3. Results

3.1 Reliability and validity of the data

This section reviews approaches for testing the reliability and validity of the data in this survey. It addresses firstly the generalisability of the results, secondly response bias, thirdly testing of reliability of data based on re-interview of the sample, fourthly validity of prevalence estimations, and fifthly reliability of laboratory test results.

3.1.1 Test of 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 partly on how representative its sample is. In order to test representivity, the distributions of the demographic characteristics of the sample were compared with those of the 1996 census. In addition, in weighting the sample, the evolution of the socio-demographic characteristics of the South-African population between the last publicly available 1996 census and the 2001 census were taken into account.[1] Detailed data from the 2001 census are however not yet available, and therefore it was not possible to explicitly compare the socio-demographic characteristics of respondents against most recent census data.

Table 7 compares the socio-demographic structure of the survey sample to the 1996 South African population census. The socio-demographic characteristics of the weighted sample closely match those of the population census in terms of sex, race, locality type and province. A slight difference of just less than two percentage points is seen between the sample and the population census. These results suggest that the sample is representative of the population from which it was drawn, thus allowing for extrapolation of the findings to the population of persons aged two years and older, who live in homes.

Table 7: Demographic characteristics of the sample in relation to the 1996 population census

DEMOGRAPHICS	2002 WEIGHTED SAMPLE		1996 POPULATION CENSUS	
	N	%	N	%
Sex				
Male	19508149	47.4	19520887	48.1
Female	21634012	52.5	21062685	51.9
Unspecified	26027	0.1	0	0.0
Total	41168189	100.0	40583573	100.0
Race				
African	32304652	78.5	31127631	76.7
White	4297416	10.4	4434697	10.9
Coloured	3553428	8.6	3600446	8.9
Indian	1012693	2.5	1045596	2.5
Unspecified	0	0.0	375204	1.0
Total	41168189	100.0	40583573	100.0

1 This was achieved using weights calculated from the census 2001 preliminary household count, which was updated using fieldwork in this study. (Permission to use the 2001 household counts was obtained from the Statistician General.)

DEMOGRAPHICS	2002 WEIGHTED SAMPLE		1996 POPULATION CENSUS	
	N	%	N	%
Locality type				
Non-Urban	18898707	46.0	18801765	46.3
Urban	22269482	54.0	21781807	53.7
Total	41168189	100.0	40583573	100.0
Province				
WC	3994583	9.7	3956875	9.7
EC	6128993	14.9	6302525	15.5
NC	832471	2.0	840321	2.1
FS	2746914	6.7	2633504	6.5
KZN	8466269	20.6	8417021	20.7
NW	2901607	7.0	3354825	8.3
GP	7711250	18.7	7348423	18.1
MP	3014130	7.3	2800711	6.9
LP	5371972	13.1	4929368	12.2
Total	41168189	100.0	40583573	100.0

3.1.2 Evaluation of response bias

In its design and execution, this survey followed closely the recommended strategies to improve response rates (FHI 2002). The strategies used include: (i) notifying households 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 subject like HIV/AIDS and sex, (iv) making a maximum of three revisits to the homes, (v) using a linked anonymous survey approach, and (vi) ensuring privacy when conducting interviews. However, there are probably a few instances where some of these strategies were not implemented as rigorously as was required.

To evaluate the response bias, we examined the extent to which the original sample was realised in Phases I and II, as presented in Table 8, bearing in mind that the final sample matched closely the 1996 census population.

Table 8 shows response rates for both phases of the study. Although 1 010 EAs were eventually selected, 970 were realised (96.04%). Of the 10 197 valid visiting points in the 970 EAs, 7 249 were (71.09%) were realised. In the 7 249 visiting points 14 450 individuals were selected and 13 518 (93.55%) were contacted, with 9 963 (73.70%)

Table 8: Response rates for both Phases I and II of the study

Province	EAs* realised Phase I	EAs realised Phase II		Total valid VPs Phase I	VPs realised Phase I		Selected respondents Phase II	Realised respondents Phase II		Respondents interviewed and tested ***		Respondents interviewed and not tested	All respondents interviewed	
	n	n	%	n	n	%	n	n	%	n	%	n	n	%
WC	125	125	100.0	1363	890	65.3	1806	1809**	100.1	1267	70.0	56	1323	73.1
EC	131	130	99.2	1317	940	71.4	1930	1875	97.2	1221	65.1	265	1486	79.3
NC	76	73	96.1	759	545	71.8	992	913	92.0	694	76.0	35	729	79.8
FS	74	68	91.9	772	544	70.5	947	805	85.0	540	67.1	81	621	77.1
KZN	186	180	96.8	1852	1426	77.0	2991	2644	88.4	1579	59.7	445	2024	76.6
NW	74	73	98.7	747	581	77.8	1086	1042	96.0	626	60.1	110	736	70.6
GT	180	162	90.0	1731	1142	66.0	2287	2139	93.5	1272	59.5	255	1527	71.4
MP	74	72	97.3	769	558	72.6	1092	1030	94.3	550	53.4	70	620	60.2
LP	90	87	96.7	887	623	70.2	1319	1261	95.6	679	53.8	218	897	71.1
TOTAL	1010	970	96.0	10197	7249	71.1	14450	13518	93.6	8428	62.3	1535****	9963	73.7

**Total number of EAs exceeds 1000 because some EAs in the WC and GP were revisited during Phase 1 due to initial poor response rates*
*** After revisits a few names were added to the original list of respondents*
**** The 8 428 includes all those whose specimens were usable*
***** Includes 412 oral fluid specimens not useable*

agreeing to be interviewed. Of these 9 963, 8 428 agreed to also give an oral fluid specimen specimen to be tested for HIV. The table also shows the provincial breakdowns. Mpumalanga and Limpopo province had the lowest response rates for HIV testing, whilst Northern Cape and Western Cape had the highest response rates.

The response rates presented in Appendices A1–A3 are based on the 8 428 participants whose HIV test results and questionnaires were linked. Both Table 8 and Appendices A1–A3 show variation in response rates. In terms of EA locality types, the highest response rate was in rural areas while the lowest was in urban formal areas. More females participated than males. With regard to race, the highest response rate was among coloureds and the lowest among whites.

A response rate of 50% in any survey is considered adequate, 60% good and 75% very good (Babbie 1990). Using this criterion, on average, the majority of the response rates in this study were good and others adequate (see Appendices A1–A3). However, a few sub-samples had response rates lower than 50% and are therefore inadequate. Although several similar studies using sub-national samples have consistently reported very good response rates (e.g. Auvert et al. 2001;Buve et al. 2001; Colvin et al. 1998; MacPhail et al. 2002), several large scale international surveys using national samples have reported response rates comparable to the present study (e.g. the National Survey of Sexual Attitudes and Lifestyles 2000 in the United Kingdom <qb.soc.surrey.ac.uk/surveys/nssal/nssalintro.html>, and HIV-Related Sexual Risk Behaviours/Beliefs, Knowledge and Behaviours Among High School Students in selected US cities in 1988 and also between 1991–1997). There is limited documented evidence that PLWAs or those at high risk of HIV infection are less likely to participate in surveys involving HIV testing (see FHI 2002). Nevertheless, it is important to mention here that in fact any response rate less than 100% in any survey, including even 75%, which is described as very good, has some bias. What is important is understanding the direction of the bias.

3.1.3 Re-interview of the sub-sample

A number of procedures were implemented during the two fieldwork Phases of the main survey to ensure compliance with the agreed methodology and the collection of quality information. An evaluation was conducted to ascertain the overall compliance with procedures and the quality and accuracy of the findings in the two phases of the survey.

The evaluation aimed to address the following aspects:

- Assess the sampling information and spatial location of the sampled units;
- The degree to which Phase I (i.e. the listing of household information at the selected sampling points) was accurately carried out;
- Whether interviewers in Phase II correctly identified and interviewed respondents;
- Whether the information collected in Phase II of the survey corresponds to information collected by the evaluation interviewers.

Specific households were visited once only during this re-interview survey. To minimise respondent fatigue, questionnaires administered to these respondents were as short as possible, and no attempt was made to obtain oral fluid samples. Due to time constraints, the re-interview teams were instructed not to make repeated visits in an attempt to find respondents who were not at home.

No attempt was made to re-interview respondents aged 12–14 years because the child sample was relatively small and it was deemed unnecessary.

Five distinct instruments were developed for use in the evaluation survey:

- A short questionnaire to validate the spatial location of an EA, the accuracy and utility of the maps and photography provided to the field teams, as well as to provide the opportunity to comment on other relevant aspects;
- A short questionnaire to be completed at each visiting point was included in the evaluation sample. By redoing the Phase I survey it was possible to check that the original information collected during Phase I of the survey corresponded to information collected by the evaluation team;
- A shortened version of the adult, youth and caregiver questionnaires which contained a selection of actual questions asked during Phase II of the main survey to cross-check for accuracy.

Fifty EAs were selected from the original 1 000 EAs for inclusion. These EAs represented all provinces and EA types. The selection of the evaluation EAs was done at the start of Phase II of the survey, and performance of the field teams in Phase II had no influence on the selection of EAs for the evaluation survey.

Approximately 35 interviewers operating in teams undertook the evaluation survey.

Conducting the evaluation survey

No specific fieldwork problems were encountered during the re-interview phase, although interviewers had to be cautious in allaying fears and suspicions about why they were re-visiting households. It was noted that there was a rumour in Mpumalanga and Limpopo provinces that a group of people were going around and infecting the population with HIV by means of saliva tests, and that they had been arrested. The rumour appeared to originate in Phase II of the survey where one team was taken to a police station to explain what they were doing when a specific community was unsure of the purpose of the survey. These two provinces had the lowest response rates in Phase II.

Four of the fifty EAs selected for the evaluation survey were not completed:

- One EA was never visited during Phase II. It served no purpose to revisit this EA;
- Two EAs could not be completed in time;
- The documentation of one EA could not be located to send to the evaluation team; The maps and visiting point questionnaires were only found later.

Results of the re-interview of the sub-sample

- Evaluation at the EA level: Experience in many surveys attests to difficulties encountered in sampling specific households and returning later to the same households during a survey. This applies especially to rural areas and informal settlements where lack of roads, identifiable boundaries and no addresses make it extremely difficult to check on fieldwork already completed. However, using the maps and photography produced for the HSRC master sample, in conjunction with GPS readings, the teams all managed to locate the selected EAs.

  The evaluation teams completed a short questionnaire to interrogate the accuracy of spatial boundaries, directions and other material that would assist a team of

interviewers to locate a specific Enumerator Area. In most cases the re-interviewers were able to find the visiting points enumerated by the Phase I fieldwork teams. Although a few of the nurse supervisors encountered difficulties in reading maps and operating GPS devices, this survey has demonstrated the potential of the methodology underlying the master sample to assist in conducting surveys of high quality.

- Evaluation of the listing of household particulars during Phase I: At each visiting point in the selected EAs, the evaluation interviewers completed a questionnaire that aimed to find out whether the Phase I interviewers visited the site, what the outcome of the visit was and whether the information they collected corresponded with that found by the evaluation interviewers. Upon completion these evaluation questionnaires were compared on a case-by-case basis with the original questionnaires. The results of this comparison were collated into a document that served as the basis for analysis.

  Table 9 summarises the findings of the evaluation survey at the visiting point level. At those visiting points where an interview was completed by the Phase I interviewers, the evaluation survey teams were able to confirm that in 72% of the cases the correct information was listed. At a fifth of the visiting points visited, the evaluation teams were not able to verify the data collected in Phase I due to non-contacts, respondents having moved, refusals to see the re-interview team etc. The evaluation team found minor inconsistencies in six percent of the completed Phase I listings. These related to wrong ages or, in one or two cases, the sex of the person being wrongly listed. There were also cases where a single member of the household was not included in the original listing. In only two percent of cases where an interview was completed the evaluation teams found major inconsistencies, such as the non-listing of household members, major problems with the composition of the household, or information provided by the Phase I interviewers which did not tally with the re-visit. It is possible that in some of these cases the evaluation team visited an incorrect point.

  Where the Phase I interviewers were not able to find respondents, the questionnaires were coded as non-contacts. Although in nearly 60% of these cases, the evaluation teams concurred with the interviewers' assessments (people being very hard to find, on holiday, etc), the evaluation teams were of the opinion that in about a quarter of cases listed by the Phase I interviewers as 'no-contacts', more could have been done to find the respondents.

  In nearly a fifth of those visiting points classified as uninhabited, the evaluation team made a different assessment. In many cases these were dwellings where people returned late or were frequently away.

  The evaluation survey also provided some estimates of the residential mobility of households. Nearly three percent of households had moved since the visit of the Phase I interviewers. Another aspect not quantified was the movement of individuals within households. In some of the informal areas between 10 and 20% of households reported the in- or out-migration of household members. This was also

Table 9: Comparing the outcome of Phase I fieldwork with the findings of the evaluation survey

PHASE I OUTCOME	RE-VISIT FINDING								
	Confirm – no inconsistency (%)	No contact – can't confirm (%)	Moved – can't confirm (%)	Refusal – can't confirm (%)	Minor inconsistency (%)	Major inconsistency (%)	Not done/no information provided (%)	TOTAL	n
Interview completed	72	8	2	5	6	2	5	100	325
Refusal	75	12	0	0	8	0	5	100	67
No contact/ No qualified person	58	16	0	0	24	0	2	100	45
Vacant dwelling	76	0	0	0	3	16	5	100	37

seen when the Phase II interviewers on occasion could not contact individuals who had moved. This has implications for follow-up studies.

On the whole however, the evaluation survey confirms the validity of the information supplied by the Phase I listing.

Non-participation in Phase I and possible reasons for this emerging from the re-interview of the sub-sample

A particular methodological concern was the level of respondent participation in Phase I, since that determined the profile of respondents selected for inclusion in the main survey. It is important to consider the reasons for non-response at Phase I, as this might have contributed to respondent bias in the overall study. During the evaluation survey more qualitative information was collected that shed some light on non-participation.

In order to generalise to Phase I of the study, it is important to know whether the response rates of the EAs selected for the evaluation survey were comparable to those of all EAs covered in Phase I. Table 10 compares the participation rates of Phase I and the evaluation survey.

Table 10: A comparison of participation rates at the visiting point level: Phase I and the sub-sample selected for the evaluation survey (percentages)

OUTCOME	TOTAL PHASE I*	EVALUATION SUB-SAMPLE*
Interview completed	73	69
Refusal	16	14
No contact/no qualified person at home	11	10
Not a dwelling/vacant dwelling	6	8

**Percentages rounded*

From Table 10 it appears that the EAs selected for the evaluation survey were similar to those in Phase I.

Less than half of potential white households were included in the listing of Phase I. Approximately three quarters of African, coloured and Indian households were interviewed in Phase I. It would be helpful to know what the reasons were for non-response, and how non-response contributed to bias in the findings of the survey.

It is essential to analyse the pattern of non-response. This is summarised below.

The three categories of non-response

- Not a dwelling/vacant dwelling. The methodology employed in the creation of the HSRC master sample used aerial photography to identify specific sampling points. From an aerial photograph it is difficult to assess whether a specific building is a dwelling, and if a dwelling, whether it is inhabited. This fact was anticipated when creating the master sample and the number of visiting points for inclusion in each EA was increased by 10%. In Phase I, 6% (n=694) of visiting points were classified as not inhabited. In general these cases will not contribute to bias (as there are no people living in the VPs). It should be borne in mind that up to a fifth of visiting points classified as uninhabited were indeed inhabited. That would mean that approximately one percent of visiting points were not included because they were difficult to find.

- No contacts/nobody qualified at home. In Phase I, 11.3% (n=1,237) of visiting points were classified as non-contacts. These persons could not be found because they worked late, were away or were not available for some other reason. A certain bias was introduced to the survey by the non-inclusion of these potential respondents. All surveys are confronted with this problem, but a balance has to be found between the costs incurred to find these hard-to-get respondents and the penalty (respondent bias) of not including them. During training, the Phase I interviewers were instructed to return at least three times on different days and times to find the respondents. In the evaluation survey it was found that not all Phase I interviewers adhered to the instructions. By being more meticulous, at least a quarter of these non-contact households could have been included in the sample It is interesting to note which households were not included in the Phase I listing on account of being away from home, mobile or hard-to-find.

In the EAs completed by the Phase I interviewers, inhabitants of white households were significantly harder to get hold of than other households. Nearly one fifth (18%) of potential white households were classified as non-contact cases, while 12% of African, 8% of coloured and 7% of Indian households were not included in the listing for similar reasons. Fourteen percent of households living in informal urban areas could not be contacted, while 12% of households in formal urban areas and tribal areas were not found.

- REFUSALS Overall 16% (n=1,692) of potential households refused to take part in Phase I. A variety of reasons were offered ranging from suggestions that they did not take part in surveys, to objections to the topic under investigation (HIV/AIDS) and a resistance to being tested for religious and other reasons. The reasons provided by those respondents who refused to be interviewed in Phase I do not allow for easy interpretation, although the topic of HIV/AIDS and the oral fluid testing might have contributed to possible non-response.

  Nearly a third (32%) of potential white households declined even to be listed in Phase I. Twenty percent of Indian households refused to take part while 17% of coloured and 9% of African households refused.

  Many researchers in South Africa find it exceedingly difficult to contact and convince households to take part in surveys, and reasons for refusals may include fear of crime, racial or language differences etc. Efforts were made to address some of these issues beforehand, but could not always be addressed in all areas.

  In comparing respondents and non-respondents we found no significant differences in variables related to HIV status.

3.1.4 Validity of HIV prevalence estimations

The calculated estimates of HIV prevalence take into consideration the full complexity of the sample by using the SAS procedure Surveymeans, and include the standard errors (SE), the coefficient of relative variation (CVr) and the 95% confidence limits. The HIV prevalence was estimated using ratio estimation. A ratio estimate is a biased estimate. As a rule of thumb the Kish guideline of CVr of < 20% is used as a reference threshold to determine the validity of prevalence estimates (Kish 1965). Furthermore, an estimate is imprecise if the confidence interval is too wide. For example, a CV value of 20% implies that its standard error is equal to 20% of the size of the estimate and the precision will be approximately equal to 40% of the size of the estimate. Consequently, if a CV value is relatively 'large', then the reliability (precision) of the estimate is relatively low. Based on this method, which is considered the most rigorous, the estimates of HIV prevalence should be considered valid for the majority of the findings. For whites, adults and youth living in rural areas or informal settlements, the imprecision of estimates are of substantive importance, and are at the statistical borderline. For this reason, the results in these latter subgroups should be treated with caution, and this is why CVs were also supplied to the reader. Finally, very high CV in some subgroups (Indian adults, white youth, white and Indian children, those children living in informal settlements and tribal areas) clearly indicate that the survey was not able to produce valid estimations of prevalence due to response biases. These are detailed in Appendices A1–A3.

This study also calculated the design effect (DEFF), that is, the loss of effectiveness when using cluster sampling, instead of employing random sampling procedure. DEFF is generally used to determine how large a sample size or confidence intervals should be to estimate reliably the population parameters. If a study is well designed the DEFFs usually range between 1 and 3, but they can be as high as 8 or even more (Schackman 2001). The smaller the value, the more reliable the sample estimate will be. In this study the design effects for HIV prevalence for each group are listed in Appendices A1–A3 and show that overall the study was well designed to permit reliable estimation of most findings.

