

SECOND GENERATION HIV SURVEILLANCE IN ANTENATAL CLINIC ATTENDEES AND YOUTH, TONGA, 2008



**MINISTRY OF HEALTH
GOVERNMENT OF TONGA**



**Secretariat of the
Pacific Community**

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinic
BSS	Behavioural Surveillance Survey
<i>C.trachomatis</i>	Chlamydia trachomatis
FHI	Family Health International
FTA-AB	Fluorescent treponemal antigen antibody
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HIV	Human Immunodeficiency Virus
MDG	Millennium Development Goals
MOH	Ministry of Health
<i>N.gonorrhoeae</i>	Neisseria Gonorrhoea
NGO	Non-Government organization
NRL	National Reference Laboratory
PCR	Polymerase Chain Reaction
PICTs	Pacific Island Countries and Territories
PLHIV	People living with HIV or AIDS
RPR	Rapid Plasma Reagin
SGS	Second Generation HIV Surveillance
SPC	Secretariat of the Pacific Community
SPS	STI Prevalence Surveillance
STI	Sexually transmitted infection
TPHA	Treponema Pallidum Haemagglutination Assay
UNGASS	United Nations General Assembly Special Session
VCT	Voluntary Confidential Testing

Executive summary

Tonga is a small island nation comprising a 169 islands with 4 main island groups with a population of 101, 991 people. Two thirds of the population reside on the main island of Tongatapu with 23% residing in urban areas. HIV prevalence in Tonga is very low with no HIV cases detected in antenatal women in the previous Second Generation Surveillance (SGS) survey conducted in 2004. In 2008, Tonga conducted a second round SGS in antenatal women and youth population groups. The results are summarised below.

A total of 348 women attending their first routine antenatal clinic (ANC) visit at the Vaiola Hospital, Tongatapu and Prince Wellington Ngu Hospital, Vava'u were consecutively recruited into the survey from March to May 2008. Trained interviewers administered questionnaires to obtain data on pregnancy characteristics, sexual behaviours, risk behaviours and HIV knowledge and attitudes. Blood and urine samples were collected from participants for testing for HIV and other sexually transmitted infections (STIs).

The key findings of the ANC STI Prevalence survey include:

- Mean age of first sex was 21.5 years with only 0.6% of women reporting age of first sex at less than 15 years.
- Less than 5% of women had more than one partner in the preceding 12 months.
- Less than 20% of women had ever used a condom.
- Nearly nine out of ten women surveyed never consume alcohol and less than 5% had consumed alcohol during pregnancy.
- Just over a quarter of women had used tobacco in the last 12 months, but almost 90% of these women had used tobacco during their pregnancy.
- HIV awareness was high, with 96% of women reporting having heard of HIV and 61% correctly answering both questions on prevention strategies.
- However, respondents also had misconceptions about HIV transmission, so overall knowledge was low at 13.8%.
- Prevalence of accepting attitudes towards people living with HIV was low.
- Rates of Chlamydia infection were found to be 12.8%, slightly lower than in the previous survey, although the difference is not significant.
- An association was found between Chlamydia infection and younger age group, but not marital status or age at first sex as in the previous study.
- No cases of HIV or Syphilis (either infectious or non-infectious) were detected and the prevalence of Gonorrhoea was low at 1.2%
- Less than 1% of women had and an HIV test in the previous 12 months and knew the result.

A behaviour surveillance survey (BSS) of sexual and other risk behaviours related to HIV and other STIs was conducted with 387 youth aged 15-24 years. Participants were recruited by convenience sampling and interviewed by peer educators from the Tonga Family Health Association.

The key findings of the youth BSS include:

- The percentage of female youth reporting ever having had sex was 31% compared with 45% for male youth.
- Mean age of first sex was 17.8 years for females and 17.2 years for males with 5.5% females and 0.9% males reporting age of first sex below 15 years.
- Of the sexually active youth, 9.6% females and 18.4% males reported having more than one sexual partner in the last 12 months.
- While nearly half of all sexually active youth reported ever having used a condom, less than a quarter reported they used a condom the last time and less than 12% reported they used a condom every time they had sex.
- Reported high risk sexual behaviour such as overlapping relationships and transactional sex were low at 1.8% and less than 1% respectively.
- However 15% of male youth who had had sex reported having had sexual contact with another male in the last 12 months.
- Nearly two thirds of females and one third of males never consumed alcohol.
- Of youth that reported consuming alcohol, over 38% reported binge drinking (i.e. 5 or more standard drinks on one occasion) on at least a weekly basis.
- A higher percentage of female youth that consume alcohol report binge drinking on at least a weekly basis compared with male youth.
- Over a third of youth reported tobacco use in the last 30 days. Kava and marijuana use in the last 30 days was 29% and 17% respectively.
- There was high awareness of HIV, with 80% of youth reporting having heard of HIV, however only 39% correctly answering both questions on prevention strategies and respondents had misconceptions about HIV transmission, so overall knowledge was low at 18%.
- Prevalence of accepting attitudes towards people living with HIV was low.
- Over half of the youth surveyed knew it was possible to get a confidential HIV test, but less than 6% had ever had an HIV test.

While there are limitations to this study, in terms of both power to detect HIV at low levels and whether sampling methods used accurately reflect the populations, the findings indicate areas where prevention efforts should be focused. These include increasing condom use, STI and HIV testing and education to increase knowledge and reduce stigma and discrimination.

Introduction

HIV epidemiology in the Pacific region

Most Pacific Island countries and territories (PICTs) other than Papua New Guinea have been classified as low prevalence settings by the World Health Organization (WHO)¹. HIV cases have now been reported in every Pacific Island Country and Territory (PICT) apart from Niue, Tokelau and Pitcairn Island with 19,179 cumulative HIV infections have been reported up to December 2007². HIV infections in PNG account for over 90% of these cases. Overall 3,230 AIDS cases and 651 AIDS-related deaths have been reported in the Region however this is believed to be an underestimate of the true burden as diagnosis of AIDS in the Region is difficult for a number of reasons. The majority of HIV transmission in the Pacific has been reported as heterosexual contact. Issues with current data include limited and poor uptake of testing and limited access for most at-risk populations.

HIV epidemiology in country

Tonga is a small island nation comprising of a 169 islands with 4 main island groups with a population of 101, 991 people. Two thirds of the population reside on the main island of Tongatapu with 23% residing in urban areas. The fertility rate is 4.2% and the crude birth rate is 28.5 per 1000 population. Life expectancy for Tongan males and females is 67.3 years and 73 years respectively. HIV prevalence in Tonga is very low with no HIV cases detected in antenatal (ANC) women in the previous Second Generation Surveillance (SGS) survey conducted in 2004. Routine HIV testing is conducted for blood donors and for Tongan immigration requirements, new recruits to the Civil Service, seafarers and STI clinic attendees. ANC women are usually screened for HIV, but in 2008 there was a problem of supply of HIV kits. 17 cases of HIV have been reported to December 2008, 10 of which have progressed to AIDS and 9 are now deceased (ref SPC).

Though HIV infection is uncommon, other STI infections are more prevalent (ref SGS report). The first round of SGS found high rates of Chlamydia (prevalence 14.5%), prevalence of Gonorrhoea and Syphilis were much lower at 2.5% and 3.2% respectively.

The central hospital is located on the main island of Tongatapu with three district hospitals serving the outer islands, 14 health centres, 37 Maternal and Child Health clinics, 12 general practitioners and two church-based clinics. There were 2599 births in 2007 and 2513 (96.7%) of women delivered in hospitals. All pregnant women had at least one antenatal visit. Antenatal care is provided at all the hospitals, health centres and Maternal and Child Health clinics.

SGS background

SGS involves strengthening existing HIV surveillance systems to improve the quality and breadth of information. SGS uses information from ongoing routine data collection systems *and* includes periodic collection of behavioural and biological data. SGS includes surveillance of both the general population and specific high risk subgroups.

SGS aims to:

- Increase the understanding of trends over time
- Increase knowledge of risk behaviours driving trends
- Use flexible tools that can change according needs over time
- Make better use of existing surveillance data

Recommended frequency and type of surveillance differs according to the level of the HIV epidemic. HIV epidemics can be broadly classified into three levels:

Low: HIV is present in 'high risk' population subgroups, such as sex workers, injecting drug users, and men who have sex with men. HIV may have present in these groups for some time, but prevalence remains low and stable.

Concentrated: There has been a rapid increase of HIV in high risk population subgroups, but HIV is not yet prevalent within the general community.

Generalised: While high risk groups have a disproportionately high prevalence, HIV is also established within the general population.¹

SGS in Low Prevalence Settings

SGS aims to provide an early warning of groups who are a high risk and the associated risk behaviours.

