Second generation surveillance surveys of antenatal women in Samoa

2008

Final Report

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List of Abbreviations

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Clinic
BSS	Behavioural Surveillance Survey
C.trachomatis	Chlamydia trachomatis
ELISA	Enzyme Linked Immunosorbent Assay
FHI	Family Health International
GDP	Gross Domestic Product
HIV	Human Immunodeficiency Virus
HSS	HIV Surveillance Survey
MDG	Millennium Development Goals
MOH	Ministry of Health
MTCT	Mother to Child Transmission
N.gonorrhoeae	Neisseria gonorrhoea
NGO	Non-Government organization
NRL	National Reference Laboratory
PCR	Polymerase Chain Reaction
PICTs	Pacific Island Countries and Territories
PLWHA	People living with HIV or AIDS
PNG	Papua New Guinea
RPR	Rapid Plasma Reagin
SGS	Second Generation HIV Surveillance
SPC	Secretariat of the Pacific Community
SPS	STI Prevalence Surveillance
STI	Sexually transmitted infection
TPPA	Treponema Pallidum Particle Agglutination
UNGASS	United Nations General Assembly Special Session
VCCT	Voluntary Confidential Counselling and Testing

Executive summary

Samoa is an independent island nation in the South Pacific Ocean which comprises of two major islands (Savaii and Upolu) that total approximately 1000 square miles. The population is approximately 180 000 persons (2001 census) with 30% of people living in urban areas.

Up to December 2008, nineteen confirmed cases of HIV had been reported, with a cumulative incidence of 10.4 per 100,000 population. The ratio of male to female infections is 2:1 and the most common mode of transmission is heterosexual. However the prevalence of other STIs has been shown to be quite high, with Chlamydia rates of 27% in a 2004-5 survey of antenatal women.

In 2008, a second STI prevalence survey was conducted among antenatal women in Samoa. The survey also collected information on risk behaviours, knowledge of and attitudes towards HIV and access to STI treatment and HIV testing.

The consecutive sampling strategy enabled recruitment of pregnant women which is likely to be representative of all pregnant women in Samoa. There are limitations to this study and it was only able to detect HIV prevalence to 1%, so the results should be interpreted with caution.

The key findings of the antenatal survey were:

- The majority of women surveyed in 2008 (64%) attended the antenatal clinic for the first time in the third trimester of pregnancy.
- Over half of antenatal women surveyed had had only one lifetime sexual partner and 97% had had only one sexual partner in the past twelve months.
- Very small numbers of women surveyed had engaged in high risk behaviours such as concurrent sexual relationships (0.9%), transactional sex (0.5%), sex with someone other than their usual partner while off island (0.9%) or sex below the age of fifteen years (2.1%).
- Alcohol and drug use were very low with 72% of women reporting they never drink alcohol and less than 4% reporting they had ever used drugs.
- Amongst the survey sample, although 67% had heard of condoms, only ten percent of women had ever used one.
- Over 20% of antenatal women had not heard of HIV prior to the survey.

- Only 67% of all women surveyed correctly identified two HIV prevention strategies and less than 20% of women correctly identified three misconceptions. Overall only 16% or survey participants correctly answered all six questions to test knowledge of HIV.
- The question on mother to child transmission was asked in both surveys, but only 72% answered this correctly in 2008 compared with 91% of participants in 2005.
- Attitudes towards PLWHAs were poor, with only around a quarter of survey participants agreeing that they would buy vegetables from a vendor known to have HIV or that a teacher who was not sick should be allowed to continue to teach.
- Only 28% of the antenatal women surveyed in 2008 believed it was possible to get a confidential HIV test, down significantly from the 2005 survey when 85% believed it was possible.
- Less than 10% of women surveyed in 2008 reported that they had ever had an HIV test and less than half of these women knew the result.
- Although no cases of HIV or Syphilis were detected during this survey, overall, 33% of antenatal women tested had at least one STI, including Hepatitis B.
- The prevalence of Chlamydia was high at 28%. There was no significant difference from STI rates in 2005.
- There was an association between Chlamydia and age with prevalence of 41% of the less than 25 year age group, compared with 18% in those 25 years and over.
- There was no statistically significant association between Chlamydia and not being married, having more than one sexual partner in the previous twelve months and number of lifetime sexual partners.