3.1.5 Reliability of the HIV test results

For quality assurance purposes, the Medical Research Council examined the accreditation status, quality control and audit procedures used by the three laboratories. The results are described below and a longer discussion on the reliability of HIV testing on saliva and oral mucosal transudate specimens is included as Appendix B1.

Contract Laboratory Services (CLS)
CLS is a joint venture between the Wits Health Consortium and the National Health Laboratory Service (NHLS). It exists to provide customised, specialised diagnostic and research pathology services to both pharmaceutical and research industries. In the past 18 months CLS has performed more than 16 000 Orasure® tests for 8 different companies.

CLS laboratory accreditation

- CLS has full South African National Accreditation (SANAS) for all tests performed in the laboratory. See www.sanas.co.za for more details.
- This accreditation grants the laboratory competency certification against the ISO17025 quality standard.
- This accreditation covers HIV Oral Mucosal Transudate testing (using the combination of the Orasure® device and Vironostika Uniform II HIV-1/2 EIA).
- National Health Laboratory Service (NHLS) microbiology quality assurance programme for serology

CLS external laboratory audits

- CLS was subjected to a full laboratory audit by SANAS on 25 September 2002 (Previous SANAS audit was in 2001).
- The pharmaceutical company Bristol Myers Squibb (BMS) audited CLS in 2001. CLS provides laboratory testing for pharmaceutical clinical trials.
- CLS was audited in 2002 by the USA-based HIV Vaccine Trials Network (HVTN) to assess laboratory quality systems for HIV vaccine trials.
- Regular audits are undertaken by the quality assurance division of the NHLS

CLS HIV testing quality control
To assure quality control (QC) regarding Oral Mucosal Transudate testing the following are done:
Internal QC: Included in every batch of 89 samples are five negative controls scattered randomly in the 96 well ELISA plate, one pre-diluted Anti-HIV-1 positive control, and one positive Anti HIV-2 positive control. Internal QC is thus 8% of samples

- Proficiency testing: CLS participates in a proficiency testing programme set-up between MEDUNSA (Department of Microbiology), University of Natal (Department of Virology) and CLS. (No international external quality assurance program could be sourced.)

University of Natal Durban (UND), Department of Virology

The UND Department of Virology is part of the Nelson R. Mandela School of Medicine in Durban and does an average of 16 000 HIV tests per month, more than any other laboratory in the country. In addition, this laboratory is the only Centers for Disease Control (Atlanta, Georgia) accredited laboratory in South Africa for performing the 'detuned' HIV tests for determining HIV incidence.

UND LABORATORY ACCREDITATION

As the UND laboratory is currently moving from King Edward VIII hospital to the Inkosi Albert Luthuli Central Hospital, accreditation may not be sought until the move is complete after which SANAS accreditation will be sought.

UND EXTERNAL LABORATORY AUDITS

The National External Quality Assurance Scheme provides this for Microbiology (CPHL), Colindale, UK.

UND HIV TESTING QUALITY CONTROL

Internal QC includes running duplicate tests on a randomly selected 6% of specimens on a daily basis. In addition, the laboratory recently did a comparison of the sensitivity and specificity of HIV testing on saliva versus serum specimens (Perumal 1999). Paired saliva and serum specimens from 500 individuals were tested using ELISAs, and positive serum specimens were confirmed using the Western Blot. The sensitivity and specificity of the saliva tests were 100% and 99.3% respectively.

MEDUNSA, Department of Virology

MEDUNSA EXTERNAL LABORATORY AUDITS

The laboratory subscribes to the following Proficiency Programmes:

- NHLS QA programme for Microbiology (Quarterly for RPR and HIV);
- UK National External QA Scheme for Microbiology (Collingdale) (Quarterly for RPR and HIV).

MEDUNSA HIV TESTING QUALITY CONTROL

To guarantee the quality of laboratory procedures and assess the consistency of the results, the following additional specimens for quality control are recommended:

- Three duplicate specimens are forwarded to an independent laboratory and the results from the two laboratories are compared for consistency;
- Calibration of the systems is carried out as recommended by the suppliers' and manufactures' instructions and specifications on a daily basis;
- All instruments have a system of routine checks that are done before each batch is processed;
- Each kit includes a positive and negative control from the manufacturer. These are run with every sample batch to verify the results. In addition known samples are included as blinded random assessment;
- When new kits are being considered, a process of validation is followed to ensure equivalent result.

The survey laboratory quality control measures

In addition to the routine external and internal laboratory control measures listed above, an additional QC measure was implemented for the purposes of comparing interlaboratory consistency specifically for the study.

Thirty Orasure® devices were taken by the MRC and each of ten volunteers had three Orasures inserted, one after the other, into their mouths over a period of about 15 minutes to ensure that there was not excessive drying of the mouth. The triplicate Orasures were then each labelled with the same bar code and sent to the HSRC. From the HSRC, the triplicate Orasures were split up and one was sent to each of the three participating laboratories for analysis. The laboratories were blind as to which were the Orasures that were part of the study and which were sent as the QC process.

The MRC then obtained the results for the 30 Orasures from each laboratory and the results are shown in the table below. The most appropriate comparison to make is between the ratio of the OD and the cut off as presented in the 'Ratio' column. Overall, there was good agreement on the ODs between the laboratories.

Table 11: Results from the 10 QC Orasures sent to the three participating laboratories

	CLS			MEDUNSA			UND VIROLOGY		
Specimen	OD	Cut off	Ratio	OD	Cut off	Ratio	OD	Cut off	Ratio
1.	3.29	0.285	11.54	3.17	0.25	12.68	3.00	0.262	11.45
2.	0.11	0.285	0.39	0.28	0.25	1.12	0.06	0.262	0.23
3.	0.10	0.285	0.35	0.11	0.25	0.44	0.08	0.262	0.31
4.	1.26	0.275	4.58	2.58	0.25	10.32	1.44	0.262	5.50
5.	0.13	0.312	0.42	0.07	0.25	0.28	0.05	0.262	0.19
6.	0.11	0.285	0.39	0.09	0.25	0.36	0.08	0.262	0.31
7.	0.23	0.285	0.81	0.24	0.25	0.96	0.18	0.262	0.69
8.	0.13	0.285	0.46	0.08	0.25	0.32	0.07	0.262	0.27
9.	0.09	0.285	0.32	0.07	0.25	0.28	0.06	0.262	0.23
10.	0.12	0.285	0.42	0.08	0.25	0.32	0.07	0.262	0.27

We also attempted another approach to laboratory quality control whereby each laboratory sent panels of 15 specimens to each of the other two laboratories. The specimens were all obtained from the study participants. The process was that each laboratory would extract the oral fluids from the Orasure® devices by eluting the oral fluids from the sponge that had been inserted into the participant's mouth.

Whilst this method of circulating specimens is well established for blood specimens, the same is not the case with oral fluid specimens. With blood specimens, the actual blood is separated into aliquot tubes, which contain the same stabilising chemicals as the original tube. However, with oral fluids extracted from the stabilised Orasure device, there is no data on how stable the resulting fluid is. We found evidence that the fluid had deteriorated in transit to the other laboratories in that the optical density (OD) readings in the laboratories that were sent the specimens were consistently below the readings of the

sending laboratory. For these reasons we did not consider this a valid form of QC and the results are therefore of no use.

In conclusion, quality control clearly confirms the validity of HIV results obtained in this study.

3.2 National HIV prevalence

Data on national level estimates of HIV prevalence are based on weighted data to correct for differential sampling weights and response rates. Analyses comparing HIV prevalence by sex, age, race, locality type and provinces were performed using a Chi-square test on weighted data. The computer software STATA, which takes into account sampling stratification and weighting of individual data, was used for these computations.

In this report reference is made to racial variables in analysing various aspects of HIV. The rationale for this is that historically, disparities in wealth, education and access to all social services have existed along racial lines. In a post-apartheid context, analysis by race allows for continued assessment of disparities in health, quality of life and development that may be a product of a racially divided history.

Analysis is also conducted within various age bands. In this report, persons younger than 14 years are referred to as children, and analysis is conducted using the age group 2–14 years. Persons aged 15–24 years are considered to be youth, and this definition is drawn from that agreed upon at the UN General Assembly Special Session on HIV/AIDS (UNGASS), which allows for uniform monitoring across countries. The age range 15–49 years is used to permit comparison with UNAIDS statistics.

All HIV prevalence ratios are presented with confidence intervals. This is because the true population estimates lie somewhere in between the lower and the upper estimates. These figures should also be read jointly with Appendices A1–A3, which provide additional detail that will assist readers in assessing the reliability of the findings. These statistics are response rates, standard errors of estimates of the HIV prevalence, the coefficient of relative covariation and the design effect (DEFF).

3.2.1. Overall HIV prevalence

The tables below present HIV prevalence estimates for South Africa and include estimates of the total number of people living with HIV/AIDS in 2002. Table 12 shows the estimated HIV prevalence in the general population of South Africa. The findings show that the prevalence of HIV amongst persons aged two years and older is estimated at 11.4%.

The national HIV prevalence differs substantially between males and females with 9.5% among males and 12.8% females being HIV positive.

Table 12: Overall HIV prevalence by sex and race, South Africa 2002

SEX & RACE	n	HIV POSITIVE (%)	95% CI
Total	**8428**	**11.4**	**10.0–12.7**
Male	3772	9.5	8.0–11.1
Female	4656	12.8	10.9–14.6
African	5056	12.9	11.2–14.5
White	701	6.2	3.1–9.2
Coloured	1775	6.1	4.5–7.8
Indian	896	1.6	0–3.4%

People living with HIV/AIDS are found in every race group in South Africa, although there are differences in the observed prevalence within race groups. The observed national prevalence among Africans is significantly higher than among other race groups.

Table 13 presents HIV prevalence by province. Based on the findings, Free State, Gauteng and Mpumalanga have the highest HIV prevalence in South Africa, while KwaZulu-Natal ranks fourth although there are no statistically significant differences among the four provinces. The Western Cape and Northwest have similar levels of prevalence. Eastern Cape has the lowest prevalence.

Table 14 presents estimated HIV prevalence by area of residence, that is, locality type. The study found that HIV prevalence varied substantially by locality type. People living in informal urban areas were significantly more likely to be HIV positive than those living in urban formal areas. Those living in urban formal areas had a significantly higher

Table 13: Overall HIV prevalence by province, South Africa 2002

PROVINCES	n	HIV POSITIVE(%)	95% CI
Total	**8428**	**11.4**	**10.0–12.7**
WC	1267	10.7	6.4–15.0
EC	1221	6.6	4.5–8.7
NC	694	8.4	5.0–11.7
FS	540	14.9	9.5–20.3
KZN	1579	11.7	8.2–15.2
NW	626	10.3	6.8–13.8
GP	1272	14.7	11.3–18.1
MP	550	14.1	9.7–18.5
LP	679	9.8	5.9–13.7

prevalence when compared to residents of farm and tribal areas although the differences were not large enough to reach statistical significance.

Table 14: Overall HIV prevalence by locality type, South Africa 2002

LOCALITY TYPE	n	HIV POSITIVE (%)	95% CI
Total	**8428**	**11.4**	**10.0–12.7**
Urban formal	5098	12.1	10.3–14.0
Urban informal	841	21.3	16.2 –26.5
Tribal	1906	8.7	6.5 –10.9
Farms	583	7.9	4.8 –11.1

3.2.2 HIV prevalence among children aged 2–14 years and older

Table 15 presents HIV prevalence data by age. The results indicate that the epidemic seriously affects South African children aged 2–14 years. The prevalence among girls and boys was estimated to be 5.2% (95% CI=3.2–7.3%) and 5.9% (95% CI-2.8–8.9%) respectively. Due to relatively small sample numbers, the prevalence for girls should be interpreted with caution. Among African children the HIV prevalence is 5.4% (95% CI=3.3–7.6%). Based on the observed coefficient of relative covariation, it is not possible to reliably estimate child HIV prevalence for other race groups, locality type or province. These findings are listed in Appendices A1–A3.

Further examination of Table 15 reveals that HIV prevalence increases with age. These age differences are discussed further below.

Table 15: HIV prevalence by age group, South Africa 2002

AGE	n	HIV POSITIVE (%)	95% CI
Total	**8428**	**11.4**	**10.0–12.7**
Children (2–14 yrs)	2348	5.6	3.7–7.4
Youths (15–24 yrs)	2099	9.3	7.3–11.2
Adults (=>25 yrs)	3981	15.5	13.5–17.5

3.2.3 HIV prevalence among persons aged 15–24 years

Table 16 shows HIV prevalence amongst youth. Although there were no sex differences among children, this is not so among the youth. Female youth have a higher HIV prevalence compared to male youth.

Table 17 summarises HIV prevalence among youth by race. African youth had the highest observed prevalence of HIV infection. The prevalence for coloured youth was

Table 16: HIV prevalence among persons aged 15-24 years by sex, South Africa 2002

SEX	n	HIV POSITIVE (%)	95% CI
Total	2099	9.3	7.3–11.2
Male	976	6.1	3.9–8.3
Female	1123	12.0	9.2–14.7

Table 17: HIV prevalence among persons aged 15-24 years by race, South Africa 2002

RACE	n	HIV POSITIVE (%)	95% CI
Total	2099	9.3	7.3–11.2
African	1320	10.2	7.9–12.5
White	129	3.2	0–7.5
Coloured	427	6.4	4.5–8.4
Indian	223	0.3	0.2–0.3

second highest. The prevalence for white and Indian youth cannot reliably be estimated from this study, mainly due to high non-response rates.

Figure 6 shows HIV prevalence by province among youth. The vertical lines shown on the graph show confidence intervals around the estimates. Not many differences were observed in HIV prevalence among youth living in different provinces.

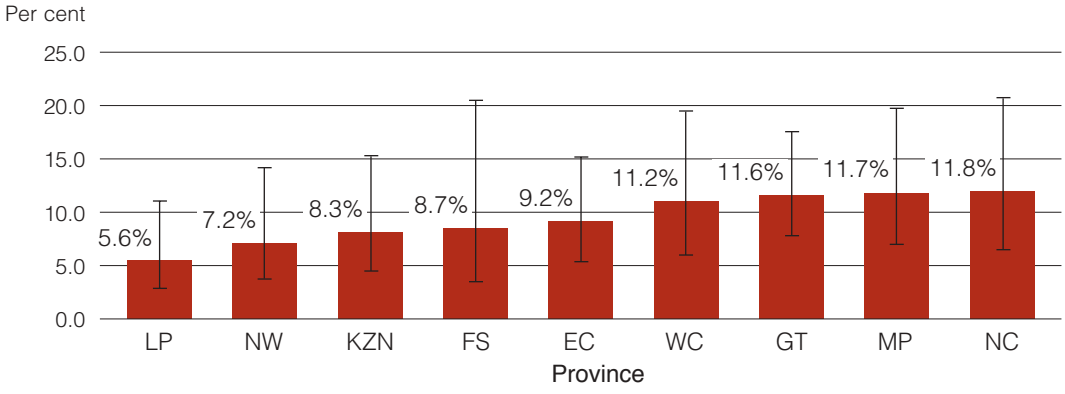

Figure 6: HIV prevalance among persons aged 15-24 by province, South Africa 2002

Table 18 presents HIV prevalence amongst youth by locality type. Major differences were found amongst various types of locality with youth living in urban informal areas having significantly higher HIV prevalence than youth living in urban formal areas.

Table 18: HIV prevalence among persons aged 15-24 years by locality type, South Africa 2002

LOCALITY TYPE	n	HIV POSITIVE (%)	95% CI
Total	2099	9.3	7.3–11.2
Urban formal	1230	9.3	6.6–12.0
Urban informal	197	20.2	12.3–28.1
Tribal	524	7.0	3.9–10.1
Farms	148	8.6	1.0–16.1

3.2.4 HIV prevalence among persons aged 15–49 years

Figure 7 presents the observed HIV prevalence among persons aged 15–49 years to permit comparison of South Africa with other countries. The results show that 15.6% tested positive. However the burden of this epidemic is uneven between sexes. Women have much higher HIV prevalence than men and these differences are statistically significant.

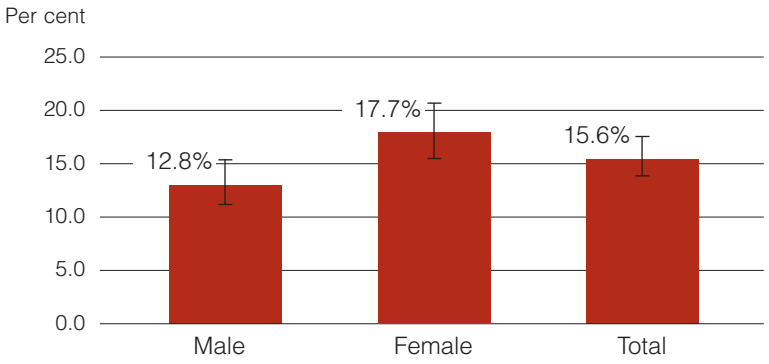

Figure 7: HIV prevalence among adults aged 15-49 years by sex, South Africa, 2002

Figure 8 shows observed HIV prevalence among persons aged 15–49 years by race. Africans have the highest HIV prevalence compared with other race groups. The prevalence among white and coloured persons is however also high. It is important to note that the observed HIV prevalence for whites has wider confidence intervals and this is largely due to a low response rate among whites. The same can be said of the Indian population.

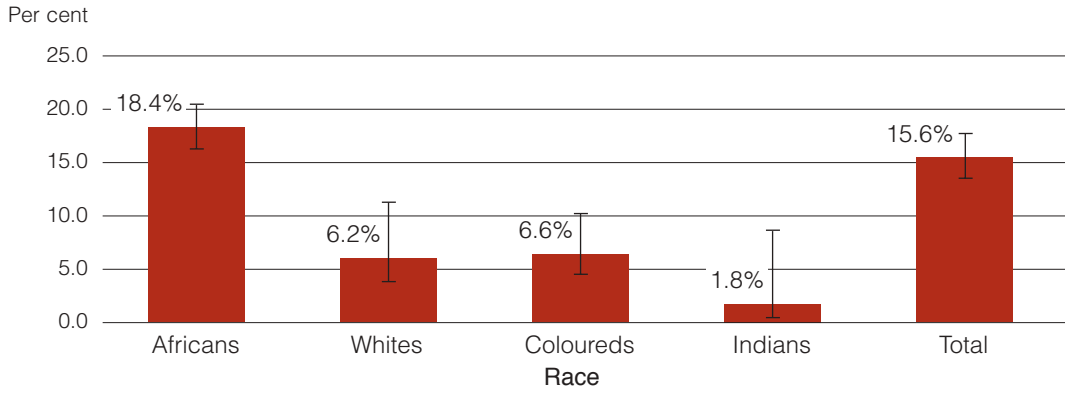

Figure 8: HIV prevalence among adults aged 15–49 years by race, South Africa 2002

Figure 9 shows HIV prevalence among the nine provinces. When prevalence was computed by province, the results show Mpumalanga, Gauteng and Free State to have the highest HIV prevalence among adults aged 15–49 years. However, Mpumalanga had a lower response rate and a wider confidence interval than the other two provinces. The Northern Cape and Eastern Cape provinces were found to have the lowest HIV prevalence among persons aged 15–49 years. The observed prevalence in Kwazulu-Natal is lower than that observed in Mpumalanga, Gauteng and Free State.

