalence of 26.8% among African females who were pregnant in the last 24 months (n = 630).

National HIV incidence

The availability of tests for recent HIV infection is a major advance in estimating incidence in selected populations. Incidence measures are generally better than prevalence measures for assessing the dynamics of HIV transmission in different populations. The data from the 2005 survey enables us, for the first time, to analyse HIV prevalence estimates, HIV incidence estimates and proximate risk factors concurrently.

Recently, the Centers for Disease Control and Prevention (CDC) introduced the BED capture EIA (CEIA) assay to identify incident infection. The BED assay uses a multi-subtype synthetic peptide and measures the increasing proportion of HIV-IgG to total IgG after seroconversion. The BED assay algorithm is designed for seropositive specimens and has been successfully implemented in cross-sectional studies. The advantage of the BED-CEIA is that it has a single window period, independent of the HIV subtype. The assay is designed to work well in populations with different HIV-1 subtypes and the testing algorithm has been successfully evaluated in populations in the United States and Thailand with B and E subtypes, as well as in cohorts from the Netherlands, Kenya, Ethiopia, Zimbabwe, and India which comprised of A, B, C, and D subtypes.

Almost 16 000 specimens tested for HIV provided an unparalleled large sample to estimate HIV incidence on a national scale for South Africa. HIV incidence estimates (weighted) are provided for the main reporting domains of the 2005 survey.

The HIV incidence estimates reflect the underlying transmission dynamics that are currently at work in South Africa. Not surprisingly, the patterns of HIV incidence estimates are comparable to those described for HIV prevalence in the previous section. HIV incidence in the total study respondents 2 years and above is estimated at 2.7%. The incidence among females is more than twice that in males, 3.6% compared to 1.5%. In

the African race group, an incidence of 3.4% was found. The incidence in the other race groups is below 1%. Persons living in urban informal areas have the highest incidence figures, 7.0% compared to rural informal areas (2.8%), rural formal areas (2.7%), and urban formal areas (1.8%). Mpumalanga (4.2%), KwaZulu-Natal (3.8%), and Free State (3.4%) recorded the highest incidence rates, while Western Cape (0.9%) and Northern Cape (0.5%) showed the lowest rates in the study population 2 years and above.

Recent HIV infections were found in every age group. Eleven of the 181 recent infections identified in the study sample occurred among children aged 2–14 years, resulting in an annualised incidence of 0.9% for this age group. Seven of those 11 recent infections in children were found in 2–9 year-olds, an age group where vertical transmission from mother to child can effectively be excluded as the source of infection.

HIV incidence among youth aged 15–24 years was 3.3%. However, an alarming finding was that females in this age group have an eight-times higher HIV incidence than males (6.5% compared to 0.8%). In adults 25 years and above, an incidence of 3.6% was recorded. Survey participants in the 15–49 year age group have an HIV incidence of 4.4%, with a peak incidence of 7.1% in the age band 25–34 years. HIV incidence in females 15–49 years was 6.3%, more than two and a half times the incidence found in males (2.4%).

The validity of the incidence estimate is dependent on the accuracy of the input measures required by the test methodology. However, the potential errors and biases associated with the BED assay methodology are expected to remain stable over time. This is important because the main purpose of incidence estimation is to measure trends in HIV incidence and relative differences in incidence in the same population or between subpopulations of the same population over time. The plausibility of the actual HIV incidence estimates derived with the BED methodology is the subject of ongoing research including a comparison with incidence estimates generated by mathematical models.

Behavioural determinants of HIV/AIDS

As the most common mode of the HIV transmission in South Africa is heterosexual intercourse, this section provides a summary of a wide range of indicators related to sexual behaviour risks, substance use, perceived susceptibility to HIV infection, and knowledge and attitudes towards HIV/AIDS.

Sexual behavioural risks

Sexual debut

One of the major goals of HIV prevention campaigns is delaying the age of sexual debut by encouraging primary sexual abstinence amongst youth. Overall, very few children in the 12–14 year age group (1.9% males and 1.5% females) reported engaging in sex. Only a few African (2%), white (0.6%) and coloured (0.6%) children in the 12–14 year age group reported having had sex before, while Indians in the same age group indicated that they had all not engaged in sexual activity at all.

The median age at first sex refers to the point at which half of the respondents in a particular age category have had sex. The overall median age at first sex for youth aged 15–24 years as a group in this study was 17 years. This was true for both sexes. An inter-age analysis revealed a trend towards earlier sexual debut amongst younger respondents. The main reasons for youth abstaining from sex (that is, primary abstinence) amongst

those who had not had sex before were that they were either not yet ready (71%) or not interested in sex (22.9%).

Sexual experience

The results showed that slightly more young females below 25 years of age (62.3%) were likely to have had sex before than their male counterparts (53.9%).

Secondary abstinence

Secondary abstinence refers to the discontinuation of sex for periods of time after initial sexual activity. Overall, nearly one-third of the respondents who were previously sexually experienced had not had sex during the previous 12 months. Secondary abstinence was higher amongst male youth aged 15–24 years (23%) than male adults aged 25–49 years (9.8%) while it was the same amongst females in the two age groups (20.0% and 21.3% respectively). Secondary abstinence was highest among elderly women (71.3%) and Africans (58.7%) aged 50 years and older.

Overall, those who said that they had not had sex before had the lowest HIV prevalence (4.3%), followed by those who reported that they abstained from sex in the past year (12.0%). Prevalence was highest among those who were sexually active (16.7%). The same pattern was found among youth aged 15–24 years (those who said they had not had sex before [3.8%], those who abstained in the past year [11.3%] and those who were sexually active [15.6%]).

Sexual partnerships

Unprotected sex with greater numbers of sexual partners increases risk of HIV acquisition and this risk is increased in the context of a generalised epidemic where there is high HIV prevalence. Most sexually active respondents reported that they had only one partner during the year with a higher proportion of females (97.4%) reporting this than males (83.7%). Young males (27.2%) reported more multiple partnerships than all older males (14.4% for 25–49 year-olds and 9.8% for those 50 years and older). The same pattern was reported among females, although the actual overall rates were much lower among females than males. Males living in informal areas, whether in urban (20.0%) or rural areas (18.7%), had more multiple partners than those living in formal urban areas (16.0%). African (19.3%) and coloured (11.2%) males had higher rates of multiple partnerships.

To gain a deeper understanding of the extent of multiple partnerships among youth, data was further disaggregated by sex, age and number of respondents. The results indicate that nearly half of males aged 15–19 years (45.2%) had more than one partner in the past year. The rate for females was 28%.

Sexual frequency

Adults aged 25–49 years generally reported higher levels of sexual frequency in the last 30 days than youth aged 15–24 years and adults aged 50 years and older. However, the modal frequency of sex for all three age groups in the last 30 days preceding the survey was 1–4 times. Nearly a quarter (24.3%) of sexually active youth aged 15–24 in the present study reported that they had not had sex in the past month.

Age mixing

Sexual networking is an important determinant of HIV infection. While nearly two thirds of sexually active male (66.2%) and female respondents (65.3%) had a sexual partner with an age difference within five years of their own age, nearly one third of males (32.4%) had partners who were more than five years younger than themselves while amongst females, the opposite was found (33.2% had partners who were at least five years older than themselves).

Overall, HIV was more prevalent among males who had sex with females five years younger than themselves than if the partner is the same five-year age range or older than themselves. For example, if a young male aged 15–19 years had a sexual partner who is five years older, he was at an increased risk of being HIV positive (19%) compared to if he had a partner who was within five years of his age (3%).

For females aged 15–19 years, HIV prevalence was 29% amongst those who had a partner who was five or more years older than themselves. The figure is also high among females aged 20–24 years (34.9%).

Condom access and use

Condoms are an important means of preventing unwanted pregnancy, sexually transmitted infections (STIs) and HIV infection. The survey showed that the overwhelming majority of the respondents (69.7%) accessed free public sector condoms – especially amongst Africans and coloureds. Nearly half of the older adults, 50 years and over (44.5%) and the majority of whites (63.5%) paid for the last condom they used. People living in rural areas were more likely to access free condoms.

The most recent brands of condom used were Choice (25.8%) followed by Red Ribbon (17.9%), Lovers Plus (17.6%) and Durex (8.2%). The overwhelming majority of respondents (89.3%) who indicated that they used a free condom at last sex were satisfied that the condom was of high quality.

The overwhelming majority of South Africans believe condoms are easily accessible when needed. Public clinics and hospitals were the most common source of condoms (66.6%), followed by pharmacies or chemists (24.5%), shops, supermarkets or café (12.9%), and private clinics or hospitals (12.8%).

Almost 38.1% of females and males used a condom during the last sexual intercourse. The large majority of respondents who were youth aged 15–24 (72.8% among males and 55.7% among females), Africans (43.6% among males and 38.1% among females), males with multiple partners (62.3%), and those living in rural informal locality types (44.0% among males) were more likely to use a condom during last sexual intercourse. There were lower levels of condom use among those aged over 50 years (8.6% for males and 5.3% for females) as well as amongst white males (16.7%) and Indian females (10.1%).

The overwhelming majority of respondents (71.2%) indicated that the main reason why they used a condom to prevent an HIV infection, almost half (49.4%) as a contraceptive method, and a quarter (24.2%) to prevent STIs.

Single respondents were considerably more likely to use a condom at last sex (69.0% among 15–24 year-olds and 52.4% among 24–49 year-olds) than those who were married or cohabiting (25.0% among 15–24 year-olds and 21.1% among 24–49 year-olds). Respondents aged younger than 50 years and who had three or more partners in the past year were more likely to use a condom at last sex (81.1% among 15–24 year-olds and 60.0% among 25–49 year-olds). Both youth and adults aged 25–49 years who had more than one current partner were more likely to use a condom during the last sexual encounter (75.4% and 60.0% respectively) than respondents with only one current partner (61.7% and 29.8% respectively).

Method of contraception among female respondents

Altogether one-quarter (25%) of all females in the reproductive age group of 15–49 years who were sexually active reported that they had never used a contraceptive in their lifetime.

Amongst 15–24 year olds, one-fifth (17.1%) had used a contraceptive injection and just over one-tenth (11.1%) had used a male condom. In comparison, nearly one-third (30.1%) of those aged 25–49 years had never used a contraceptive in their lifetime, but one-quarter (25.5%) reported they were not using any contraceptive method. Almost one-fifth (18.7%) were using contraceptive injections and 9.3% were using the pill.

The highest HIV prevalence found in the 15–24 year age group was amongst those currently not using any contraceptive method (29.4%), followed by those who used contraceptive injections (22.7%) and contraceptive pills (18.5%). In comparison, among the 25–49 year-olds the highest prevalence was found among those who had never used contraceptives in their lifetime (22.6%), followed by those currently not using any method (21.5%), those using contraceptive injections (21.1%), and those using contraceptive pills (16.0%).

HIV and self-reported diagnosis of STIs

A small proportion of respondents (3.7%) indicated that they had symptoms of penile discharge or sores in the last 3 months or currently had symptoms of an STI. HIV prevalence was found to be significantly associated with history of STI symptoms ($p < 0.01$).

Substance use

Excessive alcohol use is linked to diminished rational capacity, and has implications for HIV risk. Risk is also exacerbated by other forms of substance abuse.

The overall prevalence of alcohol consumption for the sample was 27.9%, with 18.8% being classified as low risk, and 7.2% as high risk using a 10-item Alcohol Use Disorder Identification Test (AUDIT). Proportionately more males were found to be both low- and high-risk drinkers (26.8% and 13.6% respectively) than their female counterparts (12.8% and 2.1% respectively). When further analysed among males only, it was found that proportionately more coloured males were high-risk drinkers (17.8%), followed by whites (7.2%) and African males (6.4%) while Asian males were proportionately the least high-risk drinkers (2.5%). The majority of whites (53.1%) were however classified as low-risk drinkers. When locality type was considered, high-risk drinkers were more likely to reside in rural formal (11.1%), urban formal (9.4%) and urban informal (8.9%) settings, than in rural informal areas (3.5%). Adults aged 25–49 years were more likely to be high-risk drinkers (8.9%) followed by those who were 15–24 years (6.3%) while adults were more likely to be low-risk drinkers (21.0% and 23.7% for 25–49 year-olds and 50+ years and older respectively) than the younger age groups (13.3%). High-risk drinking was above 10.0% among adults and youth aged 15 years and older in three provinces (Western Cape: 15.6%; North West: 12.7%; Northern Cape: 11.6%) and much lower in the Eastern Cape (2.6%), and Limpopo (3.6%).

Using some questions drawn from two sections of the international scale known as the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST), this study found that there was overall a very low proportion of substance use by South Africans 15 years and older. An unexpected finding was the fact that 3.1% of the respondents indicated that

they had used drugs by injection but not in the past three months while another 1.6% had done so during the past three months, giving a total of 4.7% of the sample having used injected drugs in their lifetime. This requires further investigation. The second most commonly used substance, albeit by a very small minority, was cannabis (or dagga as it is commonly called in South Africa), which was reported to be used by 2.1% of the respondents.

Perceived susceptibility to HIV infection

An individual's belief in his or her personal susceptibility to illness or disease is an important element in nearly all models of preventive health behaviour, both general and HIV/AIDS specific, as it influences the adoption of risk-reducing behaviour and/or preventive strategies. When asked how they would rate themselves on a scale of 1–4 in terms of risk of becoming infected with HIV, the majority of the adult and youth respondents (66%) in the study believed that they would not get infected with HIV while 34% believed they probably or definitely would.

Overall, fewer males (29.8%) believed they would get infected in comparison to females (37.7%). In terms of race, higher proportions of Africans (38.0%) and coloureds (28.5%) felt they were at risk. Significantly fewer older participants aged 50 and older (24.7%) and youth aged 15–24 years (28.8%) indicated that they felt vulnerable to HIV infection. This was higher in the 25–49 year age group (41.6%).

When respondents were asked to indicate the reasons why they believed that they would get infected with HIV, the main responses were: an accident or cuts (45.3%), blood transfusions (29%), lack of trust of their partners (23.9%), and inconsistent condom use (20.0%).

When asked what the reasons were for those who believed that they would not get infected, the main responses included: being faithful to their partner or trusting their partner (46.4%), abstaining from sex (22.6%), always using condoms (19.0%), and not being sexually active (14.3%).

Significantly more participants who perceived themselves to be at high risk of HIV infection (34.1%) indicated that they had been for an HIV test than those who perceived themselves to be at low risk (28.6%).

Participants who perceived themselves to be at high risk of being infected, had a much higher HIV prevalence (20.8%) in comparison to the perceived low-risk group (10.1%).

Use of voluntary counselling and testing (VCT)

VCT is important as an entry strategy for both HIV prevention and access to treatment, care and support services. Although overall knowledge of where to access HIV testing services was found to be high in this study, both rural respondents and those 50 years and older, have lower levels of utilisation of VCT as well as lower levels of perceived access to VCT services. There has however been a notable increase in the uptake of HIV testing over time – over two-thirds of those respondents who have been tested were tested in the past two years.

Amongst those respondents who had previously been tested for HIV, and for whom an HIV test result was available in this survey, about one in six (16.3%) were found to be HIV positive. For those who had not been tested, about one in eight (12.8%) are HIV positive. There is thus a large number of people who are HIV positive, but do not know their status.

This study found that HIV testing was most likely to be conducted in the public sector, and also that the overall perceptions of service satisfaction within the immediate testing environment were extremely high.

Willingness of individuals to undergo VCT is influenced by a range of factors including motivation to know one's status, although in a number of instances VCT is a product of factors related to health and life insurance, pregnancy or illness. Whilst a considerable proportion of respondents in this study found out their HIV status because they wanted to know it, or were feeling ill, or were pregnant (in the case of females), HIV testing also occurs as a product of external factors such as applying for an insurance policy or loan.

Knowledge and attitudes concerning HIV-related issues

Knowledge, perception and attitudes related to HIV/AIDS are important precursors for behavioural responses to the disease. In the present survey, knowledge is measured explicitly – for example, through analysing responses to particular awareness and knowledge questions. It is to some extent measured implicitly when analysing behavioural responses. For example, knowledge of HIV prevention behaviours can be assumed to be high in the context of high reported condom use.

There are some concerns about levels of knowledge and awareness found in this study. Nearly one-fifth (18.7%) of young people aged 12–14 did not understand sexual transmission of HIV, whilst nearly a third (31.9%) said 'no' or 'don't know' when asked if HIV could be transmitted from mother to child. Of respondents aged 50 years and over, 11.2% showed a similar lack of knowledge in relation to sexual transmission, and nearly one-quarter (23.5%) said 'no' or 'don't know' when asked about possible HIV infection from mother to child.

There is also a lack of clarity about whether AIDS is curable, as well as a lack of knowledge about whether HIV causes AIDS. Just over one quarter of respondents over the age of 50 (28.6%) disagreed or said they were unsure, as did over 10% of respondents aged 15–49 years, and nearly a fifth (18.1%) of 12–14 year-olds.

Around a third of respondents in all age categories disagreed or were unsure when asked if HIV infection could be reduced by having fewer sexual partners. It is surprising that there is still such poor knowledge about this key prevention strategy, this suggests that insufficient attention has been given to this area in communication campaigns.

The recent roll-out of ARVs makes it important to assess how much the public knows and understands about these drugs. This information will be useful to inform advocacy campaigns around the issue in order for the benefits of ARVs to be realised by the people living with HIV/AIDS (PLWHA) who need them. The majority of respondents (60%) had heard about ARV therapy. Although most respondents have correct knowledge of ARVs in the different age groups, some areas of knowledge are inadequate. The area with the most incorrect responses was 'An HIV-infected person can transmit HIV when taking ARVs'. Only 60% of the entire sample responded correctly to this item. The majority of respondents (83.3%) correctly stated that ARVs do not cure HIV/AIDS. Over a fifth (21.3%) of respondents were not sure whether traditional medicines could cure AIDS and 25.5% did not know whether ARVs could reduce the quantity of HIV in an infected person.

To date, there has been little clear understanding of public knowledge of vaccines. In this study, just under 10% of respondents were found to have ever heard of HIV vaccines.

When asked if they would use an HIV vaccine should it become available, the majority of those who were aware of vaccines (57%) were in favour of being vaccinated should a vaccine be tested and found to prevent HIV infection. The present findings provide a baseline from which to measure coverage of vaccine awareness and related interventions in the years to come.

Attitudes towards people with HIV/AIDS

Stigma and discrimination against PLWHA have often been identified as primary barriers to effective HIV prevention, as well as to the provision of treatment, care and support. Whilst stigmatising attitudes overall were low, varying proportions of respondents showed some degree of negative attitude and perception in relation to PLWHA. Differences between urban and rural areas are potentially linked to lower levels of programme interventions in rural areas. Urban areas are relatively well exposed to all forms of media and a more concentrated development of services, leading to people recognising HIV/AIDS as a population-wide phenomenon. This possibly 'normalises' HIV/AIDS so that affected people are not perceived as exceptional, and exclusionary beliefs and practices are less likely to take hold.

Communication campaigns

HIV/AIDS knowledge and awareness is often represented as occurring mainly as a product of HIV/AIDS campaigns. Such campaigns typically focus on key knowledge areas and include informing diverse audiences about behaviours and practices necessary to prevent HIV infection, encouraging the uptake of services and providing information on other aspects of HIV/AIDS. Campaigns are not the only sources of information about HIV/AIDS, nor the only stimulus to communication and behavioural response in relation to the disease. HIV/AIDS communication includes political and social communication emanating from diverse sources (for example political, religious, traditional and other leaders), and a considerable body of HIV/AIDS information exists in the mass media beyond the sphere of formal campaign inputs. Such information occurs in the context of news, but also increasingly, many talk shows, feature programmes and articles, and entertainment programmes include references to HIV/AIDS.

This study included assessment of a number of key national campaigns as well as other forms of communication and engagement with the epidemic.

Most South Africans access mass communication media a few days a week or more. Exposure to radio is highest, followed by television, newspapers and magazines. Internet access is low. However, one in five people do not access any major form of mass media a few days a week or more.

There is relatively high exposure to the key national campaigns but there are also gaps. No campaign or programme has exclusive reach into any particular audience, and there is a high degree of overlap between campaigns. This overlap is particularly evident in the emphasis of campaigns on youth audiences.

All campaigns and programmes have poor reach amongst those 50 years and older, and there remains an urban bias, with generally poor reach into rural informal and rural formal areas. Programmes and campaigns are, however, seen as useful for HIV/AIDS information to a high degree by those who know of them.

South Africans are also discussing HIV/AIDS in interpersonal contexts, and are exposed to HIV/AIDS information that does not come directly from communication campaigns and programmes.

A fair proportion of people report exposure to educational events and HIV/AIDS activities in their communities. Institutions such as the health services, schools, workplaces, and faith-based organisations (FBOs) also play an important role. Friends and family members are important sources of information about HIV/AIDS. Personally engaging with the epidemic was noted amongst a fairly high proportion of respondents. Many people personally know others who are HIV positive or who have died of AIDS. In certain age groups, involvement with the epidemic extends to voluntarism and membership in HIV/AIDS organisations, and a reasonable proportion of people in all age groups are providing care and support to those living with and affected by HIV/AIDS.

Mental health and HIV/AIDS

People living with HIV/AIDS have higher rates of a range of mental health problems than the general population. This results, in part, from mental health problems being a high risk factor for contracting HIV and, in part, as a consequence of HIV infection. Using 'proxy' measures based on a few items drawn from the screening section of the Composite International Diagnostic Interview (CIDI) for screening in this survey, it was found that those who were HIV positive in the study were more likely to feel sad, empty or depressed most of the day for a period lasting several days during the last 12 months (41.8%), to have problems sleeping (32.9%), and to have had had some experiences in the past that they thought often about and which made them feel tense or frightened (34.4%) than their counterparts who were HIV negative (29.6%, 25.8% and 26.4% respectively). There were however no significant differences between the two groups in terms of sleeping problems or feeling worried, tense or anxious for a period lasting a month or longer during the past 12 months.

In subjects found to be HIV positive, 'depression' was significantly higher amongst those who had been tested for HIV (38.8%) than in people who had not been tested (31.3%).

Other contextual factors around HIV/AIDS

Household burden of HIV/AIDS

The impact of HIV/AIDS on household income and livelihood can be devastating. Some 5.3% of respondents who were heads of households indicated that at least one member of their household was diagnosed as HIV positive. This is equivalent to 676 306 households nationally. Of these households, the majority (58.7%) indicated that they had lost a household member to HIV/AIDS in the last 12 months.

Orphans

HIV/AIDS contributes to orphanhood primarily due to the premature death of mostly young biological parents, and for this reason there is an interest in estimating the magnitude of the orphanhood problem in South Africa. The results show an overall orphanhood prevalence rate of 14.4% for children aged 2–18 years, 2.6% are maternal orphans, 10.0% paternal orphans and 2.0% double orphans. This means that overall there are a total of 2 531 810 orphans in South Africa in 2005, with 455 970 of them being maternal orphans, 1 745 715 paternal orphans and 330 125 double orphans.

When orphanhood was compared by race, it was found that the overwhelming majority (92.8%) of orphans were African, followed by 4.8% who were coloured and the rest from the other two racial groups. The rates of orphanhood were highest in the KwaZulu-Natal (19.8%) and Eastern Cape (18.1%) provinces and lowest in Western Cape province (7.5%). The orphanhood rates were highest in rural informal areas (19.6%) and least in urban formal (11.1%) and rural formal areas (12.0%).

Child-headed households

Among children aged 12 to 18 years, 2.6% identified themselves as heads of the households, and most were African. This works out to a total of 180 433 households that are child-headed in the country in 2005. Among children orphaned between 12 and 18 years of age, 2.8% identified themselves as heads of the households.

Risk factors and risk environments for children aged 2–18 years

This section of the report examined risky situations and environments that increase the chances of HIV transmission including within homes, schools and communities is based on 6 866 children aged 2–14 years who participated in the survey. The overall sample included caregivers of 5 253 children aged 2–11 years who were proxies for them. The large majority of the caregivers were aged 19–60 years (87.7%), one- tenth (10.6%) were older than 60 years and 1.7% under the age of 19 years. A further 1 613 children aged 12–14 years answered a separate questionnaire directly during an interview.

Risk environments

Poverty, types of housing settlement, businesses run from home and exposure to alcohol and drugs all contribute to increased HIV risk for children because such environments diminish protection and increase exposure to negative consequences. Only a quarter of all children surveyed live in homes where a formal salary is earned, with the most important contributions to income coming from family members and relatives (36.9%), followed by government pensions or grants (11.7%).

Of the households surveyed that have at least one child aged 2–11 years, 12% run businesses from home, and this increases to 14% for children aged 12–14 years. The majority of these businesses are informal spaza shops.

Among caregivers of children aged 2–11 years, 8% were exposed to someone in the household or neighbourhood who used recreational or mind-altering drugs at least once a month. A much higher 30% were exposed to someone in the household or neighbourhood who gets drunk at least once a month. Among those aged 12–14 years, one in ten children reported exposure to someone taking drugs and slightly over a third (36%) were exposed to someone who got drunk at least once a month.

Care and protection

Care and protection of children at home and at school is an important aspect of preventing sexual abuse and risk of HIV transmission. For the majority of children aged 2–11 years, the biological mother was a primary caregiver (72%). Among 12–14 year-old children, 62% of the caregivers were biological parents. Almost two in five children aged 2–11 years (19%) are cared for by grandparents.

For children aged 2–11 years, the majority of children are well protected by either being at home with a caregiver, at school or at a crèche (98%). Similarly, 12–14 year-old children are monitored by a caregiver always or most of the time (range: 94%–98.0% for different times of the day).

The results show high exposure to risk for many children aged 2–11 years. A little under half of children aged 2–11 years (44.3%) were often or sometimes sent out on errands alone. Among 12–14 year-olds, a large majority (77.7%) did so. A little under one-third of children aged 2–11 years (30.4%) are allowed outside the home yard without adult supervision while the corresponding proportion is 57.1% for children aged 12–14 years, with little difference between the treatment of boys and girls.

A substantial number of children are left alone at home. The percentage increases with age, from 11.7% of children aged 2–11 years to almost half of the children aged 12–14 years, with more males likely to be left alone at home. Over a quarter of children aged 2–11 (26.1%) were left in the care of a person aged 15 years or younger. While very few children aged 2–11 years (3.9%) are left in the care of a male non-family member, nearly half of the children aged 12–14 years (44.8%) are. Over a third of female children and over half of male children aged 12–14 years are left in the care of a male family member.

More female children aged 2–11 years shared a bed with a parent (46%) than male children. One-fifth of female children aged 2–11 years (21%) also shared a bed with older siblings. Among children aged 12–14 years, over one-third (39.4%) shared a bed, while another 39% shared a room sleeping in their own beds, and 28% had their own bed in their own bedroom. Over one-third (37%) of females aged 12–14 years shared a bed with someone else, usually an older sibling or a caregiver.

A key area of risk for children is travelling to and from school. Just over one-quarter of children aged 2–11 years travelled to school on their own (26.3%) or with older siblings (21.9%). Nearly one-fifth (17%) reported going to school alone while 18.5% return from school unaccompanied. Only 16.1% of children in this age group reported being accompanied by an adult going to school and 15.6% of them are accompanied back home. Two-fifths (40%) of children aged 12–14 years went to school unaccompanied while 41.6% reported returning from school unaccompanied. Parents accompanied 11.9% of children going to school and 9.3% when returning home. A neighbour or other adult accompanied 7% of children going to and from school. Other children accompanied 12–14 year-old children going to school 24.8% of the time and 29.1% on returning home. The vast majority of children aged 2–11 years travelled to and from school on foot (68.1%), which increases to 73.2% for children aged 12–14 years.

Given that children spend a considerable part of their daily lives in school, it is critical that such environments are safe for children. Children aged 12–14 years were asked to rate their schools on various aspects of safety. The majority of the children (72%) reported that their educators always attended classes, with another 13% said that they often did so. Only 42% of children reported that the educators always watched children arrive at school and even less (35%) reported that educators always watched them as they left school. Nearly half of the children (45.8%) reported that educators always or often monitored the toilets. The large majority (75%) also reported that educators always or often ensured that no unauthorised person can enter the school.

Sexual harassment of girls at school was found to be a serious problem in the survey. Nearly one-third of the children surveyed (31.0%) reported that boys sexually harass girls and 8% reported that some male educators proposed relationships with girl pupils. Reporting by gender showed little differences in perceptions in sexual harassment of girls (boys harassing girls: 32.4% by girls vs. 31.5% by boys; male educators proposing relationships to girls: 9.5% by boys vs. 7.3% by girls).

Communication and knowledge about HIV/AIDS-related issues

A substantial number of programmes targeted to school children exist based on the premise that communication between caregivers and children is vital to protecting children against HIV transmission. In the present study, very few caregivers (15.4%) discussed sex with children. They hardly discussed sexual abuse (31.1%), nor how HIV is transmitted (18.8%) or how it can be prevented (17.6%). However, gender differentiation exists in imparting HIV prevention information to children and it starts early in life as proportionately more female caregivers had discussed sex and sexual abuse with girls than with boys (sex: 17.3% vs.13.5%; sexual abuse: 34.2% vs. 27.9%, both respectively). Caregivers are more likely to discuss sex and sexual abuse with girls than with boys. Nearly half of the parents/guardians (43.5%) had talked about sex with the 12–14 year-olds while the majority (53.5%) had talked about sexual abuse. Again there was a gender differentiation with girls having been talked to more than the boys (sex: 51.0% vs. 35.5%; sexual abuse: 59.1% vs. 47.4%, both respectively).

Structural and political contextual issues

Use of healthcare services

The large majority of the respondents (70%) indicated that they usually attended the public healthcare services for their healthcare, while only 23.3% attend private healthcare services with only a very small proportion of respondents (0.1%) indicating that they utilised traditional healers. Of the respondents that attend public healthcare services, the large majority were Africans (84.2%). In contrast, the large majority of whites (80.8%) make use of private healthcare. Only a small proportion (1.1%) of Africans go to traditional healers for healthcare. The majority of respondents from poorer provinces depend more heavily on the public healthcare sector than richer ones. For instance, large proportions of respondents from Limpopo (87.0%) and Mpumalanga (80.1%) used public sector health facilities, while smaller proportions of respondents from Western Cape (41.1%) and Gauteng (40%) did so. Younger respondents were also more likely to utilise more public healthcare services (81.3%) than older ones (71.7% and 75.5% for respondents aged 25–49 and 50 years and older respectively). With regards to the geographic areas, the majority of respondents from rural informal (90.4%), urban informal (88.1%) and rural formal (82.8%) locality types were more likely to use the public healthcare services than those from urban formal areas (58.5%).

Financing of HIV/AIDS services

Public healthcare financing in South Africa is heavily dependent on general taxation. Almost half of participants (45.6%) in this survey indicated that they would support an introduction of a new tax to finance HIV/AIDS programmes. Proportionately more Africans (48.3%) and coloureds (47.7%) indicated their support for an introduction of the tax compared to their Indian (33.3%) and white (31.4%) counterparts. The provinces indicating the most support of a new tax to finance HIV or AIDS programmes were Mpumalanga (55.5%), North West (53.4%) and Free State (52.4%). The majority of participants in rural areas (51.1%) indicated their support followed by participants in urban informal areas (49.0%) compared to those in urban formal areas (45.0%) and in rural informal areas (44.4%).

When employed participants were asked if they were willing to pay a new tax to finance HIV/AIDS programmes, nearly half of the respondents (47.8%) agreed with the idea with proportionately fewer whites (30.0%) and Indians (36.4%) indicating that they were willing to do so when compared to their African (51.4%) and coloured (53.1%)

counterparts. Residents from North West (59.5%), Eastern Cape (58.9%) and Free State (57.4%) provinces were most willing to pay the tax whilst those from Limpopo (31.3%) and Northern Cape (38.1%) provinces were least willing to do so.

Opinion poll of political and structural contextual issues

There has been a lot of controversy both locally and internationally about the role of the South African government in its handling of HIV/AIDS issues and particularly on its commitment to ARV treatment for people living with HIV/AIDS. In an opinion poll that was conducted as part of this survey, approximately 71% of South Africans said political leadership publicly recognise the importance of HIV/AIDS with 72% of Africans responding positively to the question. However, less than half of the respondents (48%) said the government allocates sufficient funds to control the HIV-infection. Whites were less optimistic, with only 35% saying they think the government allocates enough resources to control HIV infection. Moreover, less than 40% of all South Africans think that there are enough community-based organisations addressing HIV/AIDS issues in the community. The majority of South Africans (60%) agreed with the fact that the government supports people and families living with HIV/AIDS. Similarly, the majority (nearly 70%) agreed that the government supports children affected by HIV/AIDS.

Overall, most residents in all nine provinces perceived that political leaders publicly recognise the importance of HIV/AIDS (range: 66.8%–81.0%). However, they still do not perceive the government to be allocating sufficient funds to control the spread of HIV infection (range: 36.4%–63.2%). Less than 40% of the residents across all nine provinces agreed that there were enough community-based organisations addressing issues of HIV/AIDS in the community. With the exception of KwaZulu-Natal (52.2%), and to some extent the Western Cape (57.2%), residents from the other seven provinces believed that the government supported people and families living with HIV/AIDS (range: 63.3%–75.6%). Finally, residents from all nine provinces in the country largely agreed that the government supports children affected by HIV/AIDS (range: 63.3%–82.2%).

Recommendations

In view of the above-mentioned findings, the following specific recommendations are made:

False sense of security

HIV/AIDS campaigns and programmes must address the false sense of security in the general population. Half of the HIV-positive respondents to this study did not think they were at risk of HIV infection. South Africans must be encouraged to find out their HIV status. In turn, counselling and other services also need to be expanded to provide additional support to persons who discover that they are HIV positive.

Stigmatising attitudes are decreasing

As South Africans are becoming more accepting of HIV/AIDS as a reality in South Africa, and accepting of people and family members living with HIV/AIDS, it is critical that service providers capitalise on this window of opportunity to encourage disclosure of HIV status.

Integration of family planning and HIV/AIDS services is vital

It is critical that the government targets pregnant women and women in the child-bearing age group through strengthening of family planning programmes as follows:

- All women in the reproductive age group (15–49 years) must be encouraged to use a contraceptive method.
- Those who use injectable contraceptives and contraceptive pills must also be encouraged to use condoms consistently with both regular and non-regular partners as long as they do not know their own or their sexual partner's HIV status.
- All couples, whether married or not, must be encouraged to find out and share their HIV status.

The high risks of HIV transmission from mother to baby before, during and after pregnancy, including the risk of the mother becoming HIV positive late in pregnancy or during the period of breastfeeding, need to be noted as important areas of risk. Teenage females have been underemphasised as a target group, although pregnancy levels are high in this age group.

We recommend that urgent action be taken on a national scale to make women aware of the risks of HIV infection during pregnancy and breastfeeding so they can make an informed choice of how best to protect themselves and their offspring from becoming infected.

HIV/AIDS campaigns should also target 'would-be' parents to encourage them to:
- Plan pregnancy;
- Get an HIV test before trying to conceive;
- Share HIV results between partners.

Periodic HIV testing is crucial

There is a need to promote HIV testing widely as it will contribute immensely to both primary and secondary prevention as well as serve as an entrée into seeking treatment for opportunistic infections and ARV therapy (in the case of advanced HIV infection).

HIV/AIDS campaigns and programmes should sensitise young females to the fact that the risk of HIV is real and greater for females. They should also be strongly encouraged to know their HIV status by testing annually.

VCT services must continue to be promoted, but routine testing should also be considered for persons seeking healthcare for other reasons. This latter approach has been recommended by UNAIDS and WHO for STI patients, pregnant women and patients with diseases associated with HIV infection such as TB.

Young people should be encouraged to delay sexual debut

It is critical that young people be encouraged to delay sexual debut. An example of a family-orientated intervention that addresses this issue is the Collaborative HIV/AIDS and Adolescent Mental Health Programme (CHAMP).

Avoiding high partner turnover and concurrent sexual partnerships

Prevention campaigns and programmes must emphasise that sexually active persons should:
- Avoid engaging in unprotected sex with any person whose HIV status they do not know;
- Access and consistently use condoms from the government or other sources to protect themselves in every sexual encounter; and
- Avoid frequent turnover of sexual partners and concurrent sexual partnerships.

Sexual partners amongst youth should be within a five-year age range
Both young females and young males must be encouraged to have sexual partners who are within five years of their own age in order to reduce their chances of HIV infection by older persons who are statistically more likely to be HIV positive.

Inform women that they are more at risk and encourage self-protection
Women are biologically more susceptible to HIV infection. Women must ensure that they use condoms to prevent themselves from becoming infected, and their right to insist on protection from HIV infection should be emphasised.

Getting treated for STIs and abstaining from sex when one has an STI
The risks of HIV infection with concurrent STI infection need to continue to be emphasised in prevention programmes. Those who have signs or symptoms of STIs should immediately seek treatment and also to abstain from sex when symptoms are present.

Warn older South Africans that they too are at risk of HIV
The high HIV prevalence among South Africans aged 50 years and older calls for development of targeted interventions for this age group. To curb HIV infection among people aged 50 years and older, the following is recommended:

- An intensified and focused HIV campaign alerting this group that they are also at risk of acquiring HIV infection;
- Emphasis on HIV prevention strategies including correct and consistent condom use, and avoiding multiple and concurrent sexual partnerships;
- Men in this age group should be discouraged from having younger female partners;
- Emphasis on the need to find out one's HIV status.

In addition, there is need for more information related to treatment, care, support and rights especially among the older age group. This age group is likely to have the burden of caring for their children in the 25–35 year age group who become ill from AIDS and for grandchildren who may also be HIV positive or who may be orphaned.

HIV infection among children is real and needs emphasis
In view of the relative high HIV prevalence found among South African children both in the 2002 survey and in this survey, we strongly recommend that the government reviews the 'baby-friendly' breastfeeding policy and encourages HIV-positive women not to breastfeed their children but rather supplies them with ready made breast-milk substitute. The prevention of mother-to-child transmission (PMTCT) programme needs to be strengthened. In addition, there is a need to examine other modes of HIV transmission in children as the chances of older children being infected through mother-to-child transmission seems unlikely. HIV prevention campaigns should include messages on increasing supervision of children.

Include children in surveillance and modelling the HIV/AIDS epidemic
We recommend that the 2006 prevention campaign spearheaded by WHO African Regional Office and the UNICEF/UNAIDS Global Programme on HIV/AIDS among children should increase public awareness to protect children of this age from becoming infected through non-vertical transmission.

We also recommend that the UNAIDS/WHO Reference Group on Estimates, Modelling and Projections urgently convene a consultation to discuss the implications for estimating HIV/AIDS prevalence taking into account these high HIV-positive rates among children.

Safe male circumcision is vital to prevent HIV in South Africa
Safe male circumcision must be encouraged by the public health sector, medical insurance schemes and women as one effective way of reducing and preventing the spread of HIV infection. However, care needs to be taken in communicating this intervention, so that an impression is not created that male circumcision completely prevents HIV acquisition because not all men who are circumcised will escape HIV infection. It is important that circumcised men still practise safer sex.

Positive prevention is an important tool for HIV prevention
There is a need to use other interventions to complement the behavioural risk reduction strategies offered through VCT. Two potentially useful intervention models that could be adopted to target this specific group include 'Healthy Relationships' used mainly with existing support groups and 'Options for Health' provided by health providers such as doctors, nurses and VCT counsellors, mainly in clinical settings providing HIV treatment.

Refocus communication strategy
With regard to HIV/AIDS communication campaigns and programmes, there needs to be a systematic and co-ordinated approach to addressing key knowledge areas of prevention, treatment, care, support and rights.

There is a need for accountability of programmes to an overarching communication strategy that is related to the national comprehensive plan.

There should also be an emphasis on addressing issues of risk and vulnerability directly. This applies in particular to gender vulnerability and rights (particularly the vulnerabilities of girls and women), age-related vulnerability (eg. high age differentials amongst younger partners and vulnerability to older age groups), legal rights (eg. the illegality of statutory rape), and vulnerability as a product of migration and mobility, amongst other factors.

Approaches to supporting local-level communication and dialogue need to be explored. This includes prioritising communication and support potentials of local HIV/AIDS organisations and institutions such as FBOs and schools. Workplaces are an important site for those who are employed.

There is an urgent need for national campaigns and programmes on prevention that also target non-youth audience. HIV/AIDS campaigns and programmes must be directed at all age groups and locality types.

Particular attention should be given to conveying knowledge of the basic science of HIV including its relation to causing AIDS, the fact that it is incurable, and that ARV treatment exists as a means to prolong life.

Implications of ARVs
It is important to consider ways in which interventions such as the government ARV programme might change attitudes to people with HIV/AIDS, as well as the extent to which such attitude changes impact on the uptake of services. In particular, as HIV/AIDS is increasingly seen more as a 'chronic and serious, but manageable condition', a less risk-averse attitude to HIV infection may prevail and this might diminish motivation to adopt protective strategies. It is therefore important to study and track these effects.

Public perceptions

This study's findings support the need for the Department of Health's Health Charter as a policy document and implementation programme intended to urgently address the pervasive health inequalities that are still found in South Africa today. The successful implementation of the charter will lead to much more efficient and effective implementation of the government's comprehensive programme for the prevention, treatment, care and management of HIV/AIDS.

Investigate a dedicated tax for HIV/AIDS

The government should explore the option of a tax on those employed to pay for HIV/AIDS programmes and ensure the sustainability of the ART programme. This could take the form of establishing a committee to explore the issues around financing of HIV/AIDS programmes.

CHAPTER 1

Introduction

1.1 Background

Sub-Saharan Africa is severely impacted by the HIV/AIDS pandemic. Recent estimates suggest that of all people living with HIV in the world, six out of every ten men, five out of every ten women, and nine out of every ten children live in sub-Saharan Africa. These figures provide sufficient evidence to make HIV/AIDS both a sub-Saharan and South African priority. Data from the Department of Health's annual national HIV seroprevalence surveys of women attending antenatal clinics since 1990 provide an estimate of HIV prevalence trends over time in South Africa. These figures indicate that South Africa continues to have the largest number of people living with HIV/AIDS in the world. For this reason, it is critical to understand the determinants that lead South Africans to be vulnerable and susceptible to HIV.

The determinants of HIV/AIDS in South Africa

The prevalence and spread of the epidemic is largely determined by many powerful social, political, structural and economic factors, which are described to some extent below. An understanding of these factors is critical not only to develop appropriate surveillance system instruments but also to understand the epidemic and implement appropriate intervention programmes.

HIV and young women

Females are more vulnerable to HIV and it has been established that the lower status and disempowerment of women contribute to their higher infection rates. Younger women, especially teenage girls, are especially vulnerable to HIV infection, due to the immaturity of their reproductive systems as well as likelier exposure to sexual coercion, the potential to overcome immediate needs through 'survival sex', the potential to utilise sex to provide access to consumer items through 'transactional sex', and the relationship between sex and violence, which includes vulnerability to rape. Children fostered as a result of death of their parents may also be exploited sexually, and poverty generally may also contribute to children being 'bartered' to exchange sex for other goods or money.

HIV and labour migration

Migration and mobility of people contributes to HIV infection. Migrants are vulnerable to HIV infection because they are away from their regular partners for long periods at a time, and this increases the probability that they may have multiple partners. There is a long history of labour migrancy in South Africa, and reducing this labour pattern may help to curb the spread of HIV.

Among migrant mine workers in West Africa the rate of HIV infection is 25%; and at some mines in South Africa the HIV rate reaches 50%, many times more than the rate among the population as a whole. Studies in Uganda in high-prevalence areas show a distinct association between frequency of travel out of village, HIV infection and distance people travel away from home. In South Africa, the high rate of rape cases among travelling women render them a very vulnerable group to HIV.

Labour migration is also linked to rapid urbanisation, and urban informal locality types were found to have the highest HIV prevalence in 2002.

HIV and occupation
HIV is not distributed evenly among all occupational groups. Some groups are more at risk than others. In a study on pregnant women in Zaire, the infection rate among women with husbands who are farmers was 2.3% compared to 14.6% among women whose husbands were in the police or military. Commercial sex workers and long-distance truck drivers have been identified as core groups in the spread of the disease.

HIV, cultural and religious norms
It is important to point out that some aspects of culture inhibit HIV infection rates while others exacerbate the disease. Customs that discourage initiation of sex at an early age and promote abstinence from sex are inhibitory. Cultural factors related to rites of passage to adulthood, marriage and death are related to HIV/AIDS. Religion also plays an important role in promoting marriage and faithfulness between sexual partners.

HIV and sexually transmitted infections
Individuals with STIs have been shown to be at increased risk of acquiring and transmitting HIV infection. Therefore, because the burden of STI disease in South Africa is high, it is believed that this directly contributes to spread of the epidemic. The national Department of Health has acknowledged this and substantial resources have been committed to STI control. There is now evidence that certain STIs, syphilis in particular, have declined in recent years and efforts need to be made to continue to reduce the new infections.

HIV, alcohol and drug use
Alcohol is known to be an important factor contributing to risk of HIV infection. There is very little information on HIV risk in relation to drug use in South Africa, although associations have been shown in international literature, and it is known that injectable drug use is growing in South Africa.

Modes of HIV transmission in South Africa

In South Africa, HIV is primarily transmitted through the following means:
- *Heterosexual transmission*: which accounts for most transmissions;
- *Transmission through men who have sex with men*, which is also influenced by some of the risk factors outlined above, but also extends to contexts such as prisons. This is an understudied area in South Africa;
- *Mother-to-child transmission*: which is now the second most common mode of transmission in South Africa. HIV infection can occur during pregnancy, labour, delivery and breastfeeding. Prolonged breastfeeding contributes to higher infection risk among children. Furthermore, surrogate breastfeeding is occurring and further increases the risk of exposure to HIV;
- *Transfusion of blood and blood products*: not very common in South Africa;
- *Unsafe injection and unsterile practices* in healthcare settings, as well as via cultural practices such as scarification, which may include use of contaminated needles and/or contaminated skin piercing equipment. This is an area requiring further investigation.

Antenatal and population-based surveys

HIV prevalence refers to the estimate of the percentage of a defined population (for example, pregnant women, youth, adults) that is infected with HIV at a given time. Such data is often extrapolated to produce estimates of general population prevalence levels

of HIV and AIDS. Estimates of HIV prevalence are crucial to developing plans to address impacts of the epidemic.

A clear understanding of HIV prevalence and HIV-prevalence trends is relevant to scenario development. National-level HIV prevalence estimates in South Africa have, since the early 1990s, been drawn mainly from surveys among pregnant women attending public sector antenatal clinics. This data has appropriately been used to inform trends of infection over time. Antenatal data has also, until fairly recently, been the primary source for developing extrapolations of HIV prevalence to the general population. Recent developments in HIV testing methods have allowed for HIV prevalence surveys to be conducted on large populations and at national level. The World Health Organization (WHO) has referred to this approach as 'second generation HIV surveillance'. Such surveys are more costly than antenatal surveys, and require high levels of participation by selected respondents to be sufficiently informative. The surveys typically include not only HIV data, but also a range of demographic data information on knowledge, attitudes, sexual behaviour and other HIV/AIDS-related practices. Population-based surveys have been conducted in a number of countries. These studies, including both survey rounds of the present study, have illustrated the limits of HIV/AIDS modelling based on antenatal data alone.

The main strengths of antenatal data, using South Africa as an example, include: a well-sampled and well-distributed number of surveillance sites; routine gathering of data from a large sample; and (theoretically) no selection bias because informed consent is not required and consecutive clinic attendees are therefore selected. Annual antenatal data has provided an important source of information on HIV prevalence trends on a year-to-year basis. Limitations include: limited demographic data are gathered (only age, and site/province); only public sector clinics are sampled (the sample is biased towards poorer, predominantly black African women); infertile women, non-sexually active women, non-pregnant women, and women who consistently use contraceptives including condoms, are either not sampled or are under-sampled; and only women in the 15–49 age range are sampled.

Advantages of population-based surveys include the gathering of a wide range of demographic data (including sex, age, race, residence geotype, employment status, marital status, migration) as well as other information (on knowledge, attitudes, behaviours and practices). The limitations are that there may be under-sampling (participants need to consent to HIV testing; there may be a fear of the sampling method; certain demographic groups may be under-represented in the sample), large sample sizes are costly to obtain, and quality control has to be maintained over the collection and testing of blood/saliva samples. Population-based surveys are also logistically complex and are therefore only viably repeated every three to five years, which limits their value for showing short-term trends.

Other surveillance data is also useful to include in developing an overall understanding of HIV prevalence. This includes targeted HIV surveillance studies conducted in communities; amongst groups such as youth, commercial sex workers or men who have sex with men; within sectors such as health, education, prisons; or in workplaces, and/or in relation to occupations such as truck driving, military or police work. Such data is gathered sporadically and usually at a sub-provincial level. Relatively few such studies have been conducted in South Africa and not all are available in the public domain. The results of studies conducted in workplaces, for example, do not reach the wider

community of researchers or the general public as a result of the sensitivity of such information in relation to potential impacts on share prices and profits. However, three recent large-scale sectoral studies have been made available in the public domain and have provided information on health workers, persons attending hospitals/clinics, and educators (Shisana, Hall et al. 2004a; Shisana, Peltzer et al. 2005).

It should be recognised that understanding HIV prevalence in South Africa requires triangulation of data. This involves drawing on data from antenatal surveys, population-based surveys and other surveys. Reference can also be made to models and estimates derived from these. All these findings need to be taken into account in developing an understanding of present levels of HIV/AIDS, and modelling of future trends.

Knowledge, attitudes, beliefs and behaviour change

There have been many small-scale studies of knowledge, attitudes, beliefs and practices in response to HIV/AIDS. Whilst there have been some reviews of such studies (see Attwell 1998; Kelly, Parker & Oyosi 2001; Simbayi 1999), there has been no systematic attempt to understand findings and trends across these studies. Research studies often use inconsistent indicators, whilst broader population characteristics and contextual factors are often not described in standard ways. This makes composite meta-analytic studies problematic.