Comprehensive SGS surveillance activities in low-level epidemics include

- cross-sectional behaviours surveys
- surveillance of STI's,
- HIV serosurveillance,
- HIV and AIDS Case reporting
- screening donated blood.

Tonga conducted Second Generation Surveys in Antenatal women and youth population groups. All participants completed a questionnaire which provides information on demographic characteristics, sexual risk behaviours, alcohol and other drug use, HIV knowledge, attitudes and access to testing, and STI history.

Questionnaires were based on surveys developed by the Family Health International organisation, and modified for use in the Pacific by the University of New South Wales (NSW) in Australia, the World Health Organization (WHO) and the Secretariat of the Pacific Community (SPC).

The behavioural questionnaires are similar for both population groups. The surveys have been adjusted to make them relevant to the population of interest and enable reporting of population specific indicators.

Surveys Conducted in Country

An STI prevalence survey was conducted in pregnant women and a behavioural surveillance survey for youth.

As well as providing information on the prevalence of STIs for the antenatal women, this report provides information on risk behaviours, links with high risk sub-populations (for example, youth who participate in transactional sex), knowledge and attitudes, prevalence of symptoms of STIs, and access to STI treatment and HIV testing.

Ethics approval

Approval to undertake the Second Generation Surveillance Surveys was given by the Medical Research Ethics Committee in Tonga.

Specimen collection and testing

STI prevalence surveys involved the collection of urine samples to test for the presence of Chlamydia and Gonorrhoea, and blood for Syphilis, Hepatitis B surface antigen and HIV antibody testing. HIV prevalence surveys involved the collection of blood for Syphilis, Hepatitis B and HIV antibody testing.

Participants who took part in SPS surveys were asked to provide a 10-15 ml first catch urine sample. Specimens were transferred to the central laboratory in country and frozen at -20 degrees Celsius until subsequent shipment to the testing laboratory. Frozen urine specimens were sent to the Molecular Microbiology Laboratory at the Royal Women's Hospital in Melbourne, Australia to test for Chlamydia and Gonorrhoea.

Laboratory testing involved amplification of *C.trachomatis* and *N.gonorrhoeae* sequences undertaking using the ROCHE COBAS Amplicor (Roche Diagnostics, Branchburg, New Jersey, United States of America). All positive *N. gonorrhoeae* specimens were then confirmed by an alternate Polymerase Chain Reaction (PCR) assay using primers and probes directed at a 90 base pair region of the OPA gene.ⁱⁱ

For participants involved in SPS and HSS surveys, a 10 ml blood sample was taken for testing. Preliminary screening for Syphilis (RPR), Hepatitis B (Determine and Serodia) and HIV (Determine and Serodia) was undertaken. Blood specimens were tested in the national laboratories in country, except for HIV confirmatory tests, which were sent to the regional confirmation laboratory for the country.

Infection	Specimen	Tests
Chlamydia	Urine	PCR Assay
Gonorrhoea	Urine	PCR Assay
Syphilis	Blood	TPHA RPP RPR titre (if RPR was reactive). Cases were recorded as infectious Syphilis if titres were greater than or equal to 1:8.
Hepatitis B	Blood	
HIV antibodies	Blood	ELISA: Determine and Serodia
HIV Confirmatory	Blood	Confirmed according to the regional algorithm

Data analysis

Data was entered into an Epi Info database and checked for accuracy by reviewing 10% of the paper surveys against the database. Respondents missing sex and age were excluded from the analysis as were respondents who did not fit the eligibility criteria. Statistical package Epi Info Version 3.4.2 was used for data analysis. Descriptive statistics were conducted and key results are presented in this report. Associations between key variables were assessed using chi square tests.

Surveys

STI Prevalence Survey of Antenatal Clinic Attendees

Survey Methodology

Table 1 shows an overview of the survey methodology used for the antenatal women's survey.

Table 1: Overview of the Survey Methodology, Antenatal Women, Tonga 2008

Methodology	Survey details
Population	<i>Antenatal women</i>
Survey type	<i>STI Prevalence Survey (SPS)</i>
Sampling method	<i>Consecutive recruitment</i>
Inclusion criteria	<i>Women attending the antenatal clinic for the first time for that pregnancy</i>
Target Sample Size	<i>350</i>
Final Sample Size	<i>348</i>
Interview location(s)	<i>Antenatal Clinic in Tongatapu and Vava'u</i>
Administration of the survey	<i>Interviewer administered by nurses from the clinic</i>
Type of consent	<i>Verbal. Interviewers signed a declaration not to release any information without the participants' approval.</i>
Time required for interview	<i>20-25 minutes</i>
Specimens collected	<i>Urine and blood</i>
Laboratory tests	<i>Chlamydia and Gonorrhea, Syphilis, HBV and HIV</i>
Data collection period	<i>March to May 2008</i>

Women attending their first routine antenatal visit at the antenatal clinic of the Vaiola Hospital, Tongatapu and Prince Wellington Ngu Hospital, Vava'u were consecutively recruited into the survey from March to May 2008. ANC staff were trained to administer questionnaires. Participants completed interviews to obtain demographic, behavioural and other information for the survey. Informed consent was obtained from all participants prior to participation. A blood sample and a urine specimen were collected from participants. Confidential linked testing for HIV and other selected STIs (Chlamydia, Gonorrhoea, Hepatitis B and Syphilis) were undertaken.

Eligibility criteria

First visit antenatal clinic attendees were eligible to participate in this survey.

Results

ANC survey

Demographic characteristics.

Table 2: Reported Demographic Characteristics, Antenatal Women, Tonga 2008

	Number	Percentage		Number	Percentage
Age group (years)			Education		
15 – 24	99	28.4	Never Attended School	0	0
25 – 49	249	71.6	Primary	1	0.3
			Some High School	20	5.7
			High School	295	84.8
			Higher	32	9.2
Country of Birth					
Tonga	345	99.1	Occupation		
Other Countries	2	0.9	Housewife/home duties	288	82.8
			Clerical/Office work	20	5.7
Ethnicity			Not employed	1	0.3
Polynesian	346	99.4	Other	37	10.6
Other	2	0.6			
Area of Residence					
Urban	101	29.0			
Rural	159	45.7			
Outer island	85	24.4			

All eligible participants agreed to take part in the survey. A total of 348 pregnant women from Tongatapu and Vava'u were recruited. Participants' ages ranged from 16-47 years (mean 28.7 years, standard deviation 6 years), with 28.4% (99) under 25 years of age (Table 2). Nearly all women were born in Tonga and of Polynesian ethnicity. The majority of women (82.8%) reported home duties as their occupation, while the most common occupations of the baby's father were farmer, construction worker or other. Nearly 80% of women were currently married and living with their spouses (Table 3). The median age at first marriage was 21.5 (range years).

Table 3: Reported Marital Status and Living Arrangements, Antenatal Women, Tonga 2008

	Number	Percentage
Marital Status		
<i>Ever married</i>	295	84.8
<i>Currently married</i>	277	79.6
Still in a relationship with the father of your unborn child	334	96.0
Living Arrangements		
<i>Living with your spouse</i>	272	78.2
<i>Living with a sex partner (non-married)</i>	21	6.0
<i>Not living with any sex partner</i>	53	15.2

Pregnancy characteristics

Among the 348 pregnant women, 21.5% (75) (were having their first child (primiparous). The median gestation was 28.6 weeks (range 5- 40 weeks) and 54% were trying to get pregnant. Of those who were pregnant but were not trying to get pregnant, 56% were not using any contraceptive methods. The most popular contraceptive methods were Depo-Provera (9.2%) and withdrawal (14.4%), followed by the rhythm method (2.9%).

Sexual behaviours

Mean age of first sex was 21.5 years and ranged from 14 to 35 years. Most women reported only one partner in the previous 12 months (Table 4).

Table 4: Reported Sexual History, Antenatal Women, Tonga, 2008

	Mean	Range
Age of first sex	21.5	14-35
Number of sex partners in lifetime	1.3	1-10
Number of sex partners in the last 12 months	1.0	1-3

Reported condom use was very low with 87.6% women reporting that they had never used a condom in the last 12 months (Table 5).

Table 5: Reported Knowledge of Condoms and Condom Use, Antenatal Women, Tonga, 2008

	Number	Percentage
Ever heard of a male condom	291	83.6
Ever heard of a female condom	41	11.8
Used a condom first time had sex	15	4.3
Ever used a condom		
<i>Male condom only</i>	62	17.8
<i>Female condom only</i>	1	0.3
Condom use in past 12 months		
<i>Every time</i>	1	0.3
<i>Sometimes</i>	40	11.5
<i>Never</i>	305	87.6

One in twenty women reported they had more than one partner in the previous 12 months (4.9%), however other reported high risk sexual behaviour was very low such as overlapping relationships (Table 6) and commercial sex (Table 7).