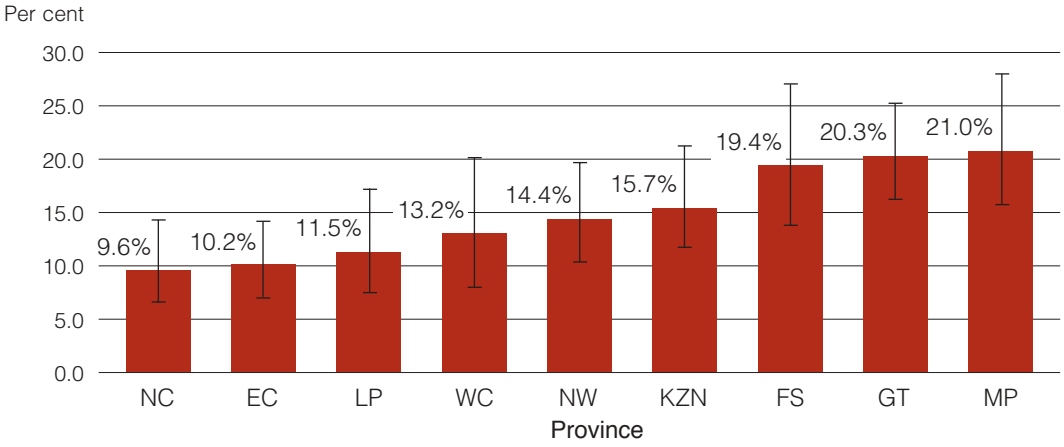

Figure 9: HIV prevalence among adults aged 15–49 years by province, South Africa 2002

From Figure 10 it is apparent that living in urban informal areas is a determinant of HIV infection among adults aged 15–49 years.

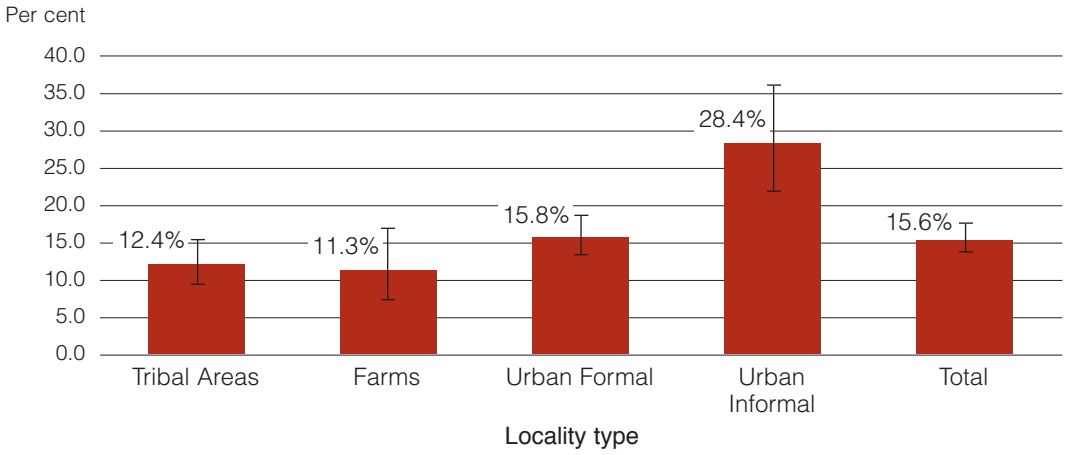

Figure 10: HIV prevalence among persons aged 15–49 years by locality type, South Africa 2002

3.2.5 HIV prevalence among persons aged 25 years and older

Table 19 shows HIV prevalence by sex amongst persons 25 years and older. While large differences were observed earlier in HIV prevalence between male and female youth, the prevalence amongst persons 25 years and older was less marked.

Table 19: HIV prevalence among persons aged 25 years and above by sex, South Africa 2002

SEX	n	HIV POSITIVE (%)	95% CI
Adults (=>25 yrs)	3981	15.5	13.5–17.5
Male	1609	14.4	11.6–17.1
Female	2372	16.2	13.6–18.8

Table 20 presents HIV prevalence amongst those aged 25 years and older by race. African adults have higher prevalence of HIV than other race groups. The HIV prevalence for white adults should be interpreted with caution given the observed low coefficient of variation and low response rate (see Appendix A2).

Table 20: HIV prevalence among persons aged 25 years and above by race, South Africa 2002

RACE	n	HIV POSITIVE (%)	95% CI
Total	8428	11.4	10.0–12.7
African	2318	18.8	16.2–21.3
White	427	5.7	2.7–8.7
Coloured	812	6.7	4.4–8.9
Indian	424	2.3	1.5–3.1

Table 21 shows HIV prevalence for adults by locality type. The study found that persons living in informal settlements have much higher HIV prevalence than those living elsewhere. The next highest HIV prevalence was in adults living in formal urban areas. In general, urban areas had higher prevalence than rural areas.

Table 21: HIV prevalence among persons aged 25 years and older by locality type, South Africa 2002

LOCALITY TYPE	n	HIV POSITIVE (%)	95% CI
Adults*	3981	15.5	13.5–17.5
Urban formal	2478	15.7	12.7–18.6
Urban informal	419	28.6	21.6–35.6
Tribal	789	12.8	9.5–16.0
Farms	295	9.5	5.7–13.2

* =>25 years

3.2.6 HIV prevalence by selected demographic and risk factor variables for persons 15 years and older

This part of the analysis excludes children because the overwhelming majority are not sexually active and hence behavioural risk variables are not applicable to this group. For this reason, instead of analysing data on 8 428 persons who provided specimens for HIV test, this section reports on weighted data collected from the 6 086 youth and adults.

Among these 6 086 participants who had valid HIV results, the prevalence was 13.6% (95%CI: 12.1–15.2%).

The data shows a significant difference between the HIV prevalence for men (11.5%) compared to women (15.0%, p = 0.01) for the whole sample. For Africans the difference

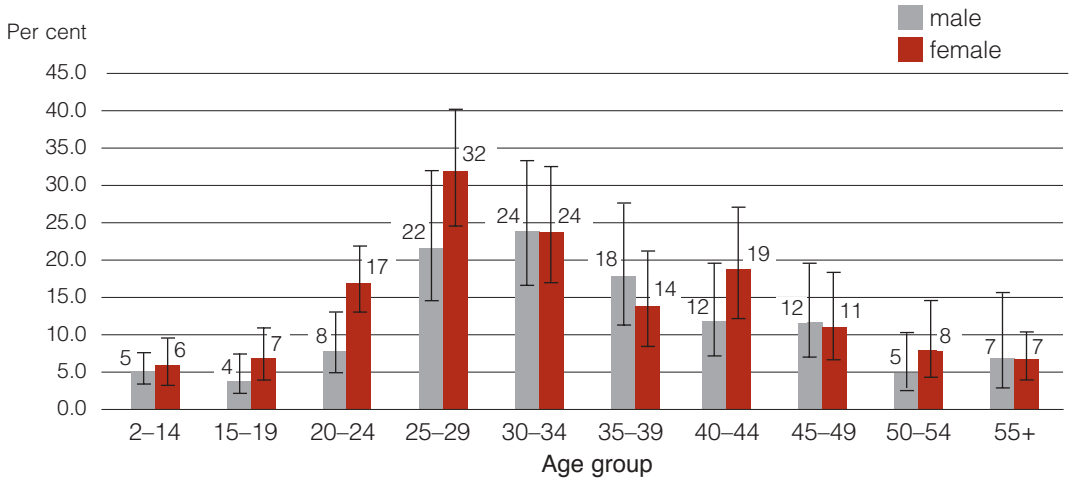

Figure 11: Prevalence of HIV by sex and age, South Africa 2002

was 13.5% for men compared to 17.6% for women (p = 0.02). For the other races there was no significant difference according to the sex of the respondent.

Figure 11 shows the prevalence of HIV for men and women separately by five-year age bands.

Table 22 shows the HIV prevalence levels for women by five-year age groups and compares the results to the levels reported by the Department of Health (DOH) for the 2001 antenatal survey (the latest available statistics). The reason for making the comparison of Africans is because this group makes up over 85% of the sample from the annual antenatal survey.

Table 22: HIV prevalence by age amongst women surveyed in 2002 compared with pregnant women surveyed by Department of Health in 2001

Age groups		Women (15–49)		African women (15–49)		2001 DoH Survey	
	%	%	95% CI	%	95% CI	%	95% CI
15 to 19	5.9	7.3	(4.7–11.3)	7.5	(4.5–12.0)	15.4	13.8–16.9
20 to 24	13.2	17.1	(12.9–22.3)	19.1	(14.2–25.0)	28.4	26.5–30.2
25 to 29	28.3	32.0	(24.8–40.1)	38.6	(30.0–48.1)	31.4	29.5–33.3
30 to 34	24.1	24.1	(17.3–32.5)	29.7	(21.1–39.9)	25.6	23.5–27.7
35 to 39	15.6	13.8	(8.7–21.1)	17.5	(10.9–26.8)	19.3	17.0–21.5
40 to 44	16.4	19.0	(12.8–27.2)	22.5	(14.9–32.5)	9.1	6.2–11.9
45 to 49	11.5	11.2	(6.5–18.7)	11.3	(5.6–21.3)	17.4	4.3–31.4
Total	15.6	17.7	(15.2–20.4)	20.7	(17.7–24.0)	24.8	23.6–26.1

When a comparison is made between all women and pregnant women surveyed through the DOH antenatal care survey, the latter have much higher rates for all five-year age groups between 15 and 39 years, and 45 and 49 years. However, when the most appropriate comparison is made, different results emerge. The comparison between African women and pregnant women surveyed by the Department of Health shows the HIV prevalence to be higher in the latter sample for those aged 15–19 and 20–24 years and much lower in the 40–44 year age group.

This study identified those women who were pregnant in the last twelve months (n=244) in the household survey, and found that 24% (CI:15.8–34.8%) were HIV positive, a finding similar to that obtained by the Department of Health in 2001 (24.8%, CI:23.6–26.1%). Because of the small number of pregnant women in the household survey, the design effect was 4.6 leading to wide confidence intervals.

3.2.7 HIV prevalence by measures of socio-economic and educational status

There was no significant difference in the HIV prevalence among those who reported that they were working (14.2%) and those not working (12.1%) (p=0.7).

Table 23 shows that when the socio-economic status of the home is categorised on a scale ranging from having not enough money for food and clothes, up to having disposable income for luxuries, there is a decrease in HIV prevalence from the poorer to richer homes when all participants are included. This means there is a negative correlation between HIV and socio-economic status. However, this trend disappears when only Africans are considered, as in this group there is no discernable trend.

Table 23: Prevalence of HIV by a measure of disposable household income for persons age 15 years and older by race, South Africa 2002

INCOME 95% (CI)	WHOLE SAMPLE 95% (CI)	AFRICAN 95% (CI)	WHITE 95% (CI)	COLOURED 95% (CI)	INDIAN
Not enough money for basics	13.9 (11.9–15.9)	14.5 (12.4–16.7)	6.2 (0.0–15.4)	7.6 (2.6–12.7)	1.9 (0.0–4.5)
Enough for basics, short for others	14.0 (11.6–16.4)	16.1 (13.2–19.0)	6.4 (0.0–13.1)	4.4 (2.6–6.2)	3.7 (0.0–9.8)
Enough for most important things	6.5 (3.7–9.3)	9.4 (3.7–15.1)	3.7 (0.9–6.4)	7.8 (1.4 –14.1)	0.5 (0.0–1.3)
Some money for extras	5.0 (1.8–8.1)	10.3 (0.0–20.7)	4.6 (0.7–7.1)	2.7 (0.0–7.1)	0.0

Table 24 summarises the relationship between HIV and education by the race of the respondent. When using the sample of persons aged 15 years and older and comparing the HIV prevalence between differing levels of education, there are no significant differences between those with no schooling, those with some schooling and those who have matriculated, but among the participants with a tertiary degree the prevalence of

Table 24: Prevalence of HIV of persons 15 years and older by educational level and by race, South Africa 2002

EDUCATION	15 YEARS + % (CI)	AFRICAN % (CI)	WHITE % (CI)	COLOURED % (CI)	INDIAN % (CI)
No school	8.3 (4.9–11.7)	8.7 (5.0–12.4)	0.0	5.2 (0.2–10.1)	0.0
Primary school	12.1 (9.7–14.5)	12.6 (10.0–15.3)	10.7 (0.0–32.2)	8.3 (3.9–12.7)	1.2 (0.0–3.7)
High school	14.9 (12.5–17.3)	17.2 (14.4–20.1)	7.7 (1.5–13.9)	5.1 (2.3–7.9)	0.8 (0.0–1.9)
Matric	15.3 (11.6–19.0)	21.1 (15.7–26.5)	4.4 (0.8–8.0)	6.4 (0.0–13.5)	3.0 (0.0–7.9)
Tertiary education	6.5 (3.4–9.5)	10.2 (4.6–15.9)	3.6 (0.4–6.8)	2.7 (0.0–6.4)	0.3 (0.0–0.8)

HIV was significantly lower than the rest (p=0.004). However, this pattern is reversed when only Africans are considered, that is, there is a significant increase in HIV prevalence with increasing levels of education (p=0.01).

3.2.8 HIV and history of diagnosis of sexually transmitted infections (STIs)

A total of 165 participants (out of 7 084 who completed questionnaires), that is, 2.3% admitted to being diagnosed with at least one STI during the last three months. When weighted data are used, 2.6% of participants had at least one STI during the last three months with the prevalence among men being 3.9% (95% CI:2.8–5.4%) and among women 1.7% (95% CI:1.2–2.4%).

Table 25 displays HIV prevalence by history of sexually transmitted infections and shows that despite the relatively low reporting levels, there is a strong association between HIV and STIs.

Tables 26 and 27 show the distribution of STIs by race and locality type. STI prevalence levels are highest among Africans followed by coloureds and whites but the differences are not statistically significant. No major differences were observed in the prevalence of self-reported STIs from people living in tribal areas, farms or urban formal areas, but there was a significantly higher prevalance of STIs among those living in informal areas.

Table 25: Prevalence of HIV by self-reported history of having had a sexually transmitted infection, South Africa 2002

	STI PRESENT		NO STI	
	%	95% CI	%	95% CI
Diagnosed with an STI in last 3 months	39.9	23.2–57.3	13.2	11.7–14.9
Sores/ulcers on genitals in last 3 months	40.2	23.9–59.0	13.3	11.8–14.9
Abnormal penile discharge in last 3 months	24.9	11.8–45.0	14.5	12.0–15.1

(Note: numbers of men with urethral discharge too few for meaningful analysis)

Table 26: Prevalence of self-reported STIs by race, South Africa 2002

RACE	STI PREVALENCE %	95% CI
African	3.1	2.4–4.0
White	0.6	0.1–3.0
Coloured	1.6	0.8–2.9
Indian	0.4	0.1–0.9

Table 27: Prevalence of self-reported STIs by locality type, South Africa 2002

LOCALITY TYPE	PREVALENCE %	95% CI
Tribal Area	2.0	0.16–3.2
Farm	2.6	1.1–6.1
Urban Formal	2.3	1.6–3.2
Urban Informal	6.5	5.0–10.2

Due to small numbers no further analysis by province is possible.

In addition to determining the prevalence of self-reported STIs, data was collected on the extent of awareness regarding where to access treatment. It was found that most people knew of the places where they could go for treatment of STIs (79%). About 10% of the respondents who knew of these services had used them and the majority of them indicated that the service provided was satisfactory (92.7%).

Logistic regression
With a variety of demographic and other factors influencing the HIV prevalence levels, it is appropriate to use logistic regression techniques in order to determine which explanatory variables are independent predictors for HIV status. Table 28 uses the weighted data and lists the demographic and behavioural variables that remained significant in the model and provides the odds ratio (OR), 95% confidence intervals and the p values for the whole sample.

The most important demographic predictors of HIV are: race, age, sex of respondent, locality type, and province of residence. Education and economic status were not significant independent predictors of HIV status, but history of an STI was associated with a higher likelihood of being HIV positive.

Being a resident in a rural area (tribal areas and farms) means that an individual is significantly less likely to be HIV positive than if resident in an urban area regardless of other factors such as race or socio-economic status. Province of residence also remains an independent predictor of HIV status with those living in the WC, EC or NC having significantly less likelihood of being HIV infected than persons living in Gauteng, Free State or Mpumulanga.

3.2.9 Discussion

The majority of findings in this study confirm trends in existing data. However, there are findings that differ from existing studies. The study also generated new findings, and these may require further validation and/or in-depth analysis.

Confirming what is known

- National HIV prevalence: This household survey supports the finding that HIV is a generalised epidemic in South Africa. This is based on the estimated national HIV

Table 28: Logistic regression of selected demographic and behavioural variables and HIV status using the unweighted data for the whole sample

	ODDS RATIOS AND CONFIDENCE INTERVALS		
Age	OR	95%CI	p value
50+	0.4	(0.3–0.6)	<0.001
25–49	1.0	(0.7–1.4)	0.9
<25	1.0		
Locality type			
farm	0.6	(0.4–1.0)	0.04
tribal area	0.6	(0.4–0.8)	0.004
urban/inform	1.4	(1.0–2.0)	0.06
urban/formal	1.0		
Sex of respondent			
female	1.4	(1.1–1.9)	0.004
male	1.0		
Household income			
luxuries	0.6	(0.3–1.2)	0.1
most	0.5	(0.3–1.0)	0.06
enough	1.04	(0.8–1.4)	0.8
not enough	1.0		
Marital status			
married	0.9	(0.6–1.2)	0.4
alone	1.0		
Race			
Coloured	0.4	(0.2–0.6)	<0.001
Indian	0.1	(0.03–0.4)	0.001
White	0.4	(0.2–0.8)	0.006
African	1.0		
Prevalance			
High	1.5	(1.1–2.2)	0.02
Mid	1.4	(1.0–2.0)	0.05
Low	1.0		
STI			
yes	2.6	(1.4– 4.8)	0.003
no	1.0		

prevalence of 11.4% of persons who are living with HIV/AIDS. If the response rate was 100%, which is never the case in any study on HIV/AIDS, perhaps different findings may have been observed. This study has been conservative in its computation of response rates. Had non-contacts in this study been excluded from the denominator as done in other studies (National Survey of Sexual Attitudes and Lifestyles 2002) the global response rate would have been 96.7% for all interviews, and 81.8% for HIV testing. The response rates for each prevalence estimate are outlined in Appendices A1–A3. This survey did not assess the following groups: children younger than 2 years old who may have been infected through mother to child transmission (estimated at 83 500), as well as persons living in institutions such as prisons, military barracks and boarding schools. For this reason, the estimate made may be underestimating HIV prevalence. A plan is underway to model study findings drawing on information from smaller studies focusing on these specific populations. The 11.4% prevalence estimated in the household survey is similar to the 11.2% (4.84 million) estimated through modelling by the Department of Health. The UNAIDS estimates of five million PLWA and 20.1% of persons in the 15–49 age group HIV positive for 2001 are much higher than those observed in this study. This study observed that 15.2% (CI: 13.9–17.5%) of persons in the same age range were HIV positive.