Some studies have been specifically conducted with a view to providing a preparatory framework for the development of national behavioural surveillance systems (Kelly 2000), but there have been no significant South African attempts to establish common criteria for monitoring of socio-behavioural responses to the epidemic, although a number of international guidelines exist.

Another problem is that research projects have tended to focus on specific outcomes such as condom use, or specific sexual practices, without paying sufficient attention to other relevant behaviours, practices and responses (not necessarily sexual) and psycho-social processes which lead to such outcomes. This means that there is little understanding of what has been achieved in terms of creating contexts for lower risk behaviours and practices.

Public perceptions regarding the prospects of an HIV vaccine

It has been suggested that with the high number of new infections occurring in the developing countries every year a vaccine maybe the only practical solution to containing the HIV epidemic. In South Africa there are efforts to develop vaccines under the South African AIDS Vaccine Initiative (SAAVI), a national body co-ordinating the research, development and testing of HIV/AIDS vaccines in South Africa.[1] While HIV vaccine research in South Africa has made some advances compared to many neighbouring countries, it is still at a relatively early stage when compared to developed countries such as the United States of America. There is a need to develop vaccines that are appropriate for Africa as the HIV strain circulating in Africa is different from those in other parts of the world and thus advancements made in other countries might not necessarily benefit Africa.

1 See http://www.afroaidsinfo.org/conent/research/vaccines/firstvaccinne.htm.

To date South Africa's Medicines Control Council has approved two of the country's HIV vaccine clinical trials, with the latest trial beginning late in 2003. The essential part of any vaccine initiative is the ability to mobilise communities to become involved in the process of vaccine development and clinical trials. In order to succeed, such programmes need to have community mobilisation, education, information and human rights promotion campaigns to inform and educate the South African population about HIV/AIDS vaccines and clinical trials. The success of any vaccine trial lies in the participation of community members who may in most cases not enjoy direct benefits from the studies undertaken. In developed countries research trials have enjoyed support, it is estimated that there are nearly 5 000 participants from the United States, England, France, Brazil, Thailand, Cuba and China who have volunteered for trials since 1987 (ICASO 2003). For vaccine trials to be successful, participation needs to be high and support must be given to those participating. It is therefore important to research knowledge and perception of communities about HIV vaccines.

Investigate the extent of use of hormonal contraception and its relationship to HIV infection
Hormonal contraceptives, particularly injectable ones such as depot medroxyprogesterone acetate, oral contraceptives and implantable contraceptive Norplant, have been associated with increased risk of HIV acquisition. However, the evidence is mixed, partly because most of the studies that found no relationship between contraceptives (oral or injectable) suffered from methodological problems related to imprecise measurement of exposure and also had potential confounders which were not controlled for.

Evidence to support the hypothesis of a positive relationship between contraceptive use and HIV comes from a meta-analysis of 28 studies that found a significant association between HIV-1 infection and oral contraceptive pill use, with the strongest effect reported from studies conducted in Africa.

Communication

Communication campaigns have been conducted at national, provincial, regional and local levels. Development of response has also involved diffusion of information through informal networks at organisational, community and interpersonal levels. It is also noted that HIV/AIDS communication extends through a wide range of sources including HIV/AIDS-related communication via the news media, as well as a product of direct experience of HIV/AIDS at community level. However, the milieu of communication has not been satisfactorily described and the relationship between information and prevention, care and support practices has not been satisfactorily measured.

Mass media campaigns involve high budgets, and are generally funded independently of each other. As a consequence there is often duplication between interventions, further exacerbated by a general trend towards 'branding' campaigns in a competitive manner, targeting of narrow areas of behaviour and practice rather than target-population defined needs, poor collaboration and partnership, and a lack of externally conducted evaluations. The high budgets of such campaigns generate high accountability to donors, funders and investors, and public relations components of campaigns may over-estimate the potential impacts of specific campaigns, whilst under-emphasising gaps and problems, and overlooking contributions made by parallel grassroots interventions and infrastructures.

There has been little research around concepts and models of prevention with little accrual of understanding of what works, for whom, and under what circumstances. There

is little evidence of up-scaling of prevention models on the basis of research evidence, and quite often there is a tendency to prefer new and 'innovative' approaches over previous interventions that might previously have shown promise.

Key strategies used to control HIV/AIDS

The Department of Health (2000b) has identified a range of key strategies for preventing the spread of HIV. These include:

- Awareness campaigns
- Life-skills programmes for youth, both in and out of school, recognising the prevention potential of targeting pre-adolescent children in particular;
- Communication campaigns to popularise prevention concepts with a strong focus on condom promotion for prevention (but including abstinence, partner reduction and other preventive strategies); promotion of VCT; promotion of care and support;
- Legislative responses which include rights to non-discrimination in workplace settings and a number of emerging Bills which focus on gender disparities and the needs and environments of children;
- An extensive condom distribution system backed by a sophisticated, demand-based logistics system;
- Appropriate treatment and management of STIs;
- An expanding VCT programme, centred around VCT provision in clinics;
- An expanding home-based care (HBC) programme;
- An emerging post-exposure prophylaxis programme;
- An emerging national-level ARV programme;
- Provision of adequate care and support. This ranges from sophisticated hospice-type care to basic home and community-based care, and welfare aspects such as children in distress, including those orphaned by AIDS.

Other government-led activities include:

- An expanding mother-to-child transmission prevention (PMTCT) pilot programme;.
- Training of traditional healers;
- Training for partners, notably in collaboration with labour unions;
- Integration of TB and HIV prevention and treatment in pilot districts.

2002 Survey

The Human Science Research Council (HSRC), in partnership with the Medical Research Council (MRC), Centre for AIDS Development, Research and Evaluation (CADRE), and Agencé Nationale de Recherches sur le Sida (ANRS), conducted South Africa's first national household study of HIV/AIDS (Shisana & Simbayi 2002). The survey included gathering of data on HIV prevalence, behaviour and communication. The 2002 survey was useful in a number of ways. Firstly, it was found that there were important differences between antenatal and population-based HIV prevalence data. Secondly, the population-based survey allowed for analysis of HIV against a range of demographic variables that are not gathered in antenatal surveys – for example, race, residence geotype and marital status. Thirdly, HIV prevalence could be interpreted in relation to knowledge, attitudes, sexual behaviours and general responses to the epidemic.

The 2002 survey increased understanding of the gender dynamics of HIV infection, particularly differential infection rates between males and females. Prior to this study, there was no national-level data to inform male/female HIV prevalence ratios. The expanded demographic variables allowed for deeper understanding of HIV prevalence patterns and

distribution. Such information is vital to informing interventions and systems of support. It also contributes to improvements in models for projecting existing and future trends in relation to HIV and AIDS.

2005 Survey

The present survey is the second in a series of household surveys that allow for tracking of HIV and associated determinants over time using the same methodology. The present survey is also the first national-level repeat survey. The present interval of three years allows for an exploration of shifts over time against a complex of demographic and other variables, as well as allowing for investigation of new areas. The findings are intended to inform the national Comprehensive Plan for Prevention, Treatment, Care and Management of HIV/AIDS.

Technological developments have allowed for new biological tests to be conducted on samples gathered in the survey. One of the hallmarks of this 2005 survey is the availability of nationally representative HIV incidence estimates. The addition of HIV incidence testing into the survey protocol allows a simultaneous analysis of HIV prevalence and incidence that significantly improves our understanding of the current dynamics of HIV transmission in South Africa. Such information is vital to informing interventions and systems of support. It also contributes to improving the accuracy of models for projecting existing and future trends in relation to HIV and AIDS.

1.2 Objectives of this study

The objectives of this study are to:

- Determine HIV prevalence and incidence as well as viral load in the population of South Africa using linked anonymous HIV testing of dry blood spot (DBS) specimens;
- Gather data to inform modelling of the epidemic in South Africa;
- Identify risky behaviours that predispose the South African population to HIV infection;
- Examine the social, behavioural and cultural determinants of HIV;
- Explore the reach of HIV/AIDS communication and relationship of communication to response;
- Assess the relationship between mental health and HIV/AIDS and establish a baseline;
- Assess public perceptions of South Africans with respect to the provision of anti-retroviral therapy for PMTCT and for treating people living with HIV/AIDS;
- Understand public perceptions regarding aspects of HIV vaccines;
- Investigate the extent of use of hormonal contraception and its relationship to HIV infection.

CHAPTER 2

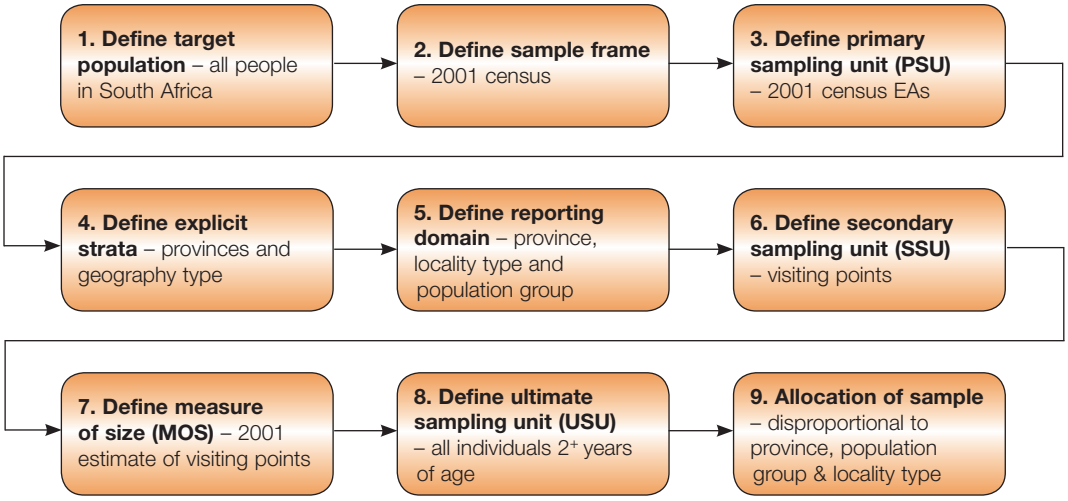
Methodology

2.1 Survey design and sampling

This survey is the second of a series of surveys to be conducted regularly to assess the spread of HIV in relation to socio-demographic characteristics, as well as behavioural and social impacts and responses to HIV/AIDS in the general population of South Africa.

The study follows a survey conducted in 2002, and focuses on all persons over two years of age living in South Africa and residing in homes. It excludes individuals living in educational institutions, old age homes, hospitals and uniformed service barracks but includes those living in hostels.

Figure 2.1: Survey design, South Africa 2005



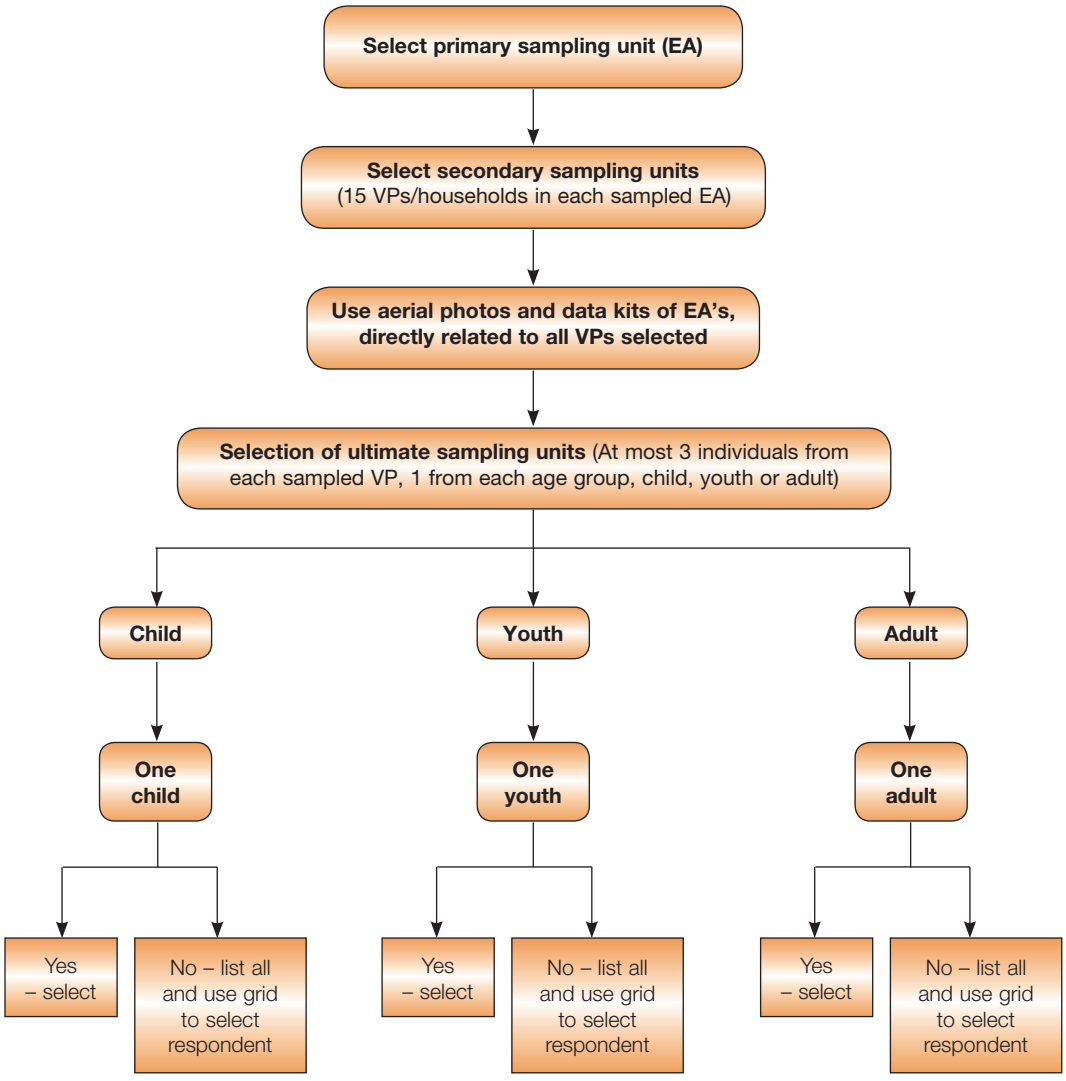
The survey design applied a multi-stage disproportionate, stratified sampling approach as outlined in Figures 2.1 and 2.2.

As in 2002, the sampling frame for the 2005 survey was based on a master sample consisting of 1 000 enumerator areas[1] (EAs) used by Statistics South Africa (Stats SA) for the 2001 census. The sample was explicitly stratified by province and locality type of the EAs. Locality types were urban formal, urban informal, rural formal (including commercial farms) and rural informal. In the formal urban locality types, race was also used as a third stratification variable (based on the dominant race group in the selected EA).

The master sample therefore allowed for reporting of results at the level of province, type of locality, age and race group (Shisana, Stoker et al. 2004).

1 An enumerator area (EA) is the spatial area that is used by Stats SA to collect information on the South African population An EA consists of approximately 180 households in an urban area and 80–120 households in a deep rural area, and is considered to be of a small enough size for one person to collect census information for Stats SA.

Figure 2.2: Steps in drawing the sample, South Africa 2005



The primary sampling unit (PSU) is the EA, the secondary sampling unit (SSU) is the visiting point (VP) or household, and the ultimate sampling unit (USU) is the individual eligible to be selected for the survey. With a view to obtaining an approximately self-weighted sample of VPs (that is, SSUs), the EAs were drawn with probability proportional to the size of the EA using the 2001 Census estimate of the number of VPs in the EA database as a measure of size (MOS). Subsequently, an equal number of VPs (15) were systematically drawn from each selected EA.

Three persons in each household could potentially be selected, however only one from each of the following age groups: 2–14, 15–24 and 25 years and older. To meet the criterion of having acceptable estimates by race group, the EA sample had to be allocated disproportionately to the explicit strata. This disproportionate allocation of the EA sample according to race resulted in a considerable overrepresentation of the 'urban formal' locality type in the sample, since the vast majority of Indians and whites live in formal urban locality types.

Several innovations were introduced in 2005 for the selection of respondents from the sampled households. Respondent selection in 2002 required two visits: an initial visit to enumerate household members and a return visit to interview the respondents randomly selected by independent person. The selected respondents were often absent on the return visit, resulting in a 74% response rate. In 2005, respondent selection and interview were done in a single visit. Fieldworkers enumerated household members, using a random number generator to select the respondent and then proceeded with the interview. This resulted in a substantial improvement in response rate (see section 3.1.2 'Response analysis'). The selection procedure was carefully monitored to ensure that fieldworkers followed the sampling protocol and did not bias selection in favour of those present in the house at the time.

The second change involved the definition of household member. In 2002, any member of the household who spent 'at least four nights a week' was included. The 2005 survey applied the de facto concept ('who slept here last night', including visitors) in sampling eligible household members. This sampling approach is standard demographic household survey procedure and was also used in the 2001 census. Although change in sampling procedures are not recommended in repeated cross-sectional surveys, it was felt that the changes instituted in 2005 would improve the quality of the data and result in more robust estimates.

2.2 Sample size estimation

The sample size estimate for the 2005 survey was guided by two requirements: 1) the requirement for measuring change over time, that is, to be able to detect a change in HIV prevalence of 5 percentage points in each of the main reporting domains – gender, age group, race, locality type, and province (5% level of significance, 80% power, two-sided test); and 2) the requirement of an acceptable precision of estimates per reporting domain – that is, to be able to estimate HIV prevalence in each of the main reporting domains with a precision level of less than ± 4%, which is equivalent to the expected width of the 95% confidence interval (z – score at the 95% level for two-sided test). A design effect of 2 was assumed.

The total sample size required for the 2005 survey was the combination of the sample sizes needed for each reporting domain and also taking into account the sampling design and the expected response rate for HIV in a given reporting domain.

2.3 Weighting of the sample

Due to the sampling design of the survey some individuals have a greater or lesser probability of selection than others. To correct this problem, sample weights are introduced to correct for bias at the EA, household and individual levels and also adjust for non-response.

Weighting procedures were undertaken before analysis of the data as follows: the data file of drawn EAs contained the selection probabilities as well as the sampling weights of these EAs. These weights reflected the disproportionate allocation of EAs according to the stratification variables – race, locality type and province. The VP sampling weight was then calculated. This weight was the counted number of VPs in the EA, proportionally corrected for invalid VPs and divided by the number of VPs participating in the survey. The final VP sampling weight was the product of the EA sampling weight and the VP sampling weight.

Demographic and HIV testing information – on all persons in all households in all responding EAs – was then assembled in order to calculate individual sample weights. In each of the three age groups (2–14, 15–24 and 25 years and older), the individual weight was the total number of individuals in that age group. Individual sample weights were benchmarked using the mid-year population estimates for 2004 provided by Stats SA. These individual sample weights were also adjusted for HIV testing non-response.

In the final step, the information at the individual level was integrated and the final sampling weight for each data record was calculated. This weight was equal to the final VP sampling weights multiplied by the selected person's sampling weight per VP per age group. This process produced a final sample representative of the population in South Africa for gender, age, race, locality type and province.

2.4 Ethical considerations

The research proposal was submitted to and approved by the HSRC's Research Ethics Committee (REC 5/24/05/04). The committee has Federalwide Assurance (FWA) for the Protection of Human Subjects accreditation with the USA's Department of Health and Human Services (DHHS).

This study followed the generally established principles regarding linked anonymous testing:[2]

- Research participants need to be informed as to the purpose of giving a sample for HIV testing and they need to give consent for this;
- Referral to nearby voluntary counselling and testing (VCT) services needs to be offered if desired.

Regarding children and consent, the dictates of existing legislation were followed:

- Current law states that a child of 14 years and older may give consent to medical intervention. Therefore any child younger than 14 years needs to have the consent of their parent or guardian.
- Children between the ages of 12 and 14 years who were capable of understanding what the research was about were also asked to give verbal consent. It was decided that anyone under 12 years of age would not be considered capable of answering a questionnaire and that the primary caregiver would instead answer a questionnaire about the child.

Regarding testing, all children aged 2–14 years were asked for their verbal consent to take a blood sample, regardless of whether or not they personally gave consent for participation in the study or proxy consent was given by their parent or guardian.

Regarding the issue of mandatory reporting of child abuse (Child Care Act No. 74, 1983), the following decisions were taken:

- No questions would be asked directly about child abuse in the survey.
- Voluntary information about a child's experiences of sexual abuse would be handled on an individual case-by-case basis in consultation with the supervisors and the principal investigators of the study.
- Details of the nearest social work offices and Child Protection Units would be made available automatically to each participating household.

2 <http://www.cdc.gov>

In order to make sure that the research on children was conducted according to the highest ethical standards, the following additional measures were introduced:

- A manual accompanied the questionnaires with a short introduction for each section, saying what would be covered in the section, explaining why the questions were being asked, and assuring participants of the confidentiality of their responses.
- Training was given and ethical guidelines included in the training manual. Specific training was given on the management of children and of crises that might arise in the field.
- Fieldworkers were monitored, as ethical provisions are only as good as the extent to which fieldworkers apply them.

This community-based household survey covered the general population but also included vulnerable groups: people with terminal illness, children, adolescents, and pregnant women, people living with HIV/AIDS and those with limited exposure to research. For this reason, care was taken to ensure that ethical practice conformed to the internationally accepted guidelines, which advocate respect of persons, beneficence and non-maleficence, and justice (CIOMS 2002; Department of Health 2000a).

All youth and adults who agreed to participate gave written or verbal (where respondent was illiterate) consent. Parents and guardians of children under 18 years were asked to give informed consent for inclusion of children in the survey and verbal assent was obtained from all children who gave a specimen for HIV testing. Fieldwork staff were trained to ensure that this was done properly.

To comply with internationally accepted ethical standards, the researchers also took the following measures:

- No names of individuals were recorded on the questionnaires nor on the blood specimen; instead barcodes with the same numbers were pasted on the questionnaires, the laboratory results sheet and the blood specimen.
- The specimens were sent to the Global Clinical Virology Laboratory in Durban.
- The HIV test results and the questionnaires were linked electronically through bar codes, making this *a linked anonymous HIV survey*.
- The participants were not given their results and fieldworkers did not know the HIV status of participants. However, those who asked to know their HIV status were given a referral card to visit any of the nearby VCT sites.

To ensure confidentiality, data were analysed nationally, provincially and by EA type and not by smaller geographic units. The EA number was deleted from the data files.

2.5 Questionnaires

Similar questionnaires to those employed in the 2002 survey were used in the 2005 survey. However, unlike in the 2002 survey wherein five questionnaires were used, only four were used in the 2005 survey. In 2005 a number of indicators were modified as a product of analysis of the 2002 questionnaire, and a number of indicators and modules were added. The questionnaires used were:

- *The VP questionnaire*. The main change from the VP questionnaire used in the 2002 survey was the addition of questions on the household's living conditions and the main indicators of vulnerability;
- *The parents/guardians of 2–11 year-old children questionnaire*;
- *The 12–14 year-old children's questionnaire*;

- *The youth and adult questionnaire*. This combined the separate youth questionnaire (for 15–24 year-olds) and the adult questionnaire (for 25 years and older) used during the 2002 survey into one questionnaire. Skip patterns allowed adults not to answer youth-related questions and vice versa. The sections on socio-cultural practices in the 2002 questionnaires were removed while those on communication were modified to focus more on various campaigns. New sections were added on the use of contraception, public perceptions of anti-retroviral therapy (ART), PMTCT, public perceptions of HIV vaccines, mental health, HIV/AIDS service delivery, financing of HIV/AIDS services, and general health.

As in 2002, all questionnaires, information sheets and informed consent forms were translated into relevant local languages and pre-tested during the pilot study.

2.6 Fieldwork procedures

2.6.1 Recruitment and training of fieldworkers

A total of 142 fieldworkers and 36 supervisors, the majority of whom were recently retired nurses, were recruited and trained. Training was provided on conducting interviews on sensitive issues and using the four questionnaires, collecting DBS specimens for HIV testing, and doing so ethically. Supervisors were trained to identify the EA using maps, Global Position System (GPS) equipment and co-ordinates, and selecting the correct VPs and participants using Kish's Grid.

In addition, 21 field editors who had completed at least Grade 12 were recruited and trained in how to conduct interviews on sensitive issues and using the four questionnaires, as well as how to identify errors in questionnaire completion. The field editors also assisted supervisors in identifying the EAs using maps, GPS and co-ordinates, and selecting the correct VPs and participants using Kish's Grid.

A training manual was used for training all three groups.

2.6.2 Community mobilisation

A multi-faceted, study-specific communication strategy (Figure 2.3) was designed to inform and encourage participation in the study.

The aims of the communication strategy were to ensure:

- That national and local government officials, as well as key public figures, were informed and understood the objective of the study in order to encourage participation as part of a collaborative effort;
- That the South African population was aware of the study being conducted;
- That religious and cultural leaders, as well as non-governmental organisations (NGOs) and community-based organisations (CBOs) working in communities were informed and understood the objectives of the study;
- That awareness, interest and understanding of the study was sustained throughout the duration of the fieldwork;
- That participants in the study were informed by trained fieldworkers about the study objectives, issues about HIV testing, confidentiality and anonymity as well as the benefits of the study;
- That the results of the study would be widely disseminated.

In order for the communication strategy to mobilise at these various levels, a communications company was appointed to facilitate the utilisation of the following approaches:

Personal briefings by HSRC research team and fieldworkers
Briefings were held with national and provincial government officials, key public figures, cultural and religious leaders and stakeholders within the communities before the study commenced. These personal briefings were done on a collaborative basis. With respect to community-level briefings, community leaders and stakeholders in turn informed the fieldwork by giving the research teams insight into languages, diversities and sensitivities of working within their communities. The support and endorsement of community leaders and stakeholders was extremely important and encouraged participation in the study within communities.

Fact sheets
Fact sheets focusing on various aspects of the study were produced to inform specific stakeholders such as mine representatives, farm owners and other organisations. The fact sheets provided in-depth information and were accompanied by a personal letter from the Scientific Project Director asking for support of the study within a specific area. This was done during the planning phases of the project.

Flyers
A flyer was designed with concise key information about the study to inform and encourage participation. A help-line number for the study was included on the flyer in order to assist participants with any queries or additional information. The flyers were translated into languages appropriate to the areas where work was undertaken. Flyers were distributed during fieldwork.

Press release
A press release was prepared by the Nelson Mandela Foundation containing a personal call by former President Nelson Mandela to citizens of South Africa to participate in the study. This press release was widely publicised by national and community media and generated public interest in the study. It proved an effective tool in mobilising community members to participate. The first press release was released a week before fieldwork began, and the second halfway through the fieldwork.

Previous report
Copies of the 2002 Nelson Mandela/HSRC Report (Shisana & Simbayi 2002) were distributed to stakeholders and members of the media during personal briefings before fieldwork commenced, to provide information about the nature and importance of the study.

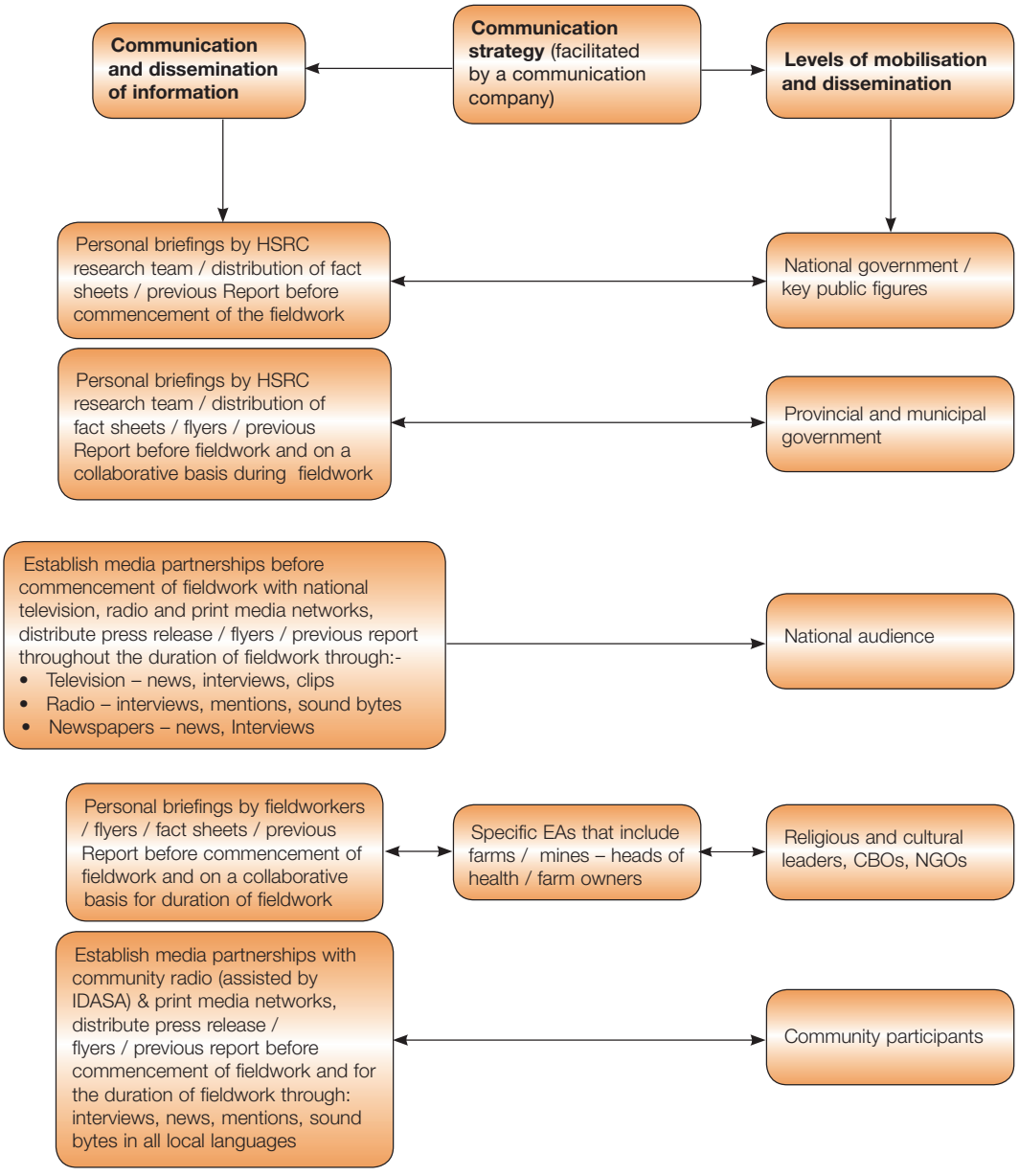
National radio, print and television networks
A media partnership was established with the South African Broadcasting Corporation before commencement of the fieldwork in order to ensure coverage using the various media. A multimedia advocacy campaign was mounted to promote the study both on radio and television including an appeal by Mr Nelson Mandela encouraging citizens of the country to participate in the study, radio and TV interviews with the research team leaders and the placing of advertisements in community newspapers. As it was important to sustain public interest and awareness throughout the duration of the study, the communications strategy included placement of ongoing interviews and articles about

the study. There was overwhelming support of the study by the media, and this played a significant role in encouraging participation.

Community radio, print networks

A media partnership was established with community newspapers throughout the country to publish the information flyer in order to encourage participation. Community radio stations around the country also showed their support by continuous mentions of the study and by conducting interviews with project leaders. The endorsement by community newspapers and community radio stations played a vital role in encouraging participation.

Figure 2.3: Community mobilisation strategy, South Africa 2005



Dissemination of the findings
Dissemination of the findings is an important factor in the communication strategy. The communications company appointed will utilise similar approaches to communicate the results of the study to the various stakeholders, national audiences and communities.

2.6.3 Community and household entry

Several months before the start of the study various stakeholders – such as national and provincial health departments, all 54 district mayors throughout the country, traditional leaders, union leadership and mine management, provincial farmers' unions, body corporates, hostel committees and so forth – were contacted by letters, informed about the study and asked for their permission to conduct the study in their provinces, districts, hostels and/or areas under their influence. In addition, an information sheet was prepared which was used to explain about the study to the head of a household selected for participation.

During fieldwork the supervisors first made a courtesy call to the relevant stakeholder before visiting households. They also notified the nearest police station of their presence in case they needed help should misunderstandings occur whilst data was being collected in an EA.

2.6.4 Pilot study

A pilot study preceded data collection. This was done in four EAs each in both Gauteng and Limpopo provinces. The pilot informed refinement of the research method and questionnaire development.

2.6.5 Main survey

Surveys in the EAs generally took about three days to complete. Most data in urban localities was collected during evenings or weekends whilst in rural localities this varied depending on the seasons (in summer farm workers and farmers were busy whereas in rural informal localities people were more easily available).

Fieldwork materials included aerial maps showing the location of the 15 VPs in each EA and directions of how to get there. GPS co-ordinates were provided. When the team arrived at a chosen VP, the supervisor approached the head of household to introduce the study and the fieldworker to the head of household. The VP questionnaire was administered by the fieldworker, and in follow-up, participant selection was made by the supervisor. After the interview, the participant was again asked to provide consent and/or informed assent to provide a DBS specimen for HIV testing. Participants aged 12 years and older who consented were all interviewed and also asked to provide DBS specimens. In the case of 2–11 year-old children, their parents/guardians were interviewed but DBS specimens were obtained from the children.

Four visits were made to each VP to optimise response.

Some fieldwork took place over six weeks between October and December 2004, but the bulk of the fieldwork was undertaken from mid-January to June 2005.

2.6.6 Quality control

Fieldwork quality was achieved through the following methods:

- All relevant maps, EA fieldwork forms and other fieldwork materials were sorted per EA. A check was done to make sure all materials were accounted for and were in good condition.
- Administrative control forms were completed.
- The data filled out on each visiting point questionnaire (VPQ) was checked for completeness and mistakes. If not satisfactory, the EA was re-visited.
- All administrative forms regarding the staff were completed.
- The completeness and correctness of fieldwork kits and materials sent to the various supervisors in the field was checked.

The relevant hardcopy questionnaires and forms were couriered with the other materials to the HSRC's Pretoria office.

Quality assurance was done by the supervisors regarding:
- The general conduct and competence of the fieldworkers;
- The correctness and completeness of the questionnaires (especially open-ended questions);
- The collection of the DBS samples;
- The administration of the barcode stickers and the laboratory tracking forms;
- The final deliverables sent to the HSRC and the relevant Global Clinical Viral Laboratory.

After receiving data from the field, quality assurance was done by the office staff. This was accomplished as follows:
- Once all the data was populated, database redundancy checks were run.
- All maps created were checked for errors such as pixelisation, errors in the legend such as incorrect route descriptions and so on, as well as overall image quality.
- The quality and correctness of the VPQs sent in from the field were checked.
- The quality of the data capturing done by the contractor employed to do data entry was checked.

One major change from the 2002 survey was the addition of non-clinical field editors described in Section 2.6.1.

The quality assurance team was led by a senior researcher with extensive experience in conducting large-scale surveys. The team of five other senior HSRC-based researchers and the fieldwork manager as well as nine provincial quality assurance co-ordinators (including the field editors' supervisor), periodically reviewed the quality of work from the field.

2.7 Laboratory procedures

2.7.1 Specimen collection

Collection of DBS specimens was the approach adopted in this survey. This specimen collection strategy was chosen because collection of blood specimens on absorbent paper (Schleicher & Schuell (S&S) 903 Guthrie Cards) offers unique advantages for large-scale population-based surveys. Sufficient blood to saturate the collection paper can be obtained easily by pricking the skin of the heel, finger, or ear, thereby eliminating the need for venipuncture. DBS specimens can be couriered conveniently from the field to the laboratory since they do not require refrigeration.

Whole blood obtained by finger prick was spotted onto each of the five circles of the Guthrie card, spotting approximately 50 microlitre of blood per circle. Fieldworkers were encouraged to fill all five circles, but at least three circles, without causing discomfort to the person. This was successfully achieved and 100% of blots received in the laboratory were suitable for laboratory testing with both the screening and confirmatory assays.

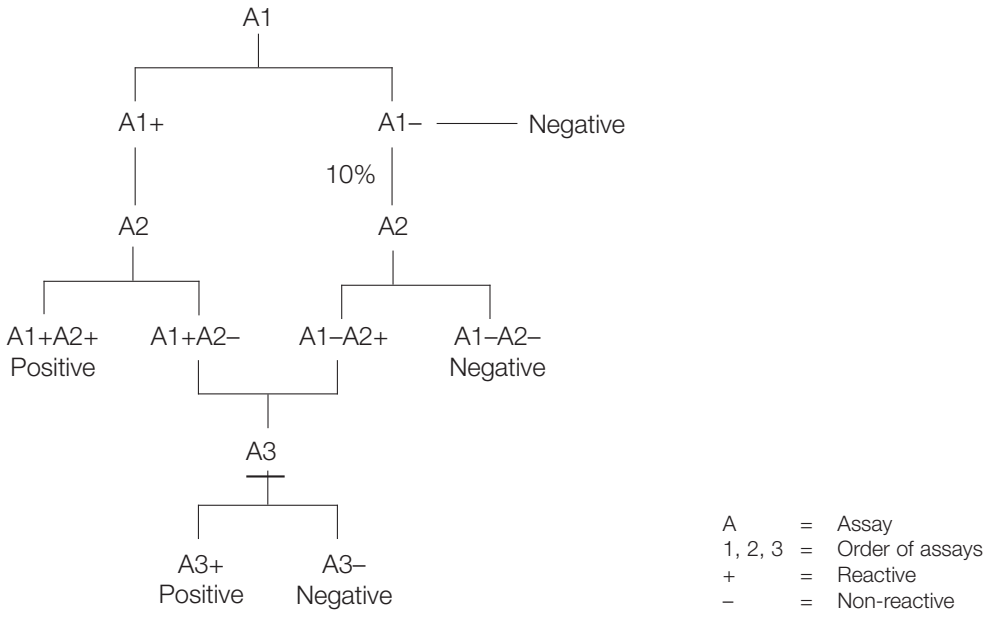
2.7.2 Specimen tracking

Batches of specimens received at the laboratory (Global Clinical Viral Laboratory, Durban) were checked through various waybill procedures. Specimens and specimen tracking sheets with the DBS barcode arrived at the laboratory in transparent zipper lock bags containing desiccant. Laboratory testing barcodes were designated to the specimens, and consecutively labelled as the specimens arrived at the laboratory. The specimen barcodes were carefully matched to the barcodes on the laboratory tracking sheets. The specimen barcode number was also scanned onto an Excel spreadsheet, and handwritten barcodes were typed into the spreadsheet. The Guthrie cards were also labelled with the laboratory testing barcode number. The laboratory managers performed a second quality control check (matching barcodes to tracking sheets and examining specimen quality) and signed off the tracking sheet for laboratory processing.

2.7.3 HIV antibody testing

DBS spots were punched into a test tube pre-labelled with the corresponding laboratory testing barcode number. The punch was decontaminated by punching four blank spots after each DBS spot to ensure no carry over. Each filter paper disc was eluted overnight at 4oC with phosphate-buffered saline (PBS, pH 7.3–7.4). An aliquot of the eluted sample was then used for performing the HIV testing assays, following the manufacturer's instructions.

Figure 2.4: HIV testing strategy, South Africa 2005



The applied HIV testing strategy is presented in Figure 2.4. All samples were first tested with the Vironostika HIV-1 Uniform II Plus O assay (bioMerieux). All HIV-positive samples were retested with a second ELISA test (Vitros ECI, Ortho Clinical Diagnostics). A second test was also conducted for 10% of cases where the first test was negative. Any samples testing positive on ELISA test 1 and negative on ELISA test 2 (producing discordant results) were supposed to be submitted to a third ELISA test (Biorad HIV 1 + 2) for final interpretation of discordant samples. However, no discordant samples were identified during the testing procedure.

The laboratory participated in an external international quality control programme for HIV antibody testing (Neqas, Collindale, United Kingdom). 100% concordance was reported.

2.7.4 HIV incidence testing

HIV incidence testing was carried out at the National Institute for Communicable Diseases (NICD), Johannesburg.

The detection of recent infections was performed using a protocol optimised for the detection using dried blood or serum spots using the BED capture EIA (CEIA, Calypte® HIV-1 BED Incidence EIA, Calypte Biomedical Corporation, Maryland, USA). Tests were performed on confirmed ELISA-positive specimens. Six-millimetre punches for controls, calibrators and samples are placed into a 96 well plate. Two hundred mircolitres of assay diluent was added to each well and the plates incubated overnight at 2–8 C. Following the incubation, 50 microlitres per sample was used in the standard BED capture EIA. The specimens were incubated on goat-anti-human IgG coated micro-well plates to allow capture of HIV and non-HIV-IgG. HIV-specific IgG were detected by a multi-subtype derived branched peptide (BED-biotin), followed by streptavidin-peroxidase. The optical density values were normalised (OD-n) using a Calibrator specimen included on every run. Specimens with OD-n less than or equal to 1.2 during initial BED-CEIA testing were confirmed by further BED testing of the sample in triplicate, where the median value of the three results was considered the final OD-n for the confirmatory run. An HIV-1-positive specimen for which the confirmatory BED-CEIA gave an OD-n of less than or equal to 0.8 was considered to be a specimen of recent HIV-1 infection, with seroconversion having occurred within the previous 180 days. Otherwise, the specimen was classified as long-term infection.

Incidence calculation:
HIV incidence is calculated as the number of recent seroconversions divided by the population at risk (those testing HIV negative plus those recently seroconverting). The annual HIV-1 incidence is calculated using the following consensus formula:

$$I = \frac{(365/w)N_{inc}}{N_{neg} + (365/w)\,N_{inc}/2} \times 100$$

where w = window period, N_{inc}= number recent HIV infection, N_{neg}= number HIV seronegative.

The incidence estimate calculation took into account the complex sampling design and applied sampling weights, that is, the N_{inc} and N_{neg} used weighted numbers in the above formula. The mean duration of recent seroconversion, the window period, in the BED-CEIA is estimated to be 180 days for HIV subtype C specimens. The resulting annualised

incidence estimate assumes that incidence is constant over the preceding 365 days (McDougal et al. 2005).

2.8 Data management and analysis

After data were received, programs were run to validate the reliability of data. Programs were run to correct data with regard to province, municipality, EA and VP numbers and to check that females did not answer male sections in the questionnaire and vice versa. Data were corrected for errors such as substitutions of census EAs and coding errors. Programs were written to address the flow of skip patterns in the questionnaire, and VPQs were matched to the individual questionnaires. Information about the respondent or non-respondent such as age, sex and race was corrected if it was missing.

Datasets were then converted to Statistical Package for the Social Sciences (SPSS) and frequency distributions were run to check that all variables contained only values in the accepted range and variable labels. Unweighted data were analysed using SPSS and SAS computer software. After the datasets were edited, programs were written to calculate the sample weights. Weighted data were calculated with STATA 8.0 software, taking into account the complex multi-level sampling design and adjusting for HIV testing non-response. STATA software (svy methods) was also used to obtain the estimates of HIV prevalence, significance values (p-values) and confidence intervals (95% CI) that take into account the complex design and individual sample weights. Tables and figures in the report present weighted percentages and unweighted counts.

CHAPTER 3

Results

3.1 Assessment of 2005 survey data

This section addresses firstly, the generalisability of the results; secondly, the response rate with emphasis on HIV testing coverage, and thirdly, the validity of prevalence estimates.

3.1.1 Generalisability of the survey results

The degree to which the findings from a household survey such as this one can be extrapolated to the entire South African population depends on how representative its sample is. In this section, the distribution of demographic characteristics of the sample is compared with those of the 2005 mid-year population estimates for South Africa.

Table 3.1 compares the socio-demographic structure of the survey sample to the 2005 mid-year South African population estimates. The socio-demographic characteristics of the weighted sample closely match those of the population estimates in terms of sex, race, and province; less than 1% difference is seen between the sample and the population census. The percentage of those aged 2–14 in the weighted sample is less than that of the population estimates because children younger than 2 were excluded from the survey. These results suggest that the sample is representative of the population from which it was drawn.

Table 3.1: Demographic characteristics of the sample in relation to the 2005 mid-year population estimates

Demographics	Weighted sample		Mid-year population estimates, 2005	
	n*	%	n*	%
Total	44 516 256		46 888 200	
Sex				
Male	21 929 203	49.3	23 070 300	49.2
Female	22 582 488	50.7	23 817 900	50.8
Unspecified	4 565	0.0		
Total	44 516 256	100.0	46 888 200	100.0
Age				
2 (0) –14	13 275 067	29.8	15 194 300	32.4
15–24	9 599 325	21.6	9 519 300	20.3
25–49	15 042 750	33.8	15 423 700	32.9
50+	6 580 805	14.8	6 750 900	14.4
Unspecified	18 309	0.0		

Demographics	Weighted sample		Mid-year population estimates, 2005	
	n*	%	n*	%
Total	44 516 256	100.0	46 888 200	100.0
Race				
African	35 096 416	78.8	37 205 700	79.3
White	4 326 444	9.7	4 379 800	9.3
Coloured	3 914 839	8.8	4 148 800	8.8
Indian	1 095 362	2.5	1 153 900	2.5
Unspecified	83 196	0.2		
Total	44 516 257	100.0	46 888 200	100.0
Province				
WC	4 382 808	9.8	4 645 600	9.9
EC	6 774 771	15.2	7 039 300	15.0
NC	878 180	2.0	902 300	1.9
FS	2 829 878	6.4	2 953 100	6.3
KZN	9 217 756	20.7	9 651 100	20.6
NW	3 641 088	8.2	3 823 900	8.2
GP	8 509 968	19.1	9 018 000	19.2
MP	3 080 554	6.9	3 219 900	6.9
LP	5 201 253	11.7	5 635 000	12.0
Total	44 516 256	100.0	46 888 200	100.0

Notes: *Mid-year population includes <2 years of age
Weighted sample: 2 years of age and older
For this and other tables and figures in this report, WC = Western Cape; EC = Eastern Cape; NC = Northern Cape; FS = Free State; KZN = KwaZulu-Natal; NW = North West; GP = Gauteng; MP = Mpumalanga; LP = Limpopo

3.1.2 Response analysis

The purpose of analysing HIV testing coverage and non-response is to show how well the survey covers the population in terms of HIV prevalence. Non-response may or may not bias HIV prevalence estimates based on population-based surveys. In cases where non-response is random, it will not bias HIV prevalence estimates. Where non-response is non-random, a bias will exist. If non-responders tend to be from groups with higher prevalence, then the prevalence estimates will be too low. On the other hand, if non-responders are from groups with lower prevalence the estimates will be too high. In reality, both of these may be occurring. In addition to group effects, individual characteristics affect non-response. Non-responders may be individuals who know about their HIV status and do not want to be tested. Others may be individuals who believe they have not been exposed to HIV and see no reason to be tested. An understanding

of the sources of non-response can help mitigate the effects of non-response on HIV prevalence estimates (UNAIDS/WHO 2005).

Every effort was made to ensure that the survey achieved a high response rate. The strategies used included:

- Notifying households prior to the study and giving adequate explanation to potential respondents;
- Selecting retired nurses, who are generally respected in communities;
- Adequately training nurses to conduct interviews on sensitive subjects like HIV/AIDS and sex;
- Making up to three revisits to the homes;
- Using a linked anonymous survey approach; and
- Ensuring privacy when conducting interviews.

Interviews were completed and specimens for HIV testing were taken from eligible respondents in the same session.

Household response rates

Non-response may occur at the household level. Household non-response directly relates to HIV testing non-response. If the household interview is not completed, HIV testing will not occur. If the household/VP has been destroyed or vacated, there is no longer a household/VP in the dwelling to respond. This is not considered a non-response. The household response rate is found by dividing the number of households/valid VPs) with completed interviews by the number of occupied households/valid VPs.

Table 3.2 shows that of 13 422 households (VPs) sampled, 12 581 were valid VPs. Invalid VPs consisted of 473 derelict buildings and 368 households were clearly abandoned. Of the 12 581 valid households/VPs, 10 584 (84.1%) were interviewed. Thus the household response rate for the 2005 survey is 84.1%. Various reasons were given for non participation at the household level:

- 852 (6.8%) refused to take part in the survey;
- 805 (6.4%) valid households but empty after three repeat visits;
- 340 (2.7%) other reasons.

Table 3.2: Household/visiting point response rates, South Africa 2005

	Total VPs	Valid VPs		Interviewed		Refused		Absent/other	
	n	n	%	n	%	n	%	n	%
Households/VPs	13 422	12 581	93.7	10 584	84.1	852	6.8	1 145	9.1
Race									
Africans	7 255	6 863	94.6	6 077	88.5	252	3.7	534	7.8
Whites	2 120	1 948	91.9	1 316	67.6	334	17.1	298	15.3
Coloured	2 379	2 292	96.3	2 013	87.8	112	4.9	167	7.3
Indian	1 468	1 436	97.8	1 178	82.0	140	9.7	118	8.2
Unknown	200	42	21.0	0	0.0	14	33.3	28	66.7
Total	13 422	12 581	93.7	10 584	84.1	852	6.8	1 145	9.1

	Total VPs	Valid VPs		Interviewed		Refused		Absent/other	
	n	n	%	n	%	n	%	n	%
Locality type									
Urban formal	8 455	8 028	94.9	6 444	80.3	758	9.4	826	10.3
Urban informal	1 329	1 273	95.8	1 155	90.7	16	1.3	102	8.0
Rural informal	2 420	2 281	94.3	2 101	92.1	40	1.8	140	6.1
Rural formal	1 218	999	82.0	884	88.5	38	3.8	77	7.7
Total	13 422	12 581	93.7	10 584	84.1	852	6.8	1 145	9.1
Province									
WC	1 746	1 624	93.0	1 413	87.0	88	5.4	123	7.6
EC	1 702	1 607	94.4	1 393	86.7	73	4.5	141	8.8
NC	890	787	88.4	680	86.4	30	3.8	77	9.8
FS	940	881	93.7	719	81.6	60	6.8	102	11.6
KZN	2 604	2 473	95.0	2 050	82.9	159	6.4	264	10.7
NW	965	896	92.8	782	87.3	54	6.0	60	6.7
GP	2 285	2 222	97.2	1 785	80.3	219	9.9	218	9.8
MP	1 039	958	92.2	796	83.1	76	7.9	86	9.0
LP	1 251	1 133	90.6	966	85.3	93	8.2	74	6.5
Total	13 422	12 581	93.7	10 584	84.1	852	6.8	1 145	9.1

Table 3.2 shows the household coverage and non-response rates for the reporting domains race, locality type and province. All provinces had a VP response rate of over 80%. Households were categorised by the race of the oldest respondent and locality type. White households had the lowest response rate (67.6%), compared to African households (88.5%). Households in urban formal locality types had the lowest response rate (80.3%), and households in rural informal locality types had the highest response rate (92.1%).