Table 6 Reported Sexual Behaviours/History, Antenatal Women, Tonga, 2008

	Number	Percentage
More than one partner in the last 12 months	17	4.9
More than two sexual relationships during the same time period, in the last 12 months	4	1.1
Has been off been off-island in the last 12 months	40	11.5
Had sex with someone (other than partner) while off-island	0	0.0
Ever been forced to have sex	6	1.7

Table 7: Reported Commercial Sex, Antenatal Women, Tonga, 2008

	Number	Percentage
Received money or goods in exchange for sex	4	1.1
Paid money or goods in exchange for sex	6	1.7

Alcohol and Substance use

Reported alcohol use in the 12 months before becoming pregnant was very low with 85.3% of respondents reporting that they never drink. For those who did report using alcohol 5.5% report consuming 5 or more standard drinks monthly. Only a small percentage (4.9%) report consuming alcohol while pregnant (Table 8).

Table 8 Reported Frequency and Consumption of Alcohol in the 12 months before becoming pregnant, and during pregnancy, Antenatal Women, Tonga, 2008

	Number	Percentage
Frequency of alcohol use		
4 or more times a week	5	1.4
2 to 3 times a week	6	1.7
2 to 4 times a month	17	4.9
Monthly or less	18	5.2
Never	297	85.3
Number of standard drinks usually consumed		
1 to 2	12	3.4
3 to 4	5	1.4
5 to 9	12	3.4
10 or more	7	2.0
Frequency of binge drinking (5 or more standard drinks on one occasion)		
Never	2	0.6
Daily or almost daily	2	0.6
Weekly	12	3.4
Less than monthly	8	2.3
Monthly	19	5.5
Has drunk alcohol while pregnant	17	4.9

Recreational drug use was also very low, with tobacco being the most commonly used drug with 26.7% reporting tobacco use in the last 12 months (Table 9). The finding that 23.9% of women had used tobacco in the previous 30 days is also concerning considering the potentially detrimental effects on the unborn child.¹ Kava use was also reported among 7.8% of respondents.

¹ <http://www.aihw.gov.au/publications/index.cfm/title/10254>;

Table 9: Reported Recreational Drug Use, Antenatal Women, Tonga, 2008

Drug	Ever used		Used in last 30 days		
	Number	Percentage	Number	Percentage of ever users	Percentage of all respondents
Tobacco	93	26.7%	83	89.2%	23.9%
Marijuana/cannabis	2	0.6%	2	100.0%	0.6%
Kava	34	9.8%	27	79.4%	7.8%
Amphetamines/Ecstasy	0	0.0	0	0.0	0.0
Injecting drug use	0	0.0	0	0.0	0.0

HIV knowledge and attitudes

HIV awareness was high among respondents with 95.7% having heard of HIV or AIDS. Three quarters of respondents correctly answered questions relating to prevention of HIV i.e. being faithful to one partner (76.7%) and condom use (74.4%) (Table 10). Nearly 90% of the women were aware that HIV could be transmitted during pregnancy, delivery or breastfeeding (86.8%). However only one third of respondents knew that HIV cannot be transmitted through mosquito bites (32.2%). Only 13.8% of women answered all five questions on HIV knowledge correctly.

Table 10: Responses to Knowledge Questions, Antenatal Women, Tonga, 2008

Knowledge Questions	Correct response		Don't know
	Number	Percentage	Number
Heard of HIV	333	95.7	
<i>Correct knowledge of mother to child transmission</i>			
A mother can pass HIV to their baby during pregnancy, delivery or breastfeeding?	302	86.8	19
<i>Correct knowledge of prevention strategies</i>			
Having sex with only one, uninfected, faithful partner can reduce the chance of getting HIV?	267	76.7	16
Using condoms correctly can reduce the chance of getting HIV?	259	74.4	38
<i>Rejects common misconceptions</i>			
A healthy looking person can be infected with HIV?	237	68.1	45
A person can get HIV from mosquito bites?	112	32.2	68
A person can get HIV by sharing a meal with someone who is infected with HIV?	166	47.7	39
<i>Overall knowledge</i>			
Correct response to the two prevention strategies	213	61.2	
Correct response to all three misconceptions	65	18.7	
Correct response to all five questions	48	13.8	
Correct response to all six questions	45	12.9	

Attitudes towards those living with HIV were assessed by responses to five statements shown in Table 11. There was a low prevalence of accepting attitudes towards people living with HIV with only 12.1% reporting that they would buy vegetables from a shopkeeper or vendor who had HIV and only 3.2% agreeing that a teacher with HIV who is not sick should be allowed to continue teaching. However, 47.7% of women agreed that a person should be able to keep his/her HIV status private.

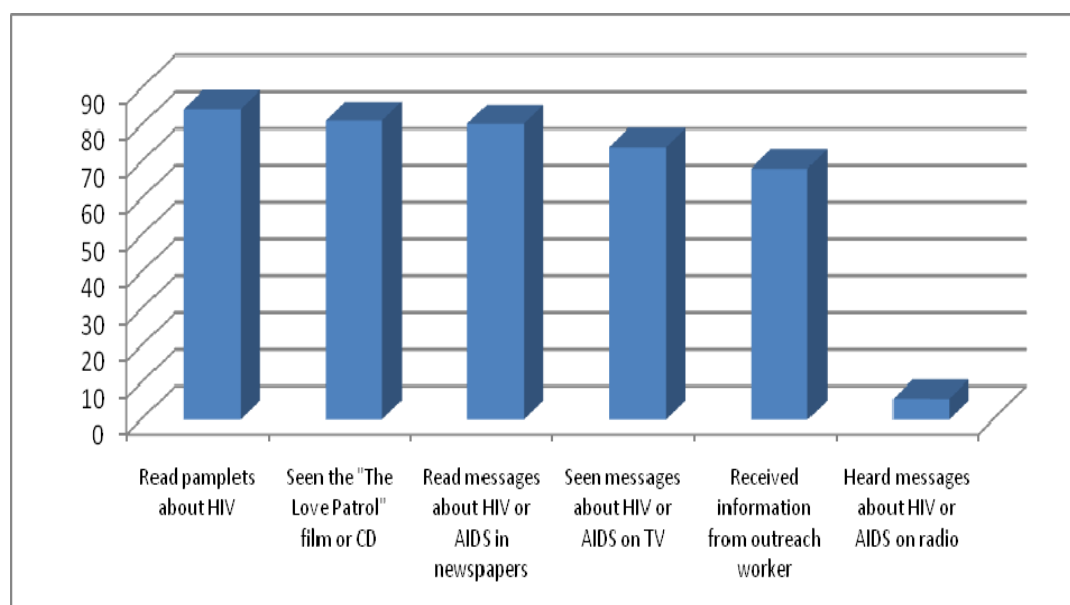
Table 11: Attitudes towards Those Living with HIV, Antenatal Women, Tonga, 2008

Attitude questions	Agreed with Statement	
	Number	Percentage
Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?	42	12.1
If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	55	15.8
If a member of your family became sick with HIV, would you be willing to care for her or him in your own household?	78	22.4
In your opinion, if a female teacher has HIV and is not sick, should she be allowed to continue teaching in the school?	11	3.2
A person should be able to keep his/her HIV status private (no one else needs to find out)	166	47.7

Prevention programs

Most of the 348 women reported reading messages about HIV in pamphlets (84.5%), in the newspaper (80.5%) or seeing messages on TV (4.1%). Only 5.7% of women, however, reported hearing messages about HIV on the radio (Figure 1).

Figure 1 Percentage of Antenatal Women reached by Prevention Programs, Tonga, 2008



Access to testing

Table 12: Reported Access to Testing, Antenatal Women, Tonga, 2008

	Number	Percentage
Believe it is possible for someone in the community to get a confidential test	91	26.1
Reasons why you can't get a confidential test		
<i>HIV testing is not available</i>	158	45.4
<i>Testing site too public</i>	30	8.6
<i>Everyone will find out</i>	26	7.5
<i>Testing site too difficult to get to</i>	2	0.6
<i>Opening hours not convenient</i>	2	0.6
<i>Missing</i>	39	11.2
Ever been tested for HIV	15	4.3
When did you have you last HIV test		
<i>In the last 3 months</i>		
<i>In the last year</i>	2	0.6
<i>Over a year ago</i>	5	1.4
Why did you have your last HIV test?		
<i>I asked for it</i>	4	1.1
<i>Medical check</i>	3	0.9
<i>Blood donor</i>	1	0.3
Received result of HIV test	5	1.4
Tested in the last 12 months and know their results	2	0.6

Ninety one respondents (26.1%) knew that it was possible to get a confidential HIV test in Tonga (Table 12). Only 15 respondents (4.3%) reported ever having an HIV test, with 5 (1.4%) of those tested reporting their last HIV test was over a year ago. Of the 15 tested, only 4 reported their test was voluntary and only five (1.4%) had received the result of their most recent test.