- HIV prevalence by age and sex of respondent: The age and sex distribution of HIV infection follows the pattern found in other studies, that is, prevalence levels rise more quickly in women and then decrease with age whereas with men the peak prevalence levels occur at an older age. The logistic regression analysis confirms that both age, in particular being between 25 and 49 years, and being female increases the likelihood of a person being HIV positive. Various reasons have been suggested for the sex differences. One hypothesised reason is that younger women are more biologically vulnerable than men because of immature genital tracts and/or as a result of risky sexual practices (Glynn 2001;Tanfer & Aral 1996). Other studies have shown that women tend to have sex with men who are older than themselves (the so-called 'sugar daddy' phenomenon) and this is supported in this study as 8% of women aged 15 to 24 have partners who are between 11 to 25 years older than themselves (compared to 2% of men) and a further 22.4% of women have partners between 6 and 10 years older (compared to 3.6% of men). It is therefore appropriate to target young women as especially vulnerable and not to ignore older people in prevention campaigns.

  The finding that there are more women infected than men in the 40 to 44 year old group is not readily explained. This may be partly due to a 'cohort effect' as the epidemic matures and people infected in their youth are now moving into older age bands with a higher mortality amongst men. However, the design of this study does not permit this analysis.

- HIV prevalence by race in South Africa: For the first time, South Africa has HIV prevalence estimates by race, a statistic essential for monitoring progress in improving the health status and quality of lives in a post-apartheid society. The finding that Africans have a higher estimated HIV prevalence [12.9% (11.2–14.5%)] than whites [6.2% (CI 3.1–9.2%)] and coloureds [6.1% (CI: 4.5–7.8%)] probably reflects historical factors. Higher proportions of Africans are more likely than other

races to be found in informal settlements, where HIV prevalence is highest. Factors contributing to this include labour migration, mobility, and relocation. Racial disparities in HIV prevalence have been observed in countries such as the United States of America, where African Americans have higher HIV prevalence than white Americans (CDC 2002: <http://www.thebody.com/cdc/factrace.html>).

Although Africans have the highest estimated HIV prevalence, whites and coloureds also have high estimated HIV prevalence. The estimated HIV prevalence among whites in South Africa is much higher than that observed in predominantly white societies, for example in the USA, Australia, France and UK, which have HIV prevalence less than 1% (UNAIDS 2002). The HIV prevalence among whites and coloureds clearly indicates that a dynamic epidemic is occurring in these groups, and they should be consciously incorporated into HIV prevention efforts.

- HIV PREVALENCE DERIVED FROM ANTENATAL DATA: This study calculated the HIV prevalence among women who reported being pregnant in the 12 months before the study (n=244) and found that 24% (CI: 15.8–34.8%) were HIV positive, a finding similar to the Department of Health's survey of clinics, which found 24.8%. As expected both the household survey and the Department of Health's antenatal survey observed much higher HIV prevalence among pregnant women than in the general population. Household data thus usefully informs interpretation of antenatal data.

  Until now, the Department of Health has used extrapolations from data collected from pregnant women to estimate HIV prevalence in the general population. Antenatal data provided the following population best estimates for 2001: (a) that 83 581 children were infected with HIV by their mothers, (b) 2.09 million men were infected, (c) 2.51 million women were infected, adding to the total estimate of 4.74 million adults. With the addition of 83 581 children, it was estimated that 4.8 million South Africans were living with HIV/AIDS at the end of 2001. Estimates were made using modelling techniques that assumed that (a) the male infection rate is equal to 85% of the rate of infection among women, (b) the number of births is equal to the number of pregnant women (c) that 35% of children born to HIV infected women will become HIV positive, and that (d) the HIV positive rate in pregnant women will be the same as the rate in non-pregnant women. From these assumptions, it appears that the antenatal model is likely to overestimate the HIV prevalence in South Africa.

  This study found that (a) the infection rate among men is 74% of that of women and HIV prevalence in pregnant women is not equal to that of non-pregnant women i.e. 24.0% and 14.5% respectively. This study provides useful input into modelling national prevalence data from antenatal data.

  The DoH antenatal data for 2001, when compared by age bands fits reasonably well with the results of this study. We found a statistically significant lower HIV prevalance among 15 to 24 year olds, which is to be expected. This is because not all young women are sexually active, as opposed to pregnant women in the antenatal data, who by definition are practising unprotected sex. Overestimation of the HIV prevalence in this age group is a known bias in antenatal studies.

When comparing women in this study with pregnant women in the anenatal survey who are older than 24 years, there is no particular trend, and the confidence intervals overlap among all age bands, except among the 40–44 year olds. The high prevalence among those aged 40–44 years in this study is anomalous, and should be regarded as suspiciously high.

- HIV prevalence in rural areas: HIV prevalence is lowest in rural areas and highest in urban areas, particularly in urban informal settlements as reported in this study. This is the first national study that examines HIV prevalence in a representative sample of South Africa's rural areas and compares the results with a representative sample in urban areas.

  The lower HIV prevalence in tribal areas and farms, when compared to the prevalence ratios in urban formal areas and in urban informal settlements, suggests that increased efforts are needed to keep prevalence lower in rural areas, while parallel efforts are needed in urban areas to reduce new infections. Residents of informal settlements are known to be more mobile, and thus need targeted interventions.

- Relationship between HIV and STIs: Sexually transmitted infections are a co-factor for HIV transmission. Research has shown that the presence of genital ulcer disease and of some non-ulcerative STIs enhances the transmission of HIV (Cohen 1997; Flemming & Wasserheit 1997; Harrison et al. 1998; Hurwitz 1998, Wasserheit 1992). Given the strong association between STI and HIV infection, the control and prevention of STIs may be critical in the prevention of HIV. The prevalence of STIs in this study was determined by self-reporting only, with no biological markers being obtained. In comparison to other recent studies in South Africa, the self-reporting levels among adults reported here (2.6% with symptoms in last 3 months) are low. In the 1998 DHS survey 12% of adults reported STI symptoms in the last 3 months and in a study in KZN the level was 10% (Colvin et al. 1998). Further research is required to understand why the prevalence of self-reported STIs is low in this study. However, the decrease in self-reported STIs may be real. The increased use of condoms and other improvements in sexual behaviour reported in this study may be lowering the incidence of STIs. This theory is supported by the substantial decreases in syphilis as measured by the annual antenatal survey.

  Nevertheless, in spite of the small number of participants admitting to STI symptoms, these participants had a substantially and significantly increased chance of being HIV positive. In addition, because of the association between STIs and HIV, it is not surprising that in this study the prevalence levels of self-reported STIs follow a similar pattern to the distribution of HIV, i.e. higher among Africans and particularly high in the informal settlements. The logistic regression analysis confirms that STIs are associated with HIV.

  Whether or not the STI epidemic is driving the HIV epidemic or whether it is 'piggy-backing' on the same risk factors cannot be established from this survey. However, whatever the relationship, informal areas need special targeting for both STI reduction and HIV prevention and care. Meanwhile, the window of opportunity exists in rural areas to prevent both the STI and HIV epidemics from reaching the

same proportions as currently exist in urban areas. There is a need for an aggressive strategy in this regard.

Differing findings

- HIV PREVALENCE IN KWAZULU-NATAL: This study observed that KwaZulu-Natal appears not to have the highest HIV prevalence in South Africa. Instead it ranked fourth highest, lower than Free State, Gauteng and Mpumalanga. However, it must be emphasised that the confidence intervals among many of these provinces overlap. The Department of Health's antenatal data show KwaZulu-Natal to have an HIV prevalence that is much higher than any other province by a much wider margin than in this study.

  There are several possible reasons for the observed discrepancies. First, the most plausible explanation for the differences may be sampling: all of the 36 KwaZulu-Natal antenatal sentinel sites are found along major or main roads (Figure 12). Transport routes are known to have much higher HIV prevalence. This study sampled respondents from rural and urban areas throughout KwaZulu-Natal. The role of differential response rates in the household survey in explaining the low prevalence of HIV in KwaZulu-Natal may need further investigation.

  Researchers investigating factors accounting for differences in HIV seroprevalence in the rural Rakai district in south western Uganda concluded that seroprevalences of HIV suggest spread of infection from main road trading centres, through intermediate trading villages, to rural agricultural villages (Wawer et al. 1991). Whilst the weighted seroprevalence of HIV for the district was 12.6%, seroprevalence was highest in main road trading centres (men 26%, women 47%), intermediate in rural trading villages on secondary roads (men 22%, women 29%), and lowest in rural

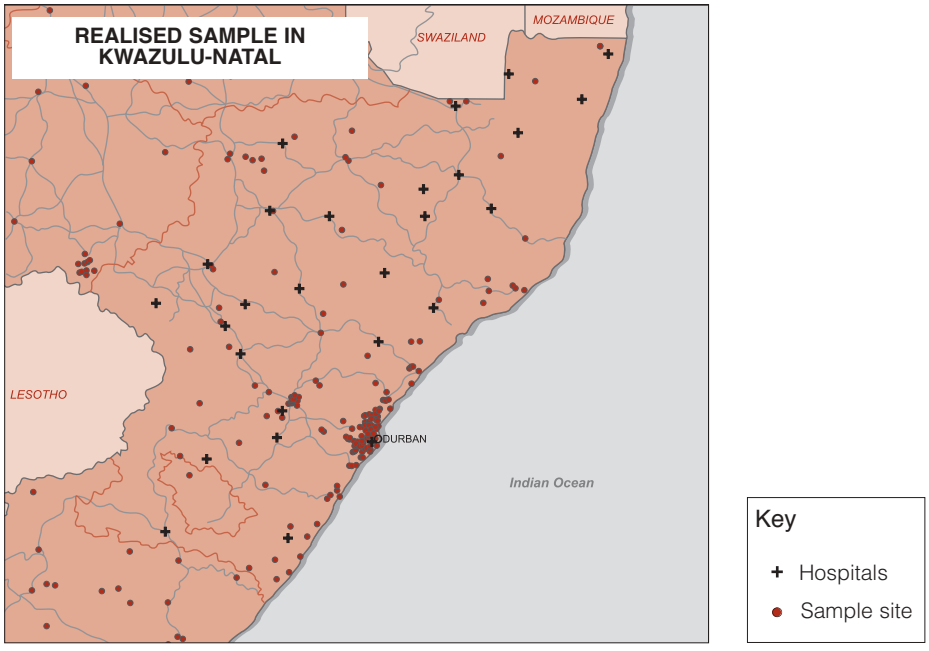

Figure 12: Map showing clinics and sites in KwaZulu-Natal

agricultural villages (men 8%, women 9%). A similar urban/rural distribution was found in Tanzania where 2.5% of the adult population in rural villages, 7.3% in roadside settlements and 11.8% in town were infected (Barongo et al. 1992).

Other studies have confirmed these findings. In Mwanza, Tanzania, the prevalence of HIV was twice as high in communities living along the roadsides in comparison to those living in villages distant from the main road (Grosskurth 1995). A study conducted in the remote mountains of Lesotho in 1995, found that all cases of HIV infection occurred amongst those subjects living along the main road (15 of 115) and no cases were detected amongst the 123 subjects living away from the main road (p=0.001) (Colvin 2000).

Recent evidence from northern KwaZulu-Natal has shown a strong correlation between the mean distance of a homestead from a primary or secondary road and HIV prevalence, with much higher prevalence in homesteads near roads (r=0.66, p=0.002). (Tanser 2000)

A second explanation for the relative ranking of KwaZulu-Natal may lie in the balance of its locality types. The three provinces with the highest HIV prevalence, Mpumalanga, Gauteng and Free State also have the highest prevalence of HIV among people living in informal settlements. The two provinces with the highest HIV prevalence also have the highest proportion of persons living in urban informal areas. These are Gauteng (19.9%) and Free State (16.9%). The Western Cape, which has higher prevalence of HIV based on household survey also has a large percentage of its population living in informal areas (12.8%). This may partly explain the reason for a higher HIV prevalence in these provinces when comparing household data with antenatal data. KwaZulu-Natal has the second lowest proportion of people living in informal settlements (5%). This may account for KwaZulu-Natal's relative ranking. Further studies are needed to validate the HIV prevalence in KwaZulu-Natal. Other studies do corroborate the lower HIV prevalence in KwaZulu-Natal. In an unpublished MRC 2001 study of 2,364 workers in chemical, transport and distribution companies, 9.4% were HIV positive. This figure was less than that of Gauteng (12.3% of 1,167 workers) and Western Cape (12.9% of 528 workers) and higher than that of Eastern Cape (6.5% of 2032 workers).

- HIV prevalence in the Western Cape: The observed HIV prevalence for women aged 15–49 years in the Western Cape of 18.5% (CI: 10.9–29.7%) is much higher than that observed from antenatal data. This is the only province where the HIV prevalence derived from the household survey is much higher than that derived from antenatal data. The Western Cape, just like Gauteng and Free State, has a high percentage of its population living in informal settlements (12.8%). This may explain the unusual finding. This finding requires further investigation.

- Relationship between HIV and socio-economic status (a proxy measure for poverty): While this study cannot claim to have adequately measured poverty, a perceived rating of adequacy of household income was utilised as a measure. The results were correlated with HIV prevalence. The study found that the relationship between perceived socio-economic status and HIV infection indicates that all strata of society are at risk and not only poorer persons. In particular, wealthy Africans have similar

levels of risk to less wealthy Africans. However, in the other race groups, lower socio-economic status appears to be related to higher likelihood of HIV infection, even after multivariate adjustment. Further work is required to create an index of poverty comprising detailed employment categories such as work in informal sector, formal sector, part-time employment, occupation, and sources of income. This might shed more light on the relationship between HIV and poverty. Further analysis of the data will be conducted.

- Relationship between HIV and education: A review of the literature shows that in Africa there is no simple relationship between HIV infection and levels of education. School attendance may increase access both to information (as shown strongly in this study) and potentially to prevention interventions. Also, in the longer term, an increased level of education may improve a person's ability to act on prevention messages. However, the improvements in socio-economic status and lifestyle changes that go with higher educational attainment may be associated with behaviours that increase risk of HIV infection (UNAIDS 1998).

  A recent comprehensive review of the association between HIV infection and educational attainment in developing countries (Hargreaves 2002) found that in Africa prior to 1996, increased schooling was either not associated with HIV or was associated with an increased risk of HIV infection. However, Hargreaves and colleagues report that there is now some evidence from Uganda and Zambia that the pattern is changing and that there is now an increasing burden amongst the less educated. The present study results show that among Africans there is a significantly increased risk of HIV infection amongst persons with higher educational levels and this may be because South Africa is still at an earlier stage of the epidemic than countries further north.

Findings requiring further research

The observation that the estimated HIV prevalence among children aged 2–14 years is 5.6% (CI: 3.7–7.4%) was unexpected. Once HIV prevalence was identified to be high in this group, a record review was undertaken to determine how many could have been infected through vertical transmission. The analysis was done focusing on those 2–11 years of age, as they are less likely to be sexually active. An analysis of the mother-child and father-child pairs revealed that of the 86 HIV positive children aged 2 to 14 years, 27 could be matched with a biological parent, and 20 of the parents selected in the study had an HIV test result. Of these 20, only five (25%) were HIV positive (four females and one male) and 15 (75%) were HIV negative. This raised the question of whether the biological parents of these children were alive or dead. The results found were that only seven (6.1%) of the 86 children had a biological mother who had died and a similar percentage (7%) had a biological father who had died. It remains unclear as to how these children could have been infected. An emerging theory that warrants further investigation is that there is unexplained HIV prevalence in children who have had no sexual exposure, or have parents with HIV negative mothers. In addition between 20–40% of HIV infections in African adults are associated with injections (Gisselquist et al. 2002). Given this unexplained high prevalence in children aged 2–14 years, it is necessary to test this theory in South Africa. Possible factors to be investigated include sexual abuse and unsterile needles.

3.2.10 Impact of access to HIV testing and awareness of serostatus

Because analysis of awareness of serostatus has to take into account the results of HIV testing used to estimate HIV prevalence, this subsection is presented using weighted data. Statistical tests were also performed on weighted data taking into account the design effects resulting from the cluster sampling procedure used in this survey.

Among respondents aged 15 years or more who agreed to be tested, 18.9% declared that they had previously been tested and that they were aware of their HIV serostatus. These proportions were 23.1% among HIV positive respondents and 18.2% among HIV negative respondents (p=0.06). It must be noted that nearly two thirds (62.6%) of those HIV positive who were unaware of their serostatus did not think that they could possibly get infected by HIV. Among those testing HIV negative, proportions of respondents who declared that they could not be infected by HIV were respectively 68.4% for those who previously underwent HIV testing and 73.4% among those who never did. It must be noted that respondents were not asked what their HIV status was, and there may have been some respondents who were tested prior to becoming HIV positive.

Among those who were HIV positive and aware of their status, 47.3% underwent HIV testing for personal reasons,[1] 22.5% during pregnancy, 14.8% following an external request (from employers, insurance companies, banks), and the remaining 15.4% referred to other circumstances. Interestingly, a higher proportion of those HIV negative and aware of their status had undergone testing because of external requests (37.5%) and a significantly lower proportion for personal reasons (29.7%). It must also be noted that prenatal HIV testing contributed to HIV testing in a greater proportion among Africans (25.3%) than in the other racial groups (9.0%).

Table 29 shows that for both HIV positive and HIV negative respondents, previous access to HIV testing, and consequently, awareness of serostatus was significantly associated with some common socio-cultural characteristics: respondents aged between 25 to 49 years, living in urban areas, with a higher level of education and strong religious background were more likely to have been tested for HIV.

Differences were noted between HIV positive and HIV negative respondents (Table 29). Amongst those who were HIV positive, females were significantly more likely to be aware of their serostatus than males, whilst the situation was reversed amongst those testing HIV negative. No effect of race on previous access to testing and personal knowledge of HIV diagnosis was observed amongst HIV positive respondents. In contrast, amongst HIV negative respondents, Africans were significantly underrepresented in the group of individuals who were aware of their serostatus. Overall, respondents who were HIV negative and who had access to testing were in higher socio-economic groups.

Table 29 also shows that awareness of serostatus, among both HIV-positive and HIV negative respondents, was associated with better knowledge about the fact that HIV causes AIDS and improved exchange of information about HIV and HIV serostatus with partner. It must be noted that among the HIV positive respondents who were sexually active in the previous year, awareness of serostatus was significantly associated with condom use at last intercourse, but that such relationship with condom use was not observed amongst HIV negative respondents.

1 Respondents who declared that they went for testing either because 'they felt sick', or because 'they had started a new relationship' or because 'they wanted to know their HIV status'.