Individual response rates

In the 10 584 valid VPs, 24 236 individuals (maximum three per household) were eligible for being interviewed and 23 275 (96.0%) completed the interview. The categories of non-response were:

- 359 (1.5%) refused to be interviewed;
- 390 (1.6%) absent from the household;
- 212 (0.9%) missing/other.

Individual response rates by reporting domains are shown in Table 3.3. Slightly more women (97.6%) agreed to be interviewed then men (94.9%). Response rates were slightly lower among 15–24 year olds (94.7%), whites (93.9%), and urban formal locality types (94.7%). The lowest response rate among provinces was found in the Western Cape (89.3%).

Table 3.3: Individual response rates for interviews among respondents aged 2 years and older, South Africa 2005

	Eligible	Interviewed	
	n	n	%
Individuals	24 236	23 275	96.0
Sex			
Male	10 204	9 685	94.9
Female	13 923	13 584	97.6
Missing	109	6	5.5
Total	24 236	23 275	96.0
Age group			
2–14	6 992	6 866	98.2
15–24	6 026	5 708	94.7
25+	11 093	10 687	96.3
Missing	125	14	11.2
Total	24 236	23 275	96.0
Race			
Africans	14 246	13 935	97.8
Whites	2 587	2 428	93.9
Coloured	4 675	4 411	94.4
Indian	2 569	2 449	95.3
Missing	159	52	32.7
Total	24 236	23 275	96.0
Locality type			
Urban formal	13 992	13 253	94.7
Urban informal	2 557	2 486	97.2
Rural informal	5 662	5 554	98.1
Rural formal	2 025	1 982	97.9
Total	24 236	23 275	96.0

	Eligible	Interviewed	
	n	n	%
Province			
WC	3 231	2 884	89.3
EC	3 827	3 795	99.2
NC	1 452	1 423	98.0
FS	1 548	1 479	95.5
KZN	4 811	4 651	96.7
NW	1 636	1 586	96.9
GP	3 768	3 621	96.1
MP	1 746	1 684	96.4
LP	2 217	2 152	97.1
Total	24 236	23 275	96.0

HIV testing response rates

Of the 24 236 eligible individuals, 15 851 (65.4%) agreed to HIV testing and were anonymously linked to the behavioral interviews. The categories of non-response were:

- 7 424 (30.6%) interviewed but refused HIV testing;
- 359 (1.5%) refused both interview and HIV testing;
- 602 (2.5%) absent from the household or missing data.

Thus the overall response rate for HIV testing in the 2005 survey was 55%. The overall response rate is the product of the household response rate and the individual response rate for HIV testing (84.1% * 65.4% = 55%).

Table 3.4 presents HIV testing coverage and non-response for the total sample (2 years and above) by the main reporting domains: sex, age, race, province, and locality type. In addition to the categories for coverage (tested) and non-response (not tested), the tables break down non-response by reason for non-response: refused or absent. Refused and absent are categories of non-response.

More females (68.3%) than males (62.2%) were tested. Coloureds (72.3%) and Africans (69.8%) were more likely to agree to testing whereas only 45.3% of whites and 51.3% of Indians agreed to be tested. The 25 and above age group was the most compliant (71.3%), and 2–14 the least (54.6%). Amongst the provinces, Northern Cape had the highest compliance (78.8%) while KwaZulu-Natal had the least compliance (56.7%). The highest response rates were found in rural formal locality types (74.5%) and the lowest in urban formal locality types (61.7%).

Table 3.4: HIV testing coverage by background characteristics: percentage distribution among respondents 2 years and older for HIV testing by testing status, South Africa 2005

	Tested %	Not tested %			Total
		Refused	Absent	Missing/other	n
Sex					
Male	62.2	34.6	2.2	1.1	10 204
Female	68.3	30.2	1.0	0.5	13 923
Race					
Africans	69.8	28.7	1.0	0.5	14 246
White	45.3	51.4	1.9	1.3	2 587
Coloured	72.3	23.8	2.9	0.9	4 675
Indian	51.3	45.8	1.7	1.2	2 569
Age groups					
2–14	54.6	44.2	0.7	0.5	6 992
15–24	68.4	28.4	2.3	0.9	6 026
25+	71.3	26.3	1.6	0.8	11 093
15–49	70.0	27.0	2.1	0.9	13 215
Province					
WC	68.2	24.9	4.8	2.0	3 231
EC	63.4	36.1	0.3	0.2	3 827
NC	78.8	19.8	1.2	0.2	1 452
FS	68.9	28.5	1.7	1.0	1 548
KZN	56.7	41.3	0.8	1.1	4 811
NW	64.6	33.1	1.3	1.0	1 636
GP	64.5	33.0	1.5	1.0	3 768
MP	70.1	28.1	1.8	0.1	1 746
LP	70.8	27.4	1.4	0.4	2 217
Locality type					
Urban formal	61.7	35.2	2.1	1.1	13 992
Urban informal	72.5	25.6	1.0	0.9	2 557
Rural informal	68.2	30.5	1.0	0.4	5 662
Rural formal	74.5	24.1	0.8	0.6	2 025

In Table 3.5 male and female respondents 15 years and older were analysed separately. Included in the analysis were background characteristics such as marital status, number of sexual partners in the last 12 months and condom use the last time the respondent had

sex with a non-regular partner – characteristics often associated with an effect on HIV prevalence.

A high percentage of females in the age groups 25–29 (75.9%) and 30–34 (75.8%) was tested for HIV compared to 65.8% and 67.7% of males in the same age groups. In both sexes, more coloureds were tested (78.8% females and 72.1% males), followed by Africans (77.5% females and 71.2% males). The Northern Cape had a high HIV test compliance for both females and males (84.3% and 80.3% respectively), while KwaZulu-Natal had the lowest HIV testing coverage for both sexes (67.1 % for females and 60.2% for males). In females, a higher percentage of widowed females (76.6%) were tested while widowed males (67.4%) were the least tested. People with more than one partner were tested in higher percentages for both sexes (80.3% for females and 75.3% for males), compared to people with one or no partner (75.4% for females and 72.2% for males). Regarding condom use, people who used a condom the last time they had sex with a non-regular partner showed a higher HIV testing coverage for both sexes (84.5% for females and 78.2% for males), compared to those who did not use a condom with a non-regular partner (73.2% for females and 75.1% for males).

Table 3.5: HIV testing coverage by background characteristics: percentage distribution among males and females 15 years and older eligible for HIV testing by testing status, South Africa 2005

	Female			Male		
	Tested %	Not tested %	Total	Tested %	Not tested %	Total
Age						
15–19	70.3	29.7	1641	66.9	33.1	1 496
20–24	71.2	28.8	1660	63.8	36.2	1 228
25–29	75.9	24.1	788	65.8	34.2	582
30-34	75.8	24.2	912	67.7	32.3	504
35–39	74.6	25.4	974	67.2	32.8	558
40–44	73.3	26.7	947	69.5	30.5	574
45–49	70.8	29.2	855	63.0	37.0	495
50–54	72.8	27.2	739	71.0	29.0	403
55–59	70.5	29.5	509	67.0	33.0	294
60 and above	73.4	26.6	1303	68.7	31.3	656
Race						
African	77.5	22.6	6160	71.2	28.8	3 750
White	51.6	48.4	1193	49.7	50.3	858
Coloured	78.8	21.2	1885	72.1	27.9	1 363
Indian	57.7	42.3	1069	54.7	45.3	806

	Female			Male		
	Tested %	Not tested %	Total	Tested %	Not tested %	Total
Provinces						
WC	73.3	26.7	1311	66.1	33.9	1 013
EC	71.5	28.5	1733	62.8	37.2	899
NC	84.3	15.7	624	80.3	19.7	416
FS	76.0	24.0	655	71.7	28.3	424
KZN	67.1	32.9	2100	60.2	39.8	1 272
NW	69.0	31.0	683	66.0	34.0	494
GP	73.2	26.8	1535	65.8	34.2	1 192
MP	74.3	25.7	723	73.2	26.8	507
LP	76.5	23.5	964	71.4	28.6	573
Locality type						
Urban formal	68.5	31.5	5935	62.9	37.1	4 159
Urban informal	81.0	19.0	1089	73.9	26.1	696
Rural informal	76.3	23.7	2522	68.6	31.5	1 256
Rural formal	81.0	19.1	782	79.1	20.9	679
Marital status						
Single	75.3	24.7	4290	71.7	28.3	3 251
Married or cohabiting	73.5	26.5	4015	71.7	28.4	2 540
Widowed	76.6	23.4	1109	67.4	32.6	184
Divorced (not married)	72.9	27.1	499	73.8	26.2	225
No. of sexual partners in last 12 months						
0 or 1	75.4	24.6	5187	72.3	27.7	3 289
More than 1	80.3	19.7	137	75.3	24.7	543
Condom use at last sex with non-regular partner?						
Yes	84.5	15.5	187	78.2	21.8	403
No	73.2	26.8	456	75.1	24.9	361

Table 3.6 compares in more detail HIV risk-associated characteristics in survey participants who were interviewed and tested with those who were interviewed but refused HIV testing in the age group 15 years and older. If respondents with risk sexual behaviour or persons who were aware of their HIV status refused to participate, the survey could over- or underestimate HIV prevalence. However, neither awareness of own HIV status nor number of sexual partners in the last 12 months was significantly associated with refusal of HIV testing. The proportion of women was higher among the interviewed and tested

(62.4% vs. 58.5%). With regard to marital status, perceived risk of contracting HIV and HIV testing history, no significant differences were found between the two groups. Other factors associated with increased risk for HIV infection suggest that the respondents who agreed to be tested were at higher risk than those not tested: penile discharge in men (1.9% vs. 1.0%); genital ulcers in women (2.4% vs. 1.6%).

Table 3.6: HIV risk-associated characteristics among respondents aged 15 years and older who were interviewed and tested compared with those who were interviewed but refused HIV testing, South Africa 2005

	Interviewed and tested for HIV		Interviewed but not tested for HIV		Level of significance
	n	%	n	%	
Sex					
Males	4 529	37.6	1 809	41.5	p= 0.003
Females	7 503	62.4	2 554	58.5	p= 0.029
Total	12 032	100.0	4 363	100.0	
Marital status					
Single	5 560	47.0	1 980	46.3	p= 0.663
Married or cohabit	4 773	40.3	1 781	41.7	p= 0.319
Widowed	974	8.2	319	7.5	p= 0.145
Divorced (not married)	530	4.5	194	4.5	p= 0.873
Total	11 837	100.0	4 274	100.0	
Perceived risk of getting HIV					
At risk	8 156	68.8	3 044	71.2	p= 0.215
Not at risk	3 694	31.2	1 229	28.8	p= 0.032
Total	11 850	100.0	4 273	100.0	
Did you ever have an HIV test					
Yes	3 586	30.3	1 351	31.6	p= 0.244
No	8 252	69.7	2 923	68.4	p= 0.495
Total	11 838	100.0	4 274	100.0	
Awareof most recent HIV result					
Know own HIV status	3 211	91.0	1 221	92.1	p= 0.793
Don't know own HIV status	319	9.0	105	7.9	p= 0.259
Total	3 530	100.0	1 326	100.0	

	Interviewed and tested for HIV		Interviewed but not tested for HIV		Level of significance
	n	%	n	%	
Sexual activity in the last 12 months					
Abstinence	2 833	29.0	936	28.2	p= 0.498
Sexually active	6 929	71.0	2 384	71.8	p= 0.709
Total	9 762	100.0	3 320	100.0	
No. of partners in the last 12 months					
More than 2 partners	180	2.6	54	2.3	p= 0.374
2 Partners	338	5.0	106	4.5	p= 0.403
One partner	6 284	92.4	2 186	93.2	p= 0.804
Total	6 802	100.0	2 346	100.0	
Condom use at last sex with a non-regular partner					
Yes	473	43.9	117	35.6	p= 0.082
No	605	56.1	212	64.4	p= 0.174
Total	1 078	100.0	329	100.0	
Abnormal penile discharge in the last 3 months (males only)					
Yes	85	1.9	17	1.0	p= 0.010
No	4 292	98.1	1 709	99.0	p= 0.810
Total	4 377	100.0	1 726	100.0	
Genital ulcers/sores in the last 3 months (females only)					
Yes	174	2.4	40	1.6	p= 0.029
No	7 219	97.7	2 457	98.4	p= 0.816
Total	7 393	100.0	2 497	100.0	

Table 3.7 lists the ten main reasons provided by respondents (2 years and above) for not participating in the 2005 survey. In most cases (57.9%) respondents expressed apprehension of blood being taken and15.7% cited religious reasons.

Table 3.7: Ten main reasons for not participating in the 2005 survey

Reason for refusal	n	%
Apprehensive of blood sample being taken	1 560	57.9
Against religious beliefs to provide a blood sample	422	15.7
Did not want to know HIV status	195	7.2
Not willing to participate in any survey or interview	126	4.7
Did not trust interviewers	104	3.9
Fear a breach of confidentiality	86	3.2
Too busy to grant interview	67	2.5
Not available now	60	2.2
Afraid of participating in the survey	46	1.7
Objected to the topic of the survey 'HIV/AIDS'	29	1.1
Total	2 695	100

Conclusion

Of the 24 236 eligible individuals, 15 851 (65.4%) agreed to HIV testing and 8 385 (34.6%) were not tested for HIV in this survey. The categories of HIV testing non-response were 7 783 (92.8%) due to refusals and 602 (7.7%) due to absence and/or missing data. It is important to note that information on background characteristics was only available for those who were interviewed but refused to be tested and not for those who were absent and therefore not interviewed. However, 7 424 (88.5%) of the total 8 385 individuals who were not tested for HIV, were interviewed in our survey, resulting in a very high coverage in the analysis of HIV testing non-response.

The analysis of HIV risk-associated characteristics in survey participants who were interviewed and tested and those who were interviewed but refused HIV testing suggests that individuals at higher risk for HIV infection were more likely to have participated in the survey. Although some associations were statistically significant due to the large sample sizes, the differences between those tested and not tested were all less than 10% and most were less than 5%.

Age, race, and locality type were major factors affecting HIV testing non-response. Children 2–14 years old had the lowest participation rate (54.6%) compared to other age groups. The response rates in the study population 2 years and above were substantially lower among whites and Indians. At the household level, only 67.6% of white households responded and at the individual level, only 45.3% of white respondents agreed to HIV testing. Indian households had a higher participation rate (82%), yet at the individual level, only 51.3% agreed to HIV testing. Locality type also influenced participation. Individuals living in urban formal locality types had a lower response rate of 61.7% to HIV testing. Since a high proportion of whites live in urban formal locality types, this is not surprising.

Variation in non-response by background characteristics is important to the degree that these characteristics affect HIV prevalence. If non-response is high for a group that

has high HIV prevalence there will be a downward bias in HIV prevalence estimates. Conversely, if non-response is high for a group with low HIV prevalence, HIV prevalence estimates will be biased upwards. As a consequence, adjustments have to be made to the survey HIV prevalence estimates. Our approach to adjustment used sampling weights that accounted for non-response (see details in the Section 2 on Methodology). As discussed in Section 3.1.1, 'Generalisability of the survey results', the final survey sample was weighted to be representative of people 2 years and above in South Africa for gender, age, race, province and locality type.

3.2 National HIV prevalence

A population-based probability sample is advantageous in generating national estimates of HIV prevalence as almost all age, sex, race and socio-economic strata of society can be included. The present sample size was large enough to allow for meaningful analysis of the data as a whole, and in the main reporting domains. Estimates of HIV prevalence are based on weighted data to correct for stratified, disproportionate sampling and account for non-response to HIV testing. All HIV prevalence rates are presented with confidence intervals that reflect the complex survey design.

3.2.1 Overall HIV prevalence

The following tables present HIV prevalence estimates for South Africa and include estimates of the total number of people living with HIV/AIDS in 2005. HIV prevalence amongst persons aged two years and older is estimated to be 10.8%, with a higher prevalence in females (13.3%) than in males (8.2%) (Table 3.8). Table 3.9 shows that HIV prevalence increases with age from 3.3% in children aged 2–14 years to 16.2 % in adults 15–49 years of age. In people 50 years and older, an often-neglected age group in surveys, HIV prevalence is estimated to be 5.7%.

Table 3.8: Overall HIV prevalence by sex, South Africa 2005

Sex	n	HIV+ %	95% CI
Male	6 342	8.2	7.1–9.6
Female	9 509	13.3	12.1–14.6
Total	15 851	10.8	9.9–11.6

Table 3.9: HIV prevalence by age group, South Africa 2005

Age	n	HIV+ %	95% CI
Children (2–14)	3 815	3.3	2.3–4.8
Youth (15–24)	4 120	10.3	8.7–12.0
Adults (= >25yrs)	7 912	15.6	14.2–17.1
Adults (= >50 yrs)	2 787	5.7	4.4–7.4
Age group 15–49	9 245	16.2	14.9–17.7

Table 3.10: HIV prevalence by sex and age group, South Africa 2005

Age	Male			Female			Total		
	HIV+			HIV+			HIV+		
	(n)	%	95% CI	(n)	%	95% CI	(n)	%	95% CI
2–4	364	4.9	1.8–12.8	365	5.3	3.1–9.0	729	5.1	2.8–9.1
5–9	638	4.2	2.2–8.0	703	4.8	2.8–8.0	1 341	4.4	3.0–6.6
10–14	809	1.6	0.8–3.4	936	1.8	0.9–3.4	1 745	1.7	1.0–2.8
15–19	1 001	3.2	1.4–7.1	1 153	9.4	7.1–12.4	2 154	5.9	4.3–8.0
20–24	784	6.0	3.8–9.4	1 182	23.9	19.8–28.4	1 966	15.2	12.5–18.2
25–29	383	12.1	8.0–17.9	598	33.3	27.7–39.4	981	23.2	19.1–28.0
30–34	341	23.3	17.2–30.7	691	26.0	21.5–30.9	1 032	24.9	21.1–29.2
35–39	375	23.3	17.8–29.8	727	19.3	14.9–24.6	1 102	20.8	17.3–24.9
40–44	399	17.5	12.0–24.7	694	12.4	9.4–16.2	1 093	14.8	11.4–19.0
45–49	312	10.3	6.5–16.0	605	8.7	6.0–12.6	917	9.4	6.9–12.7
50–54	286	14.2	8.5–22.7	538	7.5	4.9–11.2	824	10.8	7.5–15.2
55–59	197	6.4	1.9–19.8	359	3.0	1.6–5.6	556	4.5	2.0–10.0
= >60	451	4.0	1.9–8.2	956	3.7	2.2–6.3	1 407	3.9	2.5–5.9
Total	6 342	8.2	7.1–9.6	9 509	13.3	12.1–14.6	15 847	10.8	9.9–11.8

Table 3.10 and Figure 3.1 show HIV prevalence by sex and age. HIV prevalence increases dramatically among young females and peaks at 33.3% in the 25–29 age group. In males, the increase in HIV prevalence is more progressive, and peaks at a lower level than for females (23.3%) in age groups 30–34 and 35–39. From age group 35–39 onwards HIV prevalence is higher in males then in females.

The figures show that South African children have a high HIV prevalence. The rates are high in both males and females, although slightly higher in the latter. The differences are not statistically significant. Specifically, the prevalence of HIV among male children aged 2–4 years is 4.9% and 5.3% among female children. Among male children aged 5–9 years the prevalence is 4.2% and 4.8% among females. Among children aged 10–14 years, the prevalence is lowest at 1.6% among boys and 1.8% among girls.

Figure 3.1: HIV prevalence by sex and age group, South Africa 2005

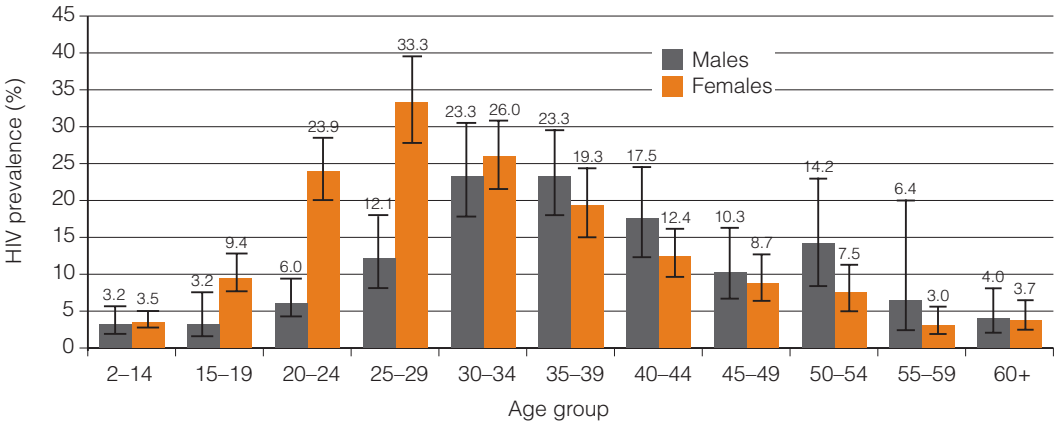
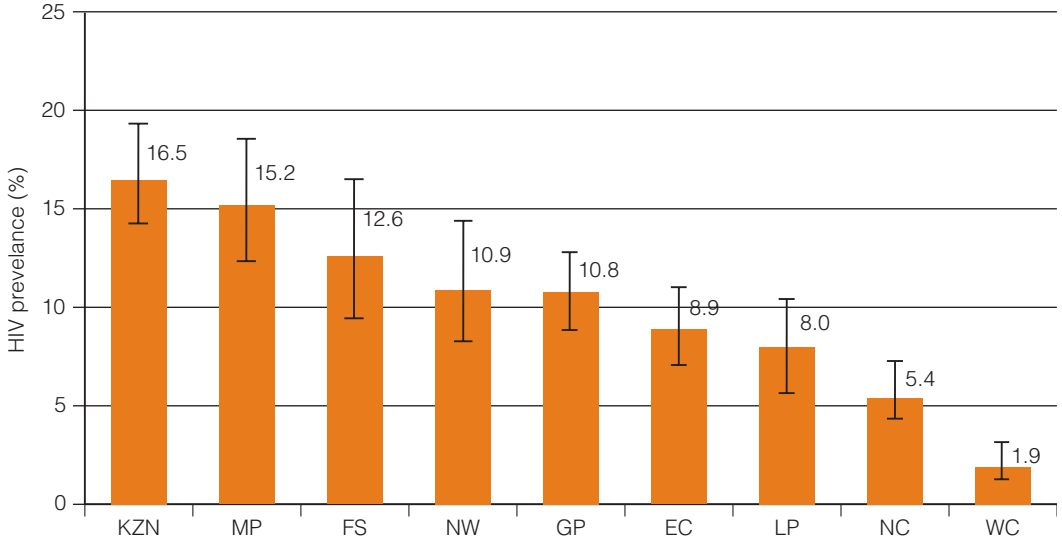


Figure 3.2: HIV prevalence among respondents aged 2 years and older by province, South Africa 2005



HIV prevalence by province is shown in Figure 3.2. KwaZulu-Natal, Mpumalanga and Free State have the highest HIV prevalence in South Africa. The lowest HIV prevalence levels were recorded in the Western Cape and Northern Cape. Area of residence is also associated with HIV prevalence. People living in urban informal locality types have a much higher prevalence than those in either urban formal or rural formal locality types (Figure 3.3).

Figure 3.3: HIV prevalence among respondents aged 2 years and older by locality type, South Africa 2005

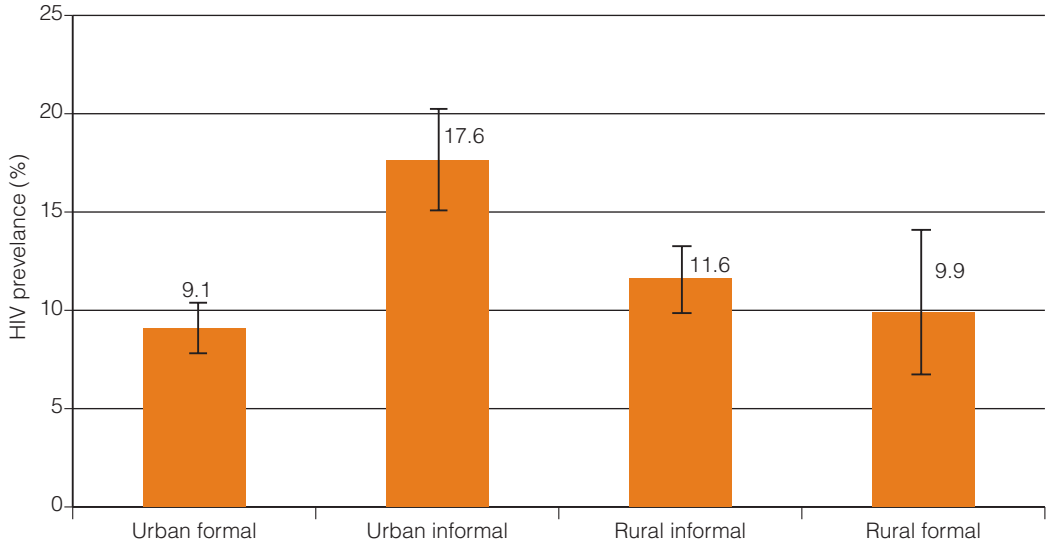
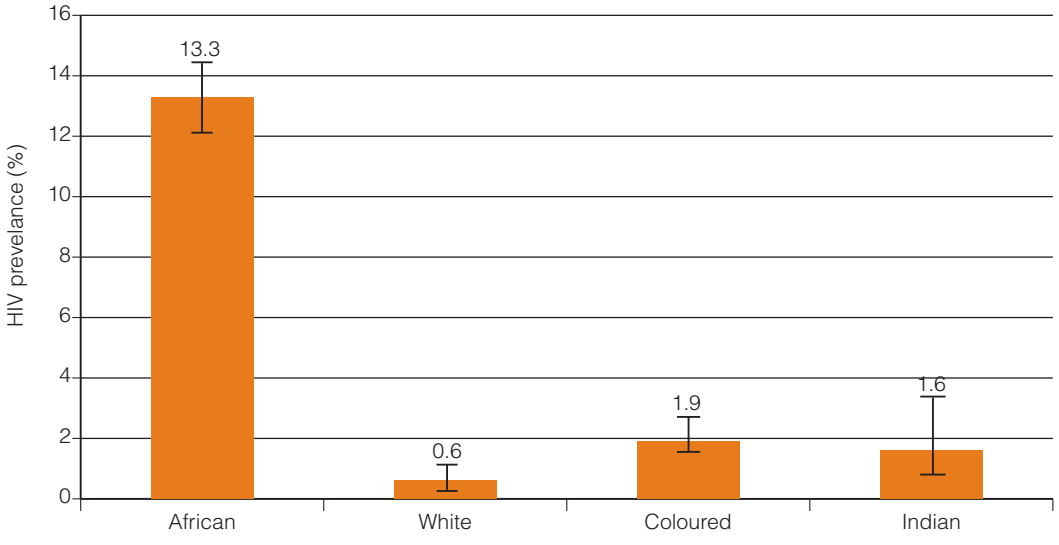


Figure 3.4: HIV prevalence among respondents aged 2 years and older by race, South Africa 2005



People living with HIV/AIDS are found in every race group in South Africa, although the observed prevalence differs (Figure 3.4). HIV prevalence in Africans is substantially greater than in any other racial group – 13.3% compared to less than 2% of other races.

3.2.2 HIV prevalence among youth aged 15–24 years

In the 15–24 year age group (n = 4 120), overall HIV prevalence was 10.3%. Females (n = 2 335) have almost four times the HIV prevalence of males (n = 1 785), 16.9% vs. 4.4% (Figure 3.5). HIV prevalence is highest in KwaZulu-Natal (16.1%). Prevalence is lowest in the Western Cape (2.3%) (Figure 3.6).

Figure 3.5: HIV prevalence among youth aged 15–24 years by sex, South Africa 2005

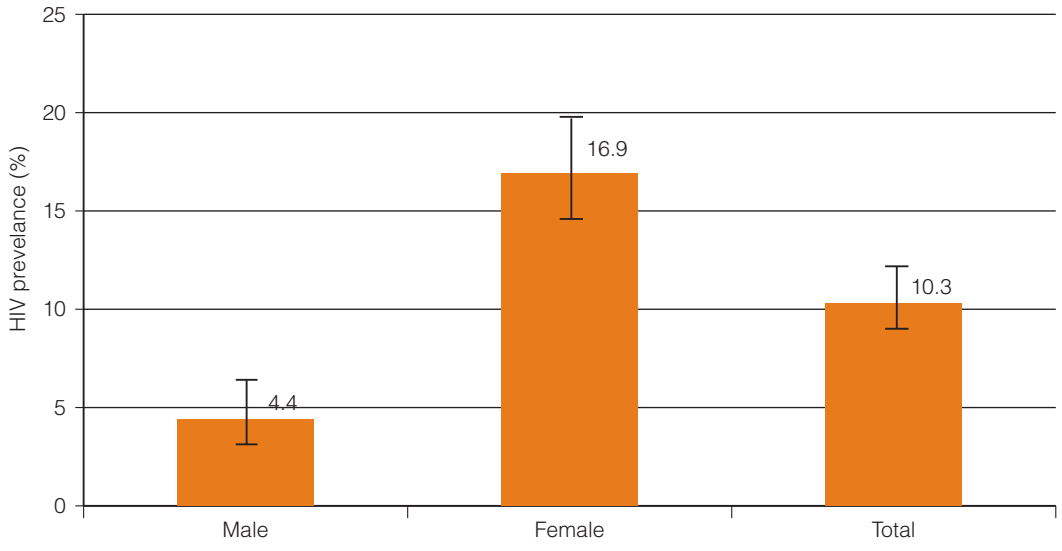


Figure 3.6: HIV prevalence among youth aged 15–24 years by province, South Africa 2005

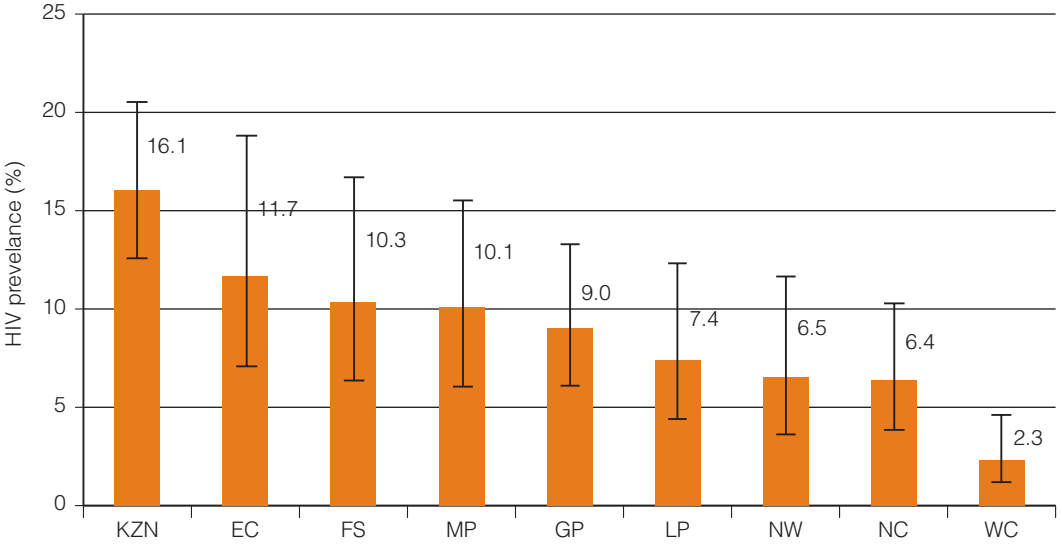


Table 3.11 presents the prevalence by locality type. The prevalence is highest in youth living in informal settlements in urban areas (17.8%), and lowest for those in the urban formal locality types (6.9%). HIV prevalence is also high in rural formal locality types (16.7%), compared to 9.9% overall. As can be seen in Table 3.12, Africans have the highest prevalence (12.3%) in this age group.

Table 3.11: HIV prevalence among youth aged 15–24 years by locality type, South Africa 2005

Locality type	n	HIV+ %	95% CI
Urban formal	2 147	6.9	5.3–8.9
Urban informal	490	17.8	13.7–22.9
Rural informal	1 088	11.1	8.5–14.3
Rural formal	395	16.7	9.3–28.1

Table 3.12: HIV prevalence among youth aged 15–24 years by race, South Africa 2005

Race	n	HIV+ %	95% CI
African	2 707	12.3	10.4–14.4
White	219	0.3	0.1–1.2
Coloured	867	1.7	0.9–2.9
Indian	321	0.8	0.2–3.0

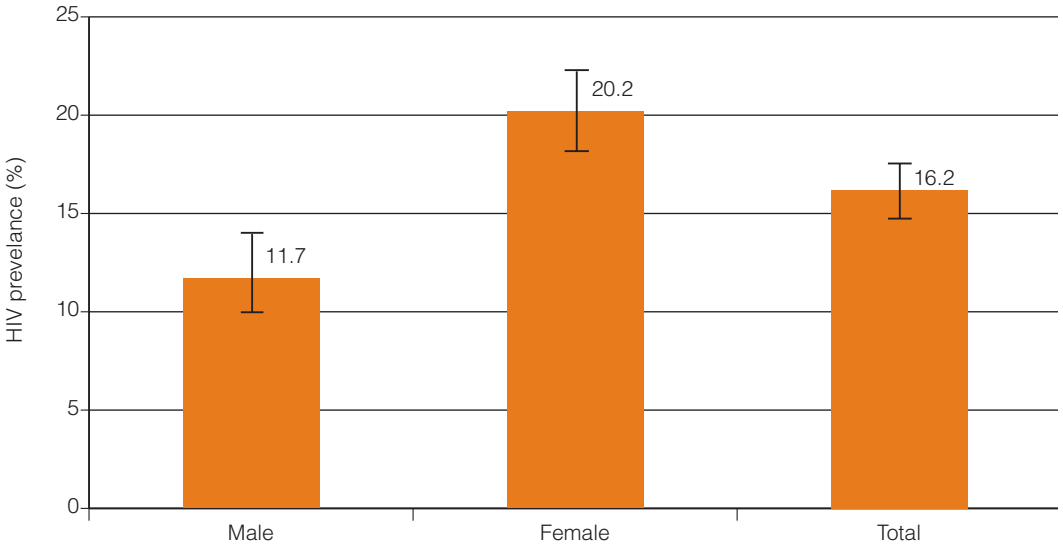
3.2.3 HIV prevalence among persons aged 15–49 years

This age group is presented separately to enable comparison with other studies in South Africa and/or other countries (Table 3.13 and Figure 3.7). The overall HIV prevalence in this age group is estimated to be 16.2%. However, prevalence in females is almost twice that of males – 20.2% compared to 11.7%.

Table 3.13: HIV prevalence among adults aged 15–49 years by sex, South Africa 2005

Sex	n	HIV+ %	95% CI
Male	3 595	11.7	10.0–13.6
Female	5 650	20.2	18.3–22.2
Total	9 245	16.2	14.9–17.7

Figure 3.7: HIV prevalence among adults aged 15–49 years by sex, South Africa 2005



Mpumalanga has the highest prevalence in this age group, 23.0%, followed by KwaZulu-Natal at 21.9%. Western Cape has the lowest prevalence, 3.2% (Figure 3.8).

Figure 3.8: HIV prevalence among adults aged 15–49 years by province, South Africa 2005

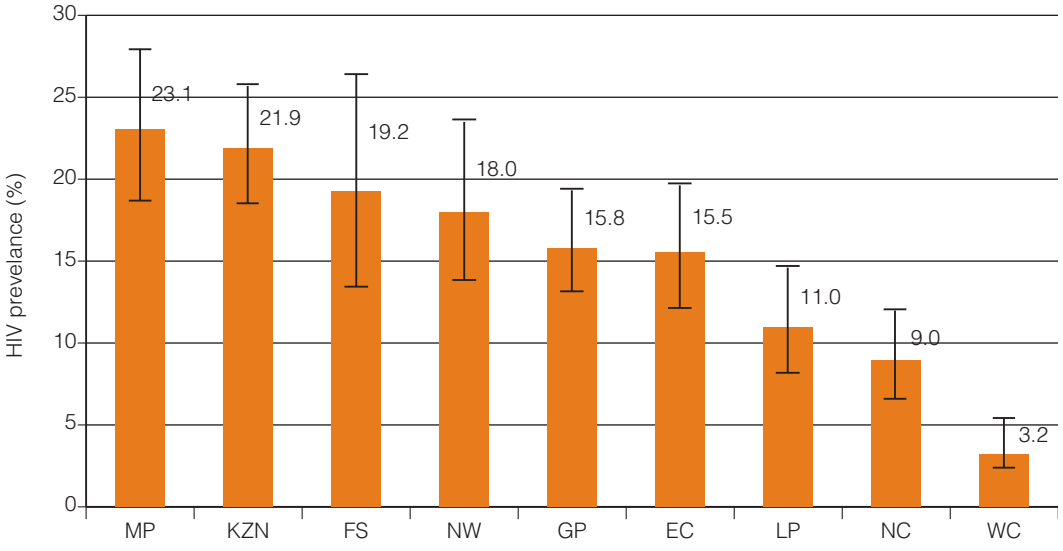


Figure 3.9: HIV prevalence among adults aged 15–49 years by locality type, South Africa 2005

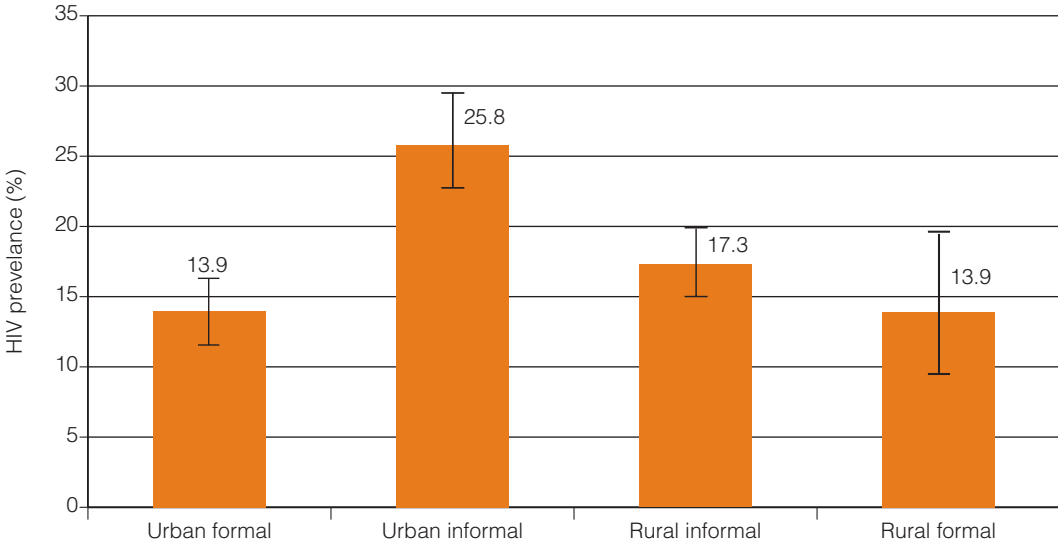
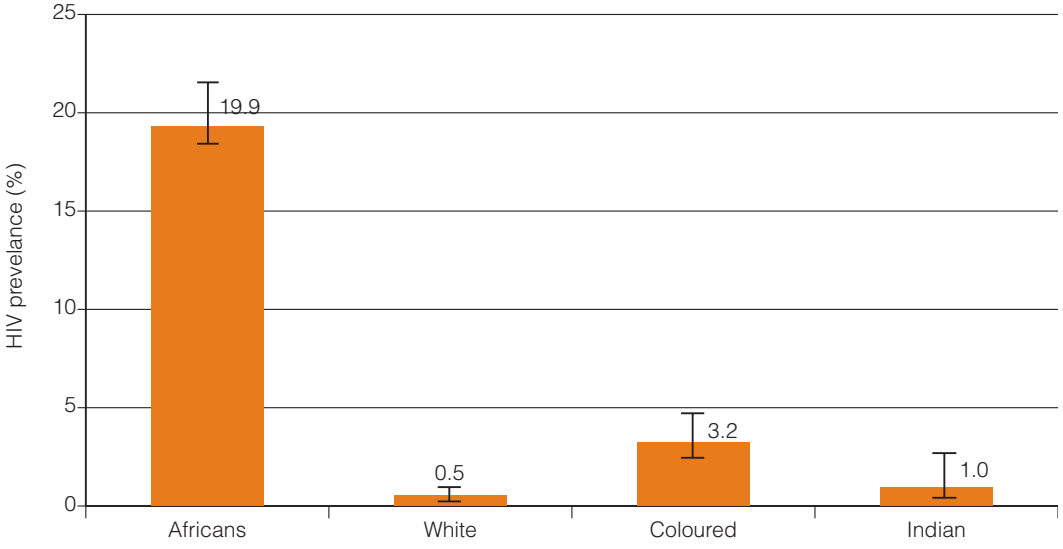


Figure 3.9 shows that persons aged 15–49 years living in informal settlements have the highest HIV prevalence – 25.8%. This is followed by rural informal locality types with 17.3%, and urban formal and rural formal locality types at 13.9%. Africans in this age group have the highest prevalence, 19.9% compared to other race groups where the prevalence is lower than 4% (Figure 3.10).

Figure 3.10: HIV prevalence among adults aged 15–49 years by race, South Africa 2005



3.2.4 HIV prevalence in females aged 15–49 years compared with the antenatal survey of 2004

Table 3.14 compares HIV prevalence among females in the 15–49 year age group with findings of the annual antenatal survey conducted by the Department of Health in 2004. HIV prevalence in five-year age bands for all females aged 15–49, and for those who were pregnant in the last 24 months in the present survey is provided for comparison. The overall HIV prevalence in females participating in the 2005 household survey was 20.2%. In the survey sample of females who were pregnant in the last 24 months (n = 918), 23.2% were HIV positive. These figures are lower than the 29.5% HIV prevalence found in the 2004 antenatal survey. However, the household survey included females of all race groups, regardless of whether or not they were sexually active, whilst the antenatal survey is only representative of pregnant females using government clinics. Taking into account a differential utilisation rate of these clinics by race and income group (well over 90% of the females in the 2004 antenatal survey were African females; Lindiwe Makubalo, Department of Health, pers. comm.), comparison with African females is shown in Table 3.15 and Figure 3.11.

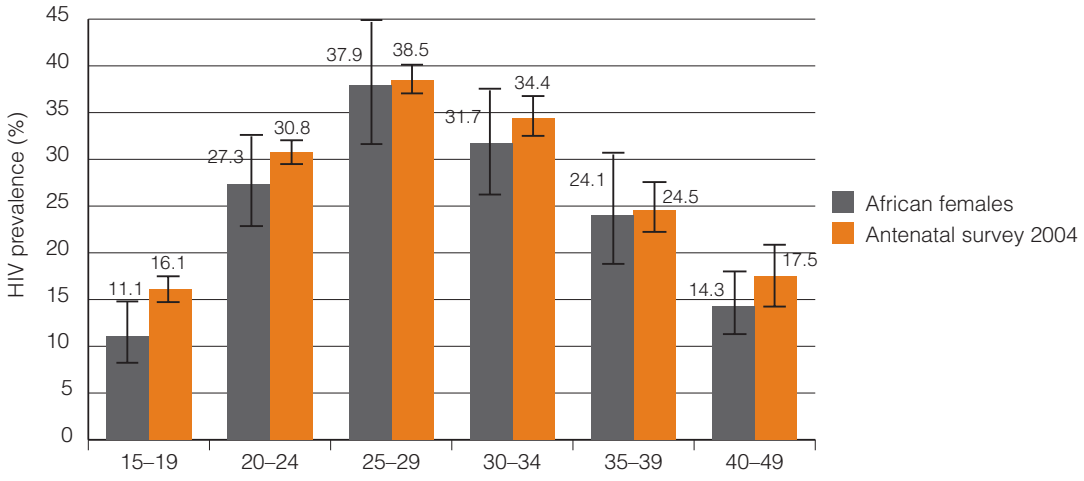
Table 3.14: HIV prevalence among females aged 15–49 years surveyed in the 2005 household survey compared to females surveyed in the 2004 antenatal survey

Age group	Females n = 5 650		Pregnant in the last 24 months n = 918		Antenatal survey 2004 n = 15 976	
	% (n)	95% CI	% (n)	95% CI	% (n)	95% CI
15–19	9.4 (1 153)	7.1–12.4	19.7 (79)	10.0–35.2	16.1 (3 130)	14.7–17.5
20–24	23.9(1 182)	19.8–28.4	25.0 (303)	18.0–33.7	30.8 (4 991)	29.3–32.3
25–29	33.3 (598)	27.7–39.4	32.1 (184)	21.6–44.7	38.5 (3 702)	36.8–40.3
30–34	26.0 (691)	21.5–30.9	20.6 (157)	12.9–31.1	34.4 (2 510)	32.2–36.6
35–39	19.3 (727)	14.9–24.6	15.7 (126)	9.4–25.3	24.5 (1 261)	21.9–27.2
40–49	10.7(1 299)	8.6–13.3	11.3 (69)	4.7–24.8	17.5 (382)	14.0–21.0
Total	20.2	18.3–22.2	23.2	19.0–28.1	29.5	28.5–30.5

Table 3.15: HIV prevalence among African females aged 15–49 years surveyed in the 2005 household survey compared to females surveyed in the 2004 antenatal survey

Age group	African females n = 3 699		African females pregnant in the last 24 months n = 630		Antenatal survey 2004 n = 15 976	
	% (n)	95% CI	% (n)	95% CI	% (n)	95% CI
15–19	11.1 (766)	8.3–14.6	21.8 (58)	11.0–38.5	16.1 (3 130)	14.7–17.5
20–24	27.3 (819)	22.7–32.5	27.8 (215)	20.0–37.3	30.8 (4 991)	29.3–32.3
25–29	37.9 (435)	31.6–44.7	37.2 (126)	25.2–51.0	38.5 (3 702)	36.8–40.3
30–34	31.7(454)	26.5–37.4	25.1 (98)	15.6–37.7	34.4 (2 510)	32.2–36.6
35–39	24.1 (458)	18.7–30.5	18.7 (84)	10.9–30.1	24.5 (1 261)	21.9–27.2
40–49	14.3 (767)	11.5–17.7	12.9 (49)	5.2–28.8	17.5 (382)	14.0–21.0
Total	24.4	22.2 – 26.8	26.8	21.9 – 32.3	29.5	28.5–30.5

Figure 3.11: HIV prevalence among African females aged 15–49 years surveyed in the 2005 household survey compared to females surveyed in the 2004 antenatal survey



When comparison is restricted to African females (n = 3 699), the HIV prevalence profile in this survey is similar to the antenatal survey at every age group. The overall HIV prevalence among African females in the 2005 household survey was 24.4%, with a higher HIV prevalence of 26.8% among African females who were pregnant in the last 24 months (n = 630).