Prevalence of STIs

Table 13: Prevalence of STIs, Antenatal Women, Tonga, 2008

	Reactive/ positive	Number tested	Prevalence	Prevalence (95% Confidence Intervals)
Chlamydia	44	345	12.8	9.4 - 16.4
Gonorrhoea	4	345	1.2	0.5 - 3.5
HIV	0	348	0	
Hepatitis B (Surface Antigen)	41	348	11.8	8.7 - 15.8
Syphilis (Active cases)*	0	348	0	

*Active cases defined as RPR titre greater than or equal to 1:8

Table 14: Prevalence of Chlamydia by selected demographic and risk factors, Antenatal Women, Tonga, 2008

		Number	Prevalence (%)
Age group	<25	21	21.2
	>25	23	9.2
Married	Yes	26	9.4
	No	3	16.7
Area of residence	Urban	15	14.9
	Rural	21	13.2
	Outer Is	8	9.4
Ever used condom	Yes	8	12.9
	No	36	12.6

No cases of HIV or Syphilis (both infectious and non-infectious) were detected among women tested in the survey. Prevalence of Chlamydia was highest at 12.8%, followed by Hepatitis B at 11.8% and gonorrhea at 1.2% (Table 13). The prevalence of Chlamydia in respect to four key demographic characteristics and risk factors are shown in Table 14. An association was observed between Chlamydia infection and age group only. Women

aged less under 25 years were more likely to be infected than older women (21.2% versus 9.2%, chi square 20.5 $p < 0.01$). Age of first sex was not included in these analyses as only two women reported having sex before the age of 15.

Symptoms of STIs

Table 15: Prevalence of Symptoms of STIs, Antenatal Women, Tonga, 2008

	Number	Percentage
Ever been diagnosed with a sexually transmitted disease or infection by a doctor or health worker?	0	-
Reported symptoms of an STI in the last one month		
Unusual genital or anal discharge	7	2
Rash, ulcer or sore around genitals	4	1.1
Lower abdominal pain in between periods or during sex	68	19.5

None of the women reported ever being diagnosed with a sexually transmitted infection previously (Table 15). However 68 women (19.5%) report lower abdominal pain in between their periods or during sex which can be a symptom of pelvic infection, a complication of infection with Chlamydia and/or Gonorrhoea.

UNGASS indicators

UNGASS indicators for antenatal women are shown below in Table 16.

Table 16: UNGASS indicators, Antenatal Women, Tonga, 2008

	15 to 24 years		25 years and older	
	Number	%	Number	%
7. Percentage of women aged 15-49 who received an HIV test in the last 12 months and who know their results	0	0	2	0.8
13. Percentage of antenatal women aged 15-24 who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission	7	7.1		
15. Percentage of antenatal women aged 15-24 who have had sexual intercourse before the age of 15	2	2.0		
16. Percentage of antenatal women aged 15-49 who have had sexual intercourse with more than one sexual partner in the past 12 months	10	10.1	7	2.8
17. Percentage of antenatal women aged 15-49 who have had sexual intercourse with more than one sexual partner in the past 12 months reporting the use of a condom during their last sexual intercourse	Data not collected			

Behavioural Survey of Youth

Survey Methodology

Table 17 shows an overview of the survey methodology used for the youth survey.

Table 17: Overview of the Survey Methodology, Youth

Methodology	Survey details
Population	<i>Youth</i>
Survey type	<i>Behavioural Survey</i>
Sampling method	<i>Convenience sample</i>
Inclusion criteria	<i>Youth aged 15 to 24 years</i>
Target Sample Size	<i>400</i>
Final Sample Size	<i>387</i>
Interview location(s)	<i>Youth 'hot spots' identified by peer educators. Sites included town centre, town water front, outside clubs and bars</i>
Administration of the survey	<i>Interviewer administered</i>
Type of consent	<i>Verbal</i>
Time required for interview	<i>20 minutes</i>
Specimens collected	<i>Nil</i>
Laboratory tests	<i>Nil</i>
Data collection period	<i>May-June 2008</i>

A behavioural survey of sexual and other risk behaviours related to HIV and other STIs in 387 youth aged 15-24 years was conducted between May to June 2008. Peer educators from Tonga Family Health Association interviewed participants. Participants were recruited via convenience sampling and completed a confidential questionnaire administered by trained interviewers. Demographic, behavioural and information on knowledge and attitudes were collected. Participation in the survey was voluntary and informed consent was obtained prior to participation.

Eligibility criteria

Youth aged between 15 to 24 years were eligible to participate in this survey.

Results

Youth survey

Demographic characteristics.

Table 18: Reported Demographic Characteristics, Youth, Tonga, 2008

	Number	Percentage		Number	Percentage
Female	165	42.6	Education		
Male	222	57.4	Never Attended School	3	0.8
			Primary	4	1.0
Age group (years)			Some high school	14	3.6
15 to 19	208	53.7	High School	278	71.8
20 to 24	179	46.3	Higher	82	21.2
Country of Birth					
Tonga	377	97.4			
Other Countries	10	2.6			
Ethnicity					
Polynesia	380	98.2			
Melanesia					
Micronesia	1	0.3			
Mixed ethnicity	7	1.8			
Other					

A total of 387 youth including 165 females and 222 males from Tongatapu were recruited. Only information from the youth who consented to participate was collected. Three youth identified as transgender and were excluded from the analysis. The mean age of participants was 19.4 years, with 53.7% (208) under 20 years of age (Table 18). The mean age for female youth was 19.2 years and male youth was 19.4 years. Nearly all youth surveyed were born in Tonga and of Polynesian ethnicity. Over seventy percent of youth interviewed had completed high school. Only 4.1% of youth were currently married and the majority of youth (87.6%) were living with immediate family or relatives (Table 19).

Table 19: Reported Marital Status and Living Arrangements, Youth, Tonga, 2008

Marital Status	Number	Percentage
<i>Currently married</i>	16	4.1
Living Arrangements		
<i>Living with immediate family</i>	274	70.8
<i>Living with relatives</i>	63	16.3

Sexual behaviours

Table 20: Reported Sexual History, Youth, Tonga, 2008

	Female	Male	Mean	Range
Age at first sex (years)	17.8	17.2	17.4	7-23
Number of sex partners in the last 12 months	2.4	2.8	2.7	1-19
	N (%)	N (%)	Total N (%)	
Have ever had sex	51 (30.9%)	100 (45%)	151 (39.0%)	
Sex before the age of 15	9 (5.5%)	2 (0.9%)	11 (2.8%)	
Sex in the last 12 months	37 (22.4%)	66 (29.7%)	103 (26.6%)	
More than one partner in the last 12 months	16 (9.6%)	41 (18.4%)	57 (14.7%)	

Table 20 shows sexual behaviour indicators among youth surveyed. One hundred and fifty one youth (100 males and 51 females) reported having had sex in their lifetime. The mean age of first sex was 17.4 years (range 7-23 years). The mean age of first sex for females was 17.8 years and males 17.2 years. Very few youth reported having sex before the age of 15 (2.8%).

Nearly 70% of those who were sexually active reported having sex in the last 12 months with a mean of 2.7 partners (range 1-19). Thirty seven female youth and 66 male youth reported having sex in the last 12 months. The mean number of partners was similar for females and males, 2.4 and 2.8 respectively. Only 14.7% of youth reported having more than one sex partner in the last 12 months, however there was no response to this question from a significant number of those surveyed.

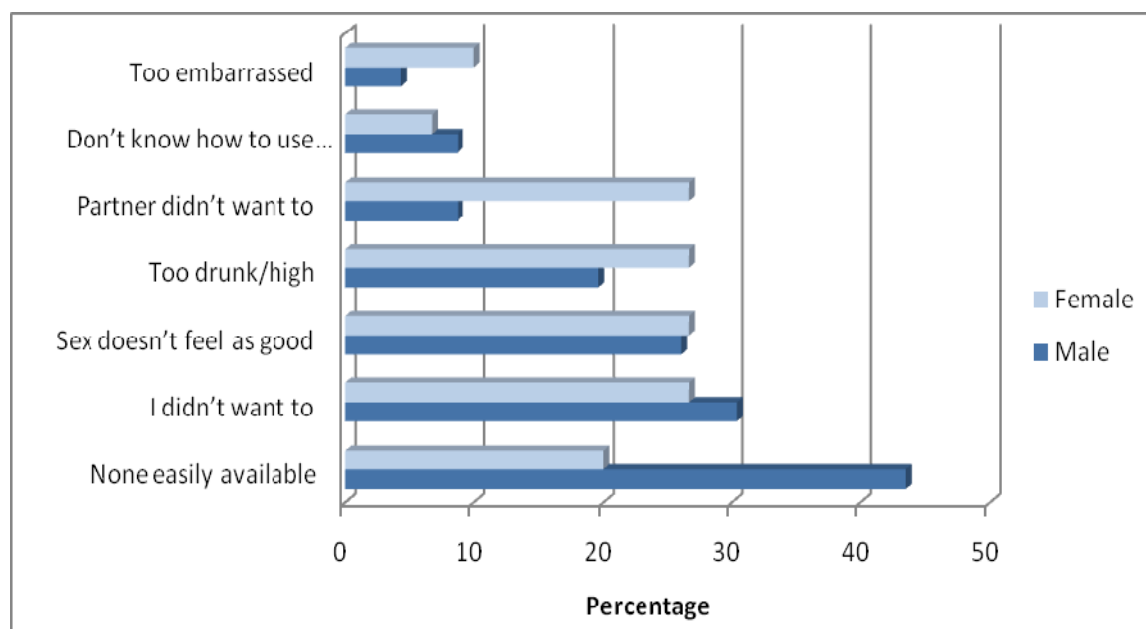
Table 21: Reported Condom Use, Youth, Tonga, 2008