Table 29: Awareness of HIV serostatus and characteristics of respondents (weighted data)

RESPONDENTS' CHARACTER-ISTICS	% AWARE OF SEROSTATUS AMONG HIV-POSITIVE INDIVIDUALS	p	% AWARE OF SEROSTATUS AMONG HIV-NEGATIVE INDIVIDUALS	p
Total	**23.1**		**18.2**	**0.06**
Sex				
Male	15.0	0.01	19.5	0.22
Female	28.1		17.3	
Age				
15–24	11.8	0.03	10.8	<0.0001
25–49	29.1		29.5	
50+	12.1		8.8	
Locality type				
Rural area	13.2	0.003	8.3	<0.0001
Urban area	28.3		25.7	
Race				
African	23.1	0.52	12.9	<0.0001
Others	28.1		34.6	
Level of education				
<High school	11.4	0.001	7.6	<0.0001
High school & more	29.7		25.0	
Religion				
Very important in personal life	27.4	0.02	20.7	<0.0003
Other	16.2		14.0	
Household resources				
Not enough money for basic goods	21.0	0.31	9.6	<0.0001
Other	26.5		26.2	
Marital status				
Living alone	24.4	0.61	13.4	<0.0001
Married	21.5		24.8	

RESPONDENTS' CHARACTER-ISTICS	% AWARE OF SEROSTATUS AMONG HIV-POSITIVE INDIVIDUALS	p	% AWARE OF SEROSTATUS AMONG HIV-NEGATIVE INDIVIDUALS	p
Sexual activity in prior 12 months				
Abstinent	20.4	0.49	6.6	<0.0001
One sexual partner	25.3		25.8	
Multiple sexual partners	16.0		16.3	
Has discussed HIV prevention with partner				
Yes	30.0	0.003	26.6	<0.0001
No	13.0		12.3	
Knows HIV serostatus of partner				
Yes	68.8	<0.0001	66.6	<0.0001
No	14.8		9.5	
Knows HIV causes AIDS				
Yes	26.6	0.003	21.5	<0.0001
No	11.7		8.3	
Condom use at last intercourse*				
Yes	33.0	0.03	26.6	0.42
No	19.1		24.4	

**In the subsample of those who had been sexually active in prior 12 months*

Although most people knew about VCT service availability, the majority of persons did not make use of VCT services. Only 19.8% of people who knew about VCT services made use of the services. The respondents who had not had an HIV test were asked if they would consider going for an HIV test. Looking at the population who said they would, 59.4% reported that they would consider a test if confidentiality was maintained (e.g. being unknown in the clinic, assured confidentiality) whilst 28.5% stated that they would consider HIV testing based on the accessibility, cost and quality of services. At least 12.0% indicated that they would be encouraged to undergo testing if the counsellors were more supportive (friendly, sensitive and helpful nurses). Amongst those who would not consider going for an HIV test, 71.7% reported that their reason was that they felt that they were at low risk of being infected. This suggests that reasons for undergoing VCT are more closely related to negative perceptions of services and low perceived risk than to problems of availability of services.

Our results show that awareness of serostatus has a positive impact on acceptability and adoption of preventive behaviours among individuals who are HIV positive. However, these results also point out the potential consequences of current limited availability of

voluntary counselling and testing, especially in rural areas and in poorer communities. Amongst the majority of the population who are HIV negative, access to testing is easier for groups with higher levels of education and income and testing does not appear to play a key role in behaviour change per se. However, results suggest that access to testing does not create a false feeling of reassurance among those who are HIV negative.

VCT for HIV is now acknowledged within the international arena as an effective and essential strategy for both HIV prevention and AIDS care (FHI 2002). The need for VCT is increasingly compelling as HIV infection rates continue to rise. The literature has shown that high-quality counselling and knowledge of HIV status helps individuals assess their level of risk, develop realistic plans to reduce their risk, and increase safer sex practices (USAID 2002). Those people who learn they are seronegative can be empowered to remain disease-free. For those HIV-infected, they have a chance to assess their options for treatment. The South African government has established more than 450 VCT centres with more than 800 counsellors around the country (DOH 2002). This study attempted to assess the extent to which South Africans have access to these services and the barriers to access.

Table 30 shows the results of the respondents who knew where to obtain VCT services. In most provinces, more than half of the sample knew where to access the services. The survey sample in Mpumalanga and Limpopo had the lowest percentage of persons who knew where to obtain VCT services. This study also found that about 40% of youth between the ages of 15 to 24 as well as a third of the adults between the ages of 25 to 49 did not know where to find these services. Urban respondents were more likely to know about VCT services than rural ones. Finally, the respondents from high educational backgrounds were more likely to know about VCT services than those from low educational backgrounds.

From the findings of this study, it is clear that VCT services are available in the country and people generally know about such services. As discussed earlier, although most people are aware of the services and how to access them, they do not necessarily make use of them. This might be due to the fact that people lack understanding of the importance of using these services. We suggest that existing prevention campaigns should increase emphasis on using VCT services. Clearly, the need for VCT services will increase as government rolls out the availability of generic anti-retroviral therapy in the public health sector in the near future.

3.3 Orphans

The premature death of parents deprives children of love, support and care. HIV/AIDS contributes to orphanhood, and for this reason there is an interest in estimating the magnitude of the orphanhood problem. In this study, we asked children or their guardians whether both the biological mother and the biological father were alive. The study found that 13% of children aged 2–14 years had lost a mother, a father or both. The study also found that 3% of children aged 2–14 years had lost their mother. This figure is similar (1.9% to 2.8%) to the one calculated from the October Household Survey of 1995 (Anderson et al. 2002). In addition this study found that 8.4% of children had lost their father. This figure is not that different from that obtained through calculations based on the October Household Survey conducted by StatsSA, which is between 9.5% and 12.5% (Anderson et al, 2002).

Table 30: Response by various sub-samples about their knowledge of availability of VCT services

VARIABLE	n	YES (%)	p	VARIABLE	n	YES (%)	p
Total	**7084**		**n.s.**	**Locality type**			p<0.001
Sex of respondent				Tribal area	1475	48.1	
Male	3025	60.3		Farm	486	53.7	
Female	4059	62.5		Urban formal	4309	65.9	
Age groups			p<0.001	Urban informal	814	67.2	
15–24 years old	2428	59.9		**Race groups**			p<0.001
25–49 years old	3139	68.5		Africans	4213	58.7	
50 and more	1517	49.8		White	676	69.8	
Provinces			p<0.001	Coloured	1358	67.7	
WC	932	66.5		Indians	837	59.1	
EC	1053	58.5		**Education level**			p<0.001
NC	520	78.8		No school	694	40.8	
FS	451	63.6		Primary school	1664	55.3	
KZN	1437	61.2		High school	2823	64.5	
NW	531	58.4		Matric	1342	69.2	
GT	1124	68.9		Tertiary education	561	72.5	
MP	431	44.3		Total n	4359	2725	
LP	605	45.0		%	61.5	38.5	

UNAIDS estimated that 660 000 children in South Africa have been orphaned due to AIDS (UNAIDS, 2002). UNAIDS defines an AIDS orphan as a child aged 0–14 years who has lost one or both parents to AIDS. This study was not able to estimate the percentage of the orphans who could have lost their parent(s) to AIDS.

Additional information collected in this survey includes age of the child at the time of death, highest level of education, details regarding the environment of the child, etc. Further analysis of the situation of these children will be undertaken.

3.4 Child-headed households

Many community-based assistance programmes report an increase in households headed by children, or consisting only of children, i.e. orphans or children without resident adult guardians. However, no national data on child-headed households has yet been reported. In this survey, just 3% of households were reported as being headed by a person between the ages of 12 and 18 years of age, and could thus be called a child-headed household (Gow & Desmond 2002). The percentage observed was 3.1% in urban formal areas, 4.2% in informal urban areas, 2.8% in tribal areas and 1.9% in farms.

3.5 Behavioural risks

The following section presents a range of indicators for sexual behaviour. This is followed by self-reported behavioural change and socio-cultural practices.

3.5.1 Age at sexual debut

The median age at first sex refers to the point at which half of respondents in a particular age category have had sex. The median age at first sex for respondents 25 years and older was 18 years. However, earlier median ages at first sex were noted amongst younger age groups. The median age of sexual debut amongst current 25–34 year olds was 17 years and for current 35–44 year olds it was 18 years. Amongst sexually active 15–24 year olds the median age was 16 years, but this figure applies only to the 56.8% of respondents in that age group who were sexually active.

An inter-age analysis was done in order to see if any shifts in the age of sexual debut had occurred across generations. Figure 13 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 49 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.

3.5.2 Sexual experience

Table 31 shows the breakdown of sexual experience by gender and also by locality type. The table shows that only a few children in the 12–14 year age group reported having had sex before. More importantly, sexual experience amongst youth was significantly

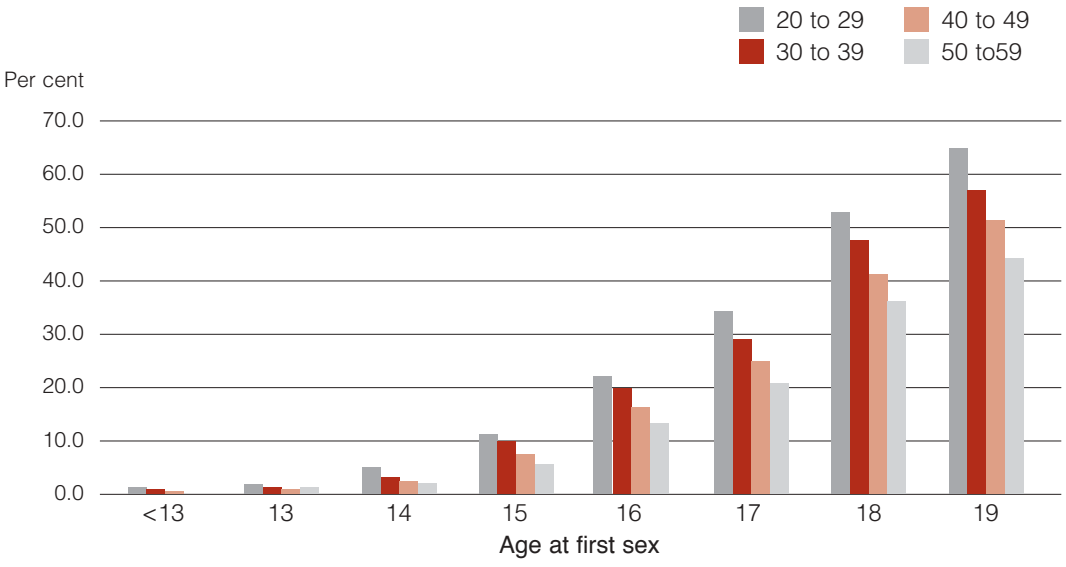

Figure13: Inter-generational analysis of changes in the age of sexual debut among 20-49 year-old adults in the study who were sexually active, South Africa 2002

higher in urban informal areas than in other types of localities. Sexual experience amongst adults was evenly distributed across gender and locality type.

Table 31: Sexual experience by gender and by locality type, South Africa 2002

VARIABLE	AGE GROUP								Total
	12–14 years old		15–24 years old		25–49 years old		50+ years old		
	%	n	%	n	%	n	%	n	n
Gender									
Male	1.1	360	55.6	1148	98.1	1285	98.7	595	3028
Female	1.6	381	57.9	1284	97.7	1854	95.8	923	4061
Locality type									
Rural*	0.9	218	58.3	761	97.5	711	97.5	489	1961
Urban informal	1.8	37	74.0	235	97.8	448	97.0	132	815
Urban formal	1.5	462	53.2	1436	98.1	1980	96.5	897	4313

** Combined farm and tribal areas*

Sexual partnerships

Table 32 below provides information for respondents who had sex in the past 12 months. Most respondents indicated that they had a single partner during the past 12 months, and the proportion of those with more than one partner was lower for females (3.9%) than for males (13.5%) ($p<0.001$). For both sexes, youth were more likely to have had more than one partner in the past year, whereas most older respondents had only one partner. A higher proportion of Africans and male or female respondents living in urban informal areas had multiple partners.

Secondary abstinence

Table 33 presents data on secondary abstinence. The discontinuation of sex for periods of time after initial sexual activity is referred to as secondary abstinence. Among respondents who had had at least one sexual partner in their life, 23.1% had no sex over the past 12 months (secondary abstinence).

Secondary abstinence is higher amongst youth than adults 25–49 years. Sexual activity declines after age 50, particularly amongst females. Adult females were nearly twice as likely to be abstinent than males.

Sexual frequency

Figure 14 shows sexual frequency in the last 30 days by age group. Adults 25–49 reported higher levels of sexual frequency than youth and adults over 50. Sexual frequency declined significantly for adults over 50. It is however important to note that seven out of ten sexually active youth had sex four or less times per month. This suggests lower levels of sexual opportunity than amongst adults.

Table 32: Sexual activity over the past 12 months by characteristics of respondents, South Africa 2002

		MALE				FEMALE		
		One partner	> one partner	p		One partner	> one partner	p
Age	n	%	%	<0.001	n	%	%	<0.001
15–24	517	77.0	23.0		634	91.2	8.8	
25–49	1149	88.5	11.5		1494	97.5	2.5	
50+	440	92.5	7.5		321	99.4	0.6	
Locality type				<0.001				<0.001
Tribal area	313	80.8	19.2		506	96.8	3.2	
Farm	208	91.8	8.2		180	95.6	4.4	
Urban formal	1244	89.8	10.2		1510	96.2	3.8	
Urban informal	341	76.5	23.5		253	94.5	5.5	
Race				<0.001				<0.001
African	1264	82.4	17.6		1461	95.4	4.6	
White	231	93.9	6.1		250	97.6	2.4	
Coloured	361	91.1	8.9		488	96.3	3.7	
Indian	250	93.6	6.4		250	98.4	1.6	
				<0.001				<0.001
TOTAL	**2106**	**86.5**	**13.5**		**2449**	**96.1**	**3.9**	

Table 33: Previously sexually active, but no sex in past 12 months (secondary abstinence)

VARIABLE	AGE GROUPS						TOTAL
	15–24 years		25–49 years		50+ years		
	%	n	%	n	%	n	n
Gender							
Male	18.4	632	8.9	1252	23.8	576	2460
Female	13.9	732	17.4	1801	63.6	881	3414
Race							
African	14.1	928	14.3	1766	53.1	825	3519
White	11.0	73	9.2	306	31.7	202	581
Coloured	22.3	264	15.7	616	48.5	241	1121
Indian	20.6	97	12.8	358	41.7	187	642

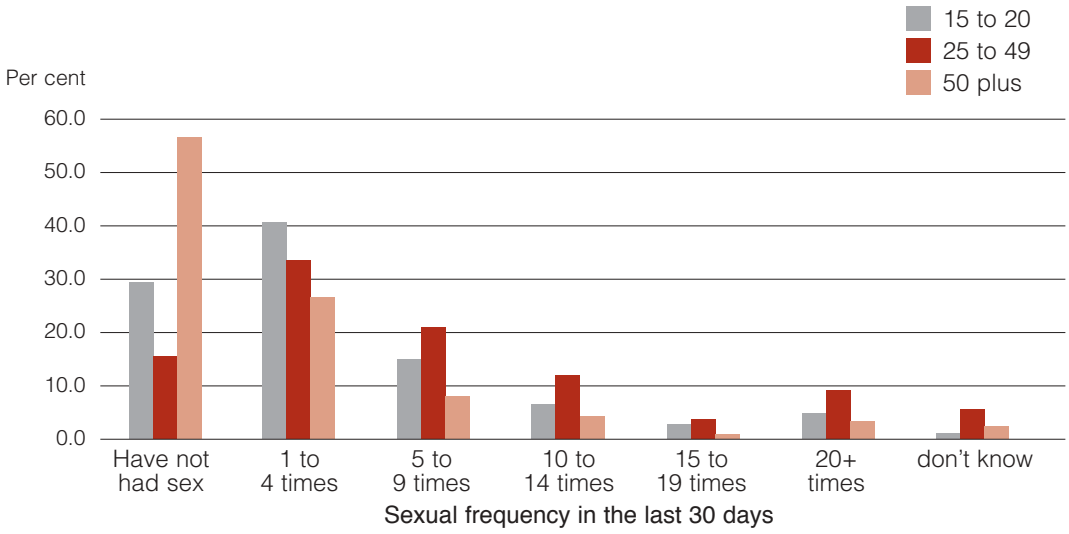

Figure 14: Sexual frequency in the last 30 days by age group

3.5.3 Condom access and use

Condoms are an important means of preventing unwanted pregnancy, sexually transmitted infections and HIV infection. Over 267 million condoms were distributed free by the Department of Health in 2001, and condoms are also distributed via social marketing and commercial sales.

Table 34 shows the responses about whether it was possible for respondents belonging to various age groups from different socio-demographic backgrounds to get a condom if they needed one. The table shows that the highest levels of perceived access to condoms were found in the Free State. This was true for both youth and adult respondents. This was followed by Mpumalanga for youth and North West Province for adults. Therefore, there was a strong general perception that condoms were readily accessible, with most sexually active respondents agreeing that they could get a condom should they need one.

Table 35 displays the various sources of condoms for different age groups, provinces and locality types. The table shows that public clinics and hospitals were the most common source of condoms for both males (35.2%) and females (45.3%). Most respondents (80.9%) in different provinces and types of localities accessed free condoms.

Condom use during last sexual encounter in last 12 months

Table 36 summarises proportions of respondents who had sex in the last year who used a condom during their last sexual intercourse. Almost a quarter (24.7%) of females and a third (30.3%) of males used a condom during the last sexual intercourse. Younger respondents and those with multiple partners were more likely to use a condom in the past 12 months than others. Youth had significantly higher rates of condom use (57.1% for males and 46.1% for females) than adults, especially those who were over 50 years of

Table 34: Responses by sexually active respondents to the question: 'Should you need a condom, is it possible to get one?' for different ages by sex, province, and locality type

VARIABLE	AGE GROUPS						TOTAL
	15–24 years		25–49 years		50+ years		
	%	n	%	n	%	n	n
Gender							
Male	95.6	634	94.9	1255	81.2	574	2463
Female	94.7	737	90.9	1799	67.2	856	3394
Total	95.1	1371	92.6	3054	72.8	1430	5855
Province							
WC	94.6	203	91.0	422	75.9	166	791
EC	92.9	239	86.6	381	57.5	259	879
NC	85.5	83	87.8	222	69.4	111	416
FS	100.0	97	97.7	213	85.1	87	397
KZN	97.0	233	94.3	600	78.1	300	1139
NW	92.5	106	96.3	243	84.5	110	459
GT	98.1	207	94.0	569	79.3	179	955
MP	98.7	76	92.9	169	67.1	82	327
LP	94.5	127	92.8	235	66.2	130	492
Locality type							
Rural*	93.2	411	89.2	692	67.0	463	1566
Urban informal	95.9	171	93.1	436	76.2	126	733
Urban formal	96.0	759	93.7	1926	75.5	841	3526

** combined tribal areas and farms*

Table 35: Sources of condoms by age, province and locality type

VARIABLE	SOURCE OF CONDOMS												
	Public Clinic/ Hospital		Private Clinic/ Hospital		Pharmacy		Shop / garage		Spaza / Shebeen		Other		Total
	%	n	%	n	%	n	%	n	%	n	%	n	n
Age													
15–24	43.1	386	11.8	106	16.8	150	9.4	84	3.4	30	15.5	139	895
25–49	39.2	553	13.8	195	19.4	273	5.8	82	1.6	22	20.2	285	1410
50+	35.6	80	13.3	30	28.4	64	7.1	16	0.9	2	14.7	33	225
Province													
WC	40.4	133	11.9	39	14.9	49	10.6	35	0.6	2	21.6	71	329
EC	48.5	138	13.0	39	10.3	31	5.3	16	5.3	16	20.3	61	301
NC	35.9	51	11.3	16	11.3	16	7.7	11	0.7	1	33.1	47	142
FS	57.4	97	11.8	20	13.6	23	2.0	5	0	0	14.2	24	169
KZN	23.1	122	17.8	94	31.4	166	8.3	44	2.3	12	17.0	90	528
NW	45.0	99	15.0	33	16.4	36	4.1	9	3.6	8	15.9	35	220
GT	46.2	232	7.8	39	23.7	119	8.6	43	0.8	4	12.9	65	502
MP	27.0	30	16.2	18	19.8	22	7.2	8	4.5	5	25.2	28	111
LP	51.3	117	14.5	33	11.0	25	4.8	11	2.6	6	15.8	36	228
Locality type													
Rural*	48.4	260	15.5	83	12.7	68	4.5	24	3.7	20	15.3	82	537
Urban informal	51.1	170	13.8	46	9.6	32	5.1	17	2.7	9	17.7	59	333
Urban formal	35.5	589	12.0	202	23.3	387	8.5	141	1.5	25	19.0	316	1660

** combined tribal areas and farms*

age (less than 10%) ($p<0.001$). Similarly, almost half of the respondents who had more than one sexual partner over the past 12 months had used a condom compared to less than 30% for respondents with only one partner ($p<0.001$). Condom use among Africans of both sexes was significantly higher in informal urban areas than in other locality types ($p<0.001$). Condom use at last intercourse was also linked with other prevention behaviours such as discussing prevention with partners and individual perception of being at risk for HIV infection. In addition, respondents who knew someone who was HIV positive were also more likely to use a condom than others ($p< 0.001$).