Table 3.16: HIV prevalence among African females aged 15–49 years surveyed in the 2005 household survey compared to females surveyed in the 2004 antenatal survey by province

Province	2005 household survey (n)	HIV+ %	95% CI	2004 antenatal survey (n)	HIV+ %	95% CI
LP	508	14.0	10.3–18.7	1 894	19.3	16.8–21.9
WC	147	14.5	8.6–23.6	1 952	15.4	12.5–18.2
NC	147	19.4	12.8–28.3	494	17.6	13.0–22.2
EC	697	20.4	16.3–25.3	1 710	28.0	25.0–31.0
NW	323	20.6	13.7–29.7	1 190	26.7	23.9–29.6
GP	591	26.6	21.8–32.0	3 168	33.1	31.0–35.3
MP	350	30.1	23.4–37.7	1 115	30.8	27.4–34.2
KZN	619	30.4	24.7–36.7	3 522	40.7	38.8–42.7
FS	317	30.9	22.0–41.5	1 016	29.5	26.1–32.9
Total	3 699	24.4	22.2–26.8	16 061	29.5	28.5–30.5

Figure 3.12: HIV prevalence among African females aged 15–49 years surveyed in the 2005 household survey compared to females surveyed in the 2004 antenatal survey by province

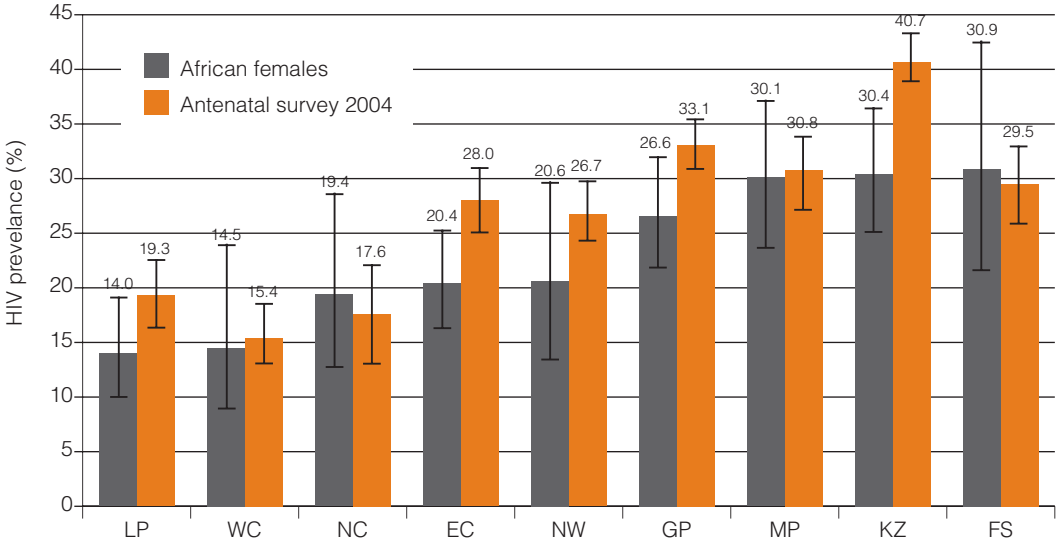


Table 3.16 and Figure 3.12 compare HIV prevalence by province between African females and pregnant females surveyed by the Department of Health in 2004. The HIV prevalence estimates derived from the antenatal survey are higher in almost all provinces, except in the Northern Cape and in Free State, where African females in the household survey

Table 3.17: HIV prevalence survey estimates in 2002 and 2005 (2 years and older)

	2002			2005		
	n	HIV+ %	95% CI	n	HIV+ %	95%CI
Age						
2 years and above	8 428	11.4	10.0–12.7	15 851	10.8	9.9–11.6
Children (2–14)	2 348	5.6	3.7–7.4	3 815	3.3	2.3–4.8
Youth (15–24)	2 099	9.3	7.3–11.2	4 120	10.3	8.7–12.0
Adults (>= 25)	3 981	15.5	13.5–17.5	7 912	15.6	14.2–17.1
Sex						
Male	3 772	9.5	8.0–11.1	6 342	8.2	7.1– 9.6
Females	4 656	12.8	10.9–14.6	9 509	13.3	12.1–14.6
Race						
African	5 056	12.9	11.2–14.5	9 950	13.3	12.2–14.5
White	701	6.2	3.1–9.2	1 173	0.6	0.3–1.0
Coloured	1 775	6.1	4.5–7.8	3 382	1.9	1.4–2.7
Indian	896	1.6	0.0–3.4	1 319	1.6	0.8–3.2
Locality						
Urban formal	5 098	12.1	10.3–14.0	8 629	9.1	7.8–10.5
Urban informal	841	21.3	16.2–26.5	1 854	17.6	15.3–20.2
Rural informal	1 906	8.7	6.5–10.9	3 859	11.6	10.0–13.4
Rural formal	583	7.9	4.8–11.1	1 509	9.9	6.9–13.8
Province						
KZN	1 579	11.7	8.2–15.2	2 729	16.5	14.0–19.3
MP	550	14.1	9.7–18.5	1 224	15.2	12.4–18.5
FS	540	14.9	9.5–20.3	1 066	12.6	9.5–16.7
NW	626	10.3	6.8–13.8	1 056	10.9	8.4–14.0
GP	1 272	14.7	11.3–18.1	2 430	10.8	8.9–12.9
EC	1 221	6.6	4.5–8.7	2 428	8.9	7.0–11.4
LP	679	9.8	5.9–13.7	1 570	8.0	6.0–10.6
NC	694	8.4	5.0–11.7	1 144	5.4	4.0–7.2
WC	1 267	10.7	6.4–15.0	2 204	1.9	1.2–3.0

showed higher HIV prevalence. Because of the relatively small sample sizes of African females surveyed in each of the nine provinces, the comparison should be interpreted with caution.

3.2.5 Discussion

The majority of findings in this survey confirm trends in existing data for South Africa. However, there are notable differences from the previous survey in 2002 (Table 3.17).

HIV prevalence by age and sex

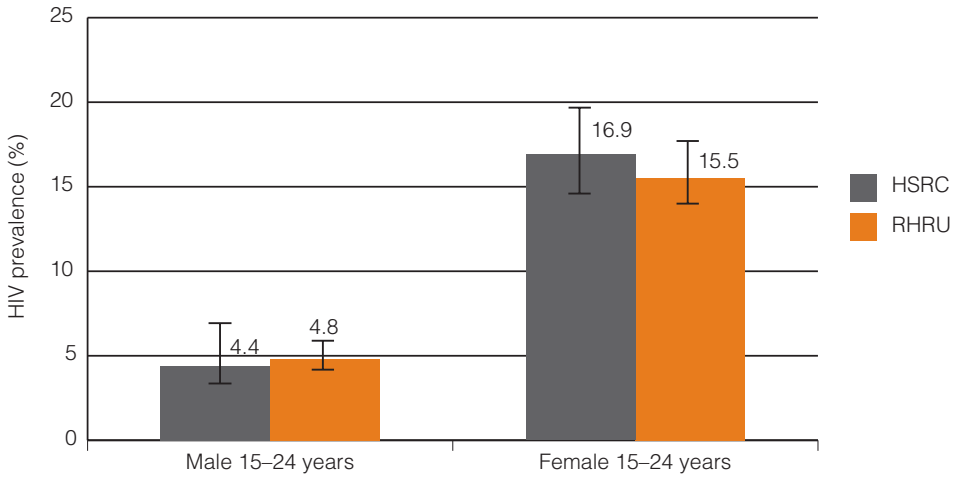
Compared with the 2002 survey, the household survey of 2005 found higher HIV prevalence among youth 15–24 years (10.3% vs. 9.3%) and a similar prevalence in adults 25 years and older (15.6% vs. 15.5%). HIV prevalence in the 15–49 age group was 16.2% in 2005 and 15.6% in 2002. Among children aged 2–14 years, however, a substantially lower HIV prevalence was recorded – 3.3% in 2005 compared to 5.6% in 2002. This resulted in an overall prevalence estimate of 10.8% for the population two years and above in 2005, slightly lower than the11.4% estimated in 2002. Using the 2005 mid-year population estimates, the 10.8% HIV prevalence translates to 4.8 million persons aged two years and older living with HIV/AIDS who are found in South African homes. It is important to note that the figure excludes children under two years of age and adults who live in university dormitories, boarding schools, army barracks and hospital patients.

The HIV prevalence among children calls for further discussion. In 2002, 5.6% of children aged 2–14 years were found to be HIV positive. A further breakdown of children aged 2–9 years revealed that the prevalence in this group in 2002 was 6.2%. In 2005 the prevalence in the age group of 2–14 is 3.3%. A further breakdown of this figure shows that the prevalence of HIV in children aged 2–9 years is indeed high. Boys aged 2–4 years had a prevalence of 4.9% and 5.3% among female children. Among boys aged 5–9 years the prevalence is 4.2% and 4.8% among girls. Further analysis by province shows that the provinces that accounted for high prevalence among children are KwaZulu-Natal (7.9%), Mpumalanga (5.5%) and Limpopo (4.7%).

The observed high HIV prevalence in South African children in this age group is similar to that observed in Botswana and Zimbabwe. In Botswana the 2004 national HIV prevalence among boys aged 18 months to 4 years was 6.0% and among girls it was 6.8%. The figures for boys aged 5–9 years were 5.9% and for girls it was 6.2%. For older children aged 10–14 in Botswana, it was 3.6% among boys and 3.9% among girls (Central Statistical Office 2005). In a district survey in Zimbabwe, the HIV prevalence among children aged 6–8 years was 5.8% (Gomo et al. 2005). These results suggest that HIV prevalence among children is a problem serious enough to warrant attention. Hence the UNICEF/UNAIDS Campaign: United for Children, Unite Against AIDS is timely. These findings on children suggest that population-based surveys should include children rather than focusing only on people of reproductive ages (15–49 years), as is the case in many demographic and health surveys. This will bring to the attention of countries the need to include children in their prevention, treatment and care programmes.

As in 2002, females are more likely to be living with HIV, and this proportion has increased over time. The largest increase in prevalence is found among females aged 15–24 – 12.0% in 2002 compared to 16.9% in 2005. The female to male ratio for HIV infection in 2005 is also highest among youth aged 15–24 years, while the prevalence in females is almost four times that of males – 16.9% vs. 4.4%. The results confirm the findings of the RHRU Youth Survey conducted in 2003, which found similar HIV prevalence in males and females (4.8% and 15.5%, see Figure 3.13).

Figure 3.13: HIV prevalence among youth aged 15–24 years surveyed in 2005 compared to the RHRU Youth Survey of HIV and sexual behaviour conducted in 2003



HIV prevalence by race and residence

Race is an important epidemiological variable because it embodies socio-economic contexts that influence risk of HIV infection. In South Africa, Africans live in contexts that increase vulnerability to many illnesses – and HIV is no exception. The overall HIV prevalence among African respondents increased slightly from 12.9% in 2002 to 13.3% in 2005. In African adults aged 15–49 years the corresponding figures are 18.4% in 2002 and 19.9% in 2005. 24.4% of African females in this age group were found to be HIV positive in the 2005 survey.

Persons aged 14–49 years living in informal settlements have by far the highest HIV prevalence (25.8%). Rural informal areas follow with 17.3%, and 13.9% were found in urban formal and rural formal areas. In the study population 2 years and above, rural areas saw an increase in HIV prevalence while urban areas saw a decrease between the two surveys (Table 3.17).

One of the notable differences from the previous survey was the significantly lower HIV rates recorded for whites and coloureds in 2005 (Table 3.17). HIV prevalence among whites appears to have declined from 6.2% to 0.6% and amongst coloureds, from 6.1% to 1.9%. Clearly, the drop in HIV prevalence in these two race groups reduced overall prevalence estimates for the Western Cape, where whites and coloureds comprised 20% and 56% respectively of the Western Cape survey sample. It is worth noting that the coefficient of relative variation (see Appendix 5.1) for the Western Cape is outside of the threshold of 0.20, suggesting that the findings for this province must be interpreted with caution. Further analysis of the data will be undertaken to clarify the situation with regard to HIV prevalence in the Western Cape.

Validity of HIV prevalence estimates

The sample size in the 2005 survey was larger than in 2002. In 2005, 15 851 respondents agreed to be tested for HIV compared to 8 428 in 2002. This represents an 88% increase in the sample of respondents agreeing to HIV testing in 2005. As a consequence, the larger sample size has made the HIV prevalence estimates more robust in 2005.

The calculated estimates of HIV prevalence take into consideration the full complexity of the survey design. The Kish guideline of a coefficient of relative variation (CVr) of <20% can be used as a reference threshold to determine the validity of prevalence estimates (Kish 1965). Estimates with a large CVr produce wide confidence intervals and are therefore less precise. Based on this method, which is considered rigorous, the estimates of HIV prevalence generated by the survey can be considered valid for the large majority of the findings (see Appendix 5.1).

The results presented in section 3.2.4 also suggest that the HIV profile among females aged 15–49 years was in good agreement with the findings of the 2004 antenatal survey, especially for African females.

Population-based household surveys, however, typically do not include some population groups with higher risk for HIV infection. The 2005 survey population comprised all persons over 2 years of age in South Africa who resided in homes and included those living in hostels. The survey did not include individuals living in police and army barracks, prisons, hospitals, and educational institutions. Such exclusions may contribute to a lower estimate of national HIV prevalence, in particular among adult males.

3.3 National HIV incidence

The availability of tests for recent HIV infection is a major advance in estimating incidence in selected populations. Incidence measures are generally better than prevalence measures for assessing the dynamics of HIV transmission in different populations. The data from the 2005 survey enables us for the first time to analyse HIV prevalence estimates, HIV incidence estimates and proximate risk factors concurrently.

Recently, the Centers for Disease Control and Prevention (CDC) introduced the BED capture EIA (CEIA) assay to identify incident infection. The estimation of incidence is the result of a calculation that requires three input measures (see details in Chapter 2 'Methodology'): the number classified as recent or incident infections, the 'window period' (the period of seroconversion having occurred within the previous 180 days), and the number of seronegative individuals at risk for infection in the study population (McDougal et al. 2005).

The BED assay uses a multi-subtype synthetic peptide and measures the increasing proportion of HIV-IgG to total IgG after seroconversion. The BED assay algorithm is designed for seropositive specimens and has been successfully implemented in cross-sectional studies. The advantage of the BED-CEIA is that it has a single window period, independent of the HIV subtype. The assay is designed to work well in populations with different HIV-1 subtypes and the testing algorithm has been successfully evaluated in populations in the United States and Thailand with B and E subtypes, as well as in cohorts from the Netherlands, Kenya, Ethiopia, Zimbabwe, and India which comprised of A, B, C, and D subtypes (Parekh et al. 2002).

Almost 16 000 specimens tested for HIV provided an unparalleled large sample to estimate HIV incidence on a national scale for South Africa. Table 3.18 presents HIV incidence estimates for the main reporting domains of the 2005 survey:

Table 3.18: HIV incidence among respondents 2 years and older by background characteristics, South Africa 2005

	Total sample	Number HIV+ with recent infections (past 180 days)	Annual incidence % / year	95%CI
Total	15 851	181	2.7	1.3–4.1
Sex				
Male	6 342	40	1.5	0.0–3.3
Female	9 509	141	3.6	2.1–5.1
Race				
African	9 950	167	3.4	1.3–5.5
White	1 173	4	0.3	0.0–0.9
Coloured	3 382	8	0.3	0.0–0.6
Indian	1 319	2	0.5	0.1–0.9
Age group				
Children				
2–14	3 815	11	0.9	0.0–2.8
2–4	729	1	0.8	0.0–2.9
5–9	1 341	6	1.5	0.0–3.4
10–14	1 745	4	0.4	0.0–1.3
Youth				
15–24	4 120	70	3.3	0.6–6.0
Male	1 785	9	0.8	0.0–3.4
Female	2 335	61	6.5	2.3–10.7
Adults				
25 and older	7 912	100	3.6	1.7–5.5
25–34	2 013	48	7.1	2.6–11.6
35–44	2 195	36	4.0	0.1–7.9
45–54	1 741	12	1.7	0.0–4.0
55 and older	1 963	4	0.4	0.0–1.5
Adults				
15–49	9 245	164	4.4	2.3–6.5

	Total sample	Number HIV+ with recent infections (past 180 days)	Annual incidence % / year	95%CI
Male	3 595	34	2.4	0.3–4.5
Female	5 650	130	6.3	3.0–9.6
Locality type				
Urban formal	8 629	58	1.8	0.0–3.6
Urban informal	1 854	52	7.0	3.2–10.8
Rural informal	3 859	55	2.8	0.6–5.0
Rural formal	1 509	16	2.7	0.0–8.0
Province				
MP	1 224	23	4.2	0.1–8.3
KZN	2 729	42	3.8	0.1–7.5
FS	1 066	19	3.4	0.0–9.3
GP	2 430	34	3.1	0.4–5.8
LP	1 570	18	2.4	0.0–5.2
NW	1 056	13	2.3	0.0–5.6
EC	2 428	18	1.7	0.0–4.5
WC	2 204	9	0.9	0.0–2.3
NC	1 144	5	0.5	0.0–1.7

Note: * Annual HIV incidence estimates are weighted estimates

The HIV incidence estimates reflect the underlying transmission dynamics that are currently at work in South Africa. It is important to keep in mind that incidence is a point estimate of recent exposure to HIV, while prevalence is the result of cumulative exposures to HIV that occurred not only recently but mostly in the past.

Not surprisingly, the patterns of HIV incidence estimates are similar to those described for HIV prevalence in the previous section. HIV incidence in the total study respondents two years and above is estimated at 2.7%. The incidence among females is more than twice that in males, 3.6% compared to 2.7%. In the African race group, an incidence of 3.4% was found. The incidence in the other race groups is below 1%. Persons living in urban informal areas have the highest incidence figures (7.0%) compared to rural informal areas (2.8%), rural formal areas (2.7%), and urban formal areas (1.8%). Mpumalanga (4.2%), Free State (3.4%), and KwaZulu-Natal (3.8%) recorded the highest incidence, while Northern Cape (0.5%) and Western Cape (0.9%) showed the lowest rates in the study population two years and above. It is worth noting that while KwaZulu-Natal ranks highest in the overall HIV prevalence, it ranks third in HIV incidence.

As shown in Table 3.18, recent HIV infections were found in every age group. Eleven of the 181 recent infections identified in the study sample occurred among children aged

2–14 years, resulting in an annualised incidence of 0.9% for this age group. Seven of those 11 recent infections in children were found in the 2–9-year-olds, an age group where vertical transmission from mother to child can effectively be excluded as the source of infection.

HIV incidence among youth aged 15–24 years was 3.3%. However, an alarming finding was that females in this age group have a five times higher HIV incidence than males, 6.1% compared to 0.8%. In adults 25 years and above an HIV incidence of 3.6% was recorded. Survey participants in the 15–49 year age group have an HIV incidence of 4.4%, with a peak incidence of 7.1% in the age band 25–34 years. HIV incidence in females aged 15–49 years was 6.3%, more than two and a half times the incidence found in males (2.4%). As in the analysis of HIV prevalence, pregnancy is again identified as a risk factor for HIV infection. Females aged 15–49 years who reported to be currently pregnant were estimated to have an HIV incidence of 8.5%.

The validity of the incidence estimate is dependent on the accuracy of the three input measures described above. However, the potential errors and biases associated with the BED assay methodology are expected to remain stable over time. This is important because the main purpose of incidence estimation is to measure trends in HIV incidence and relative differences in incidence in the same population or between subpopulations of the same population over time. The plausibility of the actual HIV incidence estimates derived with the BED methodology is the subject of ongoing research, including a comparison with incidence estimates generated by mathematical models.

3.4 Behavioural determinants of HIV/AIDS

The most common mode of the HIV transmission in South Africa is through heterosexual intercourse. The following section presents a range of indicators related to sexual behaviour risks, substance use, perceived susceptibility to HIV/AIDS infection, and knowledge and attitudes towards HIV/AIDS.

3.4.1 Sexual behavioural risks

Sexual debut

One of the major goals of HIV prevention campaigns is delaying the age of sexual debut by encouraging primary sexual abstinence amongst youth.

The median age at first sex refers to the point at which half of the respondents in a particular age category have had sex. Overall, very few children in the 12–14 year age group reported engaging in sex. Table 3.19 shows the sexual experience for youth aged 15 to 24 years for each year. Almost three-fifths (57.9%) of youth had ever had sex. A higher proportion of females (62.3%) as compared to males (53.9%) reported ever having had sex. There was however little variation between males and females in their sexual experience when examining each age as over half of each sex had had sex by the age of 18 years. The overall median age at first sex for the youth aged 15 to 24 years as a group in this study was therefore 17 years. This was true for both sexes.

Table 3.19: Sexual experience among respondents aged 15–24 years, South Africa 2005

Age	Male % n = 2 488	Female % n = 3 126	Total % n = 5 614
15	11.7	7.9	10.1
16	17.0	17.5	17.2
17	29.4	45.2	37.0
18	52.0	55.7	53.4
19	59.9	61.7	60.6
20	74.8	80.2	77.6
21	79.6	88.2	84.0
22	84.9	85.0	85.0
23	84.2	90.6	87.9
24	83.5	91.3	87.6
Total	53.9	62.3	57.9

An inter-age analysis was done in order to see if any shifts in the age of sexual debut had occurred across generations. Figure 3.14 shows the cumulative distribution of age at first sexual intercourse amongst sexually active older youth and adults in ten-year age ranges from 20 up to 59 years of age. The figure shows a trend towards earlier sexual debut amongst younger respondents. In other words, persons in younger age bands are more likely to have had sex at a younger age than persons older than themselves.

Figure 3.14: Inter-generational analysis of changes in the age of sexual debut among respondents aged 20–59 years who were ever sexually active, South Africa 2005

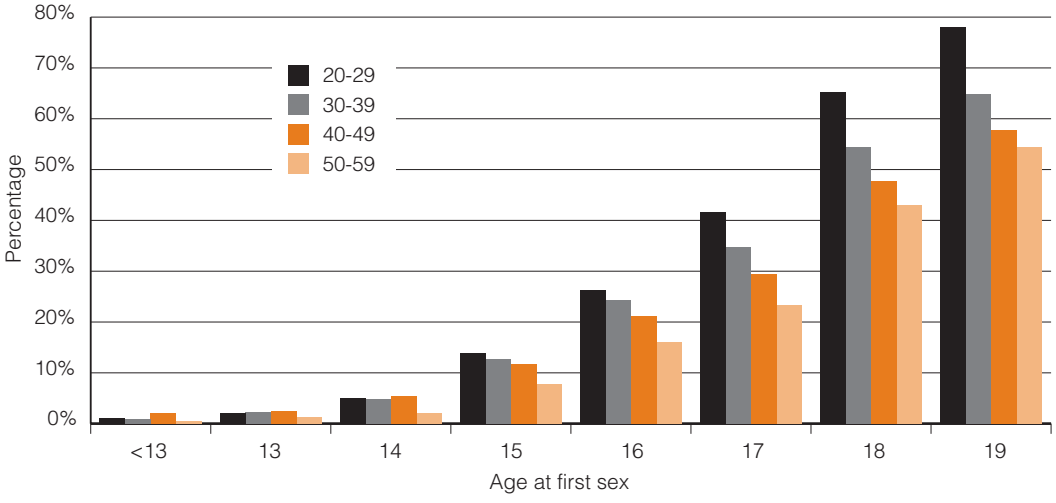


Table 3.20 shows the reasons for youth abstaining from sex. This is known as primary abstinence. The overwhelming majority of respondents (71%) stated that they were not yet ready and over a fifth (22.9%) mentioned that they were not interested in sex.

Table 3.20: Reasons for not having had sex among respondents aged 15 years and older (n = 2 570), South Africa 2005

Reason	n	%
Not ready	1 799	71.0
Not interested	601	22.9
Don't have a partner	400	17.5
Avoiding STIs, including HIV	229	10.2
Religious grounds	255	8.4
Avoiding pregnancy	120	4.4
Cultural grounds	79	2.4

Sexual experience

Table 3.21 shows the breakdown of sexual experience by sex of respondents and by locality type. The table reveals that slightly more young females aged 15–24 years of age are likely to engage in sexual activity than their male counterparts while the opposite is true for people older than 50 years of age. It is important to note that only a few African, white and coloured children in the 12–14 year age group reported having had sex before, while Indians in the same age group indicated that they had not engaged in sexual activity at all. From a gender viewpoint, females mature biologically at an earlier age, whilst a cultural norm is for men to have younger female partners. Table 3.21 also shows little variation amongst levels of sexual experience among 25 year-olds and older, according to both race and the locality types while levels of sexual experience were highest among Africans and lower in rural informal locality types among the 12–14 year-olds compared to other races and locality types respectively. Furthermore, Africans and coloureds in the 15–24 years age group reported having higher levels of sexual experience than their white and Indian counterparts whilst respondents in both urban formal and rural informal locality types also reported slightly lower levels of sexual experience compared to their urban informal and rural formal counterparts.

Table 3.21: Sexual experience among respondents aged 12 years and older by background characteristics, South Africa 2005

Variable	Age group							
	12–14 years		15–24 years		25–49 years		50+ years	
	n	%	n	%	n	%	n	%
Sex								
Male	768	1.9	2 488	53.9	2 448	96.6	1 269	98.1
Female	836	1.5	3 126	62.3	4 326	97.1	2 477	94.7

Variable	Age group							
	12–14 years		15–24 years		25–49 years		50+ years	
	n	%	n	%	n	%	n	%
Race								
African	964	2.0	3 561	60.6	4 048	97.3	1 921	96.1
White	130	0.6	422	38.3	735	95.7	728	95.8
Coloured	327	0.6	1 061	52.3	1 283	95.1	608	97.6
Indian	182	-	561	32.4	693	92.5	482	96.1
Locality type								
Urban formal	906	2.1	3 020	56.8	4 050	96.4	2 252	95.7
Urban informal	146	1.7	607	65.8	830	97.1	272	97.5
Rural informal	440	1.3	1 496	55.9	1 276	96.8	910	96.0
Rural formal	112	1.9	491	67.0	618	99.3	312	99.6

Secondary abstinence

Sexual abstinence refers to the discontinuation of sex for periods of time after initial sexual activity. This section provides analysis of what has come to be defined as secondary abstinence (that is, persons who had been previously sexually active but had no sex in the past 12 months). The analysis focuses mainly on respondents in the age categories 15–24, 25–49, and 50 and older years as very few 12–14 year-olds reported having had sex before.

Overall, nearly one-third of the respondents who had ever had at least one sexual partner indicated that they had had no sex during the previous 12 months. Table 3.22 presents a breakdown of the data by gender, race and age group. Generally, secondary abstinence was higher amongst youth aged 15–24 years than among adults aged 25–49 years except for females in both age groups. Sexual activity is noted to decline as people become older, although it is by no means non-existent. Declines are however marked especially amongst females and Africans.

Table 3.22: Previously sexually active but no sex in the past 12 months (secondary abstinence) among respondents aged 15 years and older, South Africa 2005

Variable	Age group						Total
	15–24 years		25–49 years		50+ years		
	n	%	n	%	n	%	
Sex							
Male	1 260	23.0	2 326	9.8	1 213	30.3	4 799
Female	1 784	20.0	4 162	21.3	2 309	71.3	8 255

Variable	Age group						Total
	15–24 years		25–49 years		50+ years		
	n	%	n	%	n	%	
Race							
African	2 182	21.6	3 905	18.0	1 804	58.7	7 891
White	154	23.3	700	7.6	685	36.9	1 539
Coloured	532	25.2	1 218	15.0	572	49.5	2 322
Indian	172	16.7	652	10.2	454	46.1	1 278

HIV prevalence and sexual behaviour

Table 3.23 shows that sexual activity is related to HIV infection. Those who said they had not had sex before have the lowest HIV prevalence, followed by those who report that they abstained from sex in the past year, whilst those who were sexually active had the highest HIV prevalence. The same pattern was found among youth aged 15–24 years and to some extent among adults aged 25–49 years but not among the elderly aged 50 years and older.

Table 3.23: HIV prevalence and sexual behaviour among respondents 15 year and older, South Africa 2005

Age group	Behaviour	Total	HIV+ %	95% CI
15–24	Reported not sexually active	1 639	3.8	2.2–6.6
	Secondary abstinence	510	11.3	7.8–16.1
	Sexually active	1 803	15.6	13.1–18.5
25–49	Reported not sexually active	108	10.4	4.6–22.1
	Secondary abstinence	848	21.9	17.9–26.6
	Sexually active	4 000	19.8	17.7–22.0
50+	Reported not sexually active	61	4.0	1.0–15.3
	Secondary abstinence	1 475	5.5	4.0–7.6
	Sexually active	1 126	5.9	3.7–9.2
Overall	Reported not sexually active	1 808	4.3	2.7–6.8
	Secondary abstinence	2 833	12.0	10.3–14.0
	Sexually active	6 929	16.7	15.2–18.4

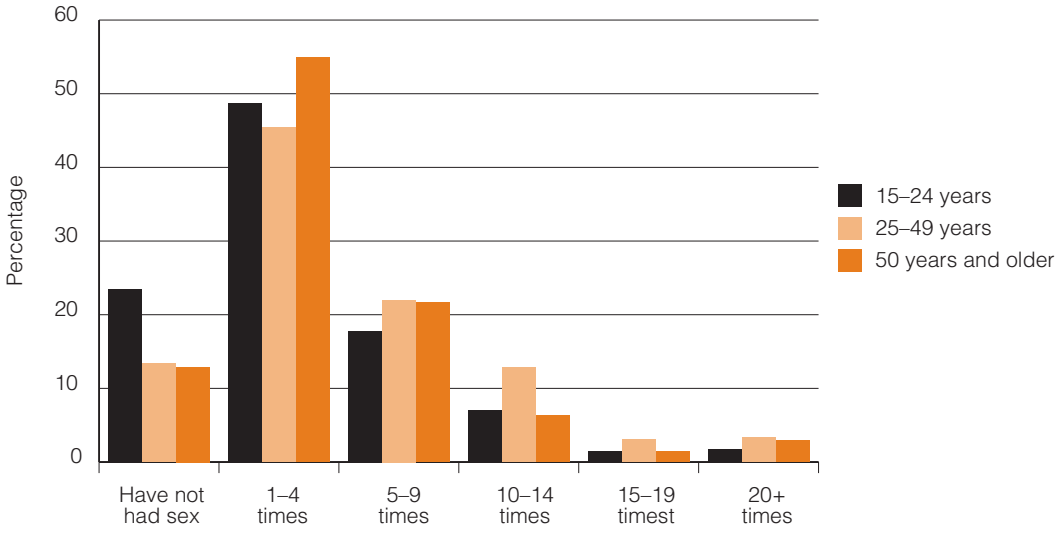
Sexual frequency

Figure 3.15 shows sexual frequency among individuals who reported having had sex in the past 12 months and in the last 30 days by age group.

Adults aged 25–49 years reported higher levels of sexual frequency than youth and adults over 50. However, the modal frequency of sex for all three age groups in the last 30 days preceding the survey was one to four times.

It is interesting to note that nearly one-quarter of the youth (24.3%) in the present study reported that they had not had sex in the past month.

Figure 3.15: Sexual frequency among respondents aged 15 years and older in the last 30 days by age group, South Africa 2005



Sexual partnerships

Unprotected sex with greater numbers of sexual partners increases risk of HIV acquisition – and this risk is increased in the context of a generalised epidemic.

Table 3.24 shows the number of sexual partners that sexually active youth and adults had had during the previous year. The table shows that most sexually active respondents reported that they had one partner during the year with a higher proportion of females (97.4%) reporting this than did their male counterparts (83.7%). Conversely, a higher proportion of males (16.3%) reported having had more sexual partners during the past year than their female counterparts (2.6%). There is a negative relationship between the rate of multiple partnerships and age of respondents. Young males reported more multiple partnerships than all older males. The same pattern was reported among females, even though the actual rates were much lower among females than males. Males living in informal areas, whether in urban or rural locality types, had more multiple partners than those living in formal areas. But for females the rates were higher in urban areas compared to rural areas. It was interesting to note that African and coloured males had higher rates of multiple partnerships while among females the rates were similar for Africans, coloureds and whites, but lower for Indians.

Table 3.24: Multiple sexual partnerships over the past 12 months among respondents aged 15 years and older by background characteristics, South Africa 2005

Variable	Male			Female		
		One partner	> One partner		One partner	> One partner
	n	%	%	n	%	%
Age						
15-24	972	72.8	27.2	1397	94.0	6.0
25 – 49	2059	85.6	14.4	3195	98.2	1.8
50+	799	90.2	9.8	726	99.7	0.3
Locality type						
Urban formal	2290	84.0	16.0	3011	96.8	3.2
Urban informal	431	80.0	20.0	628	96.5	3.5
Rural informal	668	81.3	18.7	1193	98.1	1.9
Rural formal	441	91.1	8.9	486	98.3	1.7
Race						
African	2230	80.7	19.3	3232	97.4	2.6
White	474	96.2	3.8	655	97.5	2.5
Coloured	719	88.8	11.2	899	96.5	3.5
Indian	401	96.0	4.0	518	99.8	0.2
Total	3830	83.7	16.3	5318	97.4	2.6

To gain a deeper understanding of the extent of multiple partnerships amongst the youth, data was further disaggregated by sex, age and number of respondents as shown in Table 3.25. The results indicate that nearly half of males aged 15–19 had more than one partner; this is still higher than the rate observed among females of the same age (28%). These results suggest that HIV prevention programmes should start at the beginning of adolescence. It is important also to note that very few (3.4% or less) of males and females aged 15–19 years who had had sex in the last 12 months indicated that they had no current sexual partners, indicating that most had had at least one.

Table 3.25: Current sexual partnerships among respondents aged 15–24 years, South Africa 2005

Sex/age group	n	No partner %	One partner %	>One partner %
Male				
15–19	419	2.6	52.3	45.2
20–24	844	3.4	60.3	36.2
Female				
15–19	499	3.1	68.9	28.0
20–24	1 286	1.6	77.3	21.2
Total				
15–19	918	2.8	59.7	37.5
20–24	2 130	2.4	69.5	28.1

HIV prevalence and number of sexual partners in the last 12 months

Table 3.26 shows HIV prevalence rates among respondents who were sexually active within the last 12 months in relation to the number of partners they have. Although a higher HIV prevalence (20.6%) was reported for respondents who reported that they have more than one sexual partner as compared to those with one partner (16.3%), the difference in HIV prevalence was not significant.

Table 3.26: HIV prevalence and number of sexual partners in the last 12 months among respondents aged 15 years and older, South Africa 2005

Number of partners	n	HIV+%	95% CI
1 partner	6 284	16.3	14.7–18.0
More than 1 partner	518	20.6	15.6–26.6

HIV prevalence and condom use with a non-regular partner among respondents

Table 3.27 shows condom use among participants who were aware of their HIV status and further stratified by their HIV status. Knowing one's HIV status matters in HIV prevention as shown by the results, which indicate that those who knew their HIV status were more likely to use condoms with their partner compared to those who did not know. This was regardless of whether they were positive or negative. Furthermore, those who were HIV positive and knew it tended to use a condom more than those who were negative and knew it. It is thus not surprising to find that condom use was positively associated with HIV status.

Table 3.27: Condom use during last sexual intercourse among respondents aged 15 years and older who are HIV positive and HIV negative by knowledge of HIV status, South Africa 2005

Variable	Did you or your partner use a condom the last time you had sex?					
HIV test results	HIV+			HIV–		
	Yes %	No %	I do not know/cannot remember %	Yes %	No %	I do not know/cannot remember %
Know HIV status	66.2	32.4	1.5	50.8	48.6	0.7
Don't know HIV status	26.2	73.8	0.0	35.0	63.0	2.0

Table 3.28 shows HIV prevalence rates among respondents who were sexually active with a non-regular partner within the last 12 months, and their condom use. HIV prevalence was higher in condom users than in non-condom users. However, the interpretation of this seemingly paradoxical finding should take into consideration the fact that condom use was also strongly associated with multiple sexual partners. Having multiple partners was associated with higher HIV prevalence as was shown earlier. Therefore, sexual activity with multiple sexual partners likely operates as a possible confounder in the correlation between condom use and HIV prevalence.

Table 3.28: HIV prevalence and condom use with a non-regular partner among respondents aged 15 years and older, South Africa 2005

Did you or your partner use a condom the last time you had sex with non-regular partner?			
Response	n	HIV+ %	95% CI
Yes	473	18.2	13.4–24.3
No	605	14.0	10.5–18.5

Age mixing

Sexual networking is an important determinant of HIV infection. Table 3.29 shows five-year age differentials for males and females at five-year intervals from 15 to 65 years and older. While nearly two-thirds of the sexually active male (66.2%) and female respondents (65.3%) had a sexual partner with an age difference within five years of their own age, the majority of the other males (32.4%) had partners who were more than five years younger than themselves while it was the opposite for females (33.2%; that is, they had partners who were five years or more older than themselves).

Table 3.29: Extent of age mixing among sexually active respondents aged 15 years and older (five-year intervals), South Africa 2005

	n	Partner 5 yrs older than respondent %	Age difference within five years %	Partner 5 yrs younger than respondent %
Males				
15–19	303	2.0	98.0	-
20–24	662	2.0	91.2	7.8
25–29	431	2.0	73.5	25.5
30–34	386	1.6	59.0	39.4
35–39	444	2.3	54.9	42.8
40–44	442	1.5	58.3	40.2
45–49	349	1.8	55.0	43.2
50–54	303	1.1	52.8	46.1
55–59	196	0.6	50.9	48.4
60–64	144	2.3	54.1	43.6
65+	158	0.4	43.8	55.8
Total	3 818	1.5	66.2	32.4
Females				
15–19	362	18.5	81.5	-
20–24	1 032	28.4	71.6	-
25–29	593	33.9	65.6	0.5
30–34	697	39.0	60.4	0.6
35–39	742	32.2	65.8	1.9
40–44	667	41.1	56.8	2.1
45–49	498	33.4	63.5	3.0
50–54	370	36.9	60.8	2.2
55–59	182	31.5	62.8	5.7
60–64	116	31.5	60.4	8.1
65+	54	29.2	56.0	14.9
Total	5 313	33.2	65.3	1.5

Table 3.30 shows the relationship between age mixing for five-year age differentials at five-year intervals for youth and adult respondents in this survey and HIV prevalence.

Despite the wide confidence intervals evident in the table, there is a discernible trend. Overall HIV is more prevalent among males who have sex with females five years younger than themselves than if the partner is within a five year age range or older than themselves. The data on Table 3.30 show that if a male aged 15–19 years has a sexual partner who is five years or more older, he is at an increased risk of being HIV positive (19%) compared to if he has a partner who is within five years of his age (3%). The greatest risk is where a male aged 30–34 has sexual partner who is five years or more older than him – his chances of being HIV positive are 51.6%; this is incredibly high if compared to having a partner who is within five years of his age (24%) or a partner who is younger than himself (17.9%).

Table 3.30: Extent of age mixing among sexually active respondents aged 15 years and older by HIV prevalence (five-year intervals), South Africa 2005

Age group		Partner 5 yrs older than respondent		Age difference within five years		Partner 5 yrs younger than respondent	
	n	%	95% CI	%	95% CI	%	95% CI
Males							
15–19	212	19.0	2.6–67.5	3.0	1.1–8.0	-	
20–24	483	0.0		7.6	4.2–13.5	3.8	0.7–19.0
25–29	305	12.5	1.5–58.1	9.8	5.5–16.9	18.9	9.9–33.1
30–34	281	51.6	8.5–92.4	24.6	16.0–35.9	17.9	9.2–31.9
35–39	318	13.4	2.5–48.0	18.2	12.1–26.3	31.5	20.7–44.9
40–44	333	0.0	-	13.0	7.0–22.9	23.1	13.6–36.5
45–49	250	0.0	-	4.1	1.5–10.8	18.6	10.1–31.7
50–54	226	0.0	-	10.3	4.5–21.9	16.2	7.2–33.0
55–59	141	0.0	-	0.6	0.1–2.7	13.5	3.2–42.4
60–64	110	0.0	-	1.4	0.2–9.6	3.3	0.7–14.1
65+	106	0.0	-	0.2	0.0–1.5	9.2	1.3–43.3
Total	2772	8.4	3.2–20.0	10.2	8.2–12.7	18.3	14.7–22.6
Females							
15–19	276	29.5	15.4–49.0	17.2	10.1–27.7	-	-
20–24	792	34.9	25.4–45.7	23.0	18.1–28.7	-	-
25–29	456	38.1	27.3–50.1	35.3	26.8–44.8	0.0	-
30–34	536	25.6	18.2–34.6	24.3	18.3–31.7	25.4	3.7–75.2
35–39	570	20.4	12.6–31.3	16.8	11.8–23.3	0.0	
40–44	507	15.3	9.3–24.2	7.2	4.3–11.7	14.3	2.1–56.1
45–49	367	9.5	3.5–23.5	5.4	2.9–9.6	22.9	4.8–63.8
50–54	265	1.0	0.2–5.5	4.6	2.1–9.9	0.0	

Age group		Partner 5 yrs older than respondent		Age difference within five years		Partner 5 yrs younger than respondent	
	n	%	95% CI	%	95% CI	%	95% CI
55–59	123	0.0	-	2.6	0.8–7.7	18.4	2.3–67.8
60–64	83	0.0	-	1.0	0.1–7.3	0.0	
65+	43	0.0	-	2.5	0.3–19.0	0.0	-
Total	4018	23.5	19.9–27.5	19.3	16.7–22.1	9.9	3.9–22.6

In contrast, the phenomenon of females having sexual partners who are five years younger than themselves is rare. Where it occurred the results are interesting as shown in Table 3.30. Females who have sex with males who are five years younger than themselves have a lesser chance of being HIV positive (9.9%) compared to those who have sex with males who are five years older than themselves (23.5%) and even lesser when the sexual partner is within the same five-year age range (19.3%). However, the differences are marked in females aged 15–19 years who have sexual partners who are five years older than themselves (HIV infection: 29.5%). The figure is also high among females aged 20–24 (HIV infection: 34.9%), and higher among females aged 25–29 (38.1%).

Condom use and access

Condoms are an important means of preventing unwanted pregnancy, STIs and HIV infection. Male condom distribution by the Department of Health has increased markedly – from 267 million in 2001 to 346 million in 2004. Condoms are distributed through clinics, hospitals and various other distribution points. Commercial and socially marketed condom brands are also widely available.

Table 3.31 presents information on the proportion of respondents who paid for their last condom used. It shows that the overwhelming majority (69.7%) accessed free condoms. When stratified by various demographic characteristics, more older adults (44.5%) and the majority of whites (63.5%) paid for the last condom they used. People living in rural areas were more likely to access free condoms compared to those living in urban areas. Those living in informal areas were more likely to access free condoms than those living in formal areas. Free condoms were more accessible in the Eastern Cape, Limpopo, Northwest and Mpumalanga and less so in the remainder of the provinces, including KwaZulu-Natal.

Table 3.32 shows that the brand of condom used by most respondents was the new government condom called Choice. The overwhelming majority of respondents (89.3%) who indicated that their most recent brand of condom used was free were satisfied that it was of high quality. It is important to note that the Red Ribbon condom was also distributed by government, making government the largest single provider of condoms. This is explored further below.

Table 3.31: Payment of last condom used among respondents aged 15 years and older, South Africa 2005

Variable	Paid for %	Free %	Not sure %	Total
Total	25.9	69.7	4.4	6 220
Sex				
Male	26.9	70.3	2.8	2 777
Female	24.9	69.1	6.1	3 443
Age				
24 and less	22.3	75.8	1.9	2 282
25–49 years	25.0	71.2	3.8	3 250
50 and more	44.5	39.1	16.4	688
Locality type				
Urban formal	34.5	59.8	5.7	3 900
Urban informal	20.2	77.1	2.6	709
Rural informal	12.3	84.7	3.0	1 190
Rural formal	16.3	82.8	1.0	421
Race				
African	18.9	78.0	3.1	3 736
White	63.5	26.0	10.5	846
Coloured	20.2	75.3	4.5	1 019
Indian	41.8	50.3	7.9	605
Province				
WC	30.1	64.0	5.9	814
EC	12.2	85.7	2.1	669
NC	28.1	65.6	6.3	270
FS	25.4	71.0	3.6	463
KZN	28.6	66.5	4.9	1 167
NW	22.5	75.4	2.1	528
GP	35.6	58.0	6.4	1 242
MP	21.4	76.8	1.8	450
LP	13.0	83.8	3.1	617

Table 3.32: The brand of male condom used most recently among respondents aged 15 years and older (n = 6 201), South Africa 2005

Condom brand	n	%
Choice condom	1 482	25.8
Red Ribbon condom	1 007	17.9
Lovers Plus	1 141	17.6
Durex	579	8.2
Trust	210	3.4
Don't know	1 531	22.0
Other	251	5.2

The overwhelming majority of South Africans believe condoms are easily accessible when needed.

Table 3.33 displays the various sources of condoms for sexually active respondents. The table shows that public clinics and hospitals were the most common source of condoms. A quarter (25%) of the respondents bought their condoms at a pharmacy or chemist.

Table 3.33: Sources of condoms for respondents aged 15 years and older who had used condoms (n = 5 239), South Africa 2005

Variable	n	%
Government clinic or hospital	3 373	66.6
Pharmacy or chemist	1 411	24.5
Shop or supermarket or café	641	12.9
Private clinic or hospital	677	12.8
Workplace	441	6.9
Garage or filling station	310	6.8
Spaza shop	203	4.0
Public toilets – condom boxes	200	3.8
Government buildings – condom boxes	198	3.7
Shebeen or tavern or hotel	132	2.7
Friend	126	2.1
Other*	501	9.5

Note: * Includes government condom campaigns, AIDS organisations or NGOs, condom boxes in libraries or community centres and hawkers or street vendors.

When examining sources of condoms by sex, race and locality type, we found that although the government is the primary mail provider of condoms for Africans and coloureds, it is not for whites. Whites and females older than 50 years normally obtain their condoms at the pharmacy (see Figures 3.16 and 3.17).

Figure 3.16: Sources of condoms among respondents aged 15 years and older by sex and age, South Africa 2005

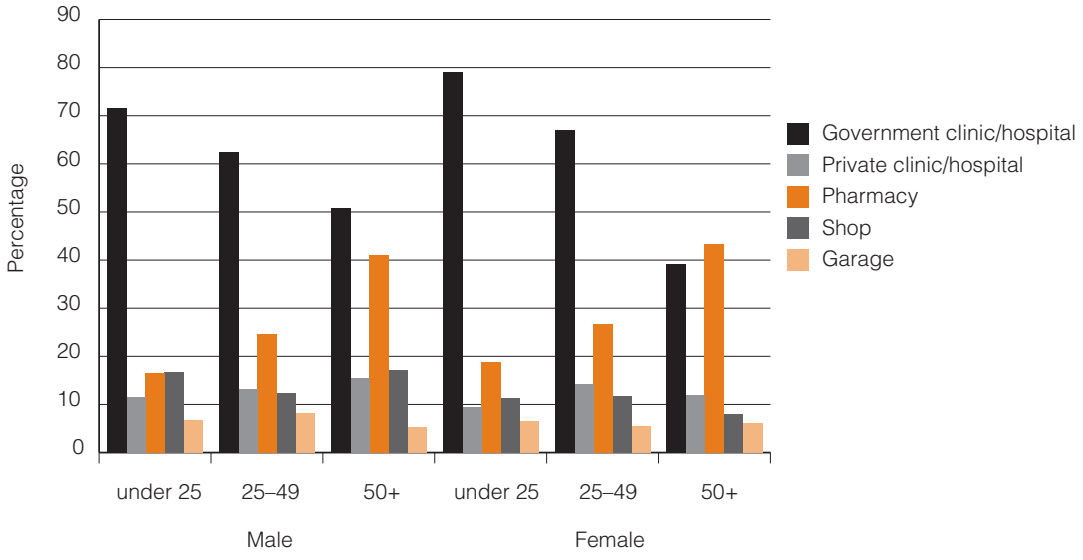
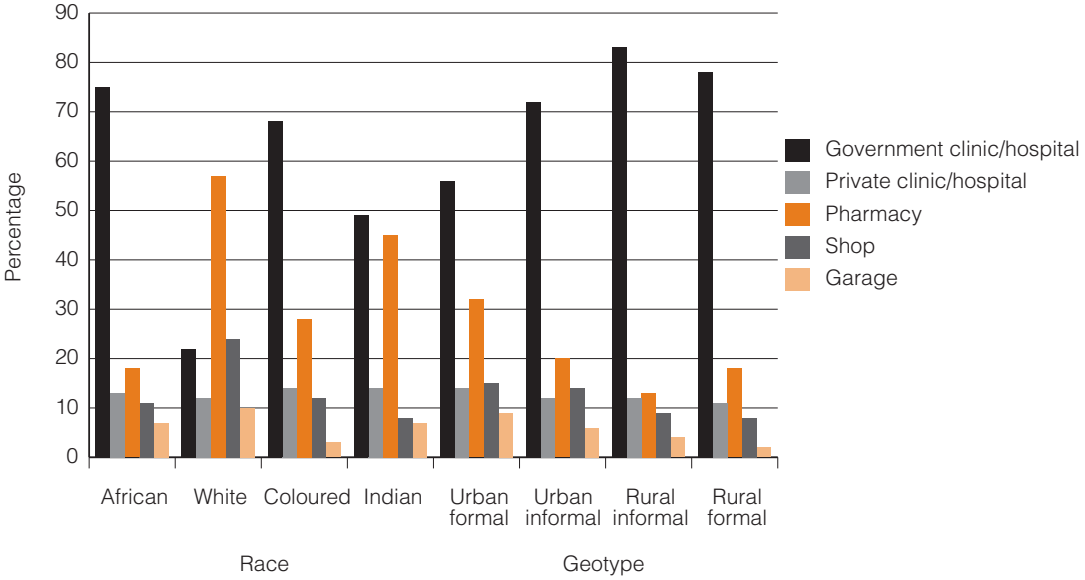


Figure 3.17: Sources of condoms among respondents aged 15 years and older by race and locality type, South Africa 2005



Condom use during last sex

Table 3.34 summarises proportions of respondents who had sex in the last year who used a condom during their last sexual intercourse. Some 38% of females and males used a condom during the last sexual intercourse. The large majority of respondents who were

youth, Africans, with multiple partners, and living in rural informal locality types were more likely to use a condom in the past 12 months. There were lower levels of condom use among those aged over 50 years (8.6% for males and 5.3% for females), white males (15.2%) and Indian females (12.6%).

Table 3.34: Condom use during the last sexual intercourse among respondents aged 15 years and older by background characteristics, South Africa 2005

Variable	Male		Female	
	n	%	n	%
Total	3 863	38.1	5393	32.8
Age group				
15-24	976	72.8	1 410	55.7
25-49	2 075	35.3	3 241	29.1
50+	812	8.6	742	5.3
Race				
African	2 239	43.6	3 281	38.1
White	482	16.7	660	15.2
Coloured	730	22.3	914	12.6
Indian	406	34.5	524	10.1
Sexual activity				
One partner	3 802	33.4	5 159	32.4
Multiple partners	538	62.3	135	46.6
Locality type				
Urban formal	2 319	38.0	3 052	32.4
Urban informal	429	42.4	642	38.5
Rural Informal area	673	44.0	1408	34.0
Rural formal	442	20.0	491	22.1

Reasons for condom use

Table 3.35 shows the reasons mentioned by respondents for condom use during their last sexual encounter. The overwhelming majority of respondents (71.2%) used a condom to prevent HIV infection. Almost half (49.4%) responded that a condom was used as a contraceptive method.