	Female N (%)	Male N (%)	Total N (%)
Used a condom first time had sex	5 (9.8%)	10 (10.0%)	15 (9.9%)
Ever used a condom			
Male condom only	23 (45.1%)	44 (44.0%)	67 (44.4%)
Female condom only	2 (3.9%)	2 (2.0%)	4 (2.6%)
Either male or female condoms	25 (49.0%)	46 (46.0%)	71 (47.0%)
Used a condom at last sex			
Yes	7 (18.9%)	17 (25.8%)	24 (23.3%)
No	29 (78.4%)	42 (63.6%)	71 (68.9%)
Condom use in past 12 months			
Every time	2 (5.4%)	10 (15.2%)	12 (11.7%)
Sometimes	16 (43.2%)	28 (42.4%)	44 (42.7%)
Never	14 (37.8%)	23 (34.8%)	37 (35.9%)

Reported condom use was very low among youth surveyed with less than 10% reporting that they used a condom the first time they had sex and only 11.7% reporting that they used a condom every time they had sex in the last 12 months (Table 21). Reported condom use was lower for females compared with males though this difference was not statistically significant. The main reason for not using a condom the last time they had sex for males was that none were easily available (Figure 2).

It cannot be ascertained whether condoms are not easily accessible in Tonga or if youth did not have them when required. The response from female youth was predominantly to do with personal choices for themselves or their partner. None of the youth stated that price was a barrier to condom use.

Figure 2: Percentage of Respondents agreeing with Each Reason for Not Using Condoms by Sex, Youth



Very few youth reported high risk sexual behaviour such as overlapping relationships (1.8%) and having sex in exchange for money or goods (<1%) (Tables 22 & 23). A significant number of male youth, however, reported having sexual contact with another male with 15 participants i.e. 15% of the sexually active male respondents reporting having sex with a male in the last 12 months. The mean number of partners in the last 12 months was 1 with a range of 1-7. Four respondents reported using a condom the last time they had sex.

Table 22: Reported Sexual Behaviours/History, Youth, Tonga, 2008

	Number	Percentage
More than two sexual relationships during the same time period, in the last 12 months	7	1.8
Has been off-island in the last 12 months?	31	8.0
Had sex with someone (other than partner) while off-island?	14	3.6
Ever forced you to have sex, even though you did not want to?	12	3.1

Table 23: Reported Transactional Sex, Youth, Tonga, 2008

	Number	Percentage
Received money or goods in exchange for sex	4	0.7
Paid money or goods in exchange for sex	2	0.3

Alcohol and substance use

Among the 387 youth surveyed 42.9% reported that they never drink alcohol. Nearly two-thirds of female youth and one-third of male youth reported that they never drink (Figure 3). For those youth who did report using alcohol one third reported drinking weekly or more.

Figure 3: Reported Frequency of Alcohol Use by Sex, Youth, Tonga, 2008

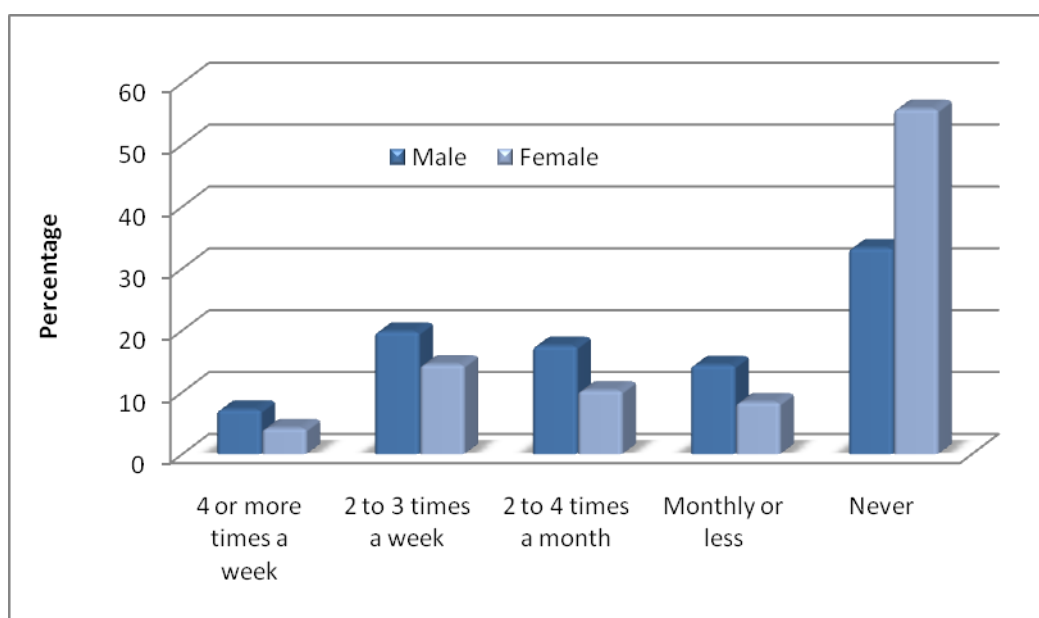
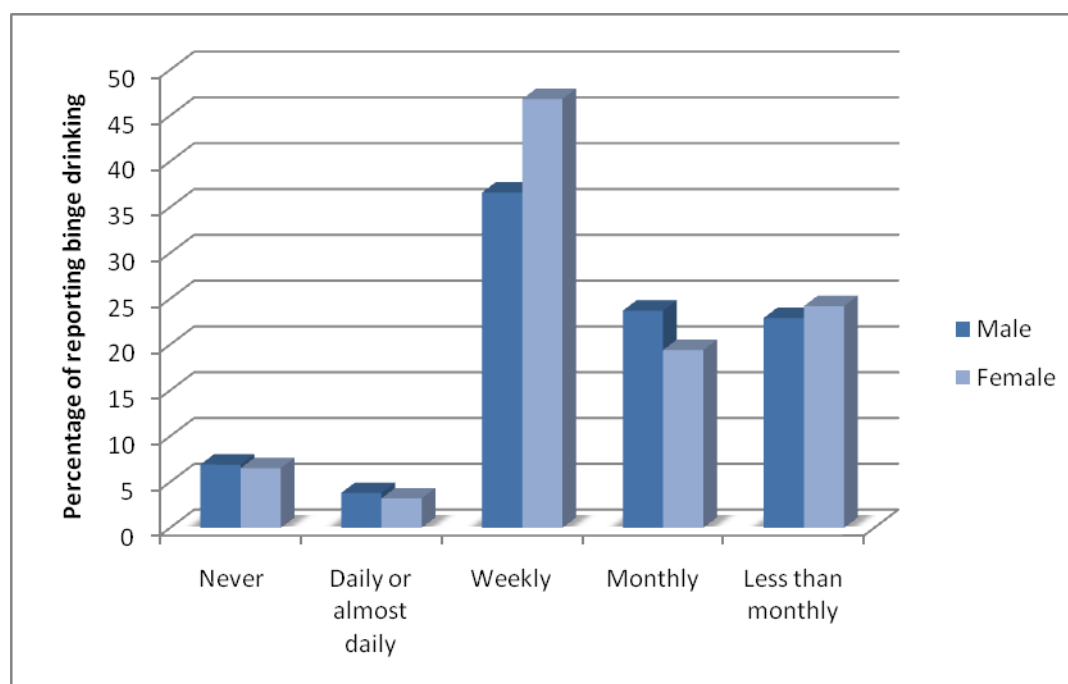


Table 24: Reported Consumption of Alcohol, Youth, Tonga, 2008

	Number	Percentage
Number of standard drinks usually consumed		
1 to 2	17	7.7
3 to 4	10	4.5
5 to 9	40	18.1
10 or more	114	51.6
Frequency of binge drinking (5 or more standard drinks) in the last 12 months		
Never	13	5.9
Daily or almost daily	7	3.2
Weekly	77	34.8
Less than monthly	43	19.5
Monthly	45	20.4

Eighty-seven of the 114 youth (76.3%) who reported 10 or more drinks on one occasion were male. Of those that reported drinking, binge drinking (i.e. 5 or more drinks on one occasion) on at least a weekly basis was reported by over 38% youth (Table 24). A higher proportion of female youth reported binge drinking on a weekly basis than male youth (Figure 4).