Table 36: Condom use during the last sexual intercourse by characteristics of respondents

VARIABLE	MALE*			FEMALE*		
	n	%	p	n	%	p
TOTAL	2106	30.3		2449	24.7	
Age			< 0.001			< 0.001
15–24	517	57.1		634	46.1	
25–49	1149	26.7		1494	19.7	
50+	440	8.2		321	5.6	
Locality type			< 0.001			< 0.001
Tribal area	313	30.7		506	24.9	
Farm	208	20.7		180	15.6	
Urban formal	1244	30.8		1510	23.6	
Urban informal	341	34.0		253	37.2	
Race			< 0.001			< 0.001
African	1264	34.3		1461	30.9	
White	231	27.7		250	15.2	
Coloured	361	22.4		488	14.1	
Indian	250	24.0		250	18.8	
Sexual activity			< 0.001			< 0.001
One partner	1822	27.4		2354	24.0	
Multiple partners	284	48.6		95	43.2	
Know someone HIV+			< 0.001			=0.002
Yes	261	35.2		352	31.0	
No	1845	29.6		2097	23.7	
Discuss prevention with partner			< 0.001			< 0.001
Yes	1264	40.0		1390	34.5	
No	833	15.4		1048	11.6	

** Computations are based on the sample of respondents who had at least one sexual intercourse over the past 12 months*

Last sexual intercourse condom use for different age groups according to marital status, partner status and HIV test history

Table 37 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 ($p<0.001$). Both youth and adults who had two partners in the past year were more likely to use a condom at last sex than those who either had only one sexual partner or had three or more partners ($p<0.001$). Similarly, both youth and adults who had more than one current partner were more likely to use a condom during the last sexual encounter than respondents with only one current partner ($p <0.001$).

Table 37: Last sexual intercourse condom use by marital status, partner status and age

VARIABLE	AGE GROUPS						TOTAL
	15–24 years		25–49 years		50+ years		
	%	n	%	n	%	n	n
Marital status							
Single	52.8	1264	32.6	1292	5.3	527	3083
Married traditional	21.1	71	13.2	916	4.4	544	1531
Married civil	30.4	46	15.8	865	5.0	400	1311
Partner status							
One sexual partner in last year	50.1	9721	21.2	2466	6.9	725	4162
Two partners in past year	59.3	108	49.1	108	16.0	25	241
Three or more partners in past year	48.5	303	20.4	499	2.5	703	1523
One current sexual partner	49.0	991	21.5	2497	6.8	720	4208
More than one current sexual partner	52.0	348	42.0	555	2.9	746	1649

When adults who had had an HIV test were compared to those who had not done so, it was found that 25.1% of the former (n=1659) used a condom at last sex as compared to 20.2% of the latter (n=5364). This suggests that HIV testing has a positive influence on condom use.

3.5.4 Self-reported behaviour change

In order to understand the impact of the HIV/AIDS epidemic on the behaviour of South Africans in general, the participants in this study were asked whether they had changed their behaviour in the last few years and how they had done so. The results obtained are

summarised in Table 38. Altogether 40.2% of the adult and youth participants in the study indicated that they had changed their behaviour. The table shows that significantly more males reported that they had indeed changed their behaviour (p<0,001). When asked to specify in what way they had changed their behaviour a similar majority of both sexes indicated that they had only one partner and were faithful to their partner. The second most frequent behavioural strategy was that they always used condoms, with significantly more males doing so than females (p<0.001). This was followed by abstaining from sex and significantly more females than males reported to have done so (p< 0.001).

Table 38: Self-reported behaviour change by sex

BEHAVIOUR CHANGE Main issue (n=7089)	n	YES (%)	p
Have changed their behaviour in the last few years	3028	45.3	<0.001
Self-reported behaviour change (n=2853)			
Have only one partner/being faithful	1385	65.1	n.s.
Abstain from sex	1385	18.1	<0.001
Always use a condom	1385	33.9	<0.001
Partner and self have an HIV test before having sex	1385	2.5	n.s.
Have reduced the number of sexual partners	1385	12.2	<0.001

3.5.5 Socio-cultural context

In order to validate the socio-cultural context within which sexual behaviour occurs in South Africa, the prevalence of various socio-cultural practices was examined. Concerning circumcision, it was found that 35% of all adult and young males were circumcised. The mean age of circumcision was 15 years and the median 17 years.

With regard to polygamy, only 3.4% of those who were married (both male and female) (n=3 594) reported that they were in a polygamous (i.e. polygynous) relationship. Concerning lobola or dowry, about 50.2% of those who were married (both male and female) (n=3 374) reported that lobola or dowry had been paid when they got married.

When asked if they practised anal sex, only 2.2% of the 4 280 participants who responded to the question answered affirmatively.

When asked if they had consulted with a traditional and/or alternative healer in the last 12 months, only 8.6% of the youth and adult samples responded affirmatively.

Of the 1 678 women who responded to the question regarding the death of a husband, 31.6% indicated they were widows. Of the 467 widows who responded to the question regarding whether they practiced spousal inheritance, 3.6% responded in the affirmative.

Over half of the widows (57%) indicated that they were required to abstain from sex during the mourning period. Finally, 53% of the widows (n=256) indicated that they were required not to have any relationships with men.

3.5.6 Discussion

Sexual debut
The finding that the median age of sexual debut was 18 years of age for both sexes in the present study is of interest as usually males lag behind females by at least a year. Inter-age analysis shows that the median age at first sex appears to be declining, with younger age groups having sex earlier. Whilst this is likely to be a product of a range of factors associated with modernisation, it does not necessarily follow that these trends cannot be reversed. Elsewhere in this study, reference is made to the positive impact of condom promotion campaigns, and campaigns focusing on abstinence and delayed sexual debut. The results are lower than the global average found in the Durex Global Sex Survey (2000) and also to those reported by UNAIDS for several other countries, except for males in Zambia (see Table 2).

Sexual experience
The finding that the large majority of respondents who were sexually active had only one partner and just about 40% had either not had sex before or had abstained from sex during the past 12 months, are similar to findings reported in the SADHS (1998) report.

A notable finding in this study was the fact that the majority of those who had more than one partner over the past year were youth from urban informal areas that were also found to have high HIV prevalence in the present study. However youth who had more than one partner were also more likely to be protecting themselves from HIV infection through greater condom use.

Levels of secondary abstinence amongst youth show promise, with 16.2% of sexually experienced youth not having had sex in the past year. This may be linked to lack of opportunity, or to personal choice amongst other factors. Further research into this phenomenon is suggested.

Concerning levels of sexual activity, very low levels were reported amongst children in the 12–14 year age group, and relatively low levels (25%) amongst 15–17 year old youth. This finding differs from that of other studies. For example, 31% of 12–17 year old youth were reported to be sexually active in a survey by loveLife (2001), whilst 13% of 12–14 year olds and 42% of 15–17 year olds were reported to be sexually active in a later survey (loveLife, 2002) survey. Reutenberg et al. (2001) in a survey of youth in KwaZulu-Natal, found that 10% of 14–15 year olds, 51% of 16–19 year olds and 85% of 20–22 year olds had had sexual intercourse. A review by Eaton et al. (2002) cites a number of studies including Makiwane's (1998) study of females in the Eastern Cape aged 15–19, which found sexual experience by age to be 25% for 15 year olds, 58% for 16 year olds and 82% for 17 year olds; and Visser and Moleko's (1999) study of Grade 6 and 7 pupils, mostly aged 12–14, in a disadvantaged urban area of Gauteng, which found 24% were sexually experienced. The low levels of sexual activity amongst 12–14 year olds found in this study, and the relatively low levels in some other studies, suggest the relevance of

life skills and communication interventions endorsing existing appropriate behaviour (i.e. abstinence). Given that only one in four 15–17 year olds report sexual activity, life skills and communication interventions should emphasise abstinence and delay of sexual debut, alongside condom use for those who are sexually active.

Sexual experience amongst 15–24 year olds is significantly higher in informal urban areas, and special emphasis should be placed on these areas for prevention interventions. It is a promising finding that partner turnover amongst youth and adults does not appear to be high, with 84.7% of youth and 93.5% of adults reporting that they have had only one partner in the past year.

Sexual frequency amongst sexually active youth is quite low, with the majority of youth (70%) having sex four or less times a month, and 29% having no sex at all. This suggests that opportunities for sexual activity are limited amongst youth. Lower levels of sexual frequency reduce risk of HIV infection, and it would be interesting to explore potentials for messaging in this regard.

Condom access and use

Condom distribution systems in South Africa are clearly highly sophisticated, and perceptions of ease of access to condoms was over 90% for both youth and adult age groups. Public sector clinics and hospitals were the most likely source of condoms. This demonstrates the high levels of effectiveness of the free condom distribution system that has been a cornerstone of the Department of Health's policy since the mid-1990s.

The levels of condom use of 57.1% and 46.1% amongst male and female youth respectively are encouraging. These levels are considerably higher than those in the SADHS (1998), which found last sex condom use to be 19.5% amongst 15–19 year old women (see Table 39 for other comparisons between findings from SADHS and the present study). The results suggest considerable changes in sexual behaviour amongst comparative groups of women between 1998 and 2002 in South Africa.

A shift in female partnerships has taken place in the last four years. It appears that women aged 15–24 years are moving away from single partnerships towards secondary abstinence. A larger percentage of 15–19 year olds (70.3%) reported no sexual partner in the last 12 months, an increase of over 10% from the SADHS (59.7%). As expected, this is counteracted with a decrease in single rates falling from 36.7% among 15 to 19 year olds in the SADHS to 26.9% in the present study. Generally, declines in multipartnerism amongst other age groups are also seen.

Rates of condom use at last sex have increased amongst all women with an increase from 8% to 28.6%. Among 15–19 year old women, 'ever' condom use increased from 28.4% to 69.6%. Rates of condom use at last intercourse more than doubled amongst young women 15–19, from 19.5% to 48.9%. Amongst this group of women, non-urban dwellers showed a more dramatic increase over the four year period. African and Indian women showed the greatest increases in condom use at last sex, with African women 15 to 49 years old being nearly three times more likely to have used a condom at last sex in 2002 than in 1998 (33.3% vs 9.2%). Condom use at last sex among Indian women 15 to 49 years old also rose dramatically from 1.8% in 1998 to 21.2% in 2002. Condom use for sexually active persons has also been shown to be high in other studies: for example,

Table 39: Comparison of present study and SADHS 1998

SAMPLE	SUB-CATEGORY	n	PRESENT STUDY 2002 (%)	n	SADHS 1998 (%)
Number of sexual partners in past 12 months					
All women 15–29	15–19, no sexual partner	688	70.3	2249	59.7
	15–19, one partner	688	26.9	2249	36.7
	15–19, 2+ partners	688	2.8	2249	2.9
	20–24, no sexual partner	596	31.5	2075	17.8
	20–24, one partner	596	63.5	2075	76.9
	20–24, 2+ partners	596	5.0	2075	3.5
	25–29, no sexual partner	328	18.8	2858	10.2
	25–29, one partner 328	77.9	2858	84.5	
	20–29, 2+ partners 328	3.3	2858	3.7	
Used a condom last sexual intercourse					
Women aged 15–49 who had sex in the past 12 months	All	2125	28.6	8617	8
Women 15–29 who had sex in the past 12 months	15–19	206	48.9	854	19.5
	20–24	428	47.0	1628	7.6
	25–29	334	34.3	1597	14.4
Women 15–49 who had sex in the past 12 months	Urban	1543	29.2	5207	10
	Non-urban	582	27.8	3410	5.5
	African	1296	33.3	6853	9.2
	White	187	12.2	637	4.3
	Coloured	432	11.5	777	5.6
	Indian	207	21.2	266	1.8
Cannot become infected by touching a person with HIV/AIDS					
Women aged 15–49	Non-urban	1543	87.3	3410	61.5
	Urban	582	93.5	5207	82.8
	All	2125	91.0	8617	74.5

'always use a condom', 55% of 12–17 year olds (loveLife, 2001); 'condom use last sex', 66% of 16–19 year olds (Rutenberg et al., 2001); 'condom use last sex', 60% of 12–17 year olds (loveLife 2002) condom use last sex, 15–24 year olds, 66% (Parker et al. 2002). This study confirms these trends as do the condom access findings discussed above. Our findings also compare favourably with those found in other countries such as Brazil, Senegal and Uganda but are much higher than the rates reported for Cambodia, Thailand and Zambia.

Although levels of condom use in adults were lower, they were considerably higher amongst those at greater risk such as unmarried adults, and those with more than one current partner. There was however a downward trend amongst both youth and adults who had a partner turnover of three or more in the past year, suggesting that a small but high-risk cohort exists in these age groups.

Condom use amongst married couples was higher than expected. Whilst a small proportion of the couples may be using condoms for HIV prevention, it is likely that condoms are also being used for contraception. Clearly, HIV/AIDS prevention strategies need to take advantage of this fact by encouraging married couples to use condoms as an effective and readily accessible method of contraception.

High levels of last intercourse condom use demonstrate the effectiveness of mass media communication campaigns, which show highest levels of recall of condom messaging as discussed later, and which have clearly been supported by highly effective condom distribution systems as discussed previously.

Self-reported behavioural change
It would appear that a fairly large proportion of participants who reported changing their behaviour had done so via a range of strategies including abstaining from sex, being monogamous and using condoms. These results, especially condom use, are partly consistent with the results from the last HSRC (1999) survey in which 44% of the sample reported that they were using condoms because of AIDS, 67% of the sample reported that AIDS had made them think of changing their behaviour and 69% indicated that AIDS encouraged them to use condoms.

Socio-cultural practices
Various socio-cultural practices such as polygamy, dry sex, anal sex, rites of death of spouse for widows, and consultation with traditional and alternative healers during the last 12 months which according to the literature review are believed to be widespread in South Africa, were found to be uncommon (e.g. for dry sex, see Louria et al. 2000; Morris & Williamson 2001; for anal sex see Abdool Karim & Ramgee, 1998; Halperin 1999; for traditional healing see Hopa et al., 1998). However, circumcision and payment of lobola or dowry are fairly widespread as expected (for circumcision, see Dreyer, 1999; Van Vuuren & De Jongh, 1996; also see Simbayi, 2002 for a review). How these two issues are related to HIV infection will be addressed in a separate analysis at a later stage.

3.6 Knowledge, perceptions and attitudes

This section examines the status of knowledge about HIV/AIDS, and its relation to prevention practices and attitudes to PLWAs.

3.6.1 HIV/AIDS knowledge

Table 40 presents findings relating to key knowledge indicators for different age groups.

Although most respondents have correct knowledge of HIV/AIDS in the six areas asked about, some areas of knowledge are significantly poorer. 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 and 2; 'yes' for items 3–6). Generally the oldest age group (50 and older) had the highest levels of incorrect responses, followed by the child group (12–14). These two age categories also tend to have higher levels of uncertainty (don't know) than do 15–49 year olds. The proportion of respondents with incorrect knowledge is low relative to the proportion that is uncertain. The area with the least incorrect responses was 'AIDS can be cured by sex with a virgin' (1.6% of those 15 years or older and 1.7% of children). However, relatively high percentages (10.1% and 23% respectively) responded 'don't know' meaning relatively high proportions of uncertainty about this dangerous myth.

The beliefs that HIV causes AIDS, that AIDS can be caused by witchcraft and that HIV can be transmitted by touch have approximately the same proportions of incorrect

Table 40: HIV knowledge by age of respondent (%)

	12–14 yrs (n=730)			15–24 yrs (n=2432)			25–49 yrs (n=3139)			50 yrs + (n=1518)			15 yrs + (n=7089)		
	yes	no	dk*	yes	no	dk*	yes	no	dk*	yes	no	dk*	yes	no	dk*
HIV causes AIDS	70.5	4.6	25.0	81.2	5.2	13.6	79.3	3.5	17.3	61.9	3.6	34.5	75.7	4.0	20.3
											P<0.0001				
A baby can become HIV positive through breastfeeding	52.1	15.8	32.1	49.5	20.8	29.8	56.1	21.3	22.6	52.2	12.6	35.2	53.2	19.0	27.8
											P<0.0001				
HIV can be transmitted by kissing	12.8	64.3	23.0	10.3	75.9	13.7	9.8	74.6	15.6	14.4	51.6	34.0	11.1	69.5	19.4
											P<0.0001				
AIDS can be caused by witchcraft	2.4	74.2	23.4	3.7	85.3	11.1	3.6	86.1	10.3	6.0	69.0	25.0	4.2	81.7	14.1
											P<0.0001				
HIV can be transmitted by touch	4.9	81.2	13.9	4.5	91.0	4.4	4.1	89.9	6.0	7.6	70.4	22.0	5.1	85.6	9.4
											P<0.0001				
AIDS can be cured by sex with a virgin	1.7	75.3	23.0	2.3	89.2	8.5	1.1	92.8	6.2	1.7	78.8	19.5	1.6	88.3	10.1
											P<0.0001				

** refers to 'don't know' responses*

responses, all falling under 5%. However, the belief that HIV causes AIDS has a relatively high proportion of don't know responses (20.3%) meaning that there is uncertainty in this area one in five respondents. If we add the don't know and incorrect responses on this item we derive a figure of 24.3% of respondents who have either incorrect knowledge or are uncertain about the causal relationships between HIV and AIDS.

Areas of highest incorrect and uncertain responses are knowledge that HIV can be transmitted by breastfeeding and that HIV is not transmitted by kissing. In particular knowledge about breastfeeding is poor and 46.8% of respondents either provided an incorrect response or were uncertain. Regarding transmission of HIV through kissing, 30.5% were either incorrect or uncertain. The youth group (15–24) stands out as having significantly better knowledge in this area with a much higher proportion of definite 'no' responses. It should be noted that the question of whether HIV can be transmitted through kissing is possibly subject to problems of definition. It is also possibly confounded by the fact that some respondents may have said 'don't know' because of better knowledge rather than uncertainty, because they know that kissing under some conditions (e.g. mouth sores) might involve risk. This may have inflated the 'don't know' responses on this item.

3.6.2 Relationship between various socio-demographic variables and HIV/AIDS knowledge

Table 41 presents HIV/AIDS knowledge by various demographic characteristics. To analyse these relationships a composite scale of knowledge was developed. A score of one was assigned to respondents who disagreed or strongly disagreed with the statement that 'HIV can be passed on by kissing a person who is HIV positive', 'AIDS can be caused by witchcraft' and 'HIV can be passed on by touching a person who is HIV positive'. A score of 0 was assigned to those who were unsure, who agreed or strongly agreed. Similarly, a score of 1 was assigned to those who agreed or strongly agreed that 'HIV causes AIDS' and 0 assigned to those who were unsure, disagreed or strongly disagreed. In this way, every respondent obtained a score of knowledge on a scale from 0 to 5. The higher the score the better the level of knowledge of HIV transmission. Results of the score in relation to respondents' socio-demographic characteristics are shown in the following table.