Last sex condom use for different age groups according to marital and partner status

Table 3.36 shows reported condom use for different age groups according to marital status and partner status. The table shows that respondents who were single were considerably more likely to use a condom than those who were married. Respondents younger than 50 years old and who had three or more partners in the past year were

more likely to use a condom at last sex than those who either had only one or two sexual partners. Similarly, both youth and adults who had more than one current partner

Table 3.35: Reasons for using condoms among respondents aged 15 years and older (n = 2 953), South Africa 2005

Reason	n	%
Concern about HIV infection	2 026	71.2
Want to prevent pregnancy	1 511	49.4
Want to prevent STIs	712	24.2
Do not trust partner	297	9.9
Saw or heard messages urging people to use condoms	157	4.7
Other	97	2.7

were more likely to use a condom during the last sexual encounter than respondents with only one current partner. It is interesting to note that condom use was also relatively high among youth and adults aged 25–49 years who had one current partner only, 25–49 year-old widowed respondents and both youth and 25–49 year olds who are divorced or separated.

Table 3.36: Condom use during the last sexual intercourse among respondents aged 15 years and older by marital status, partner status and age, South Africa 2005

Variable	Age group						Total
	15-24 years		25-49 years		50+ years		
	n	%	n	%	n	%	n
Marital status							
Single	2005	69.0	1373	52.4	74	8.6	3452
Married or cohabit	351	25.0	3610	21.1	1346	5.3	5307
Widowed			90	44.4	58	15.5	148
Divorced or separated	27	56.3	219	41.9	66	36.4	312
Partner status							
One sexual partner in the last year	2032	61.7	4933	29.8	1458	6.4	8423
Two partners in the past year	199	70.5	19.5	54.1	46	27.1	440
Three or more partners in past year	120	81.1	96	60.0	17	17.1	233
One current sexual partner	2086	62.3	5002	29.8	1464	6.5	8552
More than one current sexual partner	218	75.4	207	60.0	53	20.9	478

Method of contraception among female respondents

Table 3.37 shows the contraceptive methods currently used by females aged 15–49 years who were sexually active and tested for HIV infection. Altogether one-quarter (25%) of all females interviewed aged 15–29 years who were sexually active reported that they had never used contraceptivion. Of the 4 615 female respondents aged 15–49 years who were sexually active during the past year and responded to the question, the highest frequency of almost one-quarter of the respondents (23.4%) reported that they were using contraceptive injections, followed by one-fifth (20.1%) who reported that they were currently not using any method of contraception.

Table 3.37: Contraceptive methods currently used by females aged 15–49 years who were sexually active in the past 12 months (n = 4 614), South Africa 2005

Method	n	%
Never used contraception	1 134	25.0
Male condom	529	13.0
Contraceptive pill	548	11.2
Contraceptive injection	991	23.4
Female sterilisation	335	4.7
Not using any method	970	20.1
Other*	107	2.5

Note: * Includes those who used the loop or IUD, male sterilisation, the female condom or Norplant

Tables 3.38 and 3.39 show the data from Table 3.37 disaggregated according to age groups. Table 3.38 shows that the majority of the female youth aged 15–24 years interviewed in this study who were sexually active have never used contraception. The highest frequency of almost one-fifth (17.1%) had used contraceptive injections and just over one-tenth (11.1%) had used male condoms. In comparison, Table 3.39 shows that nearly one-third (30.1%) of those aged 25–49 years had never used contraceptives. The highest frequency, one-quarter (25.5%), reported that they were not using any contraceptive method, followed by almost one-fifth (18.7%) who indicated that they used contraceptive injections.

Table 3.38: Contraceptive methods currently used by females aged 15–24 years who were sexually active in the past 12 months (n = 3 110), South Africa 2005

Method	n	%
Never used contraception	1 857	57.0
Male condom	302	11.1
Contraceptive pill	176	6.0
Contraceptive injection	486	17.1
Not using any method	266	8.0
Other*	23	0.7

Note: * Includes those who used the loop or IUD, female sterilisation, male sterilisation, the female condom or Norplant

Table 3.39: Contraceptive methods currently used by females aged 25–49 years who were sexually active in the past 12 months (n = 4 258), South Africa 2005

Method	n	%
Never used contraception	1 270	30.1
Male condom	283	8.7
Contraceptive pill	423	9.3
Contraceptive injection	697	18.7
Loop / IUD	47	1.1
Female sterilisation	376	5.4
Not using any method	1 128	25.5
Other*	34	0.8

Note: * Includes those who used the female condom, Norplant and male sterilisation.

Tables 3.40 and 3.41 show the relationship between contraceptive use and HIV status for youth aged 15–24 years and 25–29 years respectively. Table 3.40 shows that the highest HIV prevalence found in the 15–24 year age group was amongst those currently not using any contraceptive method, followed by those who used the injection, and then those who used the pill. In comparison, among the 25–49 year-olds the highest prevalence was found among those who had never used contraceptives, followed by those currently not using any method, and then those using the pill.

Table 3.40: HIV prevalence by contraceptive methods currently used by females aged 15–24 years who were sexually active in the past 12 months, South African 2005

Method	n	HIV prevalence %	95% CI
Never used contraception	1 328	11.5	9.22–14.35
Not using any method	202	29.4	19.83–41.17
Contraceptive pill	124	18.5	8.58–35.40
Contraceptive injection	381	22.7	6.88–29.89

Table 3.41: HIV prevalence by contraceptive methods currently used by females aged 25–49 years who were sexually active in the past 12 months, South Africa 2005

Method	n	HIV prevalence %	95% CI
Never used contraception	934	22.6	18.7–27.1
Not using any method	865	21.5	16.8–27.2
Contraceptive pill	303	16.0	10.3–24.0
Contraceptive injection	564	21.1	16.4–26.7
Female sterilisation	287	13.3	6.9–24.1

Where pills and injectable contraceptives are used, they should also be used with condoms if HIV prevention is required. For this reason, we analysed the extent to which condoms were used in conjunction with contraceptive pills and injections as shown in Table 3.42.

Table 3.42: HIV prevalence among females aged 15–49 years who have used a condom and any other pregnancy prevention method at the same time during the past 12 months, South Africa 2005

Age	Total	HIV+ %	95% CI
15–49	651	27.3	22.2–33.1
15–24	307	23.1	16.5–31.4
25–49	344	30.1	22.8–38.6

HIV and self-reported diagnosis of sexually transmitted infections (STIs)

A total of 353 (3.7%) respondents (out of 11 874 who replied to the question), said they had had genital discharge or sores in the last three months or that they currently have these symptoms. Table 3.43 shows HIV prevalence by history of STI symptoms and indicates that there is a strong association between HIV and STI-related symptoms ($p < 0.01$).

Table 3.43: HIV prevalence by self-reported symptoms of STIs among respondents aged 15 years and older, South Africa 2005

Symptoms	STI symptoms			No symptom		
	n	HIV+ %	95% CI	n	HIV+ %	95% CI
Sores/ulcers on genitals, in last 3 months (males and females)	216	28.0	20.2–37.4	10 261	14.5	13.2–15.8
Abnormal penile discharge, in last 3 months (males only)	85	12.9	4.5–31.9	4 292	10.0	8.7–11.7

Discussion

The various issues concerning sexual behavioural practices found in the present study are discussed below.

Sexual debut: Overall, the present findings on this indicator showed that current 15–24 year-olds are engaging in sexual intercourse much earlier when compared to the findings from both the 2002 survey and RHRU's 2003 national survey. This is clearly borne out by the inter-generational analysis of the results which showed, as did the 2002 survey, that persons in younger age bands are actually more likely on average to have had sex at a younger age than persons older than themselves. Several recent studies suggest that the median age of sexual debut is changing. For example, the 2002 survey found that the median age at first sex for respondents 25 years and older was 18 years, and for 15–24 year-olds the median age at first sex was 16 years (although a median cannot strictly speaking be calculated as a large proportion of this age group have not had sex). Persons in younger age bands were found to be more likely to have had sex at a younger age than persons older than themselves. Harrison et al.'s (2005) analysis of sexual behaviour data for youth aged 15–24 years (n = 314) from a representative cross-sectional household

survey examines early sexual debut (<age 15) among young men in rural South Africa and found 13.1% of 15–24 year-old males experienced sexual debut before age 15. The RHRU's 2003 national survey of 15–24 year-olds found the mean age of first sex was 16.7 years and the median was 17 years. For males the mean age was 16.4 years and the median was 16 years and for females the mean and median were 17 years (Pettifor et al. 2004). Compared to other African countries, a multi-site and multi-country study that was conducted amongst 2 116 adult participants from four urban communities in Benin, Cameroon, Kenya and Zambia found that the median ages of sexual debut for males and females in the four countries were: 19 (both sexes) in Cotonou, Benin, 17.8 (males) and 17.7 (females) in Yaounde, Cameroon, 16.9 (males) and 16.5 (females) in Kisumu, Kenya, and 18.3 (males) and 17.6 (females) in Ndola, Zambia (Ferry et al. 2001).

An interesting finding was that only 10% of youth who self-reported as not having had sex before and were practising primary sexual abstinence did so in order to avoid STIs including HIV. This was fewer than the 17.5% who said they were abstaining because they did not have a sexual partner. When compared with a large majority who indicated that they were not ready or not interested in sex, this means that the message to promote primary sexual abstinence or delay sexual debut is not being conveyed clearly enough. Intervention programmes should take advantage of this fact and develop age-appropriate strategies to encourage youth to delay sexual debut until they are older.

Sexual experience: When compared to the 2002 survey results, the results from this survey were similar. Sexual experience amongst children aged 12–14 was very low and a slight majority among the youth aged 15–24 were sexually active. There were also notable racial differences. This latter finding is consistent with RHRU's 2003 survey findings. According to Noble, Cover and Yanagishita (1996), the majority of young people in many developing countries are sexually experienced by the age of 20 and premarital sex is common among 15–19 year-olds. The finding is corroborated by various studies, including the 2002 survey and the RHRU's 2003 survey. The latter found that 48% of 15–19 year-olds reported being sexually experienced.

Secondary abstinence: The finding that there was generally an increase in sexual abstinence in the present survey suggests the need to promote secondary abstinence as a prevention strategy among youth.

Sexual partnerships: The present findings are mostly similar to the 2002 survey results with three notable exceptions. Firstly, the proportion of males with more than one partner from urban formal locality types in the present survey is nearly as high as those from urban informal areas. In the 2002 survey males from the urban formal areas had the second lowest proportion of men who had more than one partner after those from the rural formal areas. Secondly, although still second to Africans, the proportion of coloured males who had more than one partner was much higher than among whites and Indians than in the 2002 survey. Finally, the proportions of females from the rural informal and rural formal areas, with more than one partner were lower than those of their counterparts from the other two locality types. A major issue of concern here is the fact that males, especially youth in the 15–19 year age group, Africans and those living in urban informal locality types are continuing to have multiple partners. This is consistent Pettifor et al. (2004) and Shisana & Simbayi (2002). Those having multiple sex partners should be made aware of the high risk of this practice and also be encouraged to use condoms consistently.

Sexual frequency: Adults aged 25–49 years reported higher sexual frequency than youth and those aged 50 years and older. These findings were consistent with those from the 2002 survey. However, the level of one-month long sexual abstinence among youth aged 15–24 was much lower. An important finding in this study, which makes a lot of sense from an epidemiological point of view, is that HIV prevalence was significantly higher among those who had sex frequently as opposed to those who either did so less frequently or abstained completely during the previous 30 days. It appears that there are declining levels of sexual frequency amongst the youth.

Condom access and use: The present findings show clear evidence of excellent condom distribution systems in the country and of the successful implementation of condom use as an HIV prevention strategy. Clearly, the positive perceptions of great ease of access to condoms, of over 90% of both youth and adult age groups, point to the sophisticated and highly efficient condom distribution systems in South Africa, particularly the Department of Health's procurement and distribution programme. Public sector clinics and hospitals were the most likely source of condoms. Pharmacies are an important source for condoms, especially for whites and Indians and for respondents aged 50 and older. When compared to the 2002 survey, access to condoms was maintained among youth and adults aged 25–49 years and much improved among the elderly aged 50 years and older especially among females. Perceived ease of access also improved in rural formal and rural informal locality types as well as throughout both the Eastern Cape and Limpopo provinces. These provinces also had a higher population of respondents from rural informal locality types compared to the other locality types. Condom use at last sex amongst youth aged 15–24 has increased from 57.1% for males and 46.1% for females in 2002 to 72.8% for males and 55.7% for females in 2005. This is a considerable increase and other age groups should be encouraged to follow these trends.

An interesting finding was that when asked for the reasons why they were using condoms the majority indicated that it was because of HIV prevention, followed by pregnancy prevention, and then STI prevention – in that order. This is encouraging. Whilst some couples may be using condoms for HIV prevention only, others were using them mainly for contraception, and some for both purposes. HIV/AIDS prevention strategies need to take advantage of this fact by encouraging married couples to use condoms as an effective and readily accessible dual method of contraception.

Use of contraceptives: The present findings about the impact of the use of contraceptives on HIV infection are inconclusive and require further analysis. Dowling (2004), following a meta-analysis of 20 studies, found that contraceptive use was linked to increased risk of HIV infection. Numerous studies have been conducted to study the relationship between hormonal contraception and HIV acquisition and currently no consensus has been reached (FHI 2004; Martin et al. 2005). For example, Martin et al. (2005) report on a study in Mombasa, Kenya, and find a significant association between DMPA use and HIV-1 infection. Ungchusak et al. (1996), in a longitudinal study in Thailand, found a significant relation between hormonal contraceptive use and HIV acquisition. Family Health International (FHI 2004), which also recently reviewed the literature on the subject, concluded that whether hormonal contraceptive use affects acquisition or transmission of STIs, including HIV, remains an important research question. According to FHI, the use of hormonal contraception, particularly injectable progestins, and its relation to the acquisition of HIV continues to be an important area of research

3.4.2 Substance use

Alcohol use by youth and adult South Africans

Alcohol use is linked to diminished rational capacity, and has implications for HIV risk. Risk is also exacerbated by other forms of substance abuse (Leggett 2001). This section presents the findings on the prevalence of alcohol use and its relationship to HIV risk.

In the present analysis, alcohol use was determined by creation of a 10-item Alcohol Use Disorder Identification Test (AUDIT) from various items asking about alcohol use in the questionnaire. The AUDIT was developed by Babor, Higgins-Biddle, Saunders and Monteiro (2001). Each question that the participant concurs with is given a weighted score and the total is used to classify a person as follows: 0 as abstainers (non-drinkers); 1–7 as low-risk drinkers (drinking that is within legal and medical guidelines and is not likely to result in alcohol-related problems); 8+ as high-risk or misuse drinkers (any level of risk, ranging from hazardous or harmful drinking to alcohol dependence). According to Babor et al. (2001), 'harmful use' of alcohol is a pattern of drinking that is already causing damage to health. The damage may be either physical (for example, liver damage from chronic drinking) or psychological (for example, depressive episodes secondary to drinking).

The overall prevalence rate of alcohol consumption for the sample was 27.9%, with 18.8% being classified as low risk, and 7.2% as high risk. When analysed by sex and alcohol consumption, a higher proportion of males were found to be both low- and high-risk drinkers than their female counterparts. When further analysed by race, it was found that proportionately more coloureds were high-risk drinkers (17.8%), followed by whites (7.2%) and Africans (6.4%) while Indians were proportionately the least high-risk drinkers (2.5%). It is important to note that the majority of whites (53.1%) were low-risk drinkers. When locality type was considered, high-risk drinkers were more likely to reside in rural formal, urban formal and urban informal settings than in rural informal areas. Table 3.44 also shows that adults (25–49 years) were more likely to be high-risk drinkers followed by 15–24 year-olds. Moreover, it was found that adults (of 50+ years) were more likely to be low-risk drinkers than the younger age groups.

Table 3.44: Alcohol use among respondents aged 15 years and older by sex and race, South Africa 2005

Variable	Abstainers (0)		Low-risk drinkers (1–7)		High-risk drinkers (8+)	
	n	%	n	%	n	%
Total	11 923	72.1	3 115	18.8	1 107	7.2
Sex						
Male	3 701	59.6	1 679	26.8	832	13.6
Female	8 222	85.1	1 436	12.8	275	2.1
Race						
African	7 755	80.3	1 230	13.3	550	6.4
White	944	39.7	852	53.1	93	7.2

Variable	Abstainers (0)		Low-risk drinkers (1–7)		High-risk drinkers (8+)	
	n	%	n	%	n	%
Coloured	1 791	54.8	743	27.4	419	17.8
Indian	1 407	74.3	285	23.2	44	2.5
Locality type						
Urban formal	6 456	65.1	2 161	25.6	712	9.4
Urban informal	1 348	78.1	221	13	142	8.9
Rural informal	3 227	86.2	348	10.3	106	3.5
Rural formal	892	62.4	385	26.4	147	11.1
Age groups						
24 and less	4 413	80.4	848	13.3	357	6.3
25–49 years	4 745	70.1	1465	21	561	8.9
50 and above	2 765	70.7	802	23.7	186	5.6

Table 3.45 presents high-risk drinking by province. The table shows that high-risk drinking was above 10.0% among adults and youth aged 15 years and older in three provinces (Western Cape: 15.6%; North West: 12.7%; Northern Cape: 11.6%) and much lower in the Eastern Cape (2.6%) and Limpopo (3.6%).

Table 3.45: High-risk drinkers among respondents aged 15 years and older by province, South Africa 2005.

Province	High-risk drinkers (8 and above)	
	n	%
WC	1 987	15.6
EC	2 585	2.6
NC	999	11.6
FS	1 010	8.6
KZN	3 231	5.6
NW	1 128	12.7
GP	2 557	8.6
MP	1 176	4.5
LP	1 472	3.6
Total	16 145	7.4

Use of other substances by youth and adult South Africans

Substance use as a risk factor in HIV infection is being investigated increasingly by researchers in a number of countries internationally. Countries in South East Asia, Central Asia, the Pacific region and Eastern Europe are facing the problem of substance use, especially through shared injections. HIV infection in these countries is common among injection sharers and homosexuals; (UNAIDS 2004). Apart from the few small-scale studies, there is a lack of information with regard to the relationship between substance use and HIV infection in South Africa. This study therefore set out to investigate the relationship amongst substance use, sexual behaviour and HIV status in South Africa. Substance abuse was measured using some questions drawn from two sections of the international scale known as the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) (Babor, Higgins-Biddle, Saunders, & Monteiro 2001).

Overall, a very low proportion of substance use by South Africans 15 years and older was found in this study. Cannabis, or dagga as it is commonly called in South Africa, was more commonly used (2.1%) than other substances, namely cocaine and sedatives (0.3% each), amphetamines (0.2%), and inhalants, hallucinogens and opiates (0.1% each).

An unexpected finding was that 3.1% of respondents indicated that they had used drugs by injection but not in the past three months while another 1.6% had done so during the past three months. Thus, a total of 4.7% of the sample admitted to have used injected drugs in their lifetime. Only a very minute proportion of respondents (0.1%) indicated that they had shared injection needles.

Discussion

The findings about differences in high-risk drinking by gender, age, race, locality type and province are not surprising. These findings are similar to those reported in the 2002 survey and in a recent national survey among educators conducted by Shisana, Peltzer et al. (2005). South Africans who are male, in the 25–49 year age group, coloured, living in rural formal, urban formal and urban informal areas, and in the Western Cape, North West and Northern Cape provinces are mainly high-risk drinkers. An interesting finding is the high level of low-risk alcohol use among whites. A similar finding among South African educators was reported by Shisana, Peltzer et al. (2005). Clearly, anti-alcohol abuse campaigns are needed in South Africa in order to reduce the risk of HIV infection, especially among both men and women who are more prone to high-risk drinking patterns.

Given that alcohol and other substance use weakens judgement and increases risky behaviour, using mind-altering substances before sex poses an HIV risk. Among adult and youth 15 years and above who had used mind-altering substances, cannabis (dagga) was the most frequently mentioned substance (2.1%); it was also the one substance that is used on a daily basis. One reason for the high use of cannabis is its apparent abundance and affordability compared to other drugs. Also cannabis is more socially acceptably compared to other drugs although it is illegal to buy or sell to others.

A small minority of respondents said that they had shared needles when injecting drugs. Although transmission of HIV through this route is very limited in the South African context, it needs monitoring in future studies.

3.4.3 Perceived susceptibility to HIV infection

An individual's belief in his or her personal susceptibility to illness or disease is an important element in nearly all models of preventive health behaviour, both general and HIV/AIDS specific (Macintyre et al. 2004). According to various theories of behaviour change such as the Health Belief Model (see Airhinhenbuwa & Obregon 2000) and the Theory of Reasoned Action (see Ajzen 1988), the degree to which one feels personally vulnerable to developing a health problem influences the adoption of risk-reducing behaviour and/or preventive strategies.

In the present study respondents were asked how they would rate themselves on a scale of 1–4 in terms of risk of becoming infected with HIV and what their reasons were for believing so. The majority of the adult and youth respondents (66%) in the study believed that they would not get infected with HIV while 34% believed they probably or definitely would (see Table 3.46).

Table 3.46: Self-rating of own risk of becoming infected with HIV among respondents aged 15 years and older, South Africa 2005

Ranking	Response category	n	%
1	I will not get infected	6021	32.7
2	I probably won't get infected	5179	33.2
3	I am probably going to get infected	4676	31.8
4	I am definitely going to get infected	247	2.2

Table 3.47 shows that 29.8% of males believed they would get infected, in comparison to 37.7% of females. The difference was found to be significant ($p < 0.001$). In terms of race, higher proportions of Africans and coloureds felt they were at risk. Significantly fewer older participants aged 50 and older (24.7%) and youth aged 15–24 years (28.8%) indicated that they felt vulnerable to HIV infection when compared to the 25–49 year age group. With regard to provinces, the majority of respondents in the Free State (45%) and nearly half of those from KwaZulu-Natal (44%) indicated that they were at probable risk while about three-quarters of residents of the Western Cape (76.3%), Mpumalanga Province (71.5%) and the Northern Cape Province (70.4%) believed that HIV would not infect them. Nearly half of the respondents in urban informal locality types (47.1%) believed that they were at risk of infection while the majority of respondents in urban formal locality types (70.2%) believed they would not to get infected.

Table 3.47: Risk of getting infected with HIV among respondents aged 15 years and older by background characteristics, South Africa 2005

Characteristics	n	Definitely not get infected %	Probably not get infected %	Possibly get infected %	Probably / definitely get infected %`
Sex					
Males	6 200	34.3	35.9	27.6	2.2
Females	9 923	31.3	31.0	35.4	2.3
Race					
African	9 522	28.2	33.8	35.4	2.6
White	1 885	51.6	33.1	14.2	1.2
Coloured	2 949	42.0	29.5	27.7	0.8
Indian	1 735	54.8	30.8	14.2	0.3
Age (years)					
15–24	5 605	33.1	38.1	26.2	2.6
25–49	6 766	25.5	32.8	39.2	2.4
50 and above	3 752	48.2	27.1	23.4	1.3
Province					
WC	1 974	38.5	37.8	22.2	1.5
EC	2 579	38.6	30.6	30.0	0.8
NC	994	39.8	30.6	29.0	0.5
FS	1 012	24.5	29.4	45.2	0.9
KZN	3 231	27.2	28.3	37.7	6.8
NW	1 122	18.7	46.7	33.0	1.7
GP	2 558	36.8	32.2	29.8	1.3
MP	1 174	43.4	28.1	28.0	0.5
LP	1 479	29.9	39.1	30.3	0.7
Locality type					
Urban formal	9 313	36.3	34.0	28.2	1.4
Urban informal	1 706	23.5	29.4	43.7	3.4
Rural informal	3 683	29.6	33.5	33.5	3.4
Rural formal	1 421	33.3	31.3	34.7	0.7

When respondents were asked to indicate the reasons why they believe that they will get infected with HIV, main perceptions of risk included an accident or cuts, blood transfusions, lack of trust of their partners and inconsistent condom use (see Table 3.48).

Table 3.48: Reasons respondents aged 15 years and older believed they would get infected with HIV (n = 4 673), South Africa 2005

Reasons	n	%
Had accident or cuts	2 116	45.3
Blood transfusion	1 353	29.0
Don't trust partners	1118	23.9
Don't use condoms	935	20.0
Multiple partners	358	7.7
Others	698	14.9

When asked what the reasons were for those who believed that they would not get infected, prominent responses included being faithful to their partner or trusting their partner, abstaining from sex, always using condoms, and not being sexually active (see Table 3.49).

Table 3.49: Reasons respondents aged 15 years and older believed they would not get infected (n = 11 100), South Africa 2005

Reasons	n	%
Faithful to one partner or trust my partner	5 208	46.4
Now abstaining from sex	2 630	22.6
Always use condoms	1 676	19.0
Have never had sex before	1 849	14.3
Do not have sex with prostitutes/sex workers	454	5.2
Do not share used needles or body piercing instruments	563	5.1
Know that both my partner and I have tested negative for HIV/AIDS	229	1.9
Other*	1 066	9.7

Note: * Includes 'God protects me', 'my ancestors protect me', 'HIV does not occur in my community', 'it is an urban disease', 'it is a white disease', 'it is a black disease', 'it is a rural disease', 'it is a woman's disease' and 'other' unspecified.

Risk perception and HIV testing history

Another important indication of how seriously people take HIV/AIDS is their willingness to be tested for HIV. As shown in Table 3.50, significantly more participants who perceived themselves to be at high risk of HIV infection (34.1%) indicated that they had been for an HIV test than those who perceived themselves to be at low risk (28.6%) ($p < 0.001$).

Table 3.50: Risk perception and HIV testing history (ever had an HIV test) among respondents aged 15 years and older, South Africa 2005

Risk perception	n	Yes %	No %	No response %
Low risk	11 184	28.6	71.2	0.2
High risk	4 918	34.1	65.9	0.1
Total	16 102	30.5	69.3	0.2

HIV prevalence and self-perceived risk

Table 3.51 shows self-perceived risk of becoming infected with HIV in relation to HIV status. Participants who perceived themselves to be at high risk of being infected had a much higher HIV prevalence (20.8%) in comparison to the perceived low-risk group (10.1%). Proportionately more females (12.8%) than males (7.5%) who perceived themselves to be at low risk of being infected by HIV were found to be actually HIV positive. It is a major source of concern that such a high HIV prevalence rate is found within the group who perceive themselves to be at low risk.

Table 3.51: Self-perceived risk of HIV among respondents aged 15 years and older by sex and HIV status, South Africa 2005

Sex	Low risk			High risk		
	n	HIV+ %	95% CI	n	HIV+ %	95% CI
Total	8 156	10.1	9.0–11.4	3 694	20.8	18.8–23.1
Male	3 220	7.5	6.0–9.3	1 223	17.4	14.2–21.0
Female	4 936	12.8	11.1–14.7	2 471	23.1	20.4–26.1

Discussion

The main finding is that about two-thirds (66%) of the adult and youth participants in the study indicated that they will not get infected with HIV. This finding is consistent with that reported in the RHRU's study and the 2002 survey. In the Health Belief Model, age is a mediating factor that influences a person's likelihood to take action to change his or her lifestyle. In this study, the older participants (50 years and above) felt less vulnerable to HIV than younger participants. The group that felt most vulnerable to HIV infection were those aged between 25–49 years. This is consistent with prevalence in this age group. The findings indicated that more participants who perceive themselves to be at high risk of HIV infection had been for an HIV test. Those who engage in safer sex practices or abstain from sex completely are, strictly speaking, correct to perceive that they are not at risk.

The majority of Africans indicated that they were more vulnerable to HIV infection, a perception that is related to high prevalence in this group. Consistent with the very low prevalence rates found amongst whites and Indians, these groups had the lowest perception of being at risk to HIV infection.

The two provinces with the highest percentage of respondents who perceived themselves as at risk to HIV infection were the Free State followed by KwaZulu-Natal, both provinces with the highest burdens of HIV infection in the country. Most respondents in urban informal areas also indicated that they felt more vulnerable with regards to HIV infection, while those in urban formal areas believed that they would not get infected. These differences in perceptions are again supported by the differences in HIV prevalence rates that were found in terms of locality type in the present study. It is of concern that respondents from Mpumalanga, which has one of the highest HIV prevalence rates in the country similar to the Free State and KwaZulu-Natal provinces, came second lowest in terms of perceived risk of HIV infection. Clearly, there is a need to highlight this discrepancy to the people of Mpumalanga in order for them to correctly gauge their level of risk of HIV infection (as high as in both KwaZulu-Natal and the Free State provinces). Although the Western Cape has the lowest prevalence rate of HIV infection, the HIV epidemic is generalised among Africans in the province, especially in informal settlements.

The reasons advanced for both high and low levels of perceptions held about perceived susceptibility to HIV infection generally show that the South African public has a good understanding about the transmission dynamics of HIV infection. If we are not to create confusion about the effectiveness of safer sex practices on the one hand, and that everyone in a generalised epidemic is at risk of HIV infection, advocacy around the issue needs to be dealt with very carefully.

3.4.4 Knowledge and use of voluntary counselling and testing (VCT)

VCT is important as an entry strategy for primarily both prevention and access to treatment, care and support services (see Sethosa & Petzer 2005; Solomon et al. 2004; Glick 2005).

Knowledge about VCT services

Most males (78.6%) and females (79.0%) were aware of a place nearby where they could get an HIV test (Table 3.52). Persons aged 50 years and over were less aware, as were people living in rural formal areas.

Table 3.52: Awareness of VCT services nearby among respondents aged 15 years and older by background characteristics, South Africa 2005

Variable	n	%
Sex		
Male	6 175	78.6
Female	9 898	79.0
Age group		
15–24	5 593	82.0
25–49	6 745	84.1
50+	3 735	61.1

Variable	n	%
Locality type		
Urban formal	9 287	84.1
Urban informal	1 696	77.9
Rural informal	3 677	74.1
Rural formal	1 413	67.7

HIV testing and HIV status

Of the 11 838 respondents 15 years and older who were tested for HIV in this survey, 3 586 (30.3%) said they had previously been tested for HIV. As shown in Table 3.53, respondents that had a HIV test prior to the survey had a higher HIV prevalence (16.2%) than those that had never had an HIV test previously (12.8%) and this difference in HIV prevalence was statistically significant (p = 0.002).

Table 3.53: HIV prevalence among respondents aged 15 years and older by 'ever had an HIV test', South Africa 2005

Previously had an HIV test	n	HIV+ %	95%CI
Yes	3 586	16.3	14.2–18.4
No	8 252	12.8	11.5–14.2

Of the 3 586 respondents that reported that they a HIV test prior to the survey, 3 211 (89.5%) were aware of their most recent HIV test result.

Amongst those aged 15–24, HIV-positive respondents were more likely to have been tested than those who were negative (33.8% vs. 18.3% respectively), and this was also the case amongst those 50 years and older (35.1% vs. 18.5% respectively; see Table 3.54). Females (30.9%) were more likely to have been tested than males (26.4%), but this difference is not significant. Married respondents (39.1%) were also more likely to have been tested than their unmarried counterparts (25.5%). Finally, respondents living in urban formal locality types (40.4%) were more likely to be tested, whilst those living in rural informal locality types were least likely to be tested (19.3%).

Table 3.54: HIV test history among respondents 15 years and older (n = 11 838), South Africa 2005

Variable	Previously tested for HIV*	HIV status found in this study	
	%	HIV+ %	HIV- %
Age group			
15–24	20.8	33.8	18.3
25–49	43.4	37.6	44.8
50+	17.7	35.1	18.5

Variable	Previously tested for HIV*	HIV status found in this study	
	%	HIV+ %	HIV- %
Sex			
Male	26.4	33.4	27.4
Female	30.9	38.2	32.6
Marital status			
Married	39.1	40.0	39.2
Unmarried	25.5	35.3	24.3
Locality type			
Urban formal	40.4	44.9	39.4
Urban informal	29.2	38.5	28.6
Rural informal	19.3	30.0	19.6
Rural formal	21.0	22.7	19.3

Recency of HIV test

Most respondents who had an HIV test before had been tested in the past two years. Table 3.55 shows that nearly half (49.4%) of all 15–24 year-olds who were tested had done so in the past year. The overwhelming majority of those tested (91%) were informed of the results of their tests.

Table 3.55: Recency of HIV test by age group, South Africa 2005

Age group	All			HIV+		
	Less than a year ago	1–2 years ago	More than 2 years ago	Less than 1 year ago	1–2 years ago	More than 2 years ago
	%	%	%	%	%	%
15–24	49.4	38.0	12.6	42.4	45.7	11.9
25–49	36.6	32.7	30.7	38.9	29.5	31.5
50+	32.5	29.4	38.1	14.3	29.5	31.5

VCT services and levels of satisfaction

The large majority (79.1%) of respondents aged 15–24 and a smaller majority (56.9%) of those aged 25–49 years indicated that they had been tested in the public sector. However only 13.9% of whites and 27.7% of Indians had been tested in the public sector. Those tested more recently were more likely to have been tested in the public sector (see Table 3.56).

Satisfaction with the VCT services provided was high. A quarter (25.1%) of respondents were very satisfied, 70.6% were satisfied, and only 4.3% were either neutral, unsatisfied or very unsatisfied. Of respondents who were ever tested in a government clinic or hospital,

25.6% indicated that they were very satisfied with the service, whilst a further 69.8% were satisfied. Only 4.6% were neutral or unsatisfied.

Table 3.56: Location of HIV testing among respondents aged 15 years and older by age group, race, and recency of test, South Africa 2005

Variable	n	Public hospital, clinic or doctor %	Private hospital, clinic or doctor %	Other %
Age group				
15–24	1 156	79.1	15.5	5.5
25–49	3 033	56.9	37.9	5.1
50+	718	47.6	44.7	7.7
Race				
African	2 439	76.0	20.1	3.9
White	879	13.9	75.0	11.1
Coloured	970	55.6	37.7	6.7
Indian	597	27.7	69.5	2.7
Test history				
Tested for HIV less than 2 years ago	3 454	75.3	19.5	5.2
Tested for HIV more than 2 years ago	1 360	64.8	32.1	3.1

Reasons for undergoing an HIV test

Reasons for undergoing testing for HIV varied. Table 3.57 shows that most respondents aged 15–24 years were tested either because they wanted to know their status (42.7%), or because they were pregnant (34.1%). Applying for an insurance policy or loan was an important reason for older respondents, and this was also an important reason for the majority of whites (59.5%) and Indians (59.2%).

Table 3.57: Reasons for HIV testing among respondents aged 15 years and older by backgound characteristics, South Africa 2005

Variable	n	I wanted to know my HIV status %	I applied for an insurance policy or loan %	I was feeling sick %	I was pregnant %	Other %
Age group						
15–24	1 158	42.7	5.1	6.5	34.1	11.5
25–49	3 038	36.9	22.8	8.5	20.9	10.9
50+	711	31.7	28.3	19.8	0.7	19.5
Race						
African	2 449	46.2	5.5	11.9	25.8	10.7
White	880	14.1	59.5	4.1	5.5	16.7
Coloured	970	33.1	25.6	5.9	22.9	12.5
Indian	596	12.8.	59.2	5.2	9.7	13.2
Locality type						
Urban formal	3 470	36.2	28.4	8.4	14.2	12.9
Urban informal	485	48.6	1.6	12.8	27.8	9.2
Rural informal	655	37.6	4.2	11.7	36.4	10.1
Rural formal	297	35.0	14.0	9.2	26.7	15.1

Reasons for not testing for HIV

Over two-thirds of respondents (69.7%) had not had an HIV test. Primary reasons for not being tested were related to not believing that they were HIV positive, or that they were not at risk of HIV. Other important reasons included trusting one's partner, being afraid of finding out one's status, or not being ready to have a test (Table 3.58). Very few respondents did not know where to go for an HIV test, and less than 1% in all categories were concerned about lack of confidentiality, stigma, job loss or standard of service.

Roughly a quarter of youth aged 15–24 (24.1%), and adults 50 years and older (25.5%) did not get tested because they felt they did not have HIV. A similar pattern was found in relation to believing they were not at risk of HIV – for youth aged 15–24, just under a quarter (24.4%) felt they were not at risk, as did nearly a third (32.2%) of those 50 years and older.

Table 3.58 also shows that whites (73.8%) were most likely to believe that they did not have HIV, as were respondents living in rural informal locality types (25.0%). Nearly one-third of Indians (32.6%) were most likely to believe that they were not at risk of HIV, and were also more likely than other race groups to trust their partners.

Table 3.58: Reasons for not testing for HIV among respondents aged 15 years and older by background characteristics, South Africa 2005

Variable	I don't think I have HIV %	I am not at risk for HIV %	I trust my partner %	I am afraid to find out %	I'm not ready %	I haven't got around to it %	I don't know where to get tested %	I am concerned about confidentiality %	I am concerned about stigma %	I am concerned about losing my job %	I am concerned about the standard of service %	Other %
Age group												
15–24	24.1	24.4	6.2	7.0	15.8	11.9	3.5	0.5	0.6	0.0	0.2	5.8
25–49	17.2	14.1	14.0	11.0	17.6	12.6	5.1	0.8	0.6	0.2	0.2	6.7
50+	25.5	32.2	12.3	2.0	6.0	8.6	5.6	0.2	0.1	0.1	0.1	7.3
Locality type												
Urban formal	20.5	23.7	12.7	6.3	13.1	11.8	3.4	0.7	0.6	0.1	0.1	7.0
Urban informal	16.9	15.1	10.0	12.8	19.1	13.1	5.3	0.6	0.8	0.3	0.4	5.5
Rural informal	25.0	23.8	8.9	8.1	14.5	9.1	4.4	0.4	0.4	0.1	0.1	5.2
Rural formal	17.1	15.4	11.1	2.9	11.9	17.9	11.2	0.2	0.1	0.1	0.2	12.0
Race												
African	21.3	20.5	9.7	8.5	16.0	11.2	5.0	0.5	0.6	0.1	0.2	6.5
White	73.8	13.0	5.6	0.2	1.5	2.4	0.4	0.0	0.0	0.1	0.1	2.7
Coloured	25.2	24.2	15.7	2.5	6.5	19.4	0.0	0.9	0.2	0.0	0.0	5.3
Indian	26.1	32.6	19.4	1.1	5.0	7.2	0.6	0.4	0.1	0.0	0.3	7.2

Discussion

In relation to HIV prevention, it has been argued that VCT may play a primary role in limiting HIV infection through encouraging HIV-negative individuals to maintain their negative status, whilst in the case of HIV-positive individuals, encouraging the adoption of safer sex practices. A number of reviews of the literature have been conducted to explore these assumptions (see Solomon et al 2004; Glick 2005) and findings note that:

- VCT has potential to achieve secondary prevention goals, but is more effective for persons who test HIV positive than for those who test HIV negative;
- Adopting prevention strategies amongst those who test HIV positive is related to being able to disclose one's status, but disclosure is not always possible (see Sethosa & Peltzer 2005);
- VCT needs to be supplemented with post-VCT activities to enhance the effectiveness of HIV prevention;

VCT is thus a complex intervention that does not uniformly lead to prevention amongst people testing negative, nor does it necessarily or uniformly direct HIV-positive persons towards treatment, care and support interventions.

Although overall knowledge of where to access HIV testing services was found to be high in this study, both rural respondents and the elderly have lower levels of utilisation of VCT as well as lower levels of perceived access to VCT services. There has however been a notable increase in the uptake of HIV testing over time – over two-thirds of those respondents who have been tested were tested in the past two years.

Amongst those respondents who had previously been tested for HIV, and for whom an HIV test result was available in this survey, about one in six (16.3%) were found to be HIV positive. For those who had not been tested, about one in eight (12.8%) are HIV positive. There is thus a large number of people who are HIV positive, but did not know their status.

VCT is currently widely available in South Africa through public sector clinics, hospitals, NGOs, and private health services (including medical practitioners). The introduction of rapid HIV tests has improved the practicality of conducting VCT, expanding VCT services and improving uptake. Protocols and policies are well established, but quality of service may vary – for example, persons testing HIV positive require long-term counselling and support, and such services are not uniformly available. Efficient counselling services are also interdependent with adequate venues and support to counsellors who are themselves vulnerable to burnout. This study found that HIV testing was most likely to be conducted in the public sector, and also that the overall perceptions of service satisfaction within the immediate testing environment were extremely high. It was also found that concerns about service quality are a disincentive to testing by respondents who had not had an HIV test.

Although the findings from this study are generally similar to those from the 2002 survey, it is interesting to note the significant increase in testing among respondents aged 15 years and older from a national average of 19.8% in 2002 to 30.5% in this study. Similar improvements are also evident among those who were HIV positive (36.5%) than among those who were HIV negative as was also the case in the 2002 Survey (23.1% versus 18.2% respectively)

Willingness of individuals to undergo VCT is influenced by a range of factors including motivation to know one's status, although in a number of instances VCT is a product of factors related to health and life insurance, pregnancy or illness. Whilst a considerable proportion of respondents in this study found out their HIV status because they wanted to know it, or were feeling ill, or were pregnant (in the case of females), HIV testing also occurs as a product of external factors such as applying for an insurance policy or loan.

3.5 Knowledge and attitudes concerning HIV-related issues

3.5.1 Knowledge about HIV/AIDS

Knowledge, perception and attitudes of HIV/AIDS are important precursors for behavioural responses to the disease. While surveys are useful towards tracking general levels of knowledge in key areas, it is recognised that the knowledge necessary to address HIV/AIDS is complex, and basic knowledge is not necessarily sufficient towards addressing response.

In the present survey, knowledge is measured explicitly – for example, through analysing responses to particular awareness and knowledge questions. It is to some extent measured implicitly when analysing behavioural responses for risk reduction or addressing the possibility of one's own infection – for example, through condom use, or through uptake of VCT. In other words, we can assume that taking steps to prevent HIV through using condoms or accessing VCT are related to knowing why these behaviours are important in relation to HIV. Overall, implicit knowledge of HIV/AIDS as measured through response to these areas is high (see the behavioural and VCT sections of this report).

With regard to basic knowledge questions, there are varying proportions of respondents who are unclear about key knowledge areas. Nearly one-fifth (18.7%) of young people aged 12–14 did not understand sexual transmission, whilst nearly a third (31.9%) said 'no' or 'don't know' when asked if HIV could be transmitted from mother to child. 11.2% of respondents aged 50 years and over showed a similar lack of knowledge in relation to sexual transmission, and nearly one-quarter (23.5%) said 'no' or 'don't know' when asked about possible HIV infection from mother to child.

There is also a lack of clarity about whether AIDS is curable, as well as a lack of knowledge about whether HIV causes AIDS. With regard to key knowledge of prevention, just over one-quarter of respondents over the age of 50 (28.6%) disagreed or said they were unsure about this relationship, as did over 10% of respondents aged 15–49, and nearly a fifth (18.1%) of 12–14 year-olds.

Around a third of respondents in all age categories disagreed or were unsure when asked if the risk of HIV infection could be reduced by having fewer sexual partners (see Table 3.59).

Table 3.59: Knowledge of HIV/AIDS by age group, South Africa 2005

Knowledge area	Age group 12–14 (n = 1 613) %	15–24 (n = 5 596) %	25–49 (n = 6 745) %	50+ (n = 3 740) %
Say no or don't know when asked if it is possible to transmit HIV through unprotected vaginal sex	18.7	6.1	4.3	11.2
Say no or don't know that it is possible to transmit HIV from a mother to her unborn child	31.9	18.4	13.8	23.5
Say no or don't know that it is not possible to transmit HIV by touching someone who has HIV/AIDS	93.0	95.6	94.7	93.1
Agree or unsure there is cure for AIDS	24.3	17.5	21.1	28.6
Disagree or are unsure that HIV causes AIDS	20.8	9.0	12.6	25.7
Disagree or are unsure HIV infection is prevented by using condoms	18.1	11.0	10.8	21.3
Disagree or are unsure can reduce the risk of HIV by having fewer sexual partners	43.4	32.8	32.6	35.0

3.5.2 Knowledge about anti-retroviral (ARV) therapy

The recent roll-out of ARVs make it important to assess how much the public knows and understands about the drugs. This information will be useful to inform advocacy campaigns around the issue in order for the benefits of ARVs to be realised by the people living with HIV/AIDS (PLWHA) who actually need them.

Table 3.60 shows that the majority of the respondents (60%) surveyed had heard about ARV therapy. Awareness was highest among respondents aged 25 to 49 years (67.6%). Whites (83.6%) and Indians (79.8%) had a higher awareness than coloureds (56.8%) and Africans (58.2%). Respondents surveyed in Gauteng (75.5%) and KwaZulu-Natal (74.8%) had higher awareness than in the other provinces. Urban formal (71.5%) residents were more aware about ARVs than respondents in the other locality types (see Table 3.60).

Table 3.60: Awareness of ARV therapy among respondents aged 15 and older by background characteristics, South Africa 2005

Characteristics	n	Yes %	No %
Sex			
Male	6 210	62.5	37.5
Female	9 936	60.6	39.4
Age group			
24 and less	5 615	60.4	39.6
25 to 49 years	6 781	67.6	32.4
50 and more	3 750	49.2	50.8
Race			
African	9 539	58.2	41.8
White	1 889	83.6	16.4
Coloured	2 951	56.8	43.2
Indian	1 735	79.8	20.2
Province			
WC	1 983	65.4	34.6
EC	2 588	39.5	60.5
NC	991	39.4	60.6
FS	1 010	54.6	45.4
KZN	3 234	74.8	25.2
NW	1 128	57.0	43.0
GP	2 557	75.5	24.5
MP	1 176	60.1	39.9
LP	1 479	49.7	50.3
Locality type			
Urban formal	9 326	71.5	28.5
Urban informal	1 709	62.0	38.0
Rural informal	3 690	51.6	48.4
Rural formal	1 421	42.9	57.1

Respondents who have ever heard about ARVs were asked what would encourage them to seek therapy if they were HIV positive. Table 3.61 shows that extending one's life (84.6%) and living healthier (54.2%) were the main reasons cited.

Table 3.61: Main reasons for seeking ARV treatment among respondents aged 15 years and older (n = 9 644), South Africa 2005

Reasons	n	%
Extend life or live longer	8 095	84.6
Live healthier	5 382	54.2
Public health services make ARV therapy freely and easily accessible	1 460	16.2
Availability of HIV/AIDS support groups	494	4.9
Assured confidentiality about HIV/AIDS	416	4.1
Medical aid will provide antiretroviral	254	2.3
I will not be discriminated against	166	1.4
Assurance of not losing my job	133	1.1

Table 3.62 shows that over half (52.8%) of the respondents indicated that nothing would discourage them from seeking ARV treatment. A small proportion of respondents (12.4%) would not seek ARV treatment due to the side-effects and some thought it too expensive (9.8%).

Table 3.62: Main reasons for not seeking ARV treatment among respondents aged 15 years and older (n = 8 571), South Africa 2005

Reasons	n	%
Nothing	4 475	52.8
Bad side effects	1 122	12.4
It is too costly	902	9.8
I am afraid of being discriminated against	813	9.3
People on ARVs die	602	8.5
Lack of confidentiality or privacy	658	6.9
Do not have HIV/AIDS or not HIV+	644	6.6
Do not want to know the results	256	3.3
Do not believe in HIV/AIDS	166	1.9

Although most respondents in the different age groups have correct knowledge of ARVs, some areas of knowledge are inadequate. Knowledge deficit is reflected in two ways – through incorrect responses and through 'don't know' responses. The levels of 'don't know' responses reflect uncertainty whereas incorrect responses mean a distinctly incorrect view ('no' for items 1, 2 and 4; 'yes' for items 3, 5 and 6). Generally the younger age group (15–24 and less) had the highest levels of incorrect responses, followed by those 50 and above. These two age categories also tended to have higher levels of uncertainty (don't know) than did 25–49 year olds. The area with the most incorrect responses was 'HIV-infected person can transmit HIV, when taking ARVs'. Only 60% of the entire sample responded correctly to the item. The majority of respondents (83.3%)

correctly stated that ARVs do not cure HIV/AIDS. Over a fifth (21.3%) of the respondents were not sure whether traditional medicines could cure AIDS and 25.5% did not know whether it could reduce the quantity of HIV in an infected person (see Table 3.63).

Table 3.63: Knowledge of ARVs among respondents aged 15 years and older, South Africa 2005

Item	24 and less (n = 3 310)			25–49 (n = 4 542)			50 and above (n = 1 850)			Overall (n = 9 702)		
	yes %	no %	dk* %	yes %	no %	dk %	yes %	no %	dk %	yes %	no %	dk %
HIV-infected person can transmit HIV, when taking ARVs	61.1	17.3	21.6	61.3	18.3	20.4	53.9	16.1	30.0	60.0	17.6	22.4
Infected person live longer	89.7	3.9	6.3	90.8	3.2	5.9	85.9	3.0	11.1	89.7	3.4	6.9
ARVs can permanently cure HIV/AIDS	3.8	85.8	10.4	5.3	84.0	10.7	4.5	70.5	20.5	4.7	83.0	12.2
ARVs reduce the quantity of the HI virus	81.7	7.6	10.7	82.6	6.9	10.5	76.1	6.2	17.7	81.2	7.0	11.8
Traditional/ complementary medicines reduce the quantity of the HI virus	14.2	62.0	23.8	16.4	58.7	24.9	14.2	55.7	30.2	15.4	59.2	25.5
AIDS can be cured with traditional medicines	3.8	76.4	19.8	6.0	73.0	21.0	5.9	69.3	24.8	5.3	73.4	21.3

Note: *dk = do not know

3.5.3 Knowledge of HIV vaccines

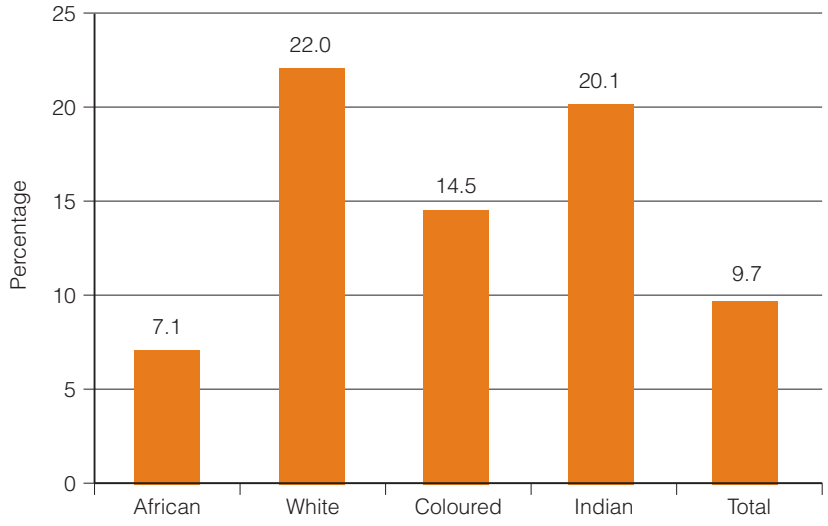
It has been suggested that behavioural prevention interventions have not had the expected impact of reducing HIV infections, especially in countries where HIV prevalence is high. It is therefore believed that developing an efficient HIV vaccine may be the only hope of fighting HIV/AIDS worldwide. Whilst the development of a viable vaccine is decades away, a focus on knowledge of vaccines remains important (SAHIVAC 2004).