Figure 4: Reported Frequency of Binge Drinking by Sex, Youth, Tonga, 2008



Recreational drug use was common among youth with tobacco being the most commonly used drug. Over one third of youth (39.3%) reported tobacco use in the last 30 days.

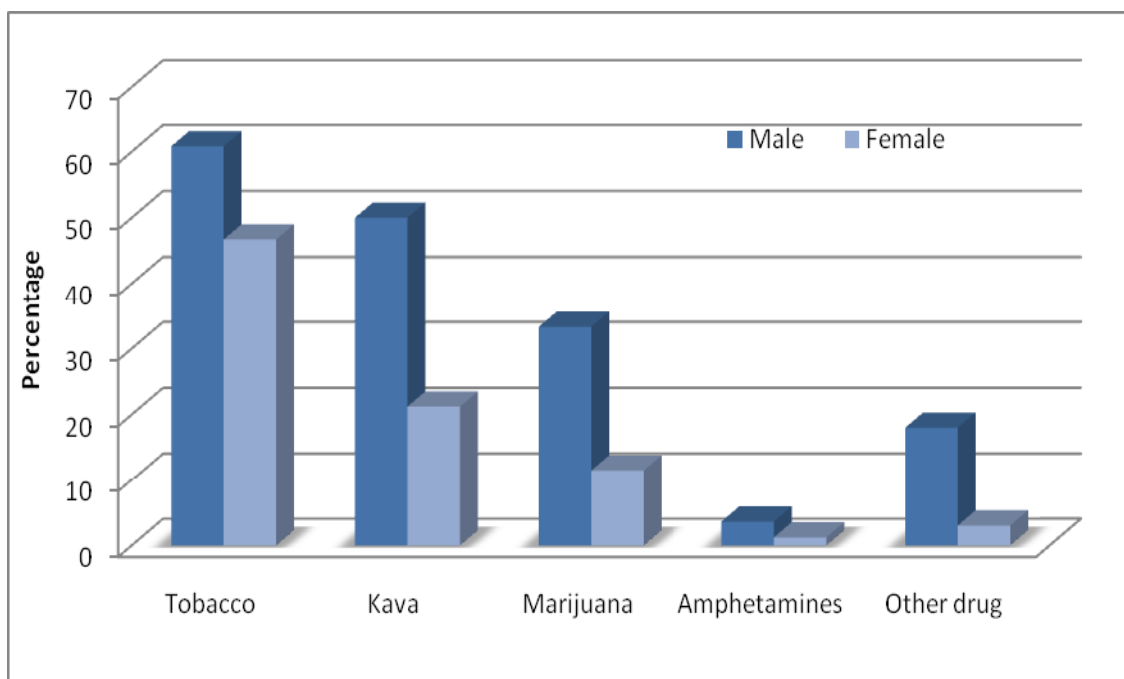
Injecting drug use was very low with only 9 (2.3%) youth reporting that they have ever injected drugs (Table 25).

Table 25: Reported Recreational Drug Use, Youth, Tonga, 2008

Drug	Ever used		Used in last 30 days		
	Number	Percentage	Number	Percentage of ever users	Percentage of all respondents
Tobacco	212	54.8	152	71.7	39.3
Kava	147	38.0	111	75.5	28.7
Marijuana/cannabis	93	24.0	64	68.8	16.5
Amphetamines/Ecstasy	10	2.6	6	60.0	1.6
Injecting drug use	9	2.3	Data not collected		

Reported kava and marijuana use was also quite common among youth, with over one quarter reporting using kava (28.7%) and 16.5% using marijuana in the last 30 days. Higher proportions of male youth reported ever having used drugs than female youth (Figure 5).

Figure 5: Proportions Reporting Ever Using Recreational Drugs by Sex, Youth, Tonga, 2008



HIV knowledge and attitudes

HIV awareness was quite high among youth, with 80.4 % having heard of HIV or AIDS. However questions on knowledge relating to prevention of HIV i.e. being faithful to one partner and condom use were poorly answered with only 46.3% and 65.1% answering questions correctly (Table 26 AND Figure 6). Again only one third of respondents knew that HIV cannot be transmitted through mosquito bites (34.9%). Overall, less than one in five youth (18.1%) answered all five questions on HIV knowledge correctly.

Table 26: Responses to Knowledge Questions, Youth, Tonga, 2008

Knowledge Questions	Correct response		Don't know
	Number	Percentage	Number
Heard of HIV	311	80.4	n/a
<i>Correct knowledge of prevention strategies</i>			
Having sex with only one, uninfected, faithful partner can reduce the chance of getting HIV?	179	46.3	51
Using condoms correctly can reduce the chance of getting HIV?	252	65.1	43
<i>Rejects common misconceptions</i>			
A healthy looking person can be infected with HIV?	213	55.0	61
A person can get HIV from mosquito bites?	135	34.9	64
A person can get HIV by sharing a meal with someone who is infected with HIV?	164	42.4	62
<i>Overall knowledge</i>			
Correct response to the two prevention strategies	152	39.3	n/a
Correct response to all three misconceptions	96	24.8	n/a
Correct response to all five questions	70	18.1	n/a

Figure 6: Percentage of Youth Who Correctly Answered the Knowledge Questions, by Sex, Tonga, 2008

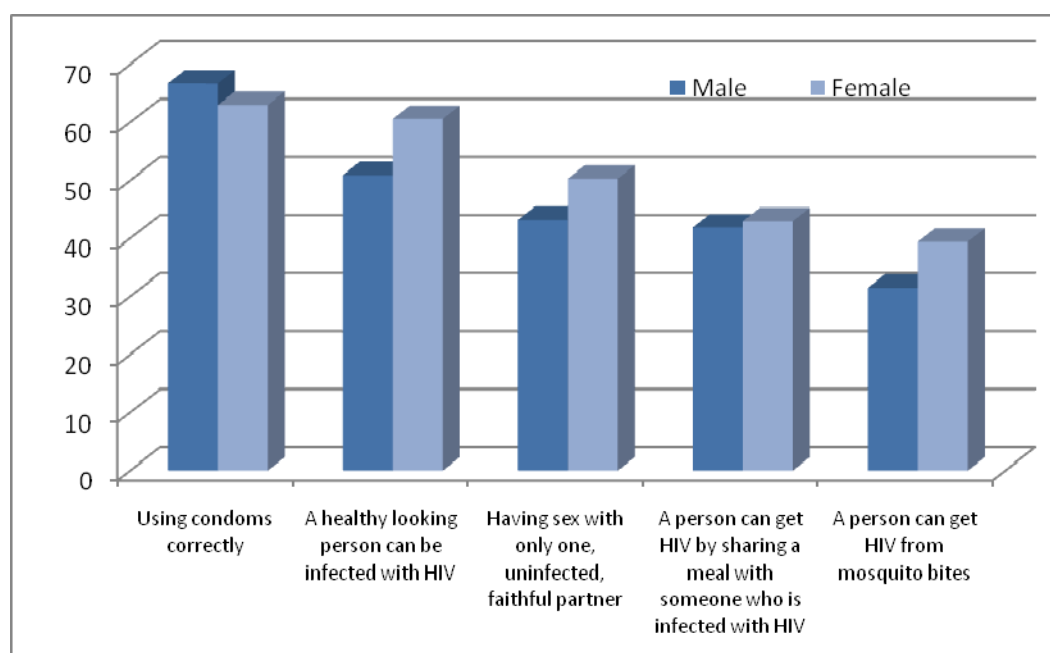
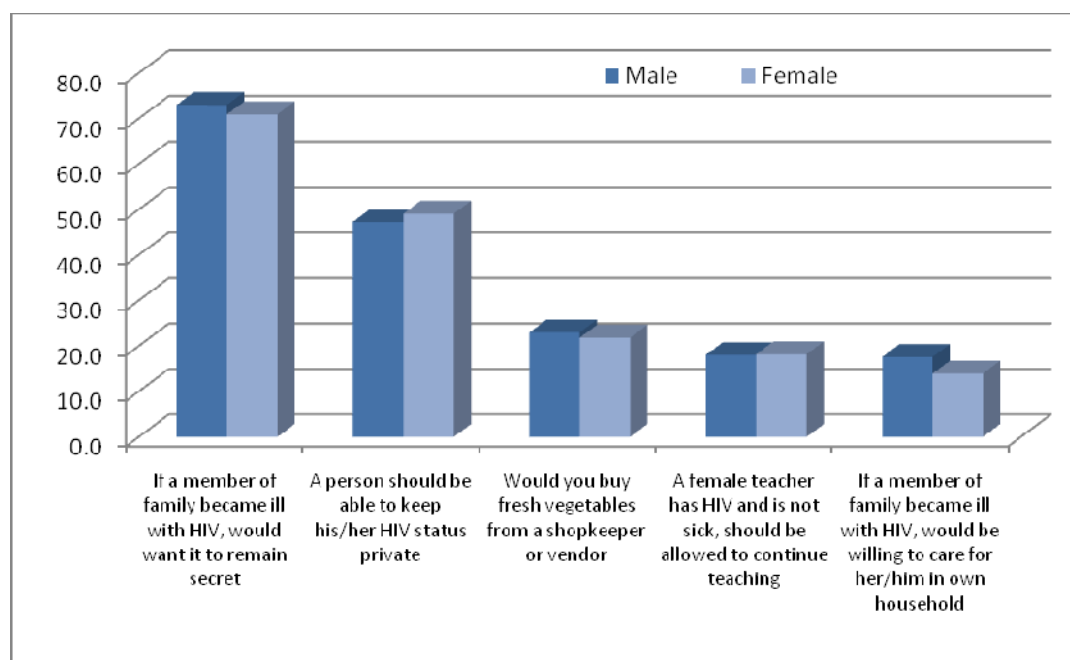