Males and females do not differ significantly in respect of HIV/AIDS knowledge. However, respondents who are younger, more educated, who live in urban rather than rural areas, who are employed and who have higher household socio-economic status, are more informed about HIV/AIDS. The white population group is the most informed, followed by the Indian, African and coloured race groups.

The range of scores is particularly high in the education category meaning, not surprisingly, that education level is the social category, which most strongly differentiates those with good and poor knowledge. To illustrate, only 59.9% of respondents with no education believed that HIV transmission is not possible by touching an HIV infected person, against 81.3% among those with primary school level education and more than 90% among those with high school level or more.

Table 41: Knowledge and socio-demographic characteristics (respondents 15 years and older)

		n	score	SD	F
Sex of respondent	Male	3028	3.68	0.04	0.49
	Female	4061	3.64	0.04	
Age	15–24	2432	3.83	0.04	P<0.0001
	25–49	3139	3.86	0.03	
	>49	1518	3.05	0.08	
Locality type	Rural	1961	3.86	0.03	P<0.0001
	Urban	5128	3.38	0.05	
Race	African	4214	3.64	0.03	P<0.0001
	White	679	3.99	0.06	
	Coloured	1359	3.29	0.10	
	Indian	837	3.85	0.06	
Education	No school	694	2.52	0.11	P<0.0001
	Primary	1664	3.44	0.05	
	High	2826	3.90	0.04	
	Matric	1343	4.07	0.04	
	Tertiary	562	4.17	0.06	
Employment	Yes	2445	3.89	0.04	P<0.0001
	No	4644	3.55	0.03	
Household situation	Not enough	2975	3.45	0.04	P<0.0001
	Just enough	2558	3.78	0.04	
	Most things	1120	3.97	0.05	
	Extra money	436	3.95	0.09	

3.6.3 Knowledge and prevention behaviours

Table 42 shows the findings regarding correct knowledge of HIV prevention behaviours. As in most previous surveys, knowledge of HIV transmission is not clearly linked with sexual activities of respondents. For instance, amongst respondents who had at least one sexual partner over the past twelve months, the proportion of respondents who know that HIV infection is not possible by kissing is the same amongst those who had only one partner (73.6%) as it is amongst those who had more than one sexual partner (72.3%, n.s.). Similar findings are made for touch and all other knowledge indicators across different categories of sexual activity.

Table 42: Correct answers to knowledge questions by prevention behaviours (%)

PREVENTION BEHAVIOUR UNDERTAKEN	HIV CAUSES AIDS			HIV CAN BE PASSED ON BY TOUCHING			HIV CAN BE PASSED ON BY KISSING		
	Yes	No	Don't know	No	Yes	Don't know	No	Yes	Don't know
Changed behaviour over last few years as response to HIV/AIDS (n=7089)									
Yes	78.9	5.0	16.0	89.2	5.3	5.5	73.9	10.4	15.6
No	73.4	3.3	23.3	83.0	4.9	12.1	66.3	11.5	22.1
		p<0.0001			p<0.0001			p<0.0001	
Condom use – last sex * (n=4558)									
Yes	86.4	3.6	11.0	93.9	3.4	2.7	80.2	7.8	12.0
No	77.2	3.8	19.0	87.4	5.1	7.5	71.0	12.0	16.9
		p<0.0002			p<0.0001			p<0.0002	
Discussed HIV prevention with partner * (n=4558)									
Yes	85.3	3.8	10.9	91.9	3.8	4.3	77.1	9.0	13.9
No	70.5	3.6	25.9	85.2	5.8	9.0	68.2	13.7	18.1
		p<0.0001			p<0.0001			p<0.0002	

** On population of respondents who had at least one sexual partner over the past 12 months*

Whilst knowledge of HIV/AIDS appears to have no direct bearing on sexual activity, it does correspond with prevention behaviours.

The above table, beginning with row one, should be read thus: Of those who report that they have changed their behaviour over the last few years as a response to HIV/AIDS 78.9% believe that that HIV causes AIDS, 5% disagree that HIV causes AIDS and 16% 'don't know'; and of those who report that they have not changed their behaviour 73.4% believe that HIV causes AIDS, 3.3% disagree that HIV causes AIDS and 23.3% 'don't know'. The chart should be similarly read for the other column headings (kissing and touching) and for the other row headings (condom use and discussion of prevention with partner).

It is important to note that the difference between those who practice prevention behaviours and those who do not is not accounted for by different levels of explicitly incorrect knowledge (levels in both are generally low). Rather it can be attributed to the larger number of 'don't know' responses amongst those who do not practice prevention behaviours. For example the proportion of those who do not believe that HIV causes AIDS is not significantly different if one compares those that report behaviour change and those that do not (5% and 3.3% respectively), but there is a markedly higher number of uncertain responses amongst the 'non-changers' (23.3% as opposed to 16%). A similar pattern pertains to the other knowledge and behaviour items.

Correct, unequivocal knowledge that HIV causes AIDS, and that HIV is not transmitted through touch and kissing is strongly associated with self-reported behaviour change over the past few years as a response to the risk of HIV infection, condom use in the last sexual experience and discussion of HIV prevention with a partner.

3.6.4 Attitudes and stigma towards people living with HIV/AIDS

Knowledge of HIV/AIDS and its relation to attitudes toward PLWAs
Attitudes to PLWAs were assessed using a series of items measured along a five-point Likert scale ranging from 1 = strongly agree to 5 = strongly disagree or vice versa. The items are: 'I will sleep in the same room as someone with HIV/AIDS', 'I will share a meal with someone who is HIV positive', 'I will talk to someone with HIV/AIDS', 'I will treat a family member with HIV/AIDS well' and 'I will not get infected by being in the same room as an infected person.'

Attitudes and stigma towards PLWA are strongly linked with knowledge of HIV/AIDS. Table 43 shows how the composite knowledge scale is related to each of the attitude items.

Respondents who would agree or strongly agree to sleeping in the same room as someone with HIV/AIDS, to sharing a meal with PLWA, to talking to an infected person or who would be inclined to treat well a family member who is a PLWA, had significantly higher scores of knowledge than others ($p<0.001$).

Relationship between various socio-demographic variables and attitudes to PLWAs
A composite scale of attitudes was developed by assigning a score to respondents who agree or strongly agree with each of the above statements. Each respondent was thus

Table 43: Mean score of knowledge scale by attitudes towards PLWAs (n=7089)

	AGREE	NEUTRAL	DISAGREE	p
Sleep in same room as PLWA	3.86	2.38	2.94	p<0.0001
(SD)	(0.03)	(0.15)	(0.10)	
Share a meal with PLWA	3.91	2.62	3.13	p<0.0001
(SD)	(0.03)	(0.11)	(0.08)	
Talk to PLWA	3.75	1.52	2.97	p<0.0001
(SD)	(0.03)	(0.20)	(0.18)	
Treat a family member well who is a PLWA	3.76	1.73	3.17	p<0.0001
(SD)	(0.03	(0.15)	(0.15)	
Not being infected by being in same room than PLWA	3.85	2.04	3.15	p<0.0001
(SD)	(0.02	(0.17)	(0.12)	

assigned a score of stigma on a scale from 0 to 5. The higher the score the more positive are attitudes towards PLWAs. The results obtained are shown in the table below.

Results reflect similar patterns to the results for knowledge. Regarding age of respondents, those in the oldest category are the most stigmatising of PLWAs, followed by the youngest age group (12–14). The 25–49 year old group are the most accepting.

The higher the education level of respondents the more positive are their attitudes towards PLWAs. Respondents from urban areas, whites and Indians and employed people tended to have more positive attitudes. Also, higher economic status was linked with less stigmatisation towards infected person. More personal involvement with HIV/AIDS (by having had an HIV test, by knowing one's partner's status, or by knowing someone who is HIV positive) was also linked to greater acceptance of PLWAs.

Regarding individual attitude items, the following were some of the more notable findings:

Table 44:Attitude scores by respondent characteristics, South Africa 2002

		n	score	SD	F
Gender	Male	3028	4.30	0.04	P >0.64
	female	4061	4.27	0.03	
Age	15–24	2432	4.38	0.04	P<0.0001
	25–49	3139	4.41	0.04	
	>49	1518	3.92	0.07	
EA type	Rural	1475	4.03	0.03	P<0.0001
	Urban	486	4.47	0.05	
Race	African	4214	4.30	0.03	P<0.0001
	White	679	4.45	0.07	
	Coloured	1359	3.96	0.09	
	Indian	837	4.38	0.08	
Education level	No school	694	3.37	0.11	P<0.0001
	Primary	1664	4.18	0.05	
	High	2816	4.46	0.03	
	Matric	1343	4.58	0.04	
	Tertiary	562	4.65	0.08	
Employ-ment	Yes	2445	4.44	0.05	P<0.0001
	No	4644	4.21	0.03	
Household situation	Not enough	2975	4.14	0.03	P<0.0001
	Just enough	2558	4.37	0.04	
	Most things	1120	4.50	0.06	
	Extra money	436	4.53	0.09	
Friend HIV+	Yes	852	4.62	0.05	P<0.0001
	No	6237	4.24	0.03	
Marital status	Married	2855	4.25	0.05	P=0.26
	Single	4228	4.31	0.03	
HIV test	Yes	1665	4.66	0.03	P<0.0001
	No	5424	4.19	0.03	
Partner	Know HIV status*	1078	4.60	0.04	P<0.001
	Don't know	3480	4.35	0.04	

** On population of respondents who had at least one sexual partner over the past 12 months (n= 4558)*

- 74.1% of respondents agree or strongly agree that they would be willing to share a meal with a person infected by HIV/AIDS
- 82.3% of respondents would be willing to sleep in the same room as a PLWA.
- Most respondents (94.3%) agree or strongly agree that they would be happy to talk to a person infected with HIV/AIDS.

3.6.5 Discussion

Better knowledge of HIV/AIDS has been shown to have a positive relationship to both prevention behaviours and positive attitudes to people with HIV/AIDS. This does not imply that knowledge is a sufficient condition of behaviour change and positive attitudes, but it is a necessary one. It is a precondition, and given that there are gaps in knowledge and segments of society that are not as well educated about the realities and risks of HIV/AIDS, it is important that HIV/AIDS knowledge not be seen as being universally high and satisfactory, as is often suggested in South Africa.

The flow of information and spread of knowledge about HIV/AIDS is not evenly spread across South African society. It seems that the sub-populations which show deficits in knowledge match the sub-populations with poorest media and communications programme coverage of HIV/AIDS. It is evident that the penetration of media and communications programmes is uneven in our society and matches a cluster of variables which are interrelated, including education, socio-economic status, place of residence (rural-urban) and race. In this context it is important that a more niche oriented and targeted approach to development of knowledge and information about HIV/AIDS be adopted. This implies a greater focus on interactive and community-level forms of information dissemination to areas that show a higher deficit of knowledge. The high levels of 'don't know' responses in response to some knowledge questions are indicative of a need for further unambiguous, simple and clear education messaging. Those who responded 'don't know' to knowledge questions are potentially reachable. On the other hand, it is likely that those who have definite incorrect beliefs about being cured of AIDS through sex with a virgin, or AIDS being caused by witchcraft are not as easily reachable. In such cases the beliefs may be based on cultural forms of understanding, which may be best addressed through engaging with opinion leaders and social structures that have influence in the cultural domain. Such beliefs have withstood informational education and may require more interactive means of address. It is also likely that recent debates in the country discussing the fact that HIV causes AIDS has produced unintended effects, including greater confusion about prevention needs in some subgroups of the population.

High levels of 'don't know' responses on knowledge questions amongst the child group (12–14) suggest a need to target this age group for HIV/AIDS education more intensively, especially since they are in the formative years for learning about sexuality. The education system is probably not meeting their HIV/AIDS knowledge needs, and this needs to be addressed in a concerted way. The knowledge of older people also shows deficits and they have particularly low exposure to more interactive forms of information, along with poorer mass media exposure.

In the case of HIV infection by breastfeeding, the high proportion of respondents that do not know with certainty that mother-to-child HIV infection can occur through

breastfeeding is probably because this has not been the subject of large public prevention campaigns, although it has been covered to some extent in news media reporting on the issue of mother-to-child transmission. Now that the prevention of mother to child transmission (PMTCT) is mandated by public policy, appropriate public education campaigns are urgently needed. This highlights the need for public education campaigns in relation to developments in prevention.

The results show that the majority of the South African population express attitudes of acceptance of PLWAs. Therefore, fear of stigmatisation should not be used as a rationale for inaction on the part of public and private policy and decision makers, regarding prevention and access to care for PLWAs. However, whilst stigma towards people is not widespread in the general population, there should still be concern about the minority who do have a clear tendency to stigmatisation. Even a small percentage is significant and will have a strong impact on the lives of people living with HIV/AIDS. The measures of stigma used in this study means that someone who registers as showing attitudes of stigma shows a fairly impactful form of stigma. Therefore these results should not provide reason to suggest that the battle against stigma is won, but rather that it requires a more focused approach emphasising care and endorsing existing positive attitudes to PLWAs and affected individuals and families.

3.7 Political and structural contextual issues

3.7.1 Political commitment and public recognition of HIV/AIDS

The international community considers leadership to be crucial in curbing the spread of HIV. For example, the United Nations General Assembly met in a special session in New York from 25 to 27 June 2001 to discuss the HIV/AIDS epidemic. The emerging declaration stated that, 'leadership by Governments in combating HIV/AIDS is essential' and also pointed out that the efforts of governments should be complemented by the 'full and active participation of civil society, the business community and the private sector.' They considered leadership to include both personal commitment and action. This is considered essential for a country to mount a credible national response to the HIV/AIDS epidemics, and UNAIDS encourages countries to achieve this.

Public perceptions regarding the extent to which South African leaders are considered to be politically committed to combat the epidemic were reviewed. This construct of political commitment was measured using three key public perception questions assessing the degree to which South African leaders (a) are committed to controlling HIV/AIDS, (b) publicly recognise the importance of HIV/AIDS, and (c) allocate sufficient resources to control the spread of HIV. Of course, questions on such matters should be considered as dealing with respondents' opinions. Therefore, they must be interpreted in the same way as answers to public opinion polls, as a measure that partially reflects the reality of social perception of the issues at stake. In particular, determinants (such as political preferences), which may not be directly related to the HIV/AIDS epidemic per se, may interfere (consciously or unconsciously) with respondents' answers. Figure 15 presents results showing that a majority (63.8%) of South Africans aged 15 years and above believe that the leaders of this country are 'committed' to controlling HIV/AIDS. But these perceptions vary substantially by race.

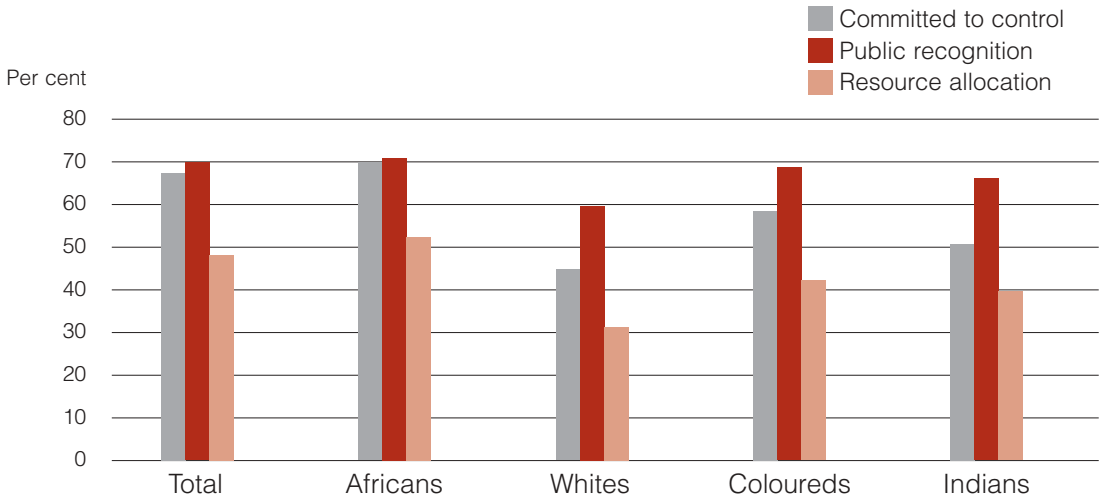

Figure 15: Public perceptions of commitment to dealing with AIDS and resource allocation by race, South Africa, 2002

While Africans are more likely to view leaders as committed to HIV/AIDS control, whites are more likely to perceive them as 'not committed'. Indians and coloureds are also less likely to perceive government as committed to AIDS control.

The majority of South Africans that consider political leaders recognise the importance of HIV/AIDS. Again, Africans are more likely to consider this to be so, followed by coloureds and Indians. Whites, compared to other groups are less likely to perceive leaders to publicly recognise the importance of HIV/AIDS.

When it comes to translation of that perceived commitment to action, only 47.5% of South Africans view the government as allocating sufficient resources to deal with the HIV/AIDS epidemic. Only half of Africans and 43.3% of coloured South Africans believed the government was allocating enough resources to tackle the epidemic, while whites and Indians were also less likely to perceive the allocation as adequate.

Public perceptions of the government's commitment to dealing with HIV/AIDS by province were also assessed. Table 45 summarises public perceptions regarding political commitments to HIV/AIDS. It shows variation of provincial public perceptions of political commitment to deal with HIV/AIDS. While overall, nearly 64% of South Africans perceived commitment, people in the Western Cape were divided on this matter. People in the Eastern Cape, Free State and Northwest mostly believed that there was commitment to fighting HIV/AIDS.

Furthermore, most residents in all nine provinces perceived that political leaders publicly recognised the importance of HIV/AIDS. However, political commitment, as seen above, should be backed by action. People in most provinces did not perceive the government to be allocating enough resources to combat HIV/AIDS. This was most pronounced in the Free State, Kwazulu/Natal, Western Cape, Eastern Cape and Gauteng Provinces. In only

Table 45: Public perceptions regarding political commitment to HIV/AIDS by province (%)

COMMITMENT	WC	EC	NC	FS	KZN	NW	GT	MP	LP	TOTAL
Political leaders are committed to controlling AIDS (%)	54.3	74.4	61.3	73.2	61.6	72.6	58.9	57.5	66.1	63.8
Political leaders publicly recognise the importance of HIV/AIDS (%)	65.5	75.0	71.7	72.1	68.6	76.9	64.9	55.7	68.6	68.9
Government allocates sufficient resources for AIDS control (%)	40.5	48.9	56.5	30.4	39.3	48.9	49.6	62.4	64.5	47.5

two provinces (Limpopo and Mpumalanga) the majority of residents perceived the government as allocating sufficient resources to manage HIV/AIDS.

3.7.2 Public opinion on access to antiretroviral therapy (ART)

Table 46 shows the findings regarding public perceptions of South Africans aged 15 and older on the government's provision of treatment for HIV/AIDS. Many public figures as well as AIDS activists in South Africa have already highlighted the need for the government to provide antiretroviral therapy for the prevention of transmission of HIV from mother to child, as well as provision of antiretroviral therapy to those medically eligible who are already afflicted with HIV/AIDS-related diseases. Nearly all South Africans are in favour of implementing these two public policies.