To date, several small-scale studies using non-probability samples have been undertaken in South Africa and have revealed relatively poor levels of vaccine awareness (SAHIVAC 2004). The current study is the first national-level exploration of the issue. The findings are useful to informing community-preparedness interventions targeted at improving public awareness and participation in HIV vaccine trials that are being implemented in selected provinces in South Africa.

In the present study, 9.7% (n = 1 732) of respondents were found to have ever heard of HIV vaccines and the following analysis is confined to this group. Among those who had heard about HIV vaccines, the highest proportion was in the 25–49 age group (11.9%)

and lowest among those aged 15–24 (6.9%). Figure 3.18 shows that a higher proportion of whites and Indians had heard about HIV vaccines than Africans and coloureds. Participants who were aware were more likely to be from urban formal locality types (14.5%) in comparison to the lowest awareness in rural informal locality types (4.3%). As regards provinces, the Western Cape (16.9%), followed by Gauteng (15.3%) and Free State (13.6%) had the highest proportions of participants who had heard about HIV vaccines, while Eastern Cape (4.3%) and Mpumalanga (3.5%) had the lowest proportions.

Figure 3.18: Awareness among respondents aged 15 years and older of HIV prevention vaccines that are being developed or tested in South Africa by race, South Africa 2005



When asked to rate their own knowledge levels of HIV vaccines, nearly (46.4%) of the participants rated their knowledge as good and 4.9% as very good while the remainder (48.6%) indicated that their knowledge was either poor (30.0%) or very poor (18.6%).

When participants were asked to indicate how long they thought it would before a vaccine would be available, nearly one-third of participants (32%) indicated that a vaccine might be available in between five to ten years, followed by one-fifth (21%) who thought that it would take less than five years, one-tenth (10%) who thought it would take 11 years or longer, and 4% who believed that there would never be an HIV vaccine available. The remaining one-third (33%) indicated that they did not know.

When asked if they would use a HIV vaccine should it become available, the majority of participants (57%) were in favour of being vaccinated should a vaccine be tested and found to prevent HIV infection.

3.5.4 Attitudes towards people with HIV/AIDS

Stigma and discrimination against people living with HIV/AIDS have often been identified as primary barriers to effective HIV prevention, as well as to the provision of treatment, care and support.

Table 3.64 shows that the overwhelming majority of respondents indicated that they would be willing to care for a family member with AIDS. However, varying proportions

of respondents showed some degree of negative attitudes and perceptions in relation to PLWHA. Respondents indicated some hesitance about marrying a person with HIV/AIDS, with less than half (46.5%) indicating that they would consider doing so. Similarly, nearly half of the respondents (46.8%) said that they would have a problem having protected sex with a partner who has HIV/AIDS.

Table 3.64: Attitudes of respondents aged 15 years and older, South Africa 2005

Attitudinal item (n = 6 081)	Agree %	Unsure %	Disagree %
I would be willing to care for a family member with AIDS	90.7	2.9	6.3
HIV-positive children should not be kept separate from other children to prevent infection	79.8	5.7	14.5
It is not a waste of money to train or give a promotion to someone with HIV/AIDS	74.7	10.4	14.9
If I knew that a food seller had HIV, I would still buy food from them	71.1	5.4	23.4
I would not want to keep secret the HIV-positive status of a family member	61.9	7.6	30.5
It is not foolish to marry a person who is living with HIV/AIDS	46.5	17.6	36.0
I would not have a problem having protected sex with a partner who has HIV/AIDS	35.3	18.0	46.8

When provinces were compared, there was no province that was consistently high or low on all items but there were variations at provincial level (Table 3.65). For example, KwaZulu-Natal stood out as being below average on only one of the questions (marrying a person with HIV/AIDS), followed by the Free State and Mpumalanga with two. Western Cape, Limpopo and North West provinces scored five areas below average.

Table 3.65: Attitudes of respondents aged 15 years and older by province, South Africa 2005

Attitudinal item (n = 16 081)	WC %	EC %	NC %	FS %	KZN %	NW %	GP %	MP %	LP %
I would be willing to care for a family member with AIDS	89.7*	87.5*	90.5*	87.7*	94.8	90.4*	90.1*	91.2	91.5
HIV-positive children should not be kept separate from other children to prevent infection	72.2*	83.1	75.8*	81.9	84.1	75.5*	76.1*	78.3*	84.4
It is not a waste of money to train or give a promotion to someone with HIV/AIDS	78.7	70.5*	69.3*	80.1	76.1	72.0*	80.2	68.8*	67.9*
If I knew that a food seller had HIV, I would still buy food from them	69.8*	73.1	71.2	65.8*	73.1	64.1*	76.2	73.0	64.5*
I would not want to keep secret the HIV-positive status of a family member	57.8*	64.9	63.6	69.4	64.1	62.9	60.7*	65.3	52.8*
It is not foolish to marry a person who is living with HIV/AIDS	54.6	37.3*	50.8	62.5	45.3*	48.3	51.0	52.5	30.5*
I would not have a problem having protected sex with a partner who has HIV/AIDS	29.7*	25.8*	26.4*	35.7	47.2	34.3*	37.0	38.7	28.0*
Total number of questions below average	5	4	4	2	1	5	3	2	5

Note: * Indicates percentage that are lower than the average percentages for all provinces

Table 3.66 presents the results showing the percentage of population that agreed to attitude statements by locality type. Urban populations have more positive attitudes towards people with HIV/AIDS with no strong differences between urban formal and urban informal populations. However, rural formal locality types have lower levels of positive attitude than rural informal locality types, with the exceptions being in the areas of openness about a family member being HIV positive (3.4% lower) and perceptions of marriage to a person living with HIV/AIDS (6.2% lower). Rural informal locality types were lowest overall in these two areas, which represent the social vulnerability of the family and marriage risk as a result of HIV/AIDS.

Table 3.66: Attitudes of respondents aged 15 years and older by locality type, South Africa 2005

Attitudinal item (n = 16 081)	Urban formal %	Urban informal %	Rural informal %	Rural formal %
I would be willing to care for a family member with AIDS	90.7	91.4	91.2	88.1
HIV-positive children should not be kept separate from other children to prevent infection	77.8	82.1	83.5	72.8
It is not a waste of money to train or give a promotion to someone with HIV/AIDS	79.7	78.3	68.8	66.3
If I knew that a food seller had HIV, I would still buy food from them	74.9	72.0	68.4	58.8
I would not want to keep secret the HIV-positive status of a family member	61.8	64.3	61.0	64.4
It is not foolish to marry a person who is living with HIV/AIDS	52.4	49.4	38.2	44.4
I would not have a problem having protected sex with a partner who has HIV/AIDS	36.6	34.6	34.6	30.6

Table 3.67 shows the percentage of the population agreeing to attitude statements by age. The population aged 50 years or older was lowest on all attitude questions. The 15–24 and 25–49 year age groups have similar scores on most items. The questions where there was highest variation were the safety of purchasing food from an HIV-positive seller (14.5%), the risk of value of training or promoting an HIV positive person and (13.6%) and marrying someone with HIV/AIDS (14.3%).

Table 3.67: Attitudes of respondents aged 15 years and older by age group, South Africa 2005

	Age group			
Attitudinal item (n = 16081)	15–24 %	25–49 %	50+ %	All %
I would be willing to care for a family member with AIDS	91.0	92.6	86.0	90.7
HIV-positive children should not be kept separate from other children to prevent infection	83.9	80.0	73.1	79.8
It is not a waste of money to train or give a promotion to someone with HIV/AIDS	78.0	76.9	64.6	74.7
If I knew that food seller had HIV, I would still buy food from them	74.5	73.5	60.9	71.1
I would not want to keep secret the HIV- positive status of a family member	61.0	62.9	61.2	61.9

Attitudinal item (n = 16081)	Age group 15–24 %	25–49 %	50+ %	All %
It is not foolish to marry a person who is living with HIV/AIDS	49.1	49.7	35.4	46.5
I would not have a problem having protected sex with a partner who has HIV/AIDS	34.9	37.7	30.2	35.3

Discussion

HIV/AIDS knowledge: Although explicit knowledge and behavioural responses in key areas is relatively high, there are still inadequate levels of knowledge of some key aspects of HIV/AIDS. Confusion about whether HIV causes AIDS, whether there is a cure for AIDS, and knowledge of ARVs have obvious negative impacts when addressing an advanced epidemic where a high proportion of people are becoming ill. Similarly, although prevention education has had a longer trajectory in South Africa, it is surprising that there is still such poor knowledge about partner reduction as an effective HIV-prevention strategy. This suggests that insufficient attention has been given to this area in communication campaigns.
Knowledge about vaccines: This component of the study's findings suggests that only a small proportion of South Africans have been exposed to information about HIV vaccine research and development. The figure of 9.7% is less than the targeted figure of 25% of South Africans having information pertaining to HIV vaccine development set by SAHIVAC (SAHIVAC 2004). The finding in this study does not support earlier findings including the latest survey based on an evaluation of SAHIVAC that have suggested that on average about 42% of South Africans have heard about the HIV vaccine (SAHIVAC 2004).

The analysis of demographic characteristics shows urban formal knowledge is highest, and analysis by race shows that Africans were the least informed of all the race groups surveyed. Previous surveys have favoured urban areas and this might explain why the previous findings have suggested that there is an increased coverage of information on vaccine (SAHIVAC 2004) than was found to be the case in the present study. Sampling has also been an issue in many of the previous studies – some of the study samples having either very educated participants or participants from civil groups that are associated with HIV/AIDS services or university students or have been selected in and around trial sites (Centre for the Study of AIDS 2002).

It was interesting to see that Western Cape and Gauteng had the highest proportions of participants who had heard of an HIV vaccine being researched or developed in South Africa. Both these provinces have had exposure to vaccine workshops and have trial sites situated in them. However, KwaZulu-Natal had only 8.8% of participants who knew about HIV vaccines although there is a research site in Durban and education workshops are being conducted by vaccine educators in the province (Centre for the Study of AIDS 2003).

It was encouraging to observe that a majority of the 9.7% of the participants in this study who are aware of HIV vaccines were optimistic about them. Regarding the time it would take to develop a vaccine, the majority of respondents believed that it would be sooner

(i.e., between five to ten years) than those reported in the SAHIVAC study. There is a lack of clarity within the vaccine field and it is still not possible to determine when an effective vaccine will be developed (IAVI 2005).

On the question of vaccination and uptake of a vaccine should it become available, the large majority (74%) of those who knew about vaccines were prepared to be vaccinated.

Given low awareness of vaccine development and testing, the main challenge remains to promote HIV vaccine literacy amongst South Africans. The present findings provide a baseline from which to measure coverage of vaccine awareness and related interventions in the years to come.

HIV/AIDS attitudes: Attitudes are complex to measure through questionnaire-based approaches, given that many factors influence a particular attitudinal response. In 2002, an alternate set of questions was utilised, mainly focusing on knowledge-related attitudes. This produced generally positive findings in relation to attitude. The questions used in the present survey attempted to explore more deep-seated attitudes and values. However, it appears that an expanded set of questions may be necessary to fully understand attitudes towards people living with HIV/AIDS, given that a complex of factors and contextual considerations may underlie responses to each question.

The survey results show that respondents are by no means uniform in their attitudes and that having a positive attitude in one area does not necessarily imply having a positive attitude in another area. It is also apparent that the survey has measured different facets of attitude, showing large differences within sub-samples in different indices of attitude. This seems to support the idea that it is not particularly helpful to talk in terms of a global attitude set, but we should rather consider attitudes in relation to particular issues, and understand what the specific determinants are in each case. Higher levels of negative attitude were related to close contact to people living with HIV/AIDS.

In general, people are accustomed to being cautious about disease contagion, and this natural fear of infection is thus readily applied to HIV/AIDS. In a review of HIV/AIDS stigma in four countries, Ogden and Nyblade (2005) explored the root causes of individual perceptions of stigma and noted high levels of fear of HIV contagion through everyday contact. Whilst knowledge that HIV is transmitted mainly through intimate contact are high, fear of contagion may be linked to a lack of trust of scientific explanations of HIV transmission.

Shifts in attitudes towards people with HIV/AIDS are related to knowing people with HIV/AIDS, and the data shows a sensitivity towards caring for family members with HIV/AIDS. Whilst close contact between children with and without HIV/AIDS was perceived less negatively, the trend towards higher levels of negative attitudes occurred in relation to closer contact with people with HIV/AIDS. Attitudes towards intimate contact with, or marriage to people living with HIV/AIDS may relate to the practicality or personal consequences of such relationships, rather than fear of disease per se. Differences between urban and rural areas are potentially linked to lower levels of programme interventions in rural areas. Urban areas are relatively well exposed to all forms of media and there is a more concentrated development of services, leading to people recognising HIV/AIDS as a population-wide phenomenon. This possibly 'normalises' HIV/AIDS so that affected people are not perceived as exceptional or as 'other' and exclusionary beliefs and practices are less likely to take hold.

3.6 Communication

3.6.1 Introduction

HIV/AIDS knowledge and awareness is often represented as occurring mainly as a product of HIV/AIDS campaigns. Such campaigns typically focus on key knowledge areas and include informing diverse audiences about behaviours and practices necessary to prevent HIV infection, encouraging the uptake of services and providing information on other aspects of HIV/AIDS.

It must be stressed however, that campaigns are not the only sources of information about HIV/AIDS, nor the only stimulus to communication and behavioural response in relation to the disease. HIV/AIDS communication is broad-based in a society where the disease is advanced. It includes political and social communication emanating from sources such as political, religious, traditional and other leaders, and extends to HIV/AIDS information that occurs in the mass media beyond the sphere of formal campaign inputs. This includes news items about HIV/AIDS, but also increasingly, talk shows, dramas, feature articles, and entertainment programmes that include references to HIV/AIDS. Communication about the disease also occurs outside the framework of Western biomedical explanations of health and treatment. People are exposed to HIV/AIDS directly as a product of knowing others with the disease, experiencing the death of people close to them, knowing their HIV status, and other forms of direct exposure.

As a product of these diverse sources of information, HIV/AIDS communication may be divergent and even contradictory. In addition, formal HIV/AIDS campaigns have different emphases and may also produce conflicting information.

Most national-level communication campaigns utilise mass media such as television, radio, print and outdoor media with some also promoting interactive communication through activities such as workshops and events, clubs, and service provision. Communication is also typically supported by 'small' media products such as booklets, leaflets, posters and utility items.[1]

Evaluations of HIV/AIDS campaigns and programmes have largely been focused on particular interventions, with evaluations not sufficiently taking into account audience exposure to multiple interventions/campaigns, as well as not necessarily measuring HIV/AIDS information that is received from other sources.

Reducing the risk of HIV infection is interdependent with knowledge of the modes of HIV infection, behaviours and practices necessary for prevention, and a capacity to apply this knowledge within one's own relationships and context. HIV risk reduction extends to accessing appropriate services – for example, obtaining condoms, seeking treatment for STIs, seeking post-exposure prophylaxis (PEP) in the case of occupational exposure or rape, accessing VCT services to find out one's status, and taking specific steps if one is HIV positive and pregnant. These prevention measures can only be taken if such resources and services are easily available.

1 Utility items include clothing, stationery and other items that can be used to carry HIV/AIDS messages or slogans.

HIV-positive persons who know their status have particular needs including the need to know of available support services, issues to do with nutrition, treatment of opportunistic infections, and ARV treatment. At a broader societal level there is a need to promote understanding of HIV/AIDS-related rights, support services such as grants, and care and support for affected individuals, children and families.

There are limitations to the extent to which communication impacts and responses can be measured within the context of a cross-sectional HIV/AIDS survey such as this one. For example, whilst reach of a campaign can be measured, the actual impacts on knowledge emanating from a particular campaign cannot be measured independently, given that there is a great deal of overlap between campaigns, as well influence emanating from sources of information beyond campaigns. This survey therefore, primarily informs understanding of the exposure to, and perceived usefulness of, various national campaigns that aim to promote HIV/AIDS awareness, as well as understanding other aspects of the HIV/AIDS communication environment.

3.6.2 Exposure to mass media

Most South Africans access mass communication media a few days a week or more. Exposure to radio is highest, followed by television, newspapers and magazines. Internet access is low (see Table 3.68).

Although overall exposure to mass media is high, one in five people do not access any major form of mass media a few days a week or more. Radio is the primary mass medium in the country as a whole and is particularly important in rural areas. With regard to television in informal and rural areas, a little over half of the respondents have exposure to television a few days a week or more. Urban-rural distinctions are even more marked for exposure to print media and the Internet.

Table 3.68: Exposure to mass media a few days a week or more, South Africa 2005

Modality	n	Radio %	TV %	Newspaper %	Magazine %	Internet %
Age group						
12–14	1 613	76.2	69.7	21.0	19.6	3.0
15–24	4 055	81.8	69.6	33.7	32.2	4.9
25–49	5 050	81.3	67.7	37.8	31.4	7.5
50 and older	2 757	74.8	62.2	24.7	18.8	5.3
Locality type						
Urban formal	6 553	84.0	86.2	48.9	41.1	11.9
Urban informal	1 378	74.5	58.4	33.0	25.8	1.8
Rural informal	2 765	75.5	46.2	17.1	15.6	0.4
Rural formal	1 166	81.4	53.3	16.0	15.7	2.5

Note: * For respondents aged 15 years and older

3.6.3 Language

It is relevant to consider language when communicating HIV/AIDS information – and it is important to ensure that no language group is marginalised. Although there are 11 official languages in South Africa, there is some degree of concordancy between languages – for example, most Zulu speakers can understand Xhosa and vice versa. Table 3.69 reflects language groups clustered through relative concordancy. Nguni languages[2] are predominant, followed by Sotho languages,[3] Afrikaans and English. Xitsonga and Tshivenda are least spoken and are not concordant. The table reflects home language of respondents, although many South Africans speak more than one language.

Table 3.69: Home language frequencies among respondents aged 15 years and older, South Africa 2005

Language	Percentage
Nguni languages	43.5
Sotho languages	25.3
Afrikaans	14.0
English	9.2
Xitsonga	3.5
Tshivenda	2.5
Other	0.3

3.6.4 Contribution of media to understanding HIV/AIDS information

Respondents were asked to indicate which media they found useful for understanding HIV/AIDS. Table 3.70 shows the importance of radio and television for HIV/AIDS communication for all age groups, language groups and locality types. Radio remains most useful in relation to locality type. Although television was useful to around eight out of ten respondents in urban formal locality types (82.1%), it was considerably lower – two-thirds or less – for all other locality types.

Table 3.70: Media sources personally found useful for understanding HIV/AIDS among respondents by background characteristics, South Africa 2005

Variable	Radio %	Television %	Newspaper %	Leaflets/ booklets %	Magazines %	Posters %	Signs or billboards %
Age group							
12–14	72.0	68.5	36.8	49.2	39.8	57.8	45.6
15–24	81.0	74.0	57.3	60.6	56.5	69.9	60.7
25–49	81.1	70.2	56.3	54.4	50.1	64.2	56.1
50 and older	71.2	60.2	34.2	30.8	28.7	40.5	34.8

2 IsiZulu, IsiXhosa, Siswati, IsiNdebele
3 Sesotho, Sepedi, Setswana

Variable	Radio %	Television %	Newspaper %	Leaflets/ booklets %	Magazines %	Posters %	Signs or billboards %
Language*							
Afrikaans	70.1	80.3	59.5	60.3	59.3	62.9	55.1
English	68.4	80.6	74.4	66.5	71.2	65.8	60.6
Nguni languages	82.6	64.1	46.2	44.4	40.1	60.3	51.0
Sotho languages	80.7	69.2	49.3	53.2	44.7	60.8	54.5
Tshivenda & Xitsonga	83.2	63.6	50.8	49.0	47.9	55.2	44.5
Locality type*							
Urban formal	78.2	82.1	66.1	63.2	61.4	67.2	61.7
Urban informal	80.9	65.3	52.9	50.8	43.6	61.3	56.6
Rural informal	79.0	53.9	34.7	38.5	32.7	53.6	42.1
Rural formal	81.8	58.3	37.2	35.3	29.4	54.0	43.0

Note: * For respondents aged 15 years and older

3.6.5 Taking HIV/AIDS more seriously

Respondents were asked to indicate what has made them take HIV/AIDS more seriously. The responses were unprompted and it was possible to provide more than one answer. Television and radio have high prominence, but interpersonal communication, such as talking to friends and family members, knowing people who have died of AIDS, AIDS statistics and children orphaned by AIDS are also viewed as important (see Table 3.71). Billboards and signage were mentioned least out of the top 12 sources.

Table 3.71: Taking HIV/AIDS more seriously by age group, South Africa 2005

Source*	Age groups			
	12–14 % (n = 1 613)	15–24 % (n = 4 055)	25–49 % (n = 5 050)	50+ % (n = 2 757)
Radio programmes	51.1	51.8	46.9	44.5
Television programmes	54.8	50.8	45.6	40.6
Talking to friends	22.8	25.1	24.0	23.7
Posters	23.7	23.1	17.0	13.5
Knowing someone who has died of AIDS	9.5	19.5	24.7	23.3
AIDS statistics	12.9	19.2	22.2	20.9
Newspaper or magazine articles	16.1	22.2	20.3	13.9
Children orphaned by AIDS	11.6	15.2	17.8	18.2

Source*	Age groups			
	12–14 % (n = 1 613)	15–24 % (n = 4 055)	25–49 % (n = 5 050)	50+ % (n = 2 757)
Talking to family members	13.3	15.0	16.5	17.3
Leaflets or booklets	16.7	19.6	13.4	8.3
Signs on taxis or buses or trains	13.3	14.7	12.1	10.5
Signs or billboards	13.5	14.4	12.4	8.4
None				

Note: * Multiple responses were possible, and only the top 12 are presented

3.6.6 Awareness of HIV/AIDS campaigns and programmes

Tables 3.72 and 3.73 illustrate awareness of various national campaigns that include HIV/AIDS content. The programmes and campaigns listed here are not *directly comparable*. Differences can be summarised as follows:

- Some are confined to mainly single mediums – for example television series such as Gazlam and Tsha Tsha, whilst others use a range of mediums, such as Takalani Sesame, which is on television and radio, and Khomanani, Soul City, and loveLife, which include broadcast, print and outdoor media.
- Annual budgets range from around R12 million for television series such as Tsha Tsha to around R65 million for Khomanani, to around R200 million for loveLife.
- Some focus on only a few key HIV/AIDS topics, whilst others address a wide range of HIV/ADS topics as well as extending to topics not directly related to HIV/AIDS.
- Some interventions focus on narrow audiences – for example Takalani Sesame and Soul Buddyz are intended for children – whilst others have wider intended audiences (for example, Khomanani). Other than the child-specific programmes, all interventions include youth and/or young adults as a primary target group.
- Some place strong emphasis on campaign branding – for example, loveLife is described as a 'lifestyle brand' for young people, whereas others may have various branding orientations – for example, Khomanani also promotes the Choice condom brand name.
- Some campaigns have been in existence for five or more years – Soul City since the early 1990s and loveLife since 1999 – whilst the television programmes, Gazlam, Tsha Tsha and Takalani Sesame have been broadcast over the past three years, and the Khomanani campaign has been active since 2001.
- Campaigns and programmes, or parts thereof, are sometimes intermittent. For example, television series occur in episodic series over three- to six-month periods followed by a break, whilst advertising or focuses on particular themes by other interventions may inoccur intermittently.
- Campaigns are not only promoted through mass media – for example, both Soul City and loveLife include activities in schools, loveLife includes sports activities and activities in a subset of clinics, Tsha Tsha is utilised as part of tertiary institution HIV/AIDS activities, and Khomanani is integrated into various government events.
- Some campaigns operate collaboratively – for example Soul City and Khomanani partner on certain products and activities.

The campaigns and programmes identified here are not the only ones active in the HIV/AIDS area. There are national campaigns and programmes with particular thematic emphases, such as the Society for Family Health's condom social marketing programme; television programmes such as Beat It; campaigns focused on treatment, such as the Treatment Action Campaign (TAC). Others include the national life-skills programme which is run in schools by the Departments of Health and Education; activities conducted by provincial governments, provincial and local non-governmental organisations, and activities led by community members themselves. A number of these interventions tend to be diffused through various locales with greater emphasis on face-to-face communication.

Table 3.72 illustrates awareness of HIV/AIDS programmes and campaigns by age group. Whilst this table does not illustrate intensity of engagement with each programme, it provides an overview of overall awareness, and is an indicator of the efficiency at which the campaigns have been able to reach into various audiences. Awareness is lowest for Khomanani in all age groups, whilst awareness of campaigns in general is highest amongst the 15–24 year age group. Although loveLife's primary target group is 12–17 year-old youth, Soul City, Soul Buddyz and Takalani Sesame achieve higher awareness in the 12–14 year age group, and awareness of Soul City is highest in all age groups. Although Takalani Sesame is primarily a children's programme, it achieves high awareness across all age groups.

Table 3.72: Awareness of HIV/AIDS programmes and campaigns by age group, South Africa 2005

Campaign/programme	Age group			
	12–14 (n = 1 613) %	15–24 (n = 4 055) %	25–49 (n = 5 050) %	50+ (n = 2 757) %
Soul City	73.6	80.2	71.7	38.6
Soul Buddyz	64.7	69.1	50.8	23.5
Khomanani	33.8	46.7	41.7	25.9
loveLife	54.7	72.3	57.2	29.0
Gazlam	55.3	66.9	53.5	25.3
Tsha Tsha	54.6	64.6	49.9	23.0
Takalani Sesame	73.0	70.5	61.3	35.1

Awareness by home language provides some idea of whether particular language groups are marginalised. However, given that many South Africans speak more than one language, awareness is not necessarily a reflection of the campaign or programme being delivered in one's home language. Soul City, loveLife and Takalani Sesame are most likely to be known by English and Afrikaans language speakers. Venda and Tsonga home-language speakers do not appear to be unduly marginalised, and in a number of programmes and campaigns, higher levels of awareness are achieved for those who have these home languages relative to others.

Table 3.73: Awareness of HIV/AIDS programmes and campaigns among respondents aged 15 years and older by home language, South Africa 2005

Campaign/ programme	English %	Afrikaans %	Nguni %	Sotho %	Venda %	Tsonga %
Soul City	60.3	53.8	69.7	72.0	81.4	67.4
Soul Buddyz	46.0	41.2	52.0	54.5	62.2	49.1
Khomanani	37.1	29.3	40.9	40.8	72.8	50.8
loveLife	62.9	53.2	54.8	55.0	67.9	58.2
Gazlam	32.5	30.7	59.1	56.7	58.5	51.6
Tsha Tsha	27.6	27.8	57.9	52.1	54.0	47.8
Takalani Sesame	56.6	55.9	58.2	61.6	63.2	55.7

Table 3.74 focuses on awareness of programmes in two key age ranges, 15–24 and 25–49, by locality type. It shows that the programmes and campaigns identified here are all well known in urban formal and urban informal locality types. However, all programmes and campaigns, with the exception of Soul City, are known by half or less of the respondents in rural areas in the 25–49 year age group, and there is also relatively low awareness in urban informal locality types. Only two-thirds or less of respondents in rural informal locality types in the 15–24 year age group are aware of any of the campaigns and programmes, with the exception of Soul City.

Table 3.74: Awareness of HIV/AIDS programmes/campaigns among respondents aged 15–49 years by locality type, South Africa 2005

Campaign/ programme	15–24 (n = 4 055)				25–49 (n = 5050)			
	Urban formal %	Urban informal %	Rural informal %	Rural formal %	Urban formal %	Urban informal %	Rural informal %	Rural formal %
Soul City	85.6	81.1	74.3	67.0	75.9	72.5	61.4	56.5
Soul Buddyz	80.3	69.4	57.6	58.1	58.6	53.0	37.7	26.2
Khomanani	52.1	47.4	40.9	32.2	46.9	40.5	33.7	19.4
Love Life	81.2	69.9	64.2	57.4	65.0	51.6	44.0	39.5
Gazlam	49.6	75.5	58.3	52.3	55.1	59.0	42.0	40.3
Tsha Tsha	68.1	72.2	58.3	50.3	50.4	54.9	40.4	37.7
Takalani Sesame	76.4	69.3	65.3	61.9	67.2	59.5	50.0	47.6

When analysed by race in the two age groups, 15–24 and 25–49, all have poor awareness amongst whites, with the exception of loveLife. Awareness amongst whites is lowest for the two television series – Gazlam and Tsha Tsha (see Table 3.75).

Table 3.75: Awareness of HIV/AIDS programmes/campaigns by race among respondents aged 15–49 years, South Africa 2005

Campaign/ programme	15–24 (n = 4 055)				25–49 (n = 5 050)			
	African %	White %	Coloured %	Indian %	African %	White %	Coloured %	Indian %
Soul City	80.4	59.3	85.2	79.9	73.0	48.1	69.8	81.5
Soul Buddyz	67.9	55.3	83.4	76.5	77.7	24.8	55.0	61.8
Khomanani	45.7	28.5	36.0	37.6	42.7	31.1	32.2	45.1
Love Life	70.3	75.4	78.1	80.5	54.2	60.6	55.7	62.2
Gazlam	69.7	21.0	66.1	51.6	58.5	8.5	47.8	44.7
Tsha Tsha	68.5	12.9	62.9	46.9	54.9	10.0	40.8	30.1
Takalani Sesame	69.4	65.3	80.8	70.7	60.7	48.8	65.4	66.0

3.6.7 Utility of HIV/AIDS programmes and campaigns

As with Tables 3.74 and 3.75, the programmes and campaigns listed here are *not directly comparable* for the reasons outlined further above. Table 3.76 and 3.77 do, however, provide some insight into perceptions in relation to the utility of the programmes and campaigns as vehicles for HIV/AIDS information by those who are aware of them. Table 3.76 shows that perceived usefulness was high throughout the age bands, but slightly lower for respondents 50 years and over. Analysis by locality showed some variation in usefulness, but in general two-thirds or more of respondents found the programmes and campaigns useful. This pattern was similar when analysed by race, although whites tended to find the programmes and campaigns less useful overall.

Table 3.76: Perceived usefulness of HIV/AIDS programmes/campaigns for HIV/AIDS information by age group, South Africa 2005

Campaign/programme	Age %			
	12–14 (n = 1 613)	15–24 (n = 4 055)	25–49 (n = 5 050)	50+ (n = 2 757)
Soul City	91.3	94.6	93.2	80.1
Soul Buddyz	85.5	90.0	83.9	65.8
Khomanani	70.6	80.0	77.7	68.2
loveLife	84.0	90.5	86.1	68.3
Gazlam	79.3	88.2	86.0	64.0
Tsha Tsha	79.2	88.0	84.0	62.9
Takalani Sesame	86.5	87.1	86.6	73.1

3.6.8 Other sources of HIV/AIDS information

Respondents were asked to indicate which other sources, beyond mass media, were personally useful for HIV/AIDS information. Table 3.77 allows for an understanding of interpersonal, sectoral and contextual sources of information. These categories are not directly comparable as a product of respondents having different levels of exposure to each category. For example, school is more likely to be referred to by respondents attending school.

It is important to note that campaigns and programmes also reach into these settings. For example, Soul City, Soul Buddyz, Khomanani and loveLife include activities and materials that go to schools, and a lifeskills programme is conducted by the Departments of Health and Education in schools.

Table 3.77 is ranked by average over all age groups. It shows that friends and other family are important sources of information. Institutional settings such as health facilities, schools, and religious institutions were all identified as important sites for information and workplaces were important for those who were full-time employees.

An overwhelming majority (91.2%) of the respondents aged 12–14 years said that schools were a useful site of information. AIDS or welfare organisations scored lower, although this may be a reflection of lower exposure to such organisations. Traditional healers and telephone helplines scored very low overall.

Table 3.77: Source or site providing personally useful information about HIV/AIDS to respondents aged 12 years and older in the past year, South Africa 2005

Source/site	Age group			
	12–14 (n = 1 613) %	15–24 (n = 4 055) %	25–49 (n = 5 050) %	50+ (n = 2 757) %
Friends	55.4	75.8	71.8	56.7
Health facility (clinic/hosp/doctor)	48.0	67.0	69.3	56.4
Other family	45.2	61.1	58.2	50.5
School	91.2	71.4	14.2	4.3
Workplace (of full-time employees)	n/a	56.1	64.8	59.5
Religious institution / FBO	30.4	38.3	40.9	44.1
Parent or caregiver	34.9	38.3	21.2	9.6
Community meeting	2.9	16.0	25.7	23.6
AIDS or welfare organisation	11.0	19.0	19.8	12.8
Pharmacy	6.3	10.5	13.1	7.7
Traditional healer	3.0	4.6	7.1	5.0
Telephone helpline	3.3	5.3	6.2	2.1

Table 3.78 is ranked by average. Sources were generally viewed as useful at similar levels across locality types, and friends, other family and institutions such as health facilities and workplaces ranked high. Pharmacies and helplines rated lower in rural areas, whilst traditional healers rated highest in urban informal areas.

Table 3.78: Source or site providing personally useful information about HIV/AIDS to respondents aged 15 years and older in the past year by locality type, South Africa 2005

Source/site	Locality type			
	Urban formal (n = 6 553) %	Urban informal (n = 1 378) %	Rural informal (n = 2 765) %	Rural formal (n = 1 166) %
Friend(s)	68.5	74.5	71.4	66.4
Health facility (clinic/hosp/Dr)	60.8	72.8	72.3	61.3
Workplace (of full-time employees)	68.2	62.6	69.3	34.7
Other family	57.7	61.3	55.9	58.1
Religious institution / FBO	41.7	41.4	40.6	35.1
Parent or caregiver	26.1	29.9	20.9	18.7
Community meeting	22.1	30.3	23.6	10.7
AIDS or welfare organisation	20.3	21.7	16.6	7.2
Pharmacy	16.0	13.6	5.2	4.6
Traditional healer	5.4	11.4	5.7	4.4
Telephone helpline	6.3	7.2	3.6	1.9

3.6.9 Interpersonal communication and participation in HIV/AIDS activities

When respondents were asked if they were comfortable talking about HIV/AIDS with at least one family member, a large majority of respondents over 15 years of age (80%), and two-thirds (66.9%) of 12–14 year-olds agreed.

When respondents were asked whether they had given advice to others about HIV/AIDS in the past year, 35.0% of 15–24 year-olds and 40.4% of 25–49 year-olds indicated that they had done so. This was however less likely for 12–14 year-olds (15.1%).

Table 3.79 provides an overview of participation in HIV/AIDS activities in the past year and is ranked by average. Older respondents, particularly those 50 years and over, are less likely to participate in educational activities overall, whilst children aged 12–14 years are less likely to participate in workshops, rallies and marches. Over a third of full-time employees (34.0%) aged over 25–49 years had attended AIDS meetings in the workplace.

Slightly more than one in eight (13.7%) of the 25–49 year-olds and nearly one-tenth (9.7%) of the 15–24 year-olds have helped a family who has someone sick with AIDS. Similar proportions of respondents have provided care directly. A smaller proportion of 25–49 year-olds (6.0%) have volunteered for HIV/AIDS activities, as have the same

proportion of respondents aged 15–24 (6.0%). One-tenth (10.9%) of 25–49 year-olds provided care for a person who was sick with AIDS, and this activity was also carried out to a similar level by those aged 15–24 years and those 50 years and over. Even a small proportion of children aged 12–14 years (2.8%) were involved in this activity.

When the data was compared to findings from the national survey in 2002, it was found that there was little overall variation in these activities, and some have declined.

Table 3.79: HIV/AIDS-related activities attended or participated in during the past year by age group, South Africa 2005

Activity	Age			
	12–14 (n = 1 613) %	15–24 (n = 4 055) %	25–49 (n = 5 050) %	50+ (n = 2 757) %
Attended workplace AIDS meetings (respondents employed full-time)	n/a	20.2	34.0	24.7
Attended an AIDS play or educational event	21.9	25.2	11.3	5.0
Community meetings	4.5	13.1	20.1	17.3
Helped a family who has lost a member as a result of AIDS	3.2	9.7	14.6	12.7
Helped a family who has someone who is sick with AIDS	2.8	9.7	13.7	12.3
Attended a workshop on HIV/AIDS	4.1	10.6	13.7	6.5
Attended a local AIDS rally, march or event	7.8	11.1	10.3	5.1
Cared for a person who is sick with AIDS	2.8	8.6	10.9	8.4
Volunteered for HIV/AIDS activities	3.2	6.0	6.0	3.4
Membership of an HIV/AIDS organisation	1.0	3.1	3.7	2.5

3.6.10 Relationship of activities to taking HIV/AIDS more seriously

It was found that television and radio were important sources for influencing the seriousness with which HIV/AIDS is regarded. Whilst not all activities could be measured in this way, the table illustrates other important influences, including attending a workshop on HIV/AIDS, taking note of HIV/AIDS statistics, and caring for a person with HIV/AIDS. It should be noted that information derived from mass media is not necessarily only the product of HIV/AIDS campaigns and programmes. Other content includes news, talk shows, dramas, amongst others.

Table 3.80: Relationship of activities to taking HIV/AIDS more seriously among respondents aged 25–49 years, South Africa 2005

Subcategory*	%	Unprompted response
Of respondents who watched TV more than once a week (n = 11 960)	63.2	Said they have taken the problem of HIV/AIDS more seriously because of television programmes
Of respondents who listened to the radio more than once a week (n = 13 105)	55.3	Said they have taken the problem of HIV/AIDS more seriously because of radio programmes
Of respondents who attended a workshop on HIV/AIDS in the past year (n = 1 841)	20.8	Said they have taken the problem of HIV/AIDS more seriously because of attending a workshop or training session on HIV/AIDS (2.3)
Of all respondents 15-49 (n = 17 223)	21.0	Said they have taken the problem of HIV/AIDS more seriously because of AIDS statistics
Of respondents who have cared for a person who was sick with AIDS in the past year (n = 1 478)	17.6	Said they have taken the problem of HIV/AIDS more seriously because they have cared for a person with HIV/AIDS

Note: * Unweighted data

Discussion

In general, South Africans have good access to one or more forms of mass media, and are exposed to HIV/AIDS campaigns and programmes through these media. South Africans are also discussing HIV/AIDS in interpersonal contexts, and are exposed to HIV/AIDS information that does not come directly from communication campaigns and programmes. Such information, in conjunction with campaigns and programmes, contributes to people taking HIV/AIDS more seriously.

Awareness and reach of programmes and campaigns cannot be conflated with impact or effectiveness and the latter aspect has not been measured directly in this survey. It is also necessary to consider overall HIV prevalence, behaviour, attitudes and knowledge as an indication of the cumulative impacts, not only of programmes and campaigns, but also of other mass media, institutional communication as well as interpersonal communication about HIV/AIDS. The following observations can be made:

- There are gaps that need to be considered in terms of reaching populations in rural and informal locality types. Given that television exposure is poor, radio remains an important means for reaching diverse locales. It also offers the potential to communicate in all 11 official language groups.
- No campaign or programme has exclusive reach into any particular audience, and there is clearly a high degree of overlap. This overlap is particularly evident in the emphasis on youth as a target audience.
- All campaigns and programmes have poor reach amongst those 50 years and older. There remains an urban bias, with generally poor reach into rural informal and formal locality types.
- Khomanani has relatively low awareness overall, and in some areas lower-cost television programmes achieve awareness that is relatively similar to multimedia

programmes. Awareness of particular elements of the Khomanani Campaign are high – for example, in relation to the Choice condom brand.
- Takalani Sesame has a wide awareness across age groups and contexts, which is surprising given its emphasis on children, and Soul City has high awareness overall.
- All programmes and campaigns are seen as useful for HIV/AIDS information to a high degree by those who know of them.
- A fair proportion of people report exposure to educational events and HIV/AIDS activities in their communities. Institutions such as health services, schools, workplaces, and faith-based organisations also play an important role. Friends and family members are important sources of information about HIV/AIDS.
- Engaging personally with the epidemic was noted amongst a fairly high proportion of respondents. Many people know others who are HIV positive or who have died of AIDS personally. In certain age groups, involvement with the epidemic extends to voluntarism and membership in HIV/AIDS organisations, and a reasonable proportion of people in all age groups are providing care and support to those living with and affected by HIV/AIDS.
- National-level campaigns and programmes have implicit and explicit goals in relation to HIV prevention. The notion of making marked impacts on youth HIV prevalence, does not appear to have occurred, although it is an explicit goal of the Lovelife programme.
- Regarding the uptake of prevention strategies, there have been positive trends in relation to condom use at last intercourse, uptake of VCT, and awareness of ARVs, but other areas of knowledge are inadequate – notably basic knowledge of partner reduction, attitudes to PLWHA and PMTCT. These gaps are inconsistent with the intensity and diversity of national-level programmes and campaigns.

3.7 Mental health and HIV/AIDS

Local and international evidence suggests that people living with HIV/AIDS have higher rates of a range of mental health problems than the general population (Olley et al. 2004; Ciesla & Roberts 2001). The high rate of mental health problems are in part from mental health problems being a high risk factor for contracting HIV and in part as a consequence of HIV infection. The latter results from:
- Cognitive impairment, dementia and psychiatric symptomatology due to viral infection of the brain;
- Depression and anxiety due to the personal impact of infection;
- Psychiatric side-effects of some ARV therapy; and
- Difficulties faced as a result of stigma and discrimination (Freeman et al. 2005).

To date, outside of studies which have tested anonymously for HIV amongst people with serious mental disorders (primarily in psychiatric inpatient units), almost all studies that have noted an association between mental disorder and HIV/AIDS have been conducted with people known to be living with HIV. This is the first known population-based study that examines mental health indicators and HIV status.

Assessing mental disorder is complex. Although comprehensive instruments to assess mental disorder (for example, Structured Clinical interview for DSMIV [SCAN], Composite International Diagnostic Interview [CIDI]), administration is highly time consuming and in some instances requires skilled mental health practitioners. Cultural variables also inhibit accurate mental health measurement. Hence in this study only 'proxy' measures, and then only at a screening level, were used. These measures have been adapted from the

screening section of the CIDI, which has been used in a number of international studies to measure mental disorder. Moreover only indicators of depression and anxiety, and not other mental disorders, have been included.

In this study only 30% of respondents had taken an HIV test and around 3% of these had never received the results. In other words, about 70% of respondents did not know their HIV sero-status and, as a consequence, the majority of people who are HIV-positive, do not know their HIV status. This has significant implications for understanding the relationship between mental health and HIV/AIDS.

Table 3.81 shows proxy measures of depression and anxiety by HIV status among those who know their HIV status. The table reveals that those who were HIV positive were more likely to feel sad, empty or depressed for most of the day for a period lasting several days during the last 12 months, to have problems sleeping, and to have had some experiences in the past that they thought about often and which made them feel tense or frightened than their counterparts who were HIV negative.

Table 3.81: Proxy measures of depression and anxiety among respondents aged 15 years and older by HIV status among those who know their HIV status, South Africa 2005

Depression and anxiety indicator	Positive HIV status %	Negative HIV status %	Level of significance
Felt sad, empty or depressed most of the day for a period lasting several days during the last 12 months	41.8 (n = 173)	29.6 (n = 837)	p = 0.001
Problems sleeping	32.9 (n = 134)	25.8 (n = 635)	p = 0.024
Problems eating	23.9 (n = 103)	20.2 (n = 586)	p = 0.15
Period during last 12 months lasting a month or longer when felt worried tense or anxious	24.8 (n = 123)	23.0 (n = 684)	p = 0.53
Experience in the past that you think about often and which makes you feel tense or frightened	34.4 (n = 127)	26.4 (n = 722)	p = 0.008

In subjects found by the anonymous HIV test to be HIV positive, 'depression' was significantly higher among those who had been tested (38.8% [n = 183]) than those who had not been tested (31.3% [n = 270, $p<0.05$]). This is likely to result from negative psychological reactions to living with HIV/AIDS. Nonetheless, of those who had not been tested, subjects found to be HIV positive were more likely to be 'depressed' than those found to be HIV negative (31% [n = 270] compared with 27.1% [n = 1 951]). This finding raises interesting and important considerations.

Discussion

It is important to note that there is a high probability that some people who had been tested (at a previous point) and were found to be negative at the time, were found through the anonymous laboratory test to be HIV positive. The results from the present study must therefore be treated with extreme caution.

The present findings provide novel results that show the possible psychological sequelae of HIV infection diagnosis in a national population of HIV-positive people who are aware of their status. The findings of higher levels of depression and anxiety, as measured by the few items in this study, are generally consistent with those obtained from previous studies (Olley et al. 2004; Ciesla & Roberts 2001).

The finding that people who could not have known their status as they had never been tested, but yet were still more 'depressed' than those found to be negative raises important questions. Five possibilities for the finding are that:

(i) A number of people who have engaged in risky behaviour may suspect they are positive and the uncertainly of their status may effect their mental health;
(ii) People who are HIV positive (even if they are unaware that they are) may have had greater exposure to a number of risk factors for depression, such as deaths of people close to them, substance abuse, highly adverse economic conditions and so forth;
(iii) People may have been physically ill over the past year and physical illness is known to result in poor psychological health;
(iv) People may have been 'depressed' prior to becoming infected and this may have raised their risk of becoming infected; and
(v) The HI virus itself may produce depressive symptoms in both symptomatic and a-symptomatic people living with HIV.

Clearly, more research using full scales for measuring depression and anxiety as well as specifically asking people to disclose their HIV status would be important in the next national survey in order to better understand the impact of HIV-positive diagnosis on psychological functioning and coping mechanisms used. Such information will be helpful in planning for and providing the necessary psychological counselling and support from professionals as well as lay counsellors through support groups as well as by families and communities.

3.8 Other contextual factors for HIV/AIDS

3.8.1 Household burden of HIV/AIDS

The impact of HIV/AIDS on household income and livelihood can be devastating. Household income may have to be diverted towards buying medication for a member living with AIDS, the household may be deprived of a breadwinner, and other household members may have to sacrifice school or work to take care of person with AIDS. In this study respondents were asked about the impact of having a person with HIV/AIDS living in the household. Only 5.3% of respondents who were heads of households indicated that at least one member of their household was diagnosed as HIV positive (five per cent of households is equal to 676 306 households). Of this group, 58.7% indicated that they lost a household member to HIV/AIDS in the last 12 months.

The tendency to under-report HIV-positive status of household members is confirmed by another finding in the study, where 13.4% persons admitted that they would keep it a secret if one of their household members died of an HIV-related illness. When asked why, more than half of respondents (55.7%) stated that they were afraid of the stigma attached to HIV/AIDS, while nearly one-third (30.5%) felt that it was not necessary at all to tell.

3.8.2 Orphans

UNAIDS (2004) has changed its definition of an orphan from a child under the age of 15 years (as they did in 2002) to a child below the age of 18 years who has lost either a mother (a maternal orphan), a father (a paternal orphan), or both parents (a double orphan) to any cause. HIV/AIDS contributes to orphanhood primarily due to the premature death of mostly young biological parents, and for this reason there is an interest in estimating the magnitude of the orphanhood problem in South Africa.

Table 3.82 shows the estimates of orphanhood found in the present study – of the overall orphanhood prevalence rate of 14.4% for children aged 2–18 years, 2.6% are maternal orphans, 10.0% paternal orphans and 2.0 % double orphans. This means that overall there are a total of 2 531 810 orphans in South Africa in 2005, with 455 970 of them being maternal orphans, 1 745 715 paternal orphans and 330 125 double orphans.
When the data was broken down by age, 13.3% of children between 2–14 years and 21.0% of respondents between 15–18 years were orphans. A further breakdown of the 2–14 year age group shows that 2.5% had lost a mother, 9.1% a father and 1.7% both parents. The comparable figures in the 15–18 year age group were 3.5%, 14.5%, and 3.0% respectively.

Moreover, when orphanhood was compared by race, we found that 92.8% of orphans were African, followed by 4.8% who were coloured and the rest were from the other two racial groups. The rates of orphanhood were highest in KwaZulu-Natal and Eastern Cape provinces and lowest in Western Cape and Northern Cape provinces. The orphanhood rates were highest in rural informal authority areas and lowest in urban formal ones.