Table 27 and Figure 7 represent the attitudes towards people living with HIV among the youth surveyed. The findings show a low prevalence of accepting attitudes among youth with only 22% reporting that they would be willing to care for a family member who became sick with HIV and only 18.1 % agreeing that a teacher with HIV who is not sick should be allowed to continue teaching. Interestingly, however, 48.1% agreed that a person should be able to keep his/her HIV status private.

Table 27: Attitudes towards Those Living with HIV, Youth

Attitude questions	Agreed with Statement	
	Number	Percentage
Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?	87	22.5
If a member of your family became ill with HIV, the virus that causes AIDS, would you want it to remain secret?	62	16.0
If a member of your family became sick with HIV, would you be willing to care for her or him in your own household?	137	35.4
In your opinion, if a female teacher has HIV and is not sick, should she be allowed to continue teaching in the school?	70	18.1
A person should be able to keep his/her HIV status private (no one else needs to find out)	186	48.1

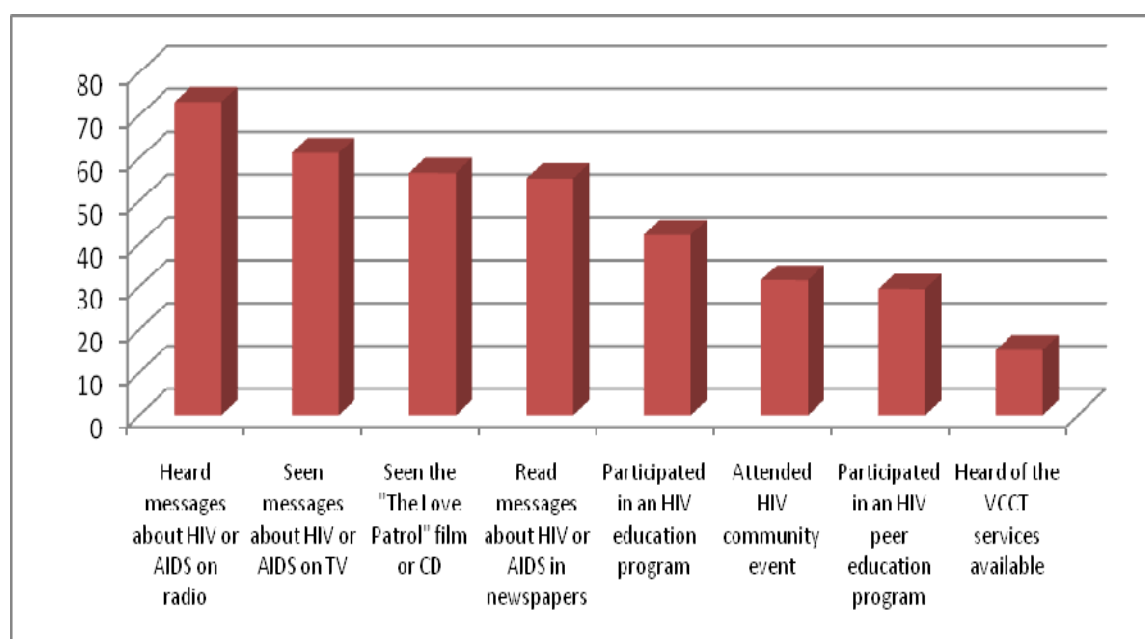
Figure 7: Percentage of Youth with Positive Attitudes towards Those Living with HIV by Sex, Tonga, 2008



Prevention programs

Most youth reported seeing messages about HIV on TV, reading messages in the newspaper and hearing messages on the radio, but less than 30% of youth reported participating in a peer education program, (Figure 8). However there was no association found between participation in a peer education program and increased knowledge of HIV.

Figure 8: Percentage of Youth reached by Prevention Programs, Tonga, 2008



Access to testing

Over fifty percent of youth knew that it was possible to get a confidential HIV test in Tonga (Table 28). However only 23 respondents (5.9%) reported ever having an HIV test, with 6 (1.6%) of those tested reporting their last HIV test was over a year ago. Of the 23 tested, only one person reported their test was voluntary and 15 (3.9%) had received the result of their most recent test.

Table 28: Reported Access to Testing, Youth, Tonga, 2008

	N	%
Believe it is possible for someone in the community to get a confidential test	207	53.5
Reasons why you can't get a confidential test		
<i>HIV testing is not available</i>	16	4.1
<i>Testing site too public</i>	18	
<i>Everyone will find out</i>	40	10.3
<i>Testing site too difficult to get to</i>	15	
<i>Opening hours not convenient</i>	2	
<i>Other</i>	3	
Ever been tested for HIV	23	5.9
When did you have you last HIV test		
<i>In the last 3 months</i>	4	1.0
<i>In the last year</i>	10	2.6
<i>Over a year ago</i>	6	1.6
Why did you have your last HIV test?		
I asked for it	1	0.3
Medical check	15	3.9
Blood donor	5	1.3
Received result of HIV test	15	3.9
Tested in the last 12 months and know their results	11	2.8

Symptoms of STIs

Table 29: Prevalence of Symptoms of STIs, Youth, Tonga, 2008

	Number	Percentage
Reported symptoms of an STI in the last one month		
Unusual genital or anal discharge	11	3.0
Rash, ulcer or sore around your genitals	6	1.7
Lower abdominal pain in between your period or during sex (Females only)	59	35.8
Stinging, burning or pain when you pass urine (males only)	15	6.6

Only a small percentage of male youth reported symptoms of an STI in the previous one month. However 59 female youth (35.8 %) reported lower abdominal pain in between their period or during sex which can be a complication of infection with Chlamydia and/or Gonorrhoea (Table 29).

UNGASS indicators

Table 30: UNGASS indicators, Youth, Tonga 2008

	Males		Females	
	Number	%	Number	%
7. Percentage of men and women aged 15-24 who received an HIV test in the last 12 months and who know their results	8	3.6	3	1.8
13. Percentage of young women and men aged 15-24 who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission*	39	17.6	31	18.8
15. Percentage of young women and men aged 15-24 who have had sexual intercourse before the age of 15	2	0.9	9	5.5
16. Percentage of women and men aged 15-24 who have had sexual intercourse with more than one sexual partner in the past 12 months	41	18.5	16	9.7
17. Percentage of women and men aged 15-24 who have had sexual intercourse with more than one sexual partner in the past 12 months reporting the use of a condom during their last sexual intercourse*	9	22.0	3	18.8
19. Percentage of men reporting the use of a condom the last time they had anal sex with a male partner**	4	26.7		

*Questions with an asterisk are also Millennium Development Goal indicators

**Men reporting condom use the last time they had anal sex with a male partner in the last 12 months.

Discussion

The 2008 SGS surveys in Tonga have provided for the first time information on sexual behaviour of youth and the first update of sexual behavior of antenatal women since 2004. The surveys have provided valuable information regarding sexual behaviour, knowledge and attitudes.

Average age of first sex was lower for youth (17.4 years) compared to the antenatal women (21.5 years). Very few respondents in both groups reported having sex before the age of 15 (2.8% of youth and 0.6% of ANC women). Despite the protective effects of delaying age of sexual initiation, it appears that both women and youth are at considerable risk of STIs as both groups reported very low and inconsistent use of condoms.

The reasons given for not using condoms in youth should be noted for future activities around condom promotion. None of the youth stated that price was a barrier to condom use as condoms are supplied for free by Ministry of Health and Tonga Family Health Association. A recent study conducted in Tongan youth reported that condom use was perceived to be associated with promiscuous sex and not considered appropriate for respectable relationships. Condoms were also reported as being associated with foreigners and not the Tongan culture⁶. Development of interventional strategies to overcome these perceptions and to promote acceptance of condom use are important to protect sexually active youth and adults from risk of STIs and serious long term complications associated with these infections.

Fifteen male youth reported having anal sex with another male in the previous 12 months. This represents 22.7% of the sexually active male youth which is a significant proportion. Condom use in this group was also low with only four respondents reporting that they used a condom the last time they had anal sex. There is a clear need for interventions addressing condom use and the importance of safe sex in the prevention of HIV and other STIs.

The key results around demographic characteristics and sexual behaviour in antenatal women are similar to those reported in the previous SGS survey conducted in 2004. The prevalence of Chlamydia in antenatal women was 12.8 % (95% CI 9.4 - 16.4) and is slightly lower than the prevalence of 14.5% reported in the previous SGS surveys, though this difference is not statistically significant¹. The previous study reported an association between Chlamydia infection and age, marital status and age at first sex. However this study only detected an association between Chlamydia infection and age (Table 14). No cases of HIV or Syphilis (either infectious or non-infectious) were detected in this survey. The previous SGS surveys reported Syphilis prevalence at 3.2% however whether these were cases of infectious Syphilis was not stated.

Chlamydia prevalence in Tonga was found to be lower than in other PICTs which have reported Chlamydia prevalence ranging from 29.0% to 6.4%. However these rates are still relatively high compared with studies in women from New Zealand³ and Australia⁴ which have reported Chlamydia prevalence to be less than 5%. Hepatitis B surface antigen prevalence was also high at 11.8% which is comparable to the previous SGS which reported prevalence at 19.6%. Hepatitis B and Chlamydia appear to be endemic

among antenatal women. Hepatitis B vaccination is given to every new born after birth and it is recommended that strategies to address Chlamydia are developed.

It is worth noting that nearly 50% of women who were pregnant were not trying to get pregnant when they conceived and that over 50% of these women were not using any form of contraception. This suggests a potential gap in the promotion of family planning services in Tonga although it cannot be ascertained what gaps currently exist regarding contraceptive needs.

Reported levels of alcohol and drug use in both groups were quite low with over 40% of youth and 85% of women reporting that they never drink. However, of the youth that did report using alcohol, over 38% consumed 5 or more standard drinks at least weekly. One third used kava in the last 30 days and the prevalence of tobacco use in the last 30 days was also high in youth. Significant numbers of youth report using marijuana in the previous 30 days. Strategies to increase awareness of effects alcohol and kava consumption, and tobacco use for youth are recommended.

The vast majority of antenatal women (96%) and four in five youth (80%) reported being aware of HIV and most participants had been exposed to HIV prevention programs. However comprehensive knowledge of HIV was relatively low as were numbers of those who have been tested for HIV.

More antenatal women had heard of HIV compared to youth (95.7% vs. 80.4%), and fared better in answering individual questions relating to HIV transmission. However youth had better overall comprehensive knowledge of HIV than antenatal women (18.1% vs. 13.8%). Most women were aware of the risk of mother-to-child transmission of HIV and a high proportion knew that the correct use of condoms could reduce transmission. The questions on misconceptions about HIV transmission were the most poorly answered with close to 70% of antenatal women and 65% of youth answering that HIV could be transmitted by mosquitoes.

The findings on attitudes towards those living with HIV/AIDS reinforce findings of limited knowledge of HIV transmission. Attitudes towards persons living with HIV were poor with only 3 % of antenatal women and 18% of youth stating that a school teacher who has HIV infection should be allowed to continue work as a teacher and only 12% of women stated that they would buy vegetables from a shopkeeper or vendor if they knew that the vendor had HIV. Interestingly nearly half of the antenatal women and youth surveyed said that a person with HIV should be able to keep their HIV status private. These results are generally suggestive of high levels of stigma and discrimination towards people living with HIV. Strategies to increase knowledge of how HIV is acquired would be of benefit to reduce the prevalence of stigma and discrimination in the community.

The results of the study, in particular the HIV prevalence results, should be interpreted with caution as there are several limitations. This study was able to detect HIV prevalence to 1%. Consideration of the necessary sample sizes required to reliably detect HIV prevalence in low prevalence settings should be given to future surveys. Both surveys are subject to interviewer bias. In small island settings it is common that people are known and therefore truthful reporting might be compromised especially around sensitive questions on sexual behaviour. Findings from the study may not accurately reflect that of the general population. Convenience sampling was used for the youth survey and sampling was only conducted in Tongatapu, and thus these findings might

not be representative of youth in Tonga. Also no information was collected on those who refused to participate in the youth survey. The antenatal women were more likely to be representative of all pregnant women in Tonga as most women attend antenatal clinics for care during pregnancy and the response rate was 100%. More rigorous sampling strategies are needed for future surveys for youth.

Conclusion

The Second Generation HIV and STI Surveillance Surveys 2008 collected important information on the sexual behaviour of ANC women and youth in Tonga. Although there were some limitations to the study, the surveys provide some key findings on the sexual behaviour of both populations. The level of HIV awareness among women and youth was high and most had been exposed to HIV prevention programs, which is very encouraging. However the findings also indicate a number of areas where programs should focus their prevention efforts such as increasing condom use, STI and HIV testing and education efforts to increase knowledge and reduce stigma and discrimination.

Indicators UNGASS and MDG

Indicators	
National Commitment and Action	
National Programmes: blood safety, antiretroviral therapy coverage, prevention of mother-to-child transmission, co-management of TB and HIV treatment, HIV testing, prevention programmes, services for orphans and vulnerable children, and education.	
7. Percentage of women and men aged 15-49 who received an HIV test in the last 12 months and who know the results	Population-based survey
8. Percentage of most-at-risk populations that have received an HIV test in the last 12 months and who know the results	Behavioural surveys
9. Percentage of most-at-risk populations reached with HIV/AIDS prevention programmes	Behavioural surveys
Knowledge and Behaviour	
13. Percentage of young women and men aged 15–24 who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission*	Population-based survey
14. Percentage of most-at-risk populations who both correctly identify ways of preventing the sexual transmission of HIV and who reject major misconceptions about HIV transmission	Behavioural surveys
15. Percentage of young women and men who have had sexual intercourse before the age of 15	Population-based survey
16. Percentage of adults aged 15–49 who have had sexual intercourse with more than one partner in the last 12 months	Population-based survey
17. Percentage of adults aged 15–49 who had more than one sexual partner in the past 12 months who report the use of a condom during their last intercourse*	Population-based survey
18. Percentage of female and male sex workers reporting the use of a condom with their most recent client	Behavioural surveys
19. Percentage of men reporting the use of a condom the last time they had anal sex with a male partner	Behavioural surveys
20. Percentage of injecting drug users who reported using sterile injecting equipment the last time they injected	Special survey
21. Percentage of injecting drug users who report the use of a condom at last sexual intercourse	Special survey
Impact	
22. Percentage of young women and men aged 15–24 who are HIV infected*	HIV sentinel surveillance and population-based survey
23. Percentage of most-at-risk populations who are HIV infected	HIV sentinel surveillance

*Millennium Development Goals indicator

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References

1. Second generation surveillance surveys of HIV, other STIs and risk behaviours in 6 Pacific Island Countries (2004-2005). World Health Organization Western Pacific Regional Office, the Secretariat of the Pacific Community, the University of New South Wales, Australia. 2006
2. Secretariat of the Pacific Community. Cumulative HIV, AIDS and AIDS deaths cases and incidence rates - All Pacific Island Countries and Territories to December 2007: HIV & STI Section, Secretariat of the Pacific Community, 2008.
3. Pacific Island Populations 2008, Statistics and Demography Programme, Secretariat of the Pacific Community.
4. Lawton B, Rose S, Bromhead C, Brown S, MacDonald J, Shepherd J. Rates of Chlamydia trachomatis testing and Chlamydial infection in pregnant women. *N Z Med J* 2004; 117(1194):U889.
5. Hocking JS, Willis J, Tabrizi S, Fairley CK, Garland SM, Hellard M. A Chlamydia prevalence survey of young women living in Melbourne, Victoria. *Sexual Health* 2006; 3: 235–240.
6. McMillan KE. 2008. Access to condoms and their use among young people in Tonga and Vanuatu (Monograph 3/2008). Sydney: National Centre for HIV Social Research, University of New South Wales.

ⁱ UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance, Guidelines for Second Generation HIV Surveillance, 2000

ⁱⁱ Tabrizi S, Chen S, Tapsall J, Garland S. Evaluation of opa-based real-time PCR for detection of *Neisseria Gonorrhoeae*. *Sexually Transmitted Diseases*