Table 46: Public perceptions (%) on the provision of ARV to prevent transmission of HIV from mother to child and provision of ARV to those living with the disease by race, South Africa 2002

	TOTAL	AFRICAN	WHITE	COLOURED	INDIAN
Should government provide ARVs for PMTCT					
Yes	96.5	96.7	93.0	97.7	98.2
No	2.1	1.7	5.8	1.2	0.9
No response	1.4	1.5	1.2	1.1	0.9
Total	100	100	100	100	100
Should government provide ARVs for those with HIV/AIDS-related illness					
Yes	95	95.7	87.7	96.6	96.4
No	3.5	2.7	11.2	2.3	2.8
No response	1.5	1.6	1.2	1.1	0.8
Total	100	100	100	100	100

3.7.3 Discussion

This section presented information on public perceptions of how the government is handling the HIV/AIDS situation in terms of political commitment, and whether perceptions of commitment are perceived to be translated into allocation of resources. Those who were previously most disadvantaged by the policies of the previous government were more likely to view the government as showing commitment to the problem of HIV/AIDS. However, the rest of South Africans (except the residents of Limpopo and Mpumalanga), perceive the government as not providing sufficient resources for tackling the HIV/AIDS problem. The fact that the overwhelming majority of people of all races believe that the government should provide ARVs to prevent transmission of HIV from mother to child and also to treat people living with HIV/AIDS, demonstrates the high level of awareness of South Africans on this issue. Recent public discourse on access to treatment for pregnant women and their newborns and the court case against the government have probably contributed to influencing public opinion on this matter. Clearly, if policy is to be informed by the public, the views of South Africans are unambiguous on this matter. The government has taken cognisance of these public perceptions as demonstrated by the Cabinet's statement of April 17 2002, which gave hope to South Africans about increased access to the programme to prevent mother-to-child transmission of HIV.

3.8 Access to media information on HIV and relationship of media exposure to knowledge and behaviour

This section examines exposure to media and information in relation to HIV/AIDS communication and is followed by an exploration of the relationship to knowledge and behavioural aspects. It focuses mainly on respondents aged 15 years and up, but includes reference to the 12–14 year old group where applicable.

3.8.1 Mass media exposure

Understanding of media exposure is important for planning HIV/AIDS communication campaigns. Table 47 shows child, youth and adult exposure to types of mass media by various modalities at a frequency of a few days per week or more. Radio is the most accessed medium, and has the highest exposure, followed by television, newspapers and magazines. Overall, there are high levels of exposure to broadcast media, although exposure to television is considerably lower in rural areas, informal urban areas and within poorer households. Print media exposure is low, with just over a third of youth and adult respondents having regular exposure. There are however higher levels of newspaper access in the 15–49 year age groups.

Table 47 illustrates the inter-relation between wealth, geographic location and mass media exposure, with poorer households and rural areas having considerably less regular exposure to all mass media channels.

3.8.2 Sources of HIV/AIDS information

Table 48 shows the rating of various media in terms of their importance as sources for HIV/AIDS information. This is relative to exposure to mass media channels – so

Table 47: Exposure to mass media a few days per week or more, South Africa 2002

MODALITY		RADIO	TELEVISION	NEWSPAPER	MAGAZINE
Age	n	%	%	%	%
15 and older	7089	80.1	66.2	29.1	25.7
15–24	2432	82.6	66.7	28.4	28.4
25–49	3139	82.6	70.1	33.4	29.4
50 and older	1518	72.4	58.1	21.6	15.2
Economic status (15+)					
Not enough money for basic things	2837	74.9	54.2	16.9	15.0
Have money for food and clothes, short on many other things	2531	83.2	69.0	29.6	26.4
Money for most important things	1120	87.0	90.0	57.5	48.3
Money for extra things	436	89.4	96.4	66.2	61.6
Locality type (15+)					
Urban formal	4313	84.1	85.3	43.3	37.5
Urban informal	815	75.3	55.5	20.3	14.8
Tribal area	1475	75.5	44.6	14.4	13.1
Farm	486	80.9	53.3	15.2	19.4

newspapers, for example, would naturally rate lower than television because of lesser exposure.

It should be noted that most mass media campaigns utilise a range of media types, with information being packaged so that synergies are achieved via multimedia approaches.

Radio is rated consistently higher than other mediums as informative for HIV/AIDS information and provides an indication of wider reach through the multilingual orientation of South African radio services. English is well catered for across all media, but print media fare less well across languages, and overall, African languages are particularly marginalized.

When respondents were asked whether they agreed with the statement 'There is not enough information in my own language', Afrikaans, Sotho, Tshivenda and Xitsonga speakers were more likely to agree than English and Nguni language speakers. It should also be noted that 60.2% of whites and 83.5% of coloureds have Afrikaans as a home

Table 48: Media informative/very informative for HIV/AIDS information, South Africa 2002

MODALITY	N	RADIO (%)	TV (%)	NEWSPAPER (%)	MAGAZINE (%)	LEAFLETS, BOOKLETS (%)
Age						
15 and older	7089	77.0	67.6	42.6	39.9	44.6
Language						
Afrikaans	1666	58.1	76.6	47.0	49.2	50.6
English	1278	63.6	82.1	68.0	63.2	64.4
Nguni languages	2339	84.9	63.5	40.2	36.0	42.2
Sotho languages	1424	78.0	65.0	36.9	35.7	40.0
Tshivenda & Xitsonga	267	80.8	60.8	35.6	29.2	37.5
Locality type						
Urban formal	4313	74.0	81.6	54.3	51.1	59.2
Urban informal	815	82.8	61.7	39.6	33.5	39.6
Tribal	1475	80.7	52.2	30.7	28.7	29.4
Farm	486	73.7	54.8	26.0	26.7	26.7

language, whilst 40% of Africans have Sotho languages, Tshivenda or Xitsonga as home languages and 57.2% have Ngoni languages as home lanaguages. English is the home language of only 0.8% of Africans.

3.8.3 Community level HIV/AIDS communication

Table 49 illustrates the general availability of HIV/AIDS information in formats other than broadcast and print mass media channels. Whilst rural areas are relatively less resourced,

Table 49: Exposure to HIV/AIDS information at community level, South Africa 2002

EA TYPE	n	RED RIBBON (%)	POSTERS (%)	LEAFLETS/ BRO-CHURES (%)	BILL BOARDS, SIGNS, MURALS (%)	AIDS PLAY (%)	COMMUNITY MEETING (%)
Urban formal	4313	84.9	67.6	67.7	60.5	28.1	22.5
Urban informal	815	78.8	59.0	59.3	53.3	28.3	27.4
Tribal	1475	70.3	49.7	45.8	41.3	23.2	22.4
Farm	486	72.5	43.5	45.2	39.6	6.9	14.8

levels of exposure do not differ markedly in comparison to other community types. Interactive approaches such as AIDS plays and community meetings about HIV/AIDS are important for supporting dialogue. Distribution of leaflets and posters can contribute to promoting community level dialogue, whilst wearing of the red ribbon may be used to indicate a personalised association with HIV. The red ribbon HIV/AIDS symbol was noted as a means for reminding people of HIV/AIDS, and achieved the highest recognition amongst all forms of community level information.

Table 50 shows other sources of HIV/AIDS information over the past year for child, youth and adult respondents. Children were most likely to receive HIV/AIDS information at school, whilst adults were more likely to receive information from a health facility. Health facilities rated highly across all ages, and were the most important source for HIV/AIDS information.

Faith-based organisations are an important source of HIV/AIDS information, being noted by children, youth and adults. There is a high level of engagement with spirituality and – when asked about religious beliefs, 88.3% of respondents aged 15 or older indicated that they were a member of a faith, with 63.6% saying that religion was very important to them.

Table 50: Other sources of HIV/AIDS information over past year, South Africa

Age	n=	Health facility (%)	School (%)	Parents (%)	Faith org (%)	Youth group (%)	AIDS org. (%)	Initiation school (%)	Sports club (%)
12–14	741	-	85.9	39.9	25.5	13.4	-	2.5	8.2
15–24	2432	68.4	75.7	54.8	39.4	36.5	21.2	8.5	21.2
25–49	3139	76.8	23.8	29.0	48.2	14.7	21.2	3.9	12.0
50+	1518	61.5	9.8	11.5	47.8	2.9	11.3	2.6	2.9

3.8.4 Telephone helplines

Telephone helplines are an important support system for dialogue, and allow callers to explore HIV/AIDS in terms of their own particular concerns. Table 51 shows the awareness of particular telephone helpline services that provide HIV/AIDS information. There was relatively high awareness amongst all groups of at least one service. The national tollfree AIDS helpline was consistently best known. Childline was identified by nearly half of 12–14 year old children. Amongst youth and adults, urban respondents were considerably more likely to note a helpline service than rural respondents. When the data was reviewed by locality type it was found that only 12% of rural children noted the availability of a helpline service.

Table 51: Awareness of telephone helplines providing HIV/AIDS information amongst those who knew of a helpline service, South Africa 2002

Age	n	AIDS helpline (%)	Childline (%)	Local Clinic/ Hospital (%)	Thetha Junction (%)	Lifeline (%)	Rape Crisis (%)
12–14	241	51.4	37.4	14.2	28.1	13.1	11.3
15–24	952	62.6	23.1	32.7	37.4	21.5	15.5
25–49	1122	62.1	25.6	38.4	33.3	28.6	24.4
50+	300	49.9	19.7	46.7	19.3	20.8	16.5
All	2615	60.0	24.0	37.4	33.1	25.2	20.4

3.8.5 Slogans and messages

Table 52 presents information on recall of slogans and messages. Respondents were asked to indicate which messages or slogans they could recall from HIV/AIDS campaigns. The unprompted, multiple responses were then coded into categories. This provides insight into the general recall of HIV/AIDS campaign orientation, as well as internalisation of messages. The most pervasive message related to condom use and this was prominent across all age groups. Limiting partner numbers, faithfulness and abstinence are in the mid-range of recall. The least emphasis was on religious or cultural values, care provision for people with HIV/AIDS, and rights of people with HIV/AIDS.

Table 52: Recall of slogans or messages, South Africa 2002 (%)

Age	n	Condom use	AIDS kills	Faithfulness	Abstinence	Number of partners	PWA rights	Helping care for PWA	Religious or cultural values
12–14	741	72.3	51.4	35.0	42.2	20.2	9.9	5.8	5.2
15–24	2432	90.8	57.3	57.5	49.8	35.1	14.5	9.8	6.6
25–49	3139	86.0	56.6	58.2	44.5	34.8	14.8	9.8	8.2
50+	1518	68.7	47.8	44.8	36.6	22.8	9.7	7.1	5.6

3.8.6 Information needs

Table 53 presents results from analysis of information needs of participants. In general it appears that South Africans have a good awareness of HIV/AIDS, and are regularly exposed to HIV/AIDS information via mass media and at community level. However, this

Table 53: Information needs by age, South Africa 2002, % (n)

INFORMATION NEEDS	15–24	25–49	50 +
Protecting young people from sexual abuse	90.4 (2422)	87.2 (3118)	77.8 (1491)
Talking to a partner about condoms (sexually active only)	87.7 (1368)	76.0 (3033)	65.1 (1425)
Blood donation and transfusion	80.0 (2388)	76.5 (3081)	65.0 (1476)
Getting an HIV test	84.0 (2398)	78.6 (3094)	69.2 (1474)
Getting counselling about HIV/AIDS	86.9 (2398)	81.1 (3093)	70.4 (1466)
Staying healthy if one is HIV positive	88.6 (2383)	84.5 (3088)	73.3 (1468)
Caring for a person who has AIDS	84.3 (4387)	81.6 (3092)	75.7 (1474)
Rights of people with HIV/AIDS	87.0 (2384)	82.7 (3079)	74.5 (1459)
Contact information on AIDS organisations	84.7 (2385)	79.7 (3073)	68.9 (1460)
Sexual abuse and rape	84.5 (2390)	79.1 (3081)	68.3 (1469)
Relationship problems	77.2 (2368)	70.9 (3063)	53.3 (1454)

does not appear to have translated into having sufficient detailed information about the disease. When asked about discrete areas of information need, most respondents expressed a need for further information.

3.8.7 Mass media relationship to context

Table 54 illustrates a range of contextual and mass media experiences in relation to taking HIV/AIDS more seriously. It was possible to cross-tabulate the variables of those who had direct exposure to a person with HIV/AIDS, with those who said they had taken the problem of HIV/AIDS more seriously in various categories. Respondents who knew someone who had died of AIDS or who had a relative who told them they were HIV positive, were more likely to have taken the problem of HIV/AIDS more seriously than those who were exposed to mass media.

Table 54: Distribution of responses to "What has made you take the problem of HIV/AIDS more seriously?" South Africa 2002

SUBCATEGORY OF RESPONDENTS	RANK %	CATEGORY
Of those who knew someone who had died of AIDS (n=480)	65.4	... said they had taken the problem of HIV/AIDS more seriously because they knew someone who has died of AIDS
Of those who had a relative or friend who told them they were HIV positive (n=116)	52.7	... said they had taken the problem of HIV/AIDS more seriously because they knew someone with HIV/AIDS
Of respondents who watched television a few days of the week or more (n=5047)	56.6	... said they had taken the problem of HIV/AIDS more seriously because of television programmes on HIV/AIDS
Of respondents who listened to the radio a few days of the week or more (n=5728)	52.0	... said they had taken the problem of HIV/AIDS more seriously because of radio programmes on HIV/AIDS
Of all respondents (n=7089)	40.0	... said they had taken the problem of HIV/AIDS more seriously because of AIDS statistics
Of respondents who read a newspaper a few days of the week or more (n=2396)	30.4	... said they had taken the problem of HIV/AIDS more seriously because of articles in newspapers on HIV/AIDS
Of respondents who read a magazine a few days of the week more(n=2162)	31.7	... said they had taken the problem of HIV/AIDS or more seriously because of articles in magazines on HIV/AIDS
Of those who had attended a workshop on HIV/AIDS (n=882)	25.9	... said they had taken the problem of HIV/AIDS more seriously because they had attended a workshop or training programme on HIV/AIDS

3.8.8 Reported behaviour change in relation to media and contextual factors

Table 55 below provides examples of behaviours and practices that may be considered as having been internalised via communication campaigns. Condom use, consideration of HIV testing, and adopting particular prevention strategies, faithfulness and condom use rated highly amongst steps taken, but HIV testing was only suggested by a small proportion of respondents. There was however a strong response in relation to HIV risk in multi-partner relationships. Respondents with more than one current partner were significantly more likely to use a condom in their last intercourse, than those with only one current partner.

3.8.9 Discussion

- It is of concern that regular exposure to broadcast media is low in rural areas and poorer households. For this reason additional communication approaches for reaching these vulnerable population need to be emphasised.
- Print media is clearly less accessible and consequently less useful as a medium for conveying HIV/AIDS information to rural communities and poorer households.

Table 55: Behaviours and practices by age, South Africa 2002 % (n)

BEHAVIOUR/PRACTICE	15–24	25–49
Ever used a condom (n=sexually active)	68.7 (1382)	51.2 (3073)
Last intercourse condom use (n=sexually active)	51.6 (1382)	24.2 (1382)
Last intercourse condom use (n=those with one current partner)	51.1 (991)	23.3 (85)
Last intercourse condom use (n=those with more than one current partner)	59.4 (96)	45.4 (97)
If you do not know your HIV status would you consider going for an HIV test	46.4 (1382)	35.9 (3073)
In the face of HIV infection, have you changed your behaviour in the past few years? (n=sexually active)	62.4 (1382)	45.8 (3073)
If yes, I have only one partner and am being faithful (n=sexually active)	75.1 (567)	79.6 (1042)
If yes, I always use condoms (n=sexually active)	53.7 (412)	32.4 (421)
If yes, my partner and I have had an HIV test (n=sexually active)	4.2 (19)	4.6 (59)

- Print media is constrained by being less adaptable for multilingual communication, and those with an African home language found print media less useful for HIV/AIDS information.
- Multilingual access to information is of concern, and Afrikaans, Sotho, Tshivenda and Xitsonga speakers are considerably marginalised in relation to HIV/AIDS information via mass media channels. Although English is the dominant language used in many mass media campaigns, it is a matter of concern that only 0.8% of Africans have English as a home language, followed by 15.5% of coloureds and 38% of whites.
- There are relatively high levels of exposure to community level media in rural areas, for example, leaflets and posters, with the latter being more pervasive than television in these areas.
- Health facilities emerge as an important source for information, and present an important option for addressing HIV/AIDS along the continuum of prevention, care and support. Schools are also an important entry point for children and youth. The relatively lower orientation of AIDS organisations suggests that useful partnerships could be developed between these organisations and health facilities. Faith-based organisations are also an important resource and partnerships between AIDS organisations, faith-based organisations and health facilities may offer promise. Youth groups and sports clubs have a relatively higher orientation for child and youth age groups, and interactions between these formations for youth audiences should be considered.

- Whilst actual use of telephone helplines was not assessed, there is a relatively high awareness of the availability of this type of service. Helplines allow for dialogue in relation to HIV/AIDS and are most successful at addressing myths and misconceptions, as well as providing counselling or referring callers to appropriate services.
- Recall of slogans and messages was relatively high, and it is clear from the condom use data that condom messages have been well internalised. This correlates strongly with actual condom use.
- 'AIDS kills' was the second most frequent 'message' recalled. Interestingly, no national level mass media campaigns have promoted messages that have incorporated 'AIDS Kills' messages, as it has been felt that such messaging is excessively fear-based, and also may contribute to the PLWHAs being stigmatised. It is clear however, that the fatal nature of AIDS has been internalised and the general perception is that AIDS does indeed lead to death.
- Although there is a general awareness of HIV/AIDS, most respondents still require further and more detailed information. This suggests that mass media campaigns are insufficient as systems of delivery, and other communication channels, particularly dialogue-oriented approaches should be considered.
- There appears to be a trend toward taking the problem of HIV/AIDS more seriously by those knowing someone who was HIV positive or who had died of AIDS. This in turn is linked to purported behaviour change, although a deeper exploration of this data is necessary. Current findings do however have implications for interventions that promoted care and support of people living with HIV/AIDS and families affected by the disease.
- The South African HIV/AIDS and communication environment is a complex one and there are literally thousands of purposive and non-purposive communication activities that take place at national, provincial and local level. It is complex to reduce behaviour, attitudes or knowledge to specific interventions – whether they are mass media, community level communication or interpersonal communication. It is clear however, that risk reducing behaviours and practices described elsewhere in this study are the net product of HIV/AIDS communication of one kind or another, led by purposive campaigns, but also disaggregated to a range of other purposive and non-purposive communication activities.
- Respondents have clearly taken note of key aspects of HIV transmission, and have internalised this understanding in their own behaviours and practices. Condom use during last sex act amongst youth is high, with half of respondents doing so, and is significantly higher amongst respondents with more than one current partner. It must be noted however, that condom use is not simply a matter of communication. Effective and appropriate service provision and condom quality are the foundations of an effective communication promoting condom use.
- In relation to condom use it must be noted that 'behaviour change' may not have been necessary. As younger individuals may have started their sexual lives adopting particular strategies, for example condom use, and might not need to 'change their behaviour'. Similarly, respondents in long-term relationships may have not needed to change their behaviour because they have been monogamous and faithful over a long period of time.
- HIV testing was considered as an option by half of all youth who had not had an HIV test, as well as by a third of adults, and is something that can be capitalised upon when introducing and promoting voluntary HIV counselling and testing programmes.