Table 3.82: Estimates of orphanhood among respondents aged 2–18 years by background characteristics, South Africa 2005

Variable	Orphans % (n = 8976)	Maternal orphans % (n = 8976)	Paternal orphans % (n = 8976)	Double orphans % (n = 8976)
Total	14.4 (1217)	2.6(244)	10.0 (841)	2.0 (132)
Gender				
Males	15.0 (557)	2.8 (114)	10.2 (377)	2.0 (66)
Females	15.3 (660)	2.6 (130)	10.8 (464)	2.0 (66)
Race				
African	17.2 (950)	3.0 (189)	11.9 (652)	2.3 (109)
Whites	3.1 (32)	0.2 (1)	2.7 (28)	0.3 (3)
Coloured	7.6 (166)	2.6 (38)	4.3 (109)	0.7 (19)
Indians	7.7 (68)	2.2 (16)	5.5 (51)	0.0 (1)
Age				
2–14	13.3 (752)	2.5 (153)	9.1 (522)	1.7 (77)
15–18	21.0 (463)	3.5 (91)	14.5 (319)	3.0 (55)

Variable	Orphans % (n = 8976)	Maternal orphans % (n = 8976)	Paternal orphans % (n = 8976)	Double orphans % (n = 8976)
Province				
WC	7.5(75)	1.7 (22)	5.0 (46)	0.8 (7)
EC	18.1 (259)	2.1 (35)	13.7 (198)	2.3 (26)
NC	13.6 (76)	2.3 (13)	9.8 (56)	1.5 (7)
FS	18.7 (102)	5.0 (28)	11.1 (60)	2.6 (14)
KZN	19.8 (283)	2.8 (56)	13.7 (192)	3.2 (35)
NW	13.7 (77)	2.9 (19)	10.1 (54)	0.6 (4)
GP	9.7 (112)	2.6 (26)	5.8 (74)	1.4 (12)
MP	15.7 (96)	3.2 (17)	13.3 (65)	2.2 (14)
LP	14.6 (137)	3.0 (28)	10.2 (96)	1.4 (13)
Locality type				
Urban formal	11.1 (499)	2.5 (104)	7.2 (342)	1.5 (53)
Urban informal	14.4 (151)	3.9 (32)	9.0 (103)	1.4 (16)
Rural informal	19.6 (493)	2.6 (80)	14.6 (355)	2.5 (58)
Rural formal	12.0 (74)	3.9 (28)	5.6 (41)	2.6 (5)

When compared to the 2002 survey, which found an overall maternal orphan prevalence of 3.3% for children aged 2–18 years, the present study shows a rate of 5.3%. Paternal orphan prevalence remained constant at 10.0% currently as compared to 10.1% for 2002.

3.8.3 Child-headed households

Among children aged 12–18 years, 2.6% identified themselves as heads of the households, and the majority were African. In the 2002 survey it was found that 1.5% of South African children are heading households (Brookes, Shisana & Richter 2004). This proportion has almost doubled to 2.6% in 2005 (or 180 433 child-headed households). Among children orphaned between 12 and 18 years of age, 2.8% identified themselves as heads of the households. This translates into 213 859 orphaned children in the general population being heads of households. Based on the *South African National Strategic Framework for Children Infected and Affected by HIV/AIDS in 2001*, the following statistics were highlighted: 35% of orphaned children have foster parents; 0.1% are adopted; and 0.25% are in residential care. This leaves 65% remaining in family or community care or living in so-called 'child-headed households'. Other national surveys carried out in sub-Saharan Africa find that the age of orphans is fairly consistent across countries. These studies suggest that overall about 15% of orphans are 0–4 years old, 35% are 5–9 years old, and 50% are 10–14 years old.

3.8.4 Risk factors and risk environments for children aged 2–18 years

The rest of this section of the report is based on 9 380 children aged 2–18 years who participated in the survey (Table 3.83) as was done in the 2002 survey's Children's Report

by Brookes, Shisana & Richter (2004). The overall sample included caregivers of 5 253 children aged 2–11 years who answered a questionnaire on the child's behalf for reasons of developmental and mental capacity as well as for ethical reasons (see Table 3.84). A further 1 613 children aged 12–14 years answered a separate questionnaire directly during an interview and an additional 2 514 children aged 15–18 years answered a youth questionnaire.

Table 3.83: Number of child respondents by age and sex, South Africa 2005

Age	Male	%	Female	%	Total	%
2	271	8.1	240	6.8	511	7.4
3	260	7.8	261	7.4	521	7.6
4	252	7.5	265	7.5	517	7.5
5	216	6.5	273	7.8	489	7.1
6	230	6.9	278	7.9	508	7.4
7	252	7.5	264	7.5	516	7.5
8	263	7.9	264	7.5	527	7.7
9	259	7.7	272	7.7	531	7.7
10	304	9.1	287	8.1	591	8.6
11	263	7.9	279	7.9	542	7.9
12	240	7.2	286	8.1	526	7.7
13	262	7.8	281	8.0	543	7.9
14	272	8.1	272	7.7	544	7.9
Total	3 344		3 522		6 866	

Table 3.84: Age of caregivers of children aged 2–11 years (n = 5 260), South Africa 2005

Age of caregiver	Percentage
< 19	1.7
19–60	87.7
>60	10.6

Children are at risk for contracting HIV/AIDS though a number of sources. Aside from risk associated with vertical transmission from mother to child in pregnancy and early infancy, many children are exposed to risky situations that increase the chances of HIV transmission, including within homes, schools and communities. Risks associated with the home include sexual abuse as well as the levels of care and protection afforded to children within the home. Schools and communities can also be unsafe, especially for children who may be unsupervised in going between school and home.

As in the 2002 survey report (Brookes et al. 2004), the present study also focused on three components of child vulnerability to HIV infection:

- Risk environments;
- Care and protection of children; and
- Knowledge and communication about sex and HIV/AIDS.

Risk environments

Poverty, types of housing settlements, businesses run from home and exposure to alcohol and drugs all contribute to increasing risk for children because such environments diminish protection and increase exposure to negative consequences. Only a quarter of all children surveyed live in homes where a formal salary is earned, with the most important contributions to income coming from family members and relatives (36.9%), followed by government pensions or grants (11.7%). Previous research has shown that urban informal settlements are prone to numerous social problems, increasing children's vulnerability to violence and sexual abuse. More caregivers in informal settlements have no source of income than any other settlement type.

Children are also exposed to various risky environments within and around the home. Of the households surveyed, with at least one child aged 2–11 years, 12% run businesses from home, and this increases to 14% for children aged 12–14 years. The majority of these businesses are informal spaza shops.

Children and caregivers were also asked about the exposure of children to drug and alcohol abuse in homes and neighbourhoods. Among caregivers of children aged 2–11 years, 8% were exposed to someone in the household or neighbourhood who used recreational or mind-altering drugs at least once a month. A much higher percentage (30%) were exposed to someone in the household or neighbourhood who gets drunk at least once a month. Among children aged 12–14 years, one in ten children reported exposure to someone taking drugs and slightly over a third (36%) were exposed to someone who got drunk at least once a month.

Table 3.85: Sources of household income among children aged 2–18 years by race, South Africa 2005

Race	n	Formal salary %	Contribution by family members and relatives %	Government pensions or grants %	Grants/ donations by private welfare organisations %	Other sources %	No income %
African	3 404	19.4	48.3	14.5	1.6	10.3	5.9
White	408	39.0	48.8	1.2	0.7	5.9	4.4
Coloured	977	33.1	42.5	10.5	1.0	8.9	3.9
Indian	465	40.2	44.5	3.2	0.6	6.2	5.2
Total	5 254						

Table 3.86: Source of household income by locality type of children aged 2–18 years, South Africa 2005

Settlement type	n	Formal salary %	Contribution by family members and relatives %	Government pensions or grants %	Grants/ donations by private welfare organisations %	Other sources %	No income %
Urban formal	2 751	33.1	44.8	8.1	0.8	8.2	5.0
Urban informal	566	18.7	46.8	11.7	2.1	13.3	7.4
Rural informal	1 555	12.9	49.6	19.0	2.1	10.2	6.1
Rural formal	394	29.2	51.1	8.6	1.3	8.1	1.8
Total	5 266						

Care and protection

Care and protection of children at home and at school is essential to preventing sexual abuse and HIV transmission. The primary agent of care in most cases would be the child's primary caregiver. Table 3.87 shows that for the majority of children aged 2–11 years, the biological mother was a primary caregiver (72%). Among 12–14 year-old children, 62% of the caregivers are biological parents. The age of the caregiver may play an important role in the protection of children. Grandparents provided care for 19% of 2–11 year olds, that is, almost two in five children aged 2–11 years are cared for by grandparents.

Table 3.87: Primary caregivers of children aged 2–11 years (n = 5097), South Africa 2005

Primary caregiver	n	%
Biological parent	3 688	72.4
Adoptive parent	33	0.6
Stepparent	18	0.3
Grandparent	962	18.9
Sibling	87	1.7
Other family member	260	5.1
Non-family member	49	10.0
Total	5 097	100.0

The majority of children aged 2–11 years are well protected by either being at home with a caregiver, at school or at a crèche (98%). Similarly, 12–14 year-old children are monitored by a caregiver always or most of the time (see Table 3.88).

Table 3.88: Monitoring by primary caregiver of children aged 12–14 years, South Africa 2005

Time of day	Sometimes/ hardly ever %	Most of the time %	Always %
In the morning			
Present at home	4.8	17.4	60.7
Near enough to call	4.0	20.6	58.0
Require child to tell them where they are going	4.2	12.1	66.3
All day			
Present at home	5.4	20.9	57.8
Near enough to call	5.5	21.6	56.6
Require child to tell them where they are going	5.5	14.3	63.9
In the afternoon			
Present at home	6.0	20.7	58.3
Near enough to call	4.7	22.7	57.3
Require child to tell them where they are going	4.4	15.9	64.4
At night			
Present at home	2.2	11.3	71.1
Near enough to call	2.1	13.3	69.3
Require child to tell them where they are going	1.9	10.2	72.3
On the weekend			
Present at home	4.6	20.4	59.7
Near enough to call	4.8	22.3	57.2
Require child to tell them where they are going	4.3	16.1	63.9

Tables 3.89 and 3.90 show high-risk practices that increase children's vulnerability to sexual abuse. Caregivers of children aged 2–11 years and children aged 12–14 years were asked about the frequency of these high-risk practices in the week prior to questioning.

Table 3.89: Proportion of children aged 2–11 years involved in high-risk practices, South Africa 2005

High-risk practices	Level	Often %	Sometimes %	Never %
Sent out of the home yard on an errand alone?	Total	8.5	35.9	55.7
	Female	7.3	35.8	56.9
	Male	9.7	35.9	54.4
Left at home alone?	Total	1.6	11.1	87.3
	Female	1.3	9.9	88.8
	Male	1.8	12.4	85.7
Left in the care of a person 15 or younger?	Total	3.9	22.5	73.5
	Female	3.4	21.0	75.6
	Male	4.5	24.1	71.4
Left in the care of a male family member?	Total	6.8	28.1	65.1
	Female	5.2	23.3	71.5
	Male	8.6	33.0	58.4
Left in the care of a male non-family member?	Total	0.3	3.6	96.1
	Female	0.2	2.9	96.9
	Male	0.5	4.2	95.2
Left in the care of a female non-family member?	Total	3.1	12.6	84.3
	Female	2.7	13.0	84.3
	Male	3.6	12.1	84.3
Out of home yard without adult supervision?	Total	5.7	24.7	69.5
	Female	4.4	23.4	72.2
	Male	7.1	26.1	66.8

The results show high exposure to risk for many children. A little under half of children aged 2–11 years are often or sometimes sent out on errands alone. Among 12–14 year olds, this proportion reaches 77.7%. A little under one-third of children aged 2–11 years are allowed outside the home yard without adult supervision while the corresponding figure for children aged 12–14 years is 57.1%. There is little difference in the treatment of male and female children.

A substantial number of children are left alone at home. The percentage increases with age, from 11.7% of children aged 2–11 years to almost half of the children aged 12–14 years, with more males likely to be left alone at home. Over a quarter of children aged 2–11 years are left in the care of a person 15 years or younger (26.1%). While very few children aged 2–11 years are left in the care of a male non-family member, 44.8% of children aged 12–14 years are exposed to this risk. Over a third of female children and over half of male children aged 12–14 years are left in the care of a male family member.

Table 3.90: Proportion of children aged 12–14 years involved in high-risk practices, South Africa 2005

Practice		Always %	Often %	Sometimes %	Never %
Sent out of the home on an errand alone?	Total	13.1	17.3	47.3	22.4
	Female	12.6	15.9	44.9	26.6
	Male	13.6	18.8	49.9	17.8
Left at home alone?	Total	4.6	7.0	35.8	52.7
	Female	4.3	6.9	32.7	56.1
	Male	4.8	7.2	39.1	48.9
Left in the care of a person 15 years or younger?	Total	2.8	5.0	23.4	68.8
	Female	3.0	5.2	24.1	67.7
	Male	2.6	4.7	22.6	70.0
Left in the care of a male family member?	Total	5.8	7.1	31.9	55.1
	Female	4.0	5.9	25.8	64.3
	Male	7.9	8.5	38.5	45.2
Left in the care of a male non-family member?	Total	1.0	0.9	4.5	93.6
	Female	1.1	1.2	3.2	94.5
	Male	0.9	0.5	5.9	92.7
Left in the care of a female non-family member?	Total	2.6	3.3	13.0	81.1
	Female	2.9	4.8	15.5	76.9
	Male	2.2	1.7	10.4	85.7
Out of home yard without adult supervision?	Total	9.2	13.9	34.0	42.9
	Female	8.7	12.6	31.0	47.7
	Male	9.8	15.2	37.3	37.7

Children are often at risk from sexual abuse within their own homes. Caregivers were asked about the sleeping arrangements of children aged 2–11 years and the 12–14 year-old children were also asked about sleeping arrangements in their homes. Table 3.91 shows that more than half of children aged 2–11 years share a bed. More female children aged 2–11 years share a bed with a parent (46%) than male children. 21% of female children aged 2–11 years also share a bed with older siblings. Among children aged 12–14 years, one-third share a bed, while another 39% share a room sleeping in their own beds and a little less than a third (28%) have their own bed in their own bedroom (see Table 3.92). 37% of females aged 12–14 years share a bed with someone else, usually an older sibling or a caregiver.

A key area of risk for children is travelling to and from school. Just over one-quarter of children aged 2–11 years travelled to school on their own (26.3%) or with older siblings (21.9%). 17% reported going to school and 18.5% returning from school unaccompanied. Only 16.1% of children in this age group reported being accompanied by an adult going to school and 15.6% of them reported being accompanied home. 40% of children aged 12–14 went to school unaccompanied and 41.6% reported returning from school unaccompanied. Parents accompanied 11.9% of children going to school and 9.3% when returning home. A neighbour or other adult accompanied 7% of children going to and from school. Other children accompanied 12–14 year-old children going to school 24.8% of the time and 29.1% on returning home.

Table 3.91: Sleeping arrangements of children aged 2–11 years, South Africa 2005

Sex	n	Where does the child usually sleep at night?		
		Alone in own bed, own bedroom %	Alone in own bed, shared room %	In shared bed %
Male	2 556	13.7	30.4	55.9
Female	2 666	12.2	26.8	61.0
Total	5 222	12.9	28.6	58.5

Table 3.92: Sleeping arrangements of children aged 12–14 years, South Africa 2005

Sex	n	Where does the child usually sleep at night?		
		Alone in own bed, own bedroom %	Alone in own bed, shared room %	In shared bed %
Male	762	31.6	39.9	28.5
Female	832	24.3	38.9	36.8
Total	1 594	27.8	39.4	32.8

Table 3.93 shows the modes of transport used by children going to and from school, with the vast majority of children aged 2–11 years travelling to and from school on foot (68.1%); this increases to 72.3% for children aged 12–14 years (Table 3.94).

Table 3.93: Mode of transport used to and from school by children aged 2–11 years, South Africa 2005

Mode of transport	To school %	From school %
On foot	67.9	68.1
Arranged privately paid transport	4.5	4.6
Private car	19.3	18.3
Local taxi	2.1	2.2

Mode of transport	To school %	From school %
Minibus taxi	2.1	2.2
School bus	3.2	3.3
Public bus	0.1	0.6
Train	0.1	0.1
Bicycle	0.2	0.2
Other	0.5	0.6

Table 3.94: Mode of transport used to and from school by children aged 12–14 years, South Africa 2005

Mode of transport	To school %	From school %
On foot	70.8	72.3
Arranged privately paid transport	3.3	3.5
Private car	13.3	11.7
Local taxi	3.2	3.2
Minibus taxi	1.0	1.0
School bus	5.0	4.8
Public bus	2.2	2.1
Train	0.3	0.3
Bicycle	0.6	0.6
Other	0.4	0.4

Given that children spend a considerable part of their daily lives in school, it is critical that such environments are safe for children. Children aged 12 to 14 were asked to rate their schools on various practices by educators for monitoring safety. Table 3.95 shows the key issues that children were asked about. The children reported that 72% of educators always attended classes, while 13% reported that educators often attend classes. Only 42% of children reported that the educators always watch children arrive to school and even less (35%) reported that educators always watch them as they leave school. Less than a third of the children reported that educators monitor the toilets, an area which qualitative studies shows to be particularly unsafe (Brookes & Richter 2001). While children report that 75% of educators always or often ensure that no unauthorised person can enter the school, clearly not enough is being done to protect children at school.

Table 3.95: Safety at school of children aged 12–14 years, South Africa 2005

Monitoring practices	Always %	Often %	Sometimes %	Never %	No information obtained %
Educators attend classes	71.8	12.9	11.5	0.6	3.3
Educators watch children at break time	42.5	14.7	25.5	13.6	3.7
Educators watch children coming to school	42.3	13.5	23.4	16.4	4.4
Educators watch children leaving school	35.4	10.8	25.2	23.5	5.2
Educators monitor the toilets	31.9	13.9	25.3	22.6	6.4
Educators make sure no unauthorised person can enter the school	64.8	10.8	10.3	6.9	7.4

Table 3.96 shows that sexual harassment at schools is a serious problem. Three out of ten children surveyed reported that boys sexually harass girls and 8% reported that male educators propose relationships with girl pupils. Reporting by gender showed little differences in perceptions in sexual harassment of girls, although girls were more likely to report on sexual harassment of girls by boys and male educators (see Table 3.97).

Table 3.96: Sexual harassment at school of children aged 12–14 years, South Africa 2005

Sexual harassment	n	Always/often/ sometimes %	Never %	No information %
Boys sexually harass girls by touching, threatening or making rude remarks to them	1 599	31.0	48.0	21.0
Girls sexually harass boys by touching, threatening or making rude remarks to them	1 599	19.9	57.7	22.3
Male educators propose relationships with girl pupils	1 598	8.3	53.3	38.5
Female educators propose relationships with boy pupils	1 598	4.4	56.1	39.6
Teachers propose relationships with pupils of the same sex	1 598	3.8	53.8	42.5

Table 3.97: Sexual harassment at school of female children aged 12–14 years, South Africa 2005

Sexual harassment	n	Always/often/ sometimes %	Never %	No information %
Boys sexually harass girls by touching, threatening, or making rude remarks				
Total	1 551	31.9	49.5	18.5
Female	809	32.4	50.9	16.7
Male	742	31.5	47.9	20.5
Male educators propose relationships with girls				
Total	1 550	8.5	54.9	36.6
Female	809	9.5	55.9	34.5
Male	741	7.3	53.8	38.9

3.8.5 Communication and knowledge about HIV/AIDS-related issues

A substantial number of programmes targeted at school children are based on the premise that communication between caregivers and children is vital to protecting children against HIV transmission. In the present study, caregivers of children aged 2–11 years and children aged 12–18 years were asked about communication about sex, sexual abuse and HIV/AIDS. Tables 3.99 and 3.99 show the responses of caregivers of children aged 2–11 and children aged 12–14 years to questions about communication in these three areas.

Tables 3.98 and 3.99 show that very few caregivers discuss sex with children; they hardly discuss sexual abuse, how HIV is transmitted or how it can be prevented. It is also clear that gender differentiation in imparting HIV prevention information to children starts early in life. Caregivers are more likely to discuss sex and sexual abuse with girls than with boys.

Table 3.98: Communication between parent/caregivers and children aged 2–11 years about sex, sexual abuse and HIV/AIDS, South Africa 2005

Issue	n	Yes %
Have you ever discussed sex with this child?	804	15.4
Male	344	13.5
Female	460	17.3
Have you ever discussed sexual abuse with this child?	1 626	31.1
Male	713	27.9
Female	913	34.2
Have you ever discussed how HIV/AIDS is transmitted with this child?	976	18.8
Male	465	18.3
Female	511	19.2

Issue	n	Yes %
Have you ever discussed how to prevent HIV/AIDS with this child?	917	17.6
Male	446	17.5
Female	471	17.7

Table 3.99: Communication between parent/caregivers and children aged 12–14 years about sex and sexual abuse, South Africa 2005

Issue	n	Yes %
Has a parent/guardian ever talked to you about sex?	697	43.5
Male	272	35.5
Female	425	51.0
Has a parent/guardian ever talked to you about sexual abuse?	837	53.5
Male	356	47.4
Female	481	59.1

3.8.6 Discussion

Household burden of HIV/AIDS: As this is the first study of its kind to examine this issue nationally it is difficult to discuss the results obtained on this topic. However, there appears to be a clear case of underreporting of the household burden of HIV/AIDS when one compares with the finding of an overall HIV sero-prevalence of 10.8% found in the current survey as well as other national surveys in South Africa. This might be because most people who are HIV positive do not know their status and secondly the high levels of issue of stigma because HIV-positive people are afraid to disclose their status. It is therefore difficult to correctly ascertain this indicator. It is however possible that as the levels of stigma towards HIV/AIDS decrease and more people disclose their status, both the visibility of burden and illness will increase.

Orphans: When the findings in this survey on the orphanhood prevalence rate are compared with that from the 2002 survey, there is evidence of an escalating orphan problem in South Africa. This is in agreement with Rehle and Shisana's (2003) conclusion that the HIV/AIDS epidemic in South Africa has peaked and the number of orphans and vulnerable children will therefore continue to increase for the foreseeable future However, the government's roll out of ARVs in the public health sector will impact positively in the near future by reducing the numbers of children orphaned by HIV/AIDS. The dominance of paternal orphans over maternal orphans (with double orphans in between) is as expected. This finding is consistent with the 2002 survey findings as reported by Brookes et al. (2004) and also recent findings from studies carried out in two local communities in South Africa (Jooste, Managa & Simbayi 2005; Simbayi et al. 2005). Similar findings have also been reported recently in two local communities each in Botswana (Tsheko et al. 2005) and Zimbabwe (Chingono et al. 2005; Rusakaniko et al. 2005). The literature

shows that in sub-Saharan countries men are dying first, followed by infected wives and partners. This is consistent with the general observation that fathers often die earlier than mothers due to the fact that men are usually much older than their spouses and their life expectancy is shorter than for women. UNICEF/UNAIDS/USAID (2004) found that 20% of households with children in Southern Africa were taking care of one or more children orphaned by AIDS. The burden on grandparents and older caregivers is increasing. Female-headed households are found to be taking in and caring for more orphans than male-headed household. Similar findings are reported in the OVC psychosocial survey recently conducted by Masisi et al. (in press) in Botswana, Simbayi et al. (2005) in South Africa and Rusakaniko et al. (2005) in Zimbabwe.

Child-headed households: The findings about the number of child-headed households are in line with the notable increase in the number of orphans found in the present study. They are also consistent with predictions from UNAIDS (2004). Although based on studies of local communities at district or municipality levels, comparable prevalence data of under 5% of child-headed households has been found in OVC censuses and psychosocial surveys conducted in two sites each in Botswana, South Africa and Zimbabwe (Tsheko et al. 2005; Masisi et al. in press at Botswanian sites; Jooste et al. 2005 and Simbayi et al. 2005 at South African sites; and Chingono et al. 2005 and Rusakaniko et al. 2005 at Zimbabwean sites). Based on the 2002 and 2005 national surveys, there is clear evidence that child-headed households are a growing problem. However, it is expected that once the coverage for ARVs is expanded significantly, there will be fewer orphans. The findings confirm what has been observed throughout Africa – that the number of child-headed households is escalating due to parental death and that the extended family system is collapsing or failing to cope (Foster 2000). In a Rwandan study, MacLellan (2005) found that three-quarters of all child-headed households are headed by girls. There are households where the oldest child is just 11 years old and there may be as many as eight children in a household. Furthermore, the study found that while most households are made up of siblings, some consisted of siblings and a parent or grandparents. In this situation the eldest child tends to be the head of the household and the adult is unable to take responsibility due to illness, particularly AIDS (MacLellan 2005).

Risk factors and risk environments: A key issue determining rates of HIV infection among youth is their exposure to risk. This part of the discussion focuses on three key areas of risk to children: environment, care and protection, and knowledge of HIV/AIDS. With regard to environment, only 25% of all children aged 2–18 years live in homes where a formal salary is earned. This figure drops to one in ten for Africans and a third of coloureds, with both groups relying heavily on government pensions or grants to supplement their income. The care and protection of children is likely to be compromised in environments where there are inadequate resources. Most of the children without adequate resources live in rural informal areas and informal areas. Almost a third of children are exposed to someone getting drunk in their home or neighbourhood at least once a month. An environment where alcohol and drug use is common is likely to increase the risk of children to sexual abuse and HIV infection. The majority of children received adequate monitoring at home. Nevertheless, the age of the caregiver may play a role in adequate monitoring of children as grandparents were involved in the care of one-fifth of the children, especially children aged 2–11 years. This positive trend must be weighed against high-risk practices whereby almost half of the children aged 2–11 years were sent out alone on errands and over 75% of children aged 12–14 years were similarly exposed to such risk. Similarly, a substantial number of children are left on their own from just over 10% aged 2–11 years to almost half of the children aged 12–14 years. The

risk of abuse is increased by the fact that 46% of female children aged 2–11 years share a bed, usually with a parent or caregiver. It does appear that caregivers are sensitive to the type of sleeping arrangements of children as two-thirds of children aged 12–14 years either have their own room or share a room.

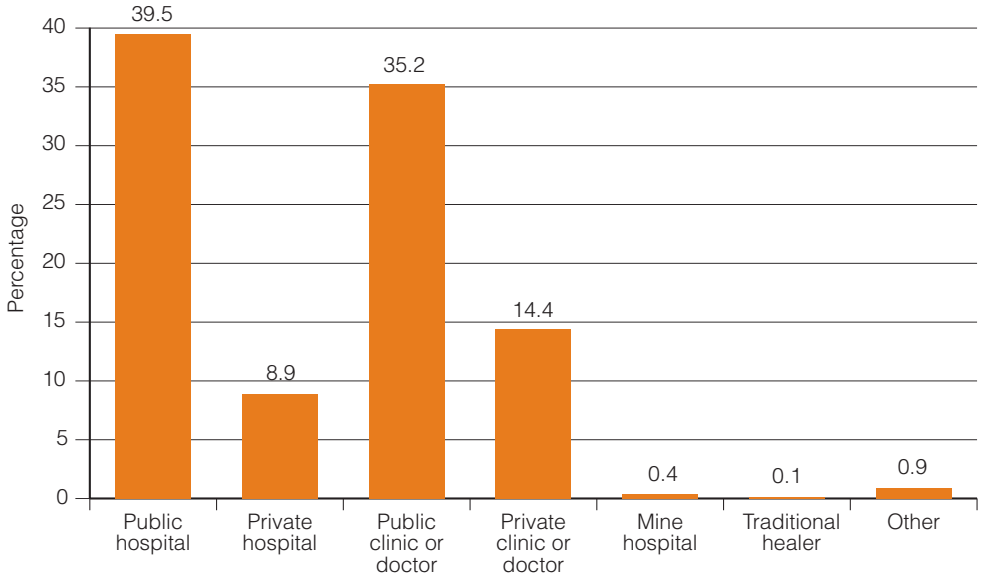
Travelling to and from school presents considerable risk to children, with at least 40% of children aged 12–14 years going to or returning from school unaccompanied. The safety of children travelling to and from school can be better assured if specific attempts are made to ensure that children are supervised. Care and protection is also needed in schools where sexual harassment of girls by boys or male educators continues to be a serious problem. Adequate knowledge and communication about HIV/AIDS is an important element of reducing risk. Very few parents report discussing sex with children aged 2–11 years, though just under a third talked about sexual abuse, most often to the female child. This increases to 44% and 54% respectively among 12–14 year-old children, again more often with girls than with boys. A child's knowledge of HIV transmission was significantly associated with parental communication about sex and sexual abuse. Factors such as living in a formal urban area and the caregiver's level of education were also significantly associated with the child's knowledge of HIV transmission. More effective strategies are needed for improving communication between parents/caregivers and children living in resource-poor environments, as well as increasing the role played by fathers in communicating important information to children. Even though children aged 12–14 years appear to have adequate knowledge of HIV transmission in relation to contaminated blood, or sharing needles, one in five do not believe that AIDS can be contracted through unprotected vaginal sex, a key transmission route. Since most children obtain information about HIV and HIV transmission through schools, it is vital that these programmes focus more heavily on the risks associated with unprotected sex in an ongoing and systematic way. Children aged 12–14 years are exposed to multiple risks within the home and within the school. The protection of children requires children, parents/caregivers and educators to act in concert to identify and minimise these multiple risks.

3.9 Structural and political contextual issues

3.9.1 Use of healthcare services

Respondents were asked to indicate the place where they usually go for healthcare and responses are presented in Figure 3.19. The large majority of the respondents (70%) indicated that they usually attended the public healthcare services, while only 23.3% attended private healthcare services with only a small proportion indicating that they utilised traditional healers.

Figure 3.19: Use of healthcare services among respondents aged 15 years and older, South Africa 2005



Of the respondents that attend the public healthcare services, the large majority were Africans (84.2%). In contrast, the large majority of whites (80.8%) use private healthcare services. Only a small proportion (1.1%) go to traditional healers for healthcare (Table 3.100).

The majority of respondents from poorer provinces depend heavily on the public healthcare sector. For instance, Table 3.100 shows that a large proportion of respondents from Limpopo (87.0%) and Mpumalanga (80.1%) attended the public sector healthcare services, while smaller proportions of respondents from Western Cape (58.3%) and Gauteng (57.0%) did so. Younger respondents were also more likely to utilise public healthcare services.

With regard to localities, the majority of respondents from rural informal (90.4%), urban informal (88.1%) and rural (82.8%) locality types were more likely to use public healthcare services than respondents from urban formal locality types (58.5%).

Table 3.100: Places where respondents aged 15 years and older usually obtain healthcare, South Africa 2005

Variable	Public hospital %	Private hospital %	Public clinic or doctor %	Private clinic or doctor %	Mine hospital %	Traditional healer %	Other %
Sex							
Male	39.3	9.8	31.9	16.0	0.7	1.1	1.2
Female	39.6	8.1	37.9	13.0	0.1	0.7	0.6

Variable	Public hospital %	Private hospital %	Public clinic or doctor %	Private clinic or doctor %	Mine hospital %	Traditional healer %	Other %
Race							
African	44.4	5.0	39.8	8.3	0.4	1.1	1.0
Coloured	35.1	11.6	31.8	21.2	0.1	0.0	0.1
Indians	28.7	29.6	8.8	32.4	0.1	0.0	0.3
Whites	9.0	30.3	9.6	50.5	0.2	0.0	0.4
Age							
15–24	42.5	6.6	38.8	10.2	0.1	0.9	0.9
25 and above	38.1	9.9	33.6	16.3	0.5	0.9	0.8
15–49	39.7	8.8	35.8	13.7	0.4	0.8	0.8
50 and above	38.9	9.0	33.0	16.8	0.3	1.0	1.2
Province							
WC	25.4	13.3	32.9	27.8	0.0	0.0	0.5
EC	38.8	3.7	49.0	6.9	0.2	1.1	0.3
NC	35.9	9.8	41.2	12.2	0.5	0.2	0.2
FS	34.9	9.0	36.8	15.1	0.2	2.1	2.0
KZN	46.6	9.7	32.6	10.2	0.0	0.8	0.2
NW	30.2	6.7	43.3	15.4	2.3	1.1	0.9
GP	30.3	13.5	26.7	26.5	0.4	0.7	1.8
MP	52.8	10.0	27.3	8.8	0.4	0.5	0.1
LP	54.2	4.4	32.8	5.7	0.1	1.1	1.6
Locality type							
Urban formal	32.4	15.6	26.1	23.8	0.6	0.6	0.9
Urban informal	44.9	3.6	43.2	6.6	0.2	0.5	1.0
Rural informal	47.2	2.4	43.2	5.0	0.2	1.2	0.8
Rural formal	39.3	4.7	43.5	10.7	0.1	0.9	0.7

3.9.2 Financing of HIV/AIDS services

The transformation of the healthcare system that began in April 1994 brought about many changes in South Africa's healthcare system and service provision. However, healthcare provision in South Africa is increasingly becoming unaffordable and the rising costs of healthcare are unsustainable. South Africa has a two-tier health system where those who can afford it can get the best care in the world, while the majority continue

to have inadequate services (Shisana & Louw 2005). The two-tier system promotes a maldistribution of resources and wastage, and defeats commitment to a healthcare for all. The projected impact on the health sector, due to increased demand for healthcare, will be greatest for the public health sector, with HIV/AIDS-related utilisation requirements increasing more than three-fold between 2000 and 2010 (Martin 2003). Current primary healthcare utilisation in South Africa is relatively low by middle-income country standards (Gray et al. 2005). Until recently an average of 3.5 visits per person per year was seen as the desirable target utilisation rate in the South African context. A major deficiency in this estimate was the lack of consideration of the impact of the HIV epidemic, and thus the target utilisation rate was increased to 3.85 (Gray et al. 2005).

According to the Department of Health's National Health Accounts (2005), public healthcare financing is too heavily dependent on general taxation. This dependence makes health sector funding vulnerable to macro-economic policy and international financial market volatility. The government needs to find ways of boosting public health sector financial resources, focusing on priorities and encouraging redistribution to where funds are most needed (Department of Health 2005). In the midst of all the calls for increased expenditure on health and HIV/AIDS, it is important to reflect on sustainability, how one thinks about this critical development challenge (Martin 2003).

Table 3.101 shows opinions about the idea of introducing a new tax to finance HIV or AIDS programmes. Almost half of participants (45.6%) indicated that they would support the introduction of such a tax. Proportionately more Africans (47.7%) and coloureds (48.3%) indicated their support for the introduction of such a tax compared to their Indian (33.3%) and white (31.4%) counterparts. The provinces that indicated most support for a new tax to finance HIV or AIDS programmes are Mpumalanga (55.5%), North West (53.4%) and Free State (52.4%). The majority of participants in the rural areas (51.1%) indicated their support followed by participants in urban informal areas (49.0%) compared to those in urban formal areas (45.0%) and in rural informal areas (44.4%).

Table 3.101: Opinions of respondents aged 15 years and older about the introduction of a new tax to finance HIV or AIDS programmes, South Africa 2005

Characteristics	n	Support %	Oppose %	No opinion %
Sex				
Males	6 199	47.3	29.3	23.4
Females	9 898	44.2	27.1	28.7
Race				
African	9 507	47.7	24.4	27.9
Coloured	2 944	48.3	25.2	26.6
Indians	1 728	33.3	45.8	20.9
Whites	1 886	31.4	52.2	16.4
Age group				
15–24	5 601	48.8	23.3	27.9
25 and above	10 496	44.1	30.3	25.6

Characteristics	n	Support %	Oppose %	No opinion %
Province				
WC	1983	40.1	31.3	28.6
EC	2579	49.7	14.3	36.0
NC	993	42.3	22.2	35.6
FS	995	52.4	30.5	17.1
KZN	3 219	40.3	32.1	27.5
NW	1 125	53.4	24.3	22.3
GP	2 557	48.1	33.3	18.6
MP	1 173	55.5	24.5	20.0
LP	1 473	35.1	31.9	33.0
Locality type				
Urban formal	9 294	45.0	33.2	21.8
Urban informal	1 705	49.0	23.5	27.4
Rural informal	3 679	44.4	23.5	32.1
Rural formal	1 419	51.1	22.2	26.7

When employed participants were asked if they were willing to pay a new tax to finance HIV/AIDS programmes, nearly half of the respondents (47.8%) agreed with the idea (Table 3.102). Table 3.102 also shows that proportionately fewer whites and Indians indicated that they were willing to pay the tax when compared to their African and coloured counterparts. Residents from North West, Eastern Cape and Free State provinces were most willing to pay the tax whilst those from Limpopo and Northern Cape provinces were least willing to do so.

Table 3.102: Willingness, among respondents aged 15 years and older who were employed, to pay a new tax to finance HIV/AIDS programmes, South Africa 2005

Characteristics	n	Yes %
Overall	8 654	47.8
Males	3 789	48.3
Females	4 865	47.3
Race		
African	4 594	51.4
Coloured	1 636	53.1
Indians	1 096	36.4
Whites	1 312	30.0

Characteristics	n	Yes %
Age group		
15–24	2 369	52.1
25 and above	6 285	46.5
Province		
WC	1 223	49.0
EC	1 256	58.9
NC	420	38.1
FS	573	57.4
KZN	2 003	41.8
NW	511	59.5
GP	1 533	48.9
MP	502	42.3
LP	633	31.3
Locality type		
Urban formal	5 562	46.6
Urban informal	835	51.5
Rural informal	1 422	46.8
Rural formal	835	55.3

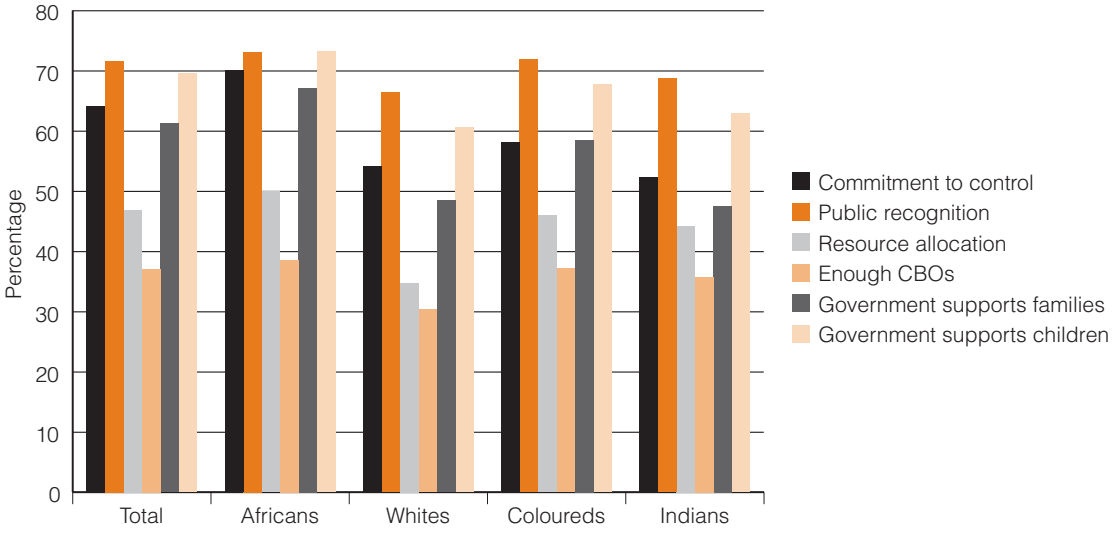
3.9.3 Opinion poll of political and structural contextual issues

There has been a lot of controversy both locally and internationally about the role of the South African government in its handling of HIV/AIDS issues, and particularly on its commitment to ARV treatment for people living with HIV/AIDS. During the 2002 survey we found that a majority (63.8%) of South Africans aged 15 years and older believed that the leaders of the country were 'committed' to controlling HIV/AIDS and that this perception varied substantially by both race and province. However, when it came to translation of the perceived commitment into practice, the majority (52.5%) viewed the government's allocation of resources as inadequate. Furthermore, nearly all South Africans believed that the government should provide ARVs for PMTCT (98%) and for people with AIDS (96.4%).

As was done during the 2002 survey, the 2005 survey also examined the general perceptions of the public in the form of a public opinion poll (see Figure 3.20). A few additional questions were also asked in the light of the recent development of the Comprehensive Plan for the Prevention, Management, and Care for HIV/AIDS recently and its implementation. Approximately, 71% of South Africans said political leadership publicly recognise the importance of HIV/AIDS with 72% of Africans responding positively to the question. However, less than half of the respondents (48%) said the

government allocates sufficient funds to control the HIV infection. Whites were less optimistic, with only 35% saying they think the government allocates enough resources to control HIV infection. Moreover, less than 40% of South Africans think that there are enough community-based organisations helping people HIV/AIDS in the community. The majority of South Africans (60%) agreed with the fact that the government supports people and families living with HIV/AIDS. Similarly, the majority (nearly 70%) agreed that the government supports children affected by HIV/AIDS.

Figure 3.20: Perceptions among respondents aged 15 years and older about political leadership's commitment to controlling HIV/AIDS and providing funding for controlling HIV infection, by race, South Africa 2005



Most residents in all nine provinces perceived that political leaders publicly recognise the importance of HIV/AIDS. However, they still do not perceive the government to be allocating sufficient funds to control the spread of HIV infection. Furthermore, residents are concerned about the number of community-based organisations helping people affected by HIV/AIDS in the community. Once again less than 40% of the residents across all nine provinces thought that there are enough community-based organisations helping people affected by HIV/AIDS in the community. With the exception of KwaZulu-Natal, residents from the other eight provinces believed that the government supports people and families living with HIV/AIDS. Residents from all nine provinces largely agreed that the government supports children affected by HIV/AIDS (see Table 3.103).

Table 3.103: Perceptions among respondents aged 15 years and older about political leadership's commitment to controlling HIV/AIDS and providing funding for controlling HIV infection by province, South Africa 2005

Issue	WC %	EC %	NC %	FS %	KZN %	NW %	GP %	MP %	LP %	Total %
Political leaders are committed to controlling HIV/AIDS in South Africa	57.3	65.6	66.2	74.2	61.5	77.6	65.5	63.7	77.3	66.7
Political leaders publicly recognise the importance of HIV/AIDS	75.3	66.8	70.6	76.2	69.2	81	72.8	65.8	79.7	72.6
The government allocates sufficient funds to control the spread of HIV infection	48.8	42.1	36.4	63.2	39.9	48.6	49.9	47.3	54.2	47.4
There are enough community-based organisations helping with HIV/AIDS in the community	39.4	36.9	38.5	51.5	32.5	34.6	39.8	41.2	33.3	37.5
The government supports people and families living with HIV/AIDS	57.2	68.3	69.1	75.6	52.2	69.7	64.3	65.8	63.8	63.3
The government supports children affected by HIV/AIDS	66.9	74.9	71.9	82.2	63.3	72	75.3	69.9	65.8	70.6

Discussion

Use of healthcare services: The majority of respondents who are mainly poor and Africans used public healthcare facilities while the minority and wealthier whites utilised private healthcare facilities. Clearly, the HIV/AIDS epidemic has the highest burden among Africans and this will no doubt exacerbate the current situation whereby 80% of the mainly black South African population utilise public health services which spend only 20% of the annual health budget while 20% of the population utilise the private health sector and spend 80% of the costs mainly among middle class and wealthy white people most of whom can afford medical aid insurance (Department of Health 2005). This motivated the development of the Draft Health Charter by the Department of Health (Department of Health 2005), partly to redress the disparities in access to and quality of healthcare which is also found between urban and rural areas. Although the study did not investigate whether or not respondents belong to medical aid schemes, belonging to a medical aid scheme might also be a major factor in this division, whereby the majority of individuals in this country with higher educational levels and from the previously advantaged population have stable employment which affords them access to medical aid. As Booysen (2003) asserts, access to a medical aid or medical benefit scheme represents another aspect of institutional access to private healthcare and can also be used as an indicator for assessing disparities in healthcare in urban and rural areas. This is further supported by the fact that the majority of respondents in this study who depend on public healthcare were from poorer and predominantly rural provinces

such as Limpopo and Mpumalanga, and from rural informal and rural formal and urban informal areas (mainly because the majority of informal dwellers are unemployed in this country). This indicates the continuing inequalities in healthcare and the burden on the public healthcare system in this country, whereby the majority of individuals in rural areas are generally more dependent on public and other healthcare services than on private services, compared with people living in urban areas (Booysen 2003). It is clear from these findings that the inequalities that the South African government has attempted to address in the past ten years continue to persist in the health sector. The situation will probably worsen in the next few years as the HIV/AIDS epidemic continues to put pressure on the resources available in the public health sector such as hospital beds, the costs of ARVs and other drugs needed for the treatment of opportunistic infections.

Financing of health services: Improved and equal access to health services, especially in the era of HIV/AIDS, will require increased income and expenditure on health services including HIV/AIDS-related services. It is therefore important that nearly half of participants (45.6%) indicated their support of an introduction of a new tax to finance HIV or AIDS programmes. More Africans (48.3%) supported the introduction of a new tax to finance HIV/AIDS followed by coloureds (47.7%), Indians (33.3%) and whites (31.4%). In this study both Africans and coloureds reported the highest HIV prevalence. The province indicating the highest level of support for a new tax to finance HIV or AIDS programmes was Mpumalanga (55.5%), which reported the highest HIV prevalence in this study. The majority of participants in rural areas (51.1%) indicated their support for a new tax, followed by participants in urban informal areas (49.0%). More significantly, employed participants were asked if they would be willing to pay a new tax to finance HIV/AIDS programmes and nearly half agreed with the proposal. However, the majority of whites and Indians indicated that they would not be willing to pay such a tax. It is possible that these two communities do not feel a strong an obligation to contribute to for the health and welfare of their compatriots because whites in particular are culturally more individualistic in orientation and also their own needs are adequately catered for through medical aid insurance and the private health sector (Department of Health 2005). Nevertheless, plans by the South African government to improve the funding of health services through a social health insurance scheme for low-paid workers will go a long way towards meeting some of the health needs of those currently unable to access medical aid insurance. Furthermore, the growth of a public–private partnership in the health sector, as advocated in the Health Charter (Department of Health 2005), augurs well for improving access to equitable and quality healthcare for all in the near future.

Opinion poll of political and structural contextual issues: As was the case during the 2002 survey, the results of the poll were fairly predictable, showing that generally previously disadvantaged people were more favourable than their previously advantaged counterparts with regard to the government's commitment, political leadership and performance in the fight against HIV/AIDS. An interesting finding was that while there was some consensus that government was providing inadequate funding to control HIV/AIDS in the country, most respondents agreed that the government was taking good care of people living with HIV/AIDS and OVC. Clearly, these results suggest that the majority of the general population is happy overall with the government's role and functioning in terms of the fight against the HIV/AIDS epidemic. However, it is clear that the government needs to market its successes in the fight against HIV/AIDS better than it has done hitherto including explaining the fact that it is providing as much funding as possible given competing demands on the budget for poverty alleviation, social welfare benefits, provision of affordable housing, free education, free health services and water to all its citizens.

CHAPTER 4

Conclusions and recommendations

4.1 Conclusions

HIV prevalence and HIV incidence

The first objective of this study was to determine HIV prevalence and incidence as well as viral load in the population of South Africa using linked anonymous HIV testing of DBS specimens. The overall HIV prevalence of 10.8% among persons aged two years and older is similar to the prevalence level of 11.4% recorded in 2002. The study has produced robust HIV prevalence estimates for all Africans and coloureds but less robust estimates for whites and Indians due to very low participation rates for HIV testing in the latter groups. The results also show that HIV prevalence continues to be high in women aged 20–24 years and peaks in the age groups 15–29 years for females, and 30–34 years for males.

HIV prevalence among young adults in the 15–49 age group increased only slightly from 15.6% in 2002 to 16.2% in 2005. The results may be a further indication that the epidemic in the general population of South Africa has entered a phase of levelling off. However, this is no reason to be complacent, as Rehle and Shisana (2003) observe, to 'sustain' HIV prevalence at this level, the number of new HIV infections (HIV incidence) is actually required to increase in order to match the loss of HIV-infected persons due to the increasing number of HIV/AIDS-related deaths, and AIDS mortality has still not reached its peak in South Africa.

Current HIV-transmission dynamics in South Africa are best reflected by the HIV-incidence figures observed in the different sub-populations. Especially alarming are the incidence rates among young females at prime childbearing age. Females aged 15–24 years have an eight-times higher HIV incidence than males (6.5% compared to 0.8%) and account for 87% of the recent HIV infections in this age group. Our incidence analysis also confirmed recent findings from Uganda by Gray et al. (2005) that suggest an increased risk of HIV acquisition during pregnancy. African females aged 15–49 years who reported having been pregnant in the last 24 months (n = 630) were estimated to have an HIV incidence of 7.9%, the highest incidence rate of all analysed sub-populations in our survey.

The HIV prevalence among children aged 2–9 years is high and this report provides important evidence to substantiate the observation that children are at risk of HIV infection. Most of the children aged 2–4 years who are HIV positive are likely to have been infected through mother-to-child transmission. In a province-wide study, Shisana, Mehtar et al. (2005b) found that prolonged breastfeeding by HIV-positive mothers is common, and is likely to be influenced by the 'baby-friendly policy' that encourages breastfeeding for all mothers. However, if a mother was not HIV positive during pregnancy but contracts HIV thereafter, she may infect her child during a period of prolonged breastfeeding.

Analysis of incidence data shows that new non-vertical infections have occurred among children in South Africa. It was found that 6% of all recent HIV infections in South Africa in 2005 occurred in children aged 2–14 years. A further breakdown shows that 3.3% occurred in children 5–9 years. These infections cannot be clearly linked to mother-to-child transmission, and thus infection would have occurred through other modes of transmission, potentially including child sexual abuse or infection through the healthcare system.

Modelling of the epidemic in South Africa

The second objective of the study was to gather data for modelling the HIV epidemic in South Africa. The study has produced estimates on HIV prevalence and behavioural indicators that will be used to model the HIV/AIDS epidemic and complement the household survey data. A separate paper on modelling the HIV/AIDS epidemic will be prepared for public release in due course.