Despite low reported levels of risk behaviour amongst pregnant women in Samoa, Chlamydia prevalence, particularly in the under 25 year age group is very high. Measures are needed to reduce the overall prevalence of STIs in the community, including research, to understand the risk behaviours of the male partners, in order to develop appropriate interventions.

Introduction

Background to Samoa

Samoa is an independent island nation in the South Pacific Ocean which comprises of two major islands (Savaii and Upolu) that total approximately 1000 square miles. The population is approximately 180 000 persons (2001 census) with 30% of people living in urban areas. Approximately half (83 000) of the population is aged 15-49 years and more than 90% are native Samoan. Samoa has an estimated population growth rate of 1.0% and a fertility rate of approximately 4.0 children per woman. The crude birth rate is 29.0 per 1000 population. The average number of babies born per year is around 5000 (2001), with more than 66% of these delivered in hospitals. The average life expectancy for Samoa is 71.8 years for males and 73.8 years for females.

Health care delivery is primarily through two main referral hospitals in Upolu and Savaii and one private hospital located in the urban area of Samoa. In addition there are eight district hospitals, five on the island of Upolu and three on Savaii. The total number of doctors currently working in government hospitals is 66, including doctors from overseas, while there are more than 13 working in the private sector.

Samoa is classified by the United Nations as a developing country and the estimated Gross Domestic Product (GDP) constant per capita was WST 5366 (US$1853) in 2004. The Services sector plays a very important role in the economy, comprising a total share of 52.8%. The two largest industries are Commerce and Transport & Communications comprising more than half of that share in 2008. Agriculture and Fishing only had a total share of 10.7% in 2008.

HIV epidemiology in the Pacific region

In 2007, there were an estimated 75,000 people living with the Human Immuno-deficiency Virus (HIV) in the Oceania region, an increase of 14,000 from 2006.[1] Papua New Guinea (PNG) has the highest prevalence of HIV in the Pacific, and the rate is steadily increasing, with the reported number of new cases doubling between 2002 and 2006. It has been estimated that 1.3 per cent of adults in PNG have acquired HIV. The majority of cases have occurred in rural areas (84 per cent) where most of the population resides (80 per cent). PNG is considered to have a generalised epidemic and unprotected heterosexual contact is thought to be the main mode of transmission. Community based studies in PNG have found a very high prevalence of untreated

sexually transmitted infections (STIs) in some communities, which also increases the risk of acquiring HIV.[1]

In other Pacific Island countries and territories (PICTS), information to date has indicated a low prevalence of HIV. However, biological and behavioural surveillance have also shown a high prevalence of untreated STIs and low prevalence of condom use, indicating high levels of vulnerability in general communities.[2]

HIV epidemiology in country

The known prevalence of HIV in Samoa is low. To December 2008 nineteen confirmed HIV cases had been reported, with a cumulative incidence of 10.4 per 100,000 population. The ratio of male to female infections is 2:1 and the most common mode of transmission is heterosexual. Two cases of transmission from mother to child have been reported.

Table 1 Distribution of cumulative reported HIV cases in Samoa to December 2008 by gender and mode of transmission

	MSM	Heterosexual	Perinatal	Unknown	Total
Male	3	7	1	2	13
Female		4	1	1	6
Total	3	11	2	3	19

The prevalence of other STIs among antenatal women has been shown in previous surveys to be quite high. The results of the survey carried out in Samoa in 2004-5 are shown in Table 2.

Table 2 Prevalence of STIs among pregnant women in Samoa, 2004-5

STI	Number tested	Number detected	Prevalence (%)	95% CI
Chlamydia	298	80	26.8	21.8 -31.9
Gonorrhoea	298	7	2.3	0.6 – 4.1
Syphilis	299	0	0	-
Any STI	298	81	27.2	22.1 – 32.2

Second Generation Surveillance background

Second generation surveillance (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 both 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 changes 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 sometime, but prevalence remains low and stable.

Concentrated: There has been a rapid increase of HIV in high risk population sub-groups, 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. [3]

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 Acquired Immunodeficiency Syndrome (AIDS) Case reporting
- screening donated blood.

Behavioural surveys are conducted using 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 are 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 very similar for all 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

In 2008, a second STI prevalence survey (SPS) was conducted among antenatal women in Samoa. As well as collecting information on the prevalence of STIs in antenatal women, the survey collected information on risk behaviours, knowledge of and attitudes towards HIV and access to STI treatment and HIV testing.

The results of this SPS will be compared with the previous results from 2006 and used to develop and monitor appropriate interventions.

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 and HIV antigen testing. HIV prevalence surveys involved the collection of blood for syphilis, hepatitis B and HIV antigen 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 minus 20 degrees Celsius until subsequent shipment to Melbourne. 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 test, Polymerase Chain Reaction (PCR) assay using primers and probes directed at a 90 base pair region of OPA gene.[4]

A 10 ml blood sample was taken for testing. Preliminary screening for syphilis (rapid plasma reagin [RPR]), hepatitis B and HIV by enzyme linked immunosorbent assay (ELISA) (Determine and Serodia) were conducted at Tupua Tamasese Meaole hospital laboratory. Samples for reactive for HIV with screening tests were sent to the regional laboratory in New Zealand for confirmatory testing.

Table 3 Laboratory testing conducted for Antenatal SPS survey

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

Ethics approval

SGS survey protocols were presented to MOH Management and Research & Ethics Committee. Surveys were supported as this was a follow-up of the approved sentinel SGS surveys of 2005.

Data analysis

Initial data screening involved cross-checking information from 10 per cent of questionnaires against the data entered onto the database. Data from the survey has been analysed using Epi Info V3.4.2 and Excel 2003.

STI Prevalence Survey of Antenatal clinic attendees

Survey Methodology

Table 4 shows an overview of the survey methodology used for the Antenatal women's survey.

Table 4: Overview of the Survey Methodology, Antenatal Women

Methodology	Survey details
Population	*Antenatal women*
Survey type	*STI Prevalence Survey (SPS)*
Sampling method	*Consecutive recruitment*
Inclusion criteria	*Women the antenatal clinic for the first time for the pregnancy*
Target Sample Size	*300*
Final Sample Size	*324*
Interview location(s)	*Antenatal Clinics in National Hospital, Medcen Private Clinic and Samoa Family Health Association*
Administration of the survey	*Interviewer administered by nurses from the clinic*
Type of consent	*Verbal. Interviewers signed a declaration not to release any information without the participants' approval.*
Time required for interview	*20-25 minutes*
Data collection period	July to September 2008

Pregnant women attending for their first antenatal clinic (ANC) visit were invited to take part in the survey. On arrival at the clinic, women were given information on the purpose of the survey, the questionnaire and STI testing.

Survey questionnaires were completed by interviewers. Verbal informed consent was obtained, and nurse interviewers signed a declaration not to disclose any information without the respondents' consent. No questionnaires were excluded from the analysis due to essential data, such as age, being missing.

Eligibility criteria

Women were eligible to take part in the antenatal survey if they were between 15 and 49 years old and attending an ANC for the first time for their pregnancy.

Results

ANC survey

Demographic characteristics.

Less than half of the women surveyed were under 25 years (41%) and almost sixty percent were in the 25 to 49 age range. The majority (97%) were born in Samoa and 99% were Polynesian.

Almost three quarters of the women had completed secondary school education with an additional 22% having a tertiary education. The majority reported their occupation as housewife, but 30% were employed in a range of occupations including clerical, retail, business and teaching.

Table 5: Reported Demographic Characteristics, Antenatal Women (ANC)

	Number	Percentage
Age group (years)		
15 to 24	134	41.4%
25 – 49	190	58.6%
Country of Birth		
Samoa	314	96.9%
New Zealand	2