HIV risk, prevention and social response

The third objective of the study was to identify risky behaviours that predispose the South African population to HIV infection, also to assess the broader social response to the epidemic. The age of first sexual experience has been shown to be earlier on average for the present generation of young people than the age of first sexual experience of older age groups. In the context of a generalised HIV epidemic, delaying first sex reduces risk to HIV infection. Although not all individuals who have had sex before sustain sexual activity on an ongoing basis – for example, just over one in five sexually experienced 15–24 year olds who have had sex before, have not had sex in the past year – sex in the context of a high prevalence HIV epidemic requires multiple strategies to avoid infection. It is in this context that high numbers of sexual partners, regular turnover of sexual partners, and concurrent sexual partnerships pose significant risks. Over a quarter of males in the 15–24 year age group have had more than one partner in the past 12 months. There are also high rates of partnership between youth and older partners, which increases HIV risk in the younger age groups. Condom use at last sexual intercourse has however increased over time, as has the number of people finding out their HIV status through having an HIV test.

Rates of HIV infection among youth is associated with risky environments. These include environments in which there are inadequate resources related to poverty, abuse of alcohol and drugs within families and neighbourhoods, and sexual harassment of girls by boys and male educators within schools.

When communication programmes are assessed in relation to HIV prevalence and behavioural response it is clear that, in spite of massive investment, there has been inadequate progress in addressing HIV prevention. Surprisingly, some key areas of knowledge remain unclear, including knowledge of sexual transmission amongst younger respondents in the youth and adult age groups, the relationship between partner reduction and risk, the risks of mother-to-child transmission, a cure for AIDS, and knowledge of the relationship between HIV and AIDS. Knowledge of ARV treatment was relatively high, although there were gaps in understanding in relation to risks of transmission when taking ARVs, amongst other aspects. There was very low awareness of developments in relation to HIV vaccines.

Attitudes to people living with and affected by HIV/AIDS were generally positive, particularly in relation to being willing to care for family members with AIDS, and general perceptions about PLWHA.

There is an overall high awareness of national HIV/AIDS campaigns and programmes, and most South Africans are exposed to multiple campaigns. There are however important gaps that need to be addressed – notably the overemphasis of national campaigns and programmes on youth as a primary audience. In particular, there is a poor awareness of campaigns and programmes in particular groups including persons aged 50 years and older, people living in rural areas and whites in general.

Exposure to HIV/AIDS information extends beyond campaigns and programmes. Friends and family members are seen as important sources of information, as are health services, schools and workplaces. People are also exposed to information about HIV/AIDS at local community meetings and educational events. More than one in ten respondents have helped families who have lost members to AIDS and helped families affected by AIDS.

Strengths and limitations of the study

In relation to strengths, firstly, the sample sizes (N = 23 275 for interviews and 15 851 for HIV testing) are large enough to allow for meaningful analyses of data on key socio-behavioural determinants and mass media information and to enable generalisation of the results to the whole South African population.

Secondly, as was the case with the 2002 survey, the study is based on a sampling approach that ensures representativeness of the South African population. The study used a multi-stage, stratified, cluster sampling approach to draw the census EAs. For this reason, the results obtained are generalisable to the nation, provinces, children, youth and adults, and also to each of the four geographic types (or locality types) of EAs, namely: urban formal, urban informal, rural informal and rural formal (farm) areas. For the second time, South African policymakers, planners, NGOs and the public have comprehensive information on HIV prevalence for people of different races and for those living in urban areas, whether in formal or informal dwellings, rural formal and rural informal areas.

Thirdly, as was the case with the 2002 survey, the study used a master sample that allows for repeated surveys to track changes in population behaviour, exposure to information for HIV prevention and HIV status.

Fourthly, this is the first national population-based survey of HIV/AIDS to include HIV incidence measures. This clearly adds to the critical scientific evidence required by the government and NGOs as well as donors to determine the levels of new HIV infections. This information will be crucial for assessing the effectiveness of the national response in reducing new HIV infections.

Finally, this is the second national South African study on the general population that has been conducted and the HSRC and its partner organisations have also conducted other large-scale surveys since the 2002 survey including studies conducted among South African health workers (e.g., Shisana, Hall et al. 2004b) and also among educators (Shisana, Peltzer et al. 2005a). Furthermore, we are also helping neighbouring countries such as Botswana, Mozambique and Swaziland to undertake similar surveys in their own countries. Apart from the experience gained and confidence in the methodology applied, the fact that this is a follow-up study is also important in its own right. In particular, having data collected in 2005 allows us to investigate the trends in changes in both HIV prevalence rates and behavioural risks as well as the impact of communication compared to the 2002 survey data as a baseline. This is indeed a major strength of the study.

As was the case with the 2002 survey, there are two obvious types of limitation, those inherent to any cross-sectional socio-behavioural studies and those specific to this study are discussed below.

In all cross-sectional studies, the exposures and outcomes are measured at the same time and hence there can be difficulties in determining causality. The difficulties in determining the temporal sequence of HIV infection and potential risk factors is exacerbated when

using prevalence rather than incidence cases of HIV because some of the infections may have occurred up to ten years ago whereas questionnaires inquire about current risk behaviours. Individuals may well have changed their behaviour since becoming infected for a variety of reasons that may or may not be due to their HIV status. This limitation has however been taken into account when interpreting the results. The inclusion of HIV incidence to some extent alleviates this concern. Additional analysis will be conducted to assess the link between behaviour and incidence.

Another limitation, common to nearly all surveys about knowledge, attitudes, beliefs and behaviours toward HIV/AIDS, is that they are based on respondents' self-declarations. Self-declarations may be affected by recall biases and, when it comes to behaviours in the sphere of individual private lives (such as sexual or addictive behaviours), respondents' answers may also be affected by a social desirability bias; that is, participants tend to provide the answers that they think are socially acceptable. It must however be pointed out that questions used for self-declaration of intimate or socially stigmatised behaviours were questions that have been validated in other scientific surveys dealing with similar issues.

A further limitation of the study, which is also common to most surveys in general populations using a household survey type of design, relates to exclusion of people not living in homes. The study sample included people who live in homes and hostels. The study excluded homeless people, those who live in streets or shelters or hotels. The design of the sample purposefully excluded people confined to institutions, such as soldiers, prisoners and students living in boarding schools. Some of these groups may have higher HIV prevalence than the general community. For this reason, the study results are generalisable to people who regularly live in homes.

Finally, the design of this household survey has been conceived in order to allow for detailed analysis of the major sub-populations in South Africa, including oversampling when necessary to guarantee meaningful comparisons (for example, between the different races in the South African population). However this design and the goal of ensuring national representativeness implies that some groups that may be of particular interest for the understanding of the epidemic could not be captured in sufficient numbers in this survey (individuals with homosexual and bisexual practices, injecting drug users, sex workers, etc.). However similar limitations are encountered by all surveys about sexual and HIV-related risk behaviours based on general population samples in other countries.

Limitations specific to this study: First, although researchers and fieldworkers made every attempt to encourage their participation, as was the case with the 2002 survey, the low HIV test participation rates of specific groups may have biased HIV prevalence estimates in some sub-populations.

Second, children under 2 years were excluded by the protocol of this study. The HIV test used in this study, as with all ELISA HIV tests, detects the presence of HIV antibodies in the blood of the participant. Over 99% of people over the age of 2 years and who are infected with HIV will test positive on the ELISA test because almost all PLWHA produce HIV antibodies. However, the situation is more complex for children under 2 years old because the infant may not be actually infected with HIV, but may, if the mother was HIV infected, still be carrying the mother's antibodies. The child will therefore test positive on the ELISA test even though he/she is not infected (false positive test). In order to determine HIV status in the under 2 year-olds, it is necessary to use nuclear amplification

technology tests such as the Polymerase Chain Reaction (PCR) test but these tests are very expensive and not cost-effective to use in a community-based survey. For these reasons we decided to exclude children under 2 years of age from the study. Therefore, this study has missed a significant proportion of children who acquired HIV from parental to child transmission.

4.2 Recommendations

The HIV prevalence in South Africa among persons aged 2 years and older at 10.8% translates to 4.8 million (95% CI: 4.2–5.3 million) people living with HIV/AIDS in 2005.

False sense of security

Factors underpinning continued high HIV prevalence are partly illustrated by the finding that half of the respondents in this study who were found to be HIV positive did not think they were at risk of HIV infection. Put another way, over two million people who are HIV positive in South Africa do not think they are at risk. This means they may be unaware of their risk of potentially infecting others. For this reason it is also recommended that HIV/AIDS campaigns and programmes address this false sense of security in the general population, with a particular emphasis on finding out one's HIV status. Counselling and other services need to be expanded to provide additional support to persons who find out that they are HIV positive.

Stigmatising attitudes are decreasing

The survey showed that nearly half of South Africans aged 15 years and older think it is acceptable to marry a person with HIV and also that a similar proportion would not have a problem having protected sex with an HIV-positive person. These results suggest that South Africans are accepting HIV/AIDS as a reality in South Africa. It is critical that service providers capitalise on this window of opportunity to encourage disclosure of HIV status.

Integration of family planning and HIV/AIDS services is vital

In view of the high prevalence and incidence of HIV amongst pregnant women and women in the child-bearing age group, it is critical that the government targets this group and strengthens family planning programmes. This is important, given that one in five South African women of reproductive age are not using any contraceptive method. For those who use injectable contraceptives and contraceptive pills, it is important to emphasise consistent use of condoms with regular and non-regular partners as long as they are not certain of their own, or their sexual partner's HIV status.

The high risks of HIV transmission from mother to baby before, during and after pregnancy, and including the risk of becoming HIV positive late in pregnancy or during the period of breastfeeding, need to be noted as important areas of risk. Teenage females have been underemphasised as a target group, although pregnancy levels are high in this age group. We recommend that urgent action on a national scale be taken to make women aware of the risks of HIV infection during pregnancy so they can make informed choices about how best to protect themselves and their offspring, from becoming infected. HIV/AIDS campaigns should also target would-be parents to encourage them to: (a) plan the pregnancy; (b) each get tested for HIV before trying to conceive and disclose the results to each other. Prospective parents should also be informed that women run a greater risk of being infected with HIV towards the end of pregnancy.

Periodic HIV testing is crucial

South Africa appears to have a well-established VCT system, and most respondents know of a place to get tested. However, many respondents found to be HIV positive in this survey had not been tested. Knowledge of HIV status is a critical aspect of prevention as it is linked to motivation to address HIV prevention risk to others. It also serves as an entrée into seeking treatment for opportunistic infections and ARV (in the case of advanced HIV infection).

Periodic HIV testing should be encouraged for men and women in stable partnerships and especially when planning to have a child. Should one of the partners be HIV positive, he/she should be counselled to discuss the advisability of conception. The current environment is conducive to discussing the matter of HIV sero-discordance and the need to prevent transmission to the uninfected partner. This is important because the couple needs to be aware that the HIV-negative partner is at risk of becoming infected with HIV.

The extremely high HIV incidence in females aged 15–24 years (six times higher than males of the same age) is a source of concern. Since half of those who are HIV positive do not know their HIV status, we recommend that HIV/AIDS campaigns and programmes should sensitise this young female group to the fact that the risk of HIV is real. They should be strongly encouraged to know their HIV status through the VCT sites that are available and accessible. Annual testing, particularly amongst young females, is recommended.

It is also recommended that VCT services continue to be promoted, but that routine testing also be considered for persons seeking healthcare for other reasons – particularly, as recommended by UNAIDS/WHO, STI patients and patients with diseases associated with HIV infection.

Young people should be encouraged to delay sexual debut

Data from this study shows clearly that the more sex one has, the greater the chances of acquiring HIV. Sexually active persons had an HIV prevalence that was four times higher than that of those who said they had not had sex and 75% higher than that of those who had abstained from sex in the past 12 months. When controlling for age of the participant, the relationship remained strong for the youth. For this reason, it is critical that young people be encouraged to delay sexual debut.

Avoid high partner turnover and concurrent sexual partnerships

Frequent partner turnover and concurrent sexual partnerships partly contribute to high HIV prevalence among single men and women. Clearly there is a need for prevention campaigns and programmes to emphasise this aspect of risk. To reduce HIV risk, it is recommended that sexually active persons should: (a) avoid engaging in unprotected sex with any person whose HIV status they do not know; (b) access and consistently use condoms from the government or other sources to protect themselves in every sexual encounter; and (c) avoid frequent partner turnover and concurrent sexual partnerships.

Sexual partners amongst youth should be within a five-year age range

What distinguishes HIV risk between young females and young males is the age group with which each has sex. The study found that young females are more likely to have

male partners who are five years older than themselves (females: 15–19 = 18.5% and 20–24 = 28.4%) versus (males: 15–19 = 2% and 20–24 = 1%). Older male sexual partners have a higher HIV prevalence than younger male partners. Although the young males have very high rates of multiple partners, they tend to use condoms more than older males. Although this study did not measure consistency of condom use, the fact that the HIV incidence among young males aged 15–24 years is just 1.1% suggests that they are partly protecting themselves against HIV. Young females who have sexual partners who are at least five years older than themselves increase their chances of being with a sexual partner who is already HIV positive.

Inform women that they are more at risk and encourage self-protection

Women are biologically susceptible to HIV infection and men are more efficient at transmitting HIV. In addition to social factors that increase vulnerability to HIV, biological factors increase susceptibility to HIV among women. While men are more efficient at transmitting HIV, females are more susceptible to HIV infection. It is recommended that women ensure that they use condoms to prevent themselves from becoming infected.

Get treated for STIs and abstain from sex when one has STIs

Sexually transmitted infections increase susceptibility to HIV infection. This study found a strong association between having a history of STI and being HIV positive. For this reason, we recommend that the risks of HIV infection with concurrent STI infection need to continue to be emphasised in prevention programmes. Those who have signs or symptoms of STIs should immediately seek treatment and also not have sex when symptoms are present.

Warn older South Africans that they too are at risk of HIV

The high HIV prevalence among South Africans aged 50 years and older calls for development of targeted interventions for this age group. Persons aged 50 years and older are considerably less aware of national HIV/AIDS campaigns and programmes and have generally poorer knowledge of key aspects of HIV prevention and other aspects of HIV/AIDS. They are less likely than other age groups to believe HIV causes AIDS, or that they are at risk of HIV, or to use condoms or to believe that using a condom prevents HIV transmission or even to know that having multiple partners increases the risk of HIV or believe there is a cure for AIDS. Men who have sex with partners who are five or more years younger have an increased risk of HIV. To curb HIV infection among people aged 50 years and older, the following is recommended:

- An intensified and focused HIV campaign alerting this group that they are also at risk of acquiring HIV infection;
- Emphasis on HIV prevention strategies including correct and consistent use of condoms, and avoiding multiple and concurrent sexual partnerships;
- Emphasis on the need to know their HIV status.

Information related to treatment, care, support and rights should also not be overlooked. It is important to note that older age groups are also likely to have the burden of caring for their children in the 25–35 year age group who become ill from AIDS and for grandchildren who may be orphaned.

This recommendation appears to be obvious and to be applicable to all, however given the poor HIV prevention and knowledge in this older group of South Africans, it is essential to go back to basics.

HIV infection among children needs emphasis

The high HIV prevalence among South African children is a major cause of concern. When the 2002 results were released there was a tendency not to acknowledge that so many South African children were infected with HIV. The estimated 129 621 children aged 2–4 years and 214 102 children aged 5–9 currently living with HIV/AIDS are significant numbers. In view of these findings we recommend that the government reviews the 'baby friendly' breastfeeding policy and encourage HIV-positive women not to breastfeed their children and to supply them with a breastmilk substitute instead. It is feasible for the state to establish a not-for-profit enterprise that can produce a breastmilk substitute specifically to support women who cannot breastfeed because of HIV and other conditions.

The PMTCT programme needs to be strengthened. In addition, there is a need to examine other modes of HIV transmission in children. Given that 6% of new infections occurred within 180 days prior to testing of children in this survey, and the observation that these children were no longer being breastfed, the chances of them being infected through mother-to-child transmission seems unlikely. There is thus a likelihood that they were infected horizontally through other means. The source of infection in these children needs to be investigated, including the potential of child sexual abuse. Our findings suggest that many children in South Africa are left unsupervised for much of the time including going to and from school and being sent on errands alone. Such practices may expose children to sexual abuse. We recommend that the HIV prevention campaigns should include messages on increasing supervision of children.

Include children in surveillance and modelling the HIV/AIDS epidemic

The high HIV prevalence among children aged 5–9 years is common in South Africa, Botswana and Zimbabwe as discussed earlier. Antenatal surveillance systems and models do not take into account HIV infection in this group yet a proportion of these children enter adolescence already HIV positive. This is likely to pose major challenges in the development of HIV prevention programmes for HIV-positive children who try to cope with puberty, peer pressure and the need to be accepted. We thus recommend that the 2006 Prevention Campaign spearheaded by the WHO's African Regional Office and the UNICEF/UNAIDS Global Programme on HIV/AIDS Among Children should increase public awareness and aim to protect children of this age from becoming infected through non-vertical transmission. We also recommend that the UNAIDS/WHO Reference Group on Estimates, Modelling and Projections urgently convene a consultation to discuss the implications for estimating HIV/AIDS prevalence, taking into account these high HIV-positive rates among children.

Safe male circumcision is vital to prevent HIV in South Africa

In view of the high HIV prevalence among adult men in South Africa, although lower than that of women, it is crucial that South Africa adds to the evidenced-based prevention effort. In a study in Orange Farm in South Africa, Auvert and Puren (2004) concluded that safe circumcision can offer at least 60% protection from infection among males. For this reason, we recommend that healthcare providers, as part of routine healthcare, encourage young men to be safely circumcised before becoming sexually active. Medical aid schemes are also encouraged to pay for safe male circumcision and to provide safe male circumcision in public clinics. This will reduce the number of new HIV infections among males, and will in turn reduce the risk for women and children. Women can encourage men to undergo circumcision by preferring circumcised men as partners. However, care needs to be taken in communicating this intervention, so that an impression is not created

that male circumcision completely prevents HIV acquisition. Clearly not all men who are circumcised will escape HIV infection and it is still important for circumcised men to practice safe sex.

Positive prevention is an important tool for HIV prevention

Although there was an improvement in the proportions of people who are aware of their HIV status who were using condoms during the last sex act in this study when compared to the 2002 survey, there is still some concern that many of the people who have tested for HIV and know their status are still engaging in risky behaviour. It is important that everyone who knows their status takes the appropriate steps to both reduce the chances of infection (in the case of those who are HIV negative), and avoid infection of uninfected partners or those who are unaware of their status (in the case of those who are HIV positive).

There is a need to use other interventions to complement the behavioural risk reduction strategies offered through VCT. Two potentially useful intervention models could be adopted to target this specific group. The 'Healthy Relationships' model tested successfully and being currently implemented by CDC throughout the USA (see Kalichman et al. 2001). The model builds on existing support groups in five two-hour sessions and promotes both disclosure of HIV-positive status and, more importantly, the use of condoms as well as reducing the number of sexual partners. It is currently being pilot tested in 12 African countries including South Africa. The 'Options for Health' model aims to achieve the same goals as 'Healthy Relationships' but is based on health providers such as doctors, nurses and VCT counsellors spending 3–5 minutes on health behaviour education during regular visits by PLWHA receiving ARVs until they change their behaviour accordingly (see Fisher 2005; Fisher, et al. 2004). The model is being further tested and piloted both in the USA and in South Africa as well as in Botswana, Lesotho and Swaziland. Involving caregivers in identifying and minimising risky environments for children at home and at school is important to reducing HIV transmission. CHAMP (Collaborative HIV/AIDS and Adolescent Mental Health Program) is a prevention intervention that focuses on strengthening the relationship between pre-adolescents and their families to delay sexual debut through active monitoring of children and identifying risky environments and is currently being tested among 450 families in KwaZulu-Natal.

Refocus communication strategy

With regard to HIV/AIDS communication campaigns and programmes, there needs to be a systematic and co-ordinated approach to addressing key knowledge areas of prevention, treatment, care, support and rights. Clearly there is a need for accountability of programmes to an overarching communication strategy that is related to the National Comprehensive Plan. This study found that there is an urban bias in the reach of HIV/AIDS campaigns and programmes and emphasis on the use of radio in all languages is recommended to increase non-urban reach.

Most national campaigns and programmes see youth as a primary target audience. The notion that a focus on youth under 20 will have a knock-on effect on HIV prevalence amongst young adults, or adults in general, does not appear to be the case. This emphasis is out of kilter with the high levels of HIV prevalence amongst young females under 25, young adults in the 25–35 year age group, and amongst people aged 50 years and older. Emphasis therefore urgently needs to be placed on non-youth audiences.

There should also be an emphasis on addressing issues of risk and vulnerability directly. This applies in particular to gender vulnerability and rights (particularly among girls and women), age-related vulnerability (for example, high age differentials amongst younger partners and vulnerability to older age groups), legal rights (for example, the illegality of statutory rape), and vulnerability as a product of migration and mobility, amongst other factors.

Approaches to supporting local-level communication and dialogue need to be explored. This includes prioritising communication and support potentials of local HIV/AIDS organisations and institutions such as FBOs and schools. Workplaces are an important site for those who are employed.

Partner reduction and avoidance of partner concurrency as strategies for HIV prevention do not appear to have been sufficiently emphasised by campaigns. These strategies are recognised as having potential as efficient mechanisms to reduce HIV incidence, and should be prioritised in HIV/AIDS campaigns and programmes directed at all age groups and localities. This is particularly important for the young adult and adult age groups who are exposed to sexual networks where HIV prevalence is high.

Attention should be given to conveying knowledge of the basic science of HIV including its relation to causing AIDS, the fact that it is incurable, and that ARV treatment exists as a means to prolong life.

Implications of ARVs

It is important to consider ways in which interventions such as the government ARV programme might change attitudes to people with HIV/AIDS, as well as the extent to which such attitude changes impact on the uptake of services. For example, to what extent is the uptake of VCT likely to be improved by the advent of treatment and hence more positive prospects for people with HIV/AIDS? On the other hand there may be negative effects of this and other programmes. As HIV/AIDS is increasingly seen as a 'chronic and serious, but manageable condition', a less risk-averse attitude to HIV infection may prevail and this might diminish motivation to adopt protective strategies. It is therefore important to study and track these effects.

Public perceptions

This study's findings support the need for the DoH's Health Charter as a policy document and implementation programme meant to urgently address the pervasive health inequalities that are still found in South Africa today. The successful implementation of the charter will lead to much more efficient and effective implementation of the government's comprehensive programme for the prevention, treatment, care and management of HIV/AIDS.

Investigate a dedicated tax for HIV/AIDS

This study indicates that between 4.8 million and 5.3 million South Africans aged 2 years and older are living with HIV/AIDS in 2005; many already need ARV therapy as seen from the study of a national probability sample of South African educators, where 22% of those infected with HIV had CD4 cell counts < 200 cells/mm3 blood (Rehle et al. 2005). Currently the government is providing ARV therapy to many, but not all. The cost is likely to escalate. This survey showed that although South Africans believe the government is committed to controlling HIV/AIDS and is not in denial about HIV/AIDS, they are of the

view that the government is not providing sufficient funding for HIV/AIDS. Because the resources are not limitless, it is crucial to explore sources of additional funding. When employed study participants were asked whether they are prepared to pay tax for HIV/AIDS, 47% of males and 44.2% said they were willing to pay and a small proportion of 29.3% males and 27.1% females were unwilling to do so. The remainder did not express an opinion. It is recommended that the government explores this option to ensure sustainability of the ARV therapy programme. This could take the form of establishing a committee to explore the issues around financing of HIV/AIDS programmes.

APPENDIX 5.1

HIV prevalence rates, socio-demographic characteristics, coefficient of variation, and design effect

Variable	Count	n	Response rate %	Prevalence rate (r) %	SE_srs %	SE_r %	CV_r	Deft	Deff
Total	24 236	15 851	65.4	10.8	0.2	0.5	0.05	1.976247	3.905554
Age									
Children (2–14)	6 992	3 815	54.6	3.3	0.3	0.6	0.18	2.101382	4.415807
Youth (15–24)	6 026	4 120	68.4	10.3	0.5	0.8	0.08	1.7738	3.146368
Adults (25+)	11 093	7 912	71.3	15.6	0.4	0.8	0.05	1.882165	3.542546
Province									
WC	3 231	2 204	68.2	1.9	0.3	0.5	0.24	1.578661	2.492171
EC	3 827	2 428	63.4	8.9	0.6	1.1	0.13	1.930487	3.726781
NC	1 452	1 144	78.8	5.4	0.7	0.8	0.15	1.227668	1.507169
FS	1 548	1 066	68.9	12.6	1.0	1.8	0.15	1.799654	3.238753
KZN	4 811	2 729	56.7	16.5	0.7	1.3	0.08	1.872045	3.504552
NW	1 636	1 056	64.5	10.9	1.0	1.4	0.13	1.489541	2.218734
GP	3 768	2 430	64.5	10.8	0.6	1.1	0.10	1.709162	2.921235
MP	1 746	1 224	70.1	15.2	1.0	1.6	0.10	1.522347	2.317541
LP	2 217	1 570	70.8	8.0	0.7	1.2	0.14	1.688404	2.850709

Variable	Count	n	Response rate %	Prevalence rate (r) %	SE_srs %	SE_r %	CV_r	Deft	Deff
Locality type									
Urban formal	13 992	8 629	61.7	9.1	0.3	0.7	0.08	2.279597	5.196561
Urban informal	2 557	1 854	72.5	17.6	0.9	1.3	0.07	1.422288	2.022904
Rural formal	2 025	1 509	74.5	11.6	0.8	0.9	0.08	1.058875	1.121217
Rural informal	5 662	3 859	68.2	9.9	0.5	1.7	0.18	3.620294	13.10653
Sex									
Males	10 204	6 342	62.2	8.2	0.3	0.7	0.08	1.883546	3.547745
Females	13 923	9 509	68.3	13.3	0.3	0.6	0.05	1.838156	3.378819
Race									
Africans	14 246	9 950	69.8	13.3	0.3	0.6	0.04	1.711554	2.929418
Whites	2 587	1 173	45.3	0.6	0.2	0.2	0.31	0.799508	0.639212
Coloureds	4 675	3 382	72.3	1.9	0.2	0.3	0.18	1.432395	2.051754
Indians	2 569	1 319	51.3	1.6	0.3	0.6	0.37	1.688974	2.852633

Note: n = number of cases in the sample, r = response rate, SE_r = standard error of the response rate, CV_r = coefficient of relative covariation, Deft = design factors (square root of Deff), and Deff = design effect

Appendix 5.2

HIV viral load analysis

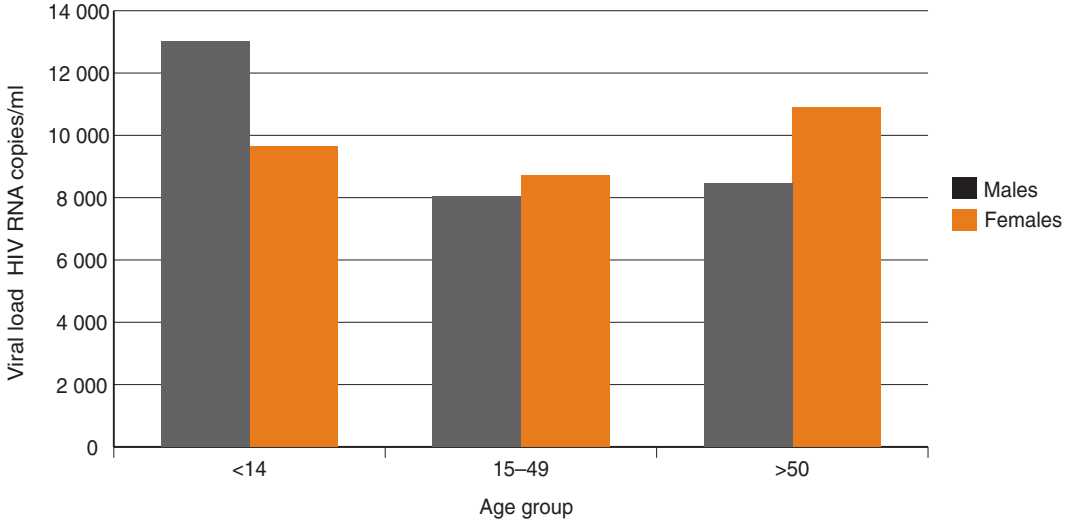
A random sub-sample of 750 DBS specimens from HIV-positive African individuals was subjected to viral load testing. 711 of the 750 specimens were evaluated, 22 samples were excluded because specimens did not produce amplifiable viral copies (so-called low detection-level samples), 15 specimens were not suitable for analysis and two specimens could not be matched with gender data. Viral loads are reported as HIV-1 RNA copies per mL of blood. Medians of HIV viral loads are shown with their interquartile range (IQR).

The HIV viral load profile of the sample is shown in Table A5.1 and Figure A5.1. The median HIV-1 RNA load in the total sample was 8 800 copies/mL (3 520-15 600). The difference in viral loads among males and females aged 15–49 years was not significant (Kruskal-Wallis test on $\log_{10}$ viral load: p= 0.70). There was also no significant difference in the median HIV viral loads by age group (Kruskal-Wallis test on $\log_{10}$ viral load: p = 0.72).

Table A5.1 Median HIV-1 RNA load (Copies/mL – $\log_{10}$) among respondents 2 years and older, South Africa 2005

Age	n	Gender	Viral Load	IQR	Log 10	IQR Log 10
2–14	18	M	12 900	(4 000– 44 000)	4.11	(3.60–4.64)
	29	F	9 600	(3 160–14 800)	3.98	(3.50–4.17)
15–49	163	M	8 000	(3 360–15 200)	3.90	(3.53–4.18)
	444	F	8 650	(3 800–15 000)	3.94	(3.58–4.18)
50 +	24	M	8 400	(4 120–21 400)	3.93	(3.61–4.33)
	33	F	10 800	(4 400–15 200)	4.03	(3.64–4.18)
All	205	M	8 000	(3 480–16 400)	3.90	(3.54–4.21)
	506	F	8 800	(3 800–15 200)	3.94	(3.58–4.18)

Figure A5.1: Median HIV viral load by age and sex (HIV RNA copies/mL), South Africa 2005



This was the first time that DBS specimens have been used for HIV viral load assessment in a population-based survey of this scale. The DBS method of specimen collection has been mooted as an important method of conducting population-based viral load analysis, particularly in developing country settings where sample collection, storage, transport logistics and related specimen stability issues can be challenging (Cassol et al. 1992; Mwaba 2003). There was also good comparability between DBS viral load data and the results obtained with dry plasma spot (DPS) specimens (Brambilla et al. 2003). However, higher HIV viral load levels were found with whole blood specimens (Auvert & Puren 2004).

Further research needs to investigate the validity of HIV viral load results obtained with DBS samples as national, population-based viral load information becomes increasingly important in the assessment of the impact of ARV treatment programmes on the HIV transmission dynamics in South Africa.

APPENDIX 5.3

List of supervisors

K Moodley (National field co-ordinator)
E Botha
Gertrude Tshipa
BJ Moleme
SS Masisi
MJ Scholing
J Francis
P Bosman
M Buckton
D Arendse
M Arrison
E Hendriks
J Mojapelo
T Zim
M Phooko
PM Makhetha
B Mthembu
E Moraka
L Stuurman
N Tyalimpi
W Ngqovu
T Lokwe
F Ndabeni
M Thwane
T Papo
S Sekgobela
S Khosa
H Shipalana
M J Botha
E Nel
P Anthony
T Shange
R Fynn
F Magubane
A Sithole
E Khanyile

List of fieldworkers

C Lucas
M Johnson
J Russell
A Bantobets
I Seekoei
N Bantobetsi
D Mokganisang
R Fish
F Calvert
NDC Sitska
SC Mothabeng
MP Ramagara
TJ Mokoena
NR Tsolo
FM Njoyi
J Hlabeli
S Thoka
A Baloyi
E Sechoaro
N Moholo
S Tshabalala
D Crouch
S James
N Dziba
N Yoyo
D Mgijima
J Xhonti
T Ndema
K Schoonraad
N Ndzunga
M Briekwa
M Burger
J Mehl
M Hammond
L October
J May
J Timotheus
J Gelant
B Johnson
S Hermanus
V Wilkens
S Ohlson
MJ Kgaphalo
NE Ntlatleng
NE Setshedi
A Q Mnguni
L Moletse
M Ngobeni
G Rampeng
N Tlakula
M Matau
F Manne
M Nkomezulu
M Mnotoza
J Pule
E Sithole

E Dube
L Motomi
N Sisusa
B Matale
R Tainton
A Gumede
L Molefe
K Maite
M Mangoale
J Masipa
E Jele
F Nxokwane
V Mango
N Mbolekwa
N Gantsho
M Mbebe
M Qelo
M Mbuqe
J Sannah
N Mkanzi
M Fuzani
F Qwele
K Gobinca
N Marwanqa
D Ntshinga
R Joubert
N Mpahlele
F Yabo
J Galo
S Joyi
R Mhlongo
G Mafa
RM Olebogang
MR Mathibe
MC Mahlanga
BM Mabothe
E Lucas
N Sebokolodi
M Nteo
F Fake
G Mawilla
D Motome
C Mushi
C Dipela
N Mabunda
M Mangewa
J Lehaiwe
E Bopape
M Matheson
M Thipe
P Mushi
N Tsaoane
J Parogo
R Lubesi
J Setsubi
L Naidoo
A Naidoo
M Govender
D Raghoo
D Dladla
J Jali
N Zindela
I Ogle
C Damonse
D Debrose
E Mbatha
G Mabizela
L Andanlal
C Mgobhozi
E Gumede
G Letuka
G Ngcobo
N Mchunu
L Thango
G Mdage
J Mbhekeni
C Vollenhoven
A Gouden
B Gouden
NE D'Olivera

List of field editors

S Cingo
C Mabaso
N Sithole
P Matsobane
L Enacham
N Jila
M Sibiya
L Ndlovu
M Banyini
E Ntuli
C Tshitlho
T Makhutle
E Xotongo
S Gcina
P Mngese
N Jafta
G Notiko
X Arrie
A Ishmael
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REFERENCES

Airhihenbuwa CO & Obregon R (2000) A critical assessment of theories/models used in Health communication for HIV/AIDS. *Journal of Health Communication*, 5: S5–15

Ajzen I (1988) *Attitudes, personality and behaviour*. Milton Keynes: Open University Press

Attwell K (1998) Literature review: HIV/AIDS knowledge, attitudes, beliefs and behaviours in South Africa. Report prepared for the National Directorate of HIV/AIDS and STIs, National Department of Health, Pretoria

Auvert B, Males S, Puren A, Taljaard D, Caraël & Williams B. (2004) Can highly active antiretroviral therapy reduce the spread of HIV? *Journal of Acquired Immune Deficiency Syndrome*, 36: 613–21

AIVI (2005) *Progress towards an AIDS vaccine since 2000*. <http://www.aivi.org>

Babor TF, Higgins-Biddle JC, Saunders JB & Monteiro MG (2001) *AUDIT, The Alcohol Use Disorders Identification Test: Guidelines for use in primary care*. Geneva: World Health Organization, Department of Mental Health and Substance Dependence

Bhana A, Petersen I, Mason A, Mahintsho Z, Bell C & McKay M (2004) Children and youth at risk: Adaptation and pilot study of the CHAMP Amaqhawe programme in South Africa. *African Journal of AIDS Research,* 31: 33–41

Booysen F (2003) Urban–rural inequalities in healthcare delivery in South Africa. *Development Southern Africa*, 20:659–72

Brambilla D, Jennings C, Aldrovandi G, Bremer J, Comeau AM, Cassol SA, Dickover R, Jackson JB, Pitt J, Sullivan JL, Butcher A, Grosso L, Reicheldorfer P & Fiscus SA (2003) Multicentre evaluation of use of dried blood and plasma-spot specimens in quantitative assays for human immunodeficiency virus RNA: Measurement, precision and RNA stability. *Journal of Clinical Microbiology*, 41: 1888–93

Brookes H & Richter L (2001) *A study of school responses to violence against girls*. Pretoria: UNICEF/HSRC

Brookes H, Shisana O & Richter L (2004) *The national household HIV prevalence and risk survey of South African children*. Cape Town: HSRC Press

Cassol S, Salas T, Gill MT, Montpetit M, Rudnik J, Sy CT & O'Shaughnessy MV (1992) Stability of dried blood spot specimens for detection of human immunodeficiency virus DNA by polymerase chain reaction, *Journal of Clinical Microbiology,* 30: 3039–42

Centre for the Study of AIDS (2002) cited in SAHIVAC 2004

Centre for the Study of AIDS (2003) *SAHIVAC*. http://www.csa.za.org/article/articleview/231/1/6/

Central Statistical Office (Botswana) (2005) *The Botswana AIDS impact survey II, 2004*. Gaborone: CSO

Chingono A, Rusakaniko S, Mahati S, Mupambireyi PF & Chandiwana B (2005) *Psychosocial conditions of orphans and vulnerable children two districts of Zimbabwe: A baseline survey*. Cape Town: HSRC Press

Ciesla JA & Roberts JE (2001) Meta-analysis of the relationship between HIV infection and risk for depressive disorders. *American Journal of Psychiatry,* 158: 725–30

CIOMS (Council for International Organisations of Medical Sciences) (2002) *International ethical guidelines for biomedical research involving human subjects*. <http://www.cioms.ch/frame_guidelines_september_2002.htm>

Connolly CA, Shisana O, Simbayi L & Colvin M (2004) HIV and circumcision in South

Africa. Poster presented at the 15th International AIDS Conference, Bangkok, Thailand, 9–12 July

Department of Health (South Africa) (2000a) *Guidelines for good practice in the conduct of clinical trials in human participants in South Africa*. <http://www.doh.gov.za/docs/policy/trials/trials-full.html>

Department of Health (South Africa) (2000b) *HIV/AIDS strategic plan*, 2000–2005. Pretoria: Department of Health

Department of Health (South Africa) (2005a) *National HIV and syphilis antenatal sero-prevalence survey in South Africa 2004*. Pretoria: Department of Health

Department of Health (South Africa) (2004b) *Strategic priorities for the national health system 2005–2009*. Pretoria: Department of Health

Department of Health (South Africa) (2004c) *Moving the nation to act: A research report on The Khomanani Campaign 2001–2004*. Pretoria: Department of Health

Department of Health (South Africa) (2005) *National Health Accounts for South Africa: Public Sector Report*. <http://www.doh.gov.za/docs/reports/2002/nha/summary.pdf>

Dowling F (2004) Hormonal Contraceptives and HIV Risk, *Bella Online,* <http://www.bellaonline.com/articles/art18856.asp>

FHI (Family Health International) (2004) Contraceptives and HIV. *Reproductive Health*, <http://www.fhi.org/en/RH/FAQs/contraHIV_faq.htm>

Ferry B, Caraël M, Auvert B, Kahindo M, Chege R, Musonda R, Kaona F, Buvé A & Study Group on the Heterogeneity of HIV Epidemics in African cities (2001) Comparison of key parameters of sexual behaviour in four African urban populations with different levels of HIV infection. *AIDS*, 15: S41–50

Fisher JD (2005) HIV risk-behavior change interventions for seropositives: Initial ideas on theory and practice. Paper presented at the 7th AIDS Impact Conference, Cape Town, South Africa, 4–7 May

Fisher JD, Cornman DH, Osborn CY, Amico KR, Fisher WA & Friedland GH (2004) Clinician-initiated HIV-risk reduction intervention for HIV-positive persons: Formative research, acceptability, and fidelity of the options project. *Journal of Acquired Immune Deficiency Syndromes*, 37, S2: 78–87

Foster G (2000) The capacity of the extended family safety net for orphans in Africa. *Psychology, Health and Medicine*, 5: 55–63

Freeman M (2003) *Mental health and HIV/AIDS: Report on a round-table discussion*. Cape Town: HSRC Publishers

Freeman M, Patel V, Collins P & Bertolote J (2005) Integrating mental health in global initiatives for HIV/AIDS. *British Journal of Psychiatry*, 187: 1–3

Glick P (2005) Scaling up HIV voluntary counselling and testing in South Africa: What can evaluation studies tell us about potential prevention impacts? SAGA Working Paper, Cornell University

Gomo E, Rusakaniko, Munyati S, Mashange W, Mustvangwa J, Chandiwana B (2005) *Household survey of HIV prevalence in Chimanimani District, Zimbabwe: A baseline study*. Cape Town: HSRC press.

Gray R, Li X, Kigozi G, Serwadda D, Brahmbhatt H, Wabwire-Mangen F, Nalugoda F, Kiddugavu M, Sewankambo N, Quinn TC, Reynolds SJ & Wawer MJ (2005) Increased

risk of incident HIV during pregnancy in Rakai, Uganda: A prospective study. *Lancet,* 366: 1182–8

Hargreaves JR (2002) Socio-economic status and risk of HIV infection in an urban population in Kenya. *Tropical Medicine and International Health,* 7: 793-802

Hargreaves JR & Glynn JR (2002) Educational attainment and HIV-1 infection in developing countries: A systematic review. *Tropical Medicine and International Health,* 7: 489–98

Harrison A, Cleland J, Gouws E & Frohlich J (2005) Early sexual debut among young men in rural South Africa: Heightened vulnerability to sexual risk? *Sexually Transmitted Infections,* 81: 259–261

Harrison, D & Steinberg M (2002) *Behaviour change: The cornerstone of prevention.* Parklands: LoveLife

Herek GM & Mitnick L (1996) AIDS and stigma: A conceptual framework and a research agenda. Final report from a research workshop sponsored by the National Institute of Mental Health

Jooste S, Managa A, & Simbayi L (2005*) A census report on orphaned and vulnerable children in two South African communities.* Cape Town: HSRC Press

Kalichman SC, Rompa D, Cage M, DiFonzo K, Simpson D, Austin J, Luke W, Buckles J, Kyomugisha F, Benotsch E, Pinkerton S & Graham J (2001) Effectiveness of an intervention to reduce HIV transmission risks in HIV-positive people. *American Journal of Preventive Medicine*, 2: 81–92

Kelly K et al (2001) Communities of practice: Contextual mediators of youth response to HIV/AIDS. Research commissioned by Save The Children

Kelly K, Parker W, Hajiyiannis H, Ntlabati P & Kincaid L (2005) *Tsha Tsha: Key findings of the evaluation of episodes 1–26.* Johannesburg: CADRE

Kelly MJ (2000) *Planning for education in the context of HIV/AIDS.* Paris: Unesco

Kish L (1965) *Survey Sampling*. New York: John Wiley & Sons

Leggett T (2001) Drugs, sex-work and HIV in three South African cities. *Society in Transition,* 32: 101–9

MacLellan M (2005) Child headed households: Dilemmas of definition and livelihood rights. Paper presented at the 4th world conference on Family Law and Children's Rights, Cape Town.

Magongo B, Magwaza S, Mathambo V & Makhanya N (2002) *National report on the assessment of the public sector's voluntary counselling and testing programme.* Durban: Health Systems Trust

Martin G (2003) *A comparative analysis of the financing of HIV/AIDS programmes In Botswana, Lesotho, Mozambique, South Africa, Swaziland And Zimbabwe.* Cape Town: Hsrc Publishers

Martin HL Jr, Richardson BA, Mandaliya K Achola JO, Overbaugh J & Kreiss JK (2005) The early work on hormonal contraceptive use and HIV acquisition. *Journal of Acquired Immune Deficiency Syndromes*, 38: S12–14

McDougal SJ, Pilcher CD, Parekh BS, Gershy-Damet G, Branson BM, Marsh K & Wiktor SZ (2005) Surveillance for HIV-1 incidence using tests for recent infection in resource-constrained countries. *AIDS* 19: S25–30

McIntyre K, Rutenberg N, Brown L & Karim A (2004) Understanding perceptions of HIV risk among adolescents in KwaZulu-Natal. *AIDS and Behaviour*, 83: 237–50

Mwaba P, Cassol S, Nunn A, Pilon R, Chintu C, Janes M & Zumla A (2003) Whole blood versus plasma spots for measurement of HIV-1 viral load in HIV-infected African patients. *Lancet,* 362: 2067–8

Noble J, Cover J & Yanagishita M (1996) *The world's youth, 1996*. Washington, DC: Population Reference Bureau

Ogden J & Nyblade, L (2005) *Common at its core: HIV-related stigma across contexts*. Washington, DC: International Center for Research on Women

Olley BO, Gxamza F, Seedat S, Theron H, Stein D, Taljaard J, Reid E & Reuter H (2004) HIV/AIDS patients – the role of gender. *South African Journal Psychiatry,* 10: 21–4

Parekh BS, Kennedy MS, Dobbs T, Pan CP, Byers R, Green T, Hu DJ, Vanichseni S, Young NL, Choopanya K, Mastro TD & McDougal JS (2002) Quantitative detection of increasing HIV type 1 antibodies after seroconversion: A simple assay for detecting recent HIV infection and estimating incidence. *AIDS Research and Human Retroviruses*, 18: 295–307

Parker W (2004) *Rethinking conceptual approaches to behaviour change: The importance of context*. Johannesburg: CADRE

Pettifor A, Rees H, Stefenson A, Hlongwa-Madikizela L, MacPhail C, Vermaak K & Kleinschmidt I (2004) *HIV and sexual behaviour among young South Africans: A national survey of 15–24 year olds*. Pretoria: Department of Health

Policy Project (2004) *Siyam'kela, examining HIV/AIDS stigma in selected South African media, January to March 2003: A summary*. Cape Town: Policy Project, Centre for the Study of AIDS, USAID, & Department of Health

Policy Project (2004) *Siyam'kela, tackling HIV/AIDS stigma: Guidelines for the workplace*. Cape Town: Policy Project, Centre for the Study of AIDS, USAID & Department of Health, South Africa

Rehle T & Shisana O (2003) Epidemiological and demographic HIV/AIDS projections: South Africa. *African Journal of AIDS Research,* 2: 1–8

Rehle T, Shisana O, Glencross D & Colvin M (2005) *HIV-positive educators in South African public schools: Predictors for prophylaxis and antiretroviral therapy*. Cape Town: HSRC Press

Rusakaniko S, Mupambireyi PF, Mahati S, Chibatamoto P & Chandiwana B (2005) *A census of orphans and vulnerable children two Zimbabwean districts*. Cape Town: HSRC Press

SAHIVAC (2004) *South African human rights and community mobilisation interventions for HIV/AIDS: Vaccine developments and clinical trials. Final evaluation report*. Pretoria: SAHIVAC

Sethosa E & Peltzer K (2005) Evaluation of HIV counselling and testing, self-disclosure, social support and sexual behaviour change among a rural sample of HIV reactive patients in South Africa. *Curationis: the South African Journal of Nursing,* 28: 29–41

Shisana O, Hall E, Maluleke R, Chauveau J & Schwabe C (2004) HIV/AIDS prevalence among South African health workers. *South African Medical Journal,* 94: 846–50

Shisana O & Louw J (2005) Financing healthcare in South Africa, *New Agenda,* 17: 39–44

Shisana O, Mehtar S, Mosala T, Zungu-Dirwayi N, Rehle T, Dana P, Colvin M, Parker W, Connolly C, Dunbar R & Gxamza F (2005) *HIV risk exposure among young children: A study of 2–9 year olds served by public health facilities in the Free State, South Africa*. Cape Town: HSRC Press

Shisana O, Peltzer K, Zungu-Dirwayi N & Louw J (Eds.) (2005) *The health of our educators: A focus on HIV/AIDS in South African schools*. Cape Town: HSRC Press

Shisana O & Simbayi L (2002) *Nelson Mandela/HSRC Study of HIV/AIDS: South African National HIV prevalence, behavioural risks and mass media household survey 2002*. Cape Town: Human Sciences Research Council

Shisana O, Stoker D, Simbayi LC, Orkin M, Bezuidenhout F, Jooste SE, Colvin M & van Zyl J (2004) South African national household survey of HIV/AIDS prevalence, behavioural risks and mass media impact: Detailed methodology and response rate results. *South African Medical Journal,* 94: 283–8

Simbayi LC (1999) AIDS awareness and sexual behaviour change in South Africa. In KR Hope Snr (Ed.) *AIDS and development in Africa*. New York: Haworth Press

Simbayi LC, Kalichman SC, Jooste S, Mathiti V, Cain D & Cherry C (2004) Alcohol use and sexual risks for HIV infection among men and women receiving sexually transmitted infection clinic services in Cape Town, South Africa. *Journal of Studies on Alcohol,* 65: 422–34

Simbayi LC, Kleintjies S, Ngomane T, Tabane EMC, Mfecane S, & Davids A (2005) *Psychosocial issues affecting orphaned and vulnerable children in two South African communities*. Cape Town: HSRC Press

Social Surveys (2005) *Evaluation of Soul City, Series 6*. Johannesburg: Soul City Institute of Health and Development Communication; Social Surveys

Solomon V, van Rooyen H, Griesel R, Gray D, Stein J & Nott V (2004) *Critical review and analysis of voluntary counselling and testing: Literature in Africa*. Durban: Health Systems Trust

Soul City Institute of Health and Development Communication (2003) *Evaluation of Soul Buddyz: Series 2*. Johannesburg: Soul City

Tsheko GN, Odirile LW, Segwabe M & Bainame K (2005) A c*ensus of orphans and vulnerable children in two villages in, Botswana*. Cape Town: HSRC Press

UNAIDS (2004) *Global report on the AIDS epidemic*. Geneva: UNAIDS

UNAIDS/WHO (2004) *UNAIDS/WHO policy statement on HIV testing*. Geneva: UNAIDS

UNAIDS/WHO (2005) *Guidelines measuring national HIV prevalence in population-based surveys*. Geneva: UNAIDS/WHO Working Group on Global HIV/AIDS/STI surveillance

Ungchusak K, Rehle T, Thammapornpilap P, Spiegelman D, Brinkmann U & Siraprapasiri T (1996) Determinants of HIV infection among female commercial sex workers in North Eastern Thailand: Results from a longitudinal study. *Journal of Acquired Immune Deficiency Syndromes and Human Retrovirology,* 12: 500–7

UNICEF, UNAIDS, USAID (2004) *Children on the Brink 2004: A joint report of new orphan estimates and a framework for action*. New York: USAID

World Health Organisation (2001) *The World Health Report 2000: Mental health – new understanding, new hope*. Geneva: World Health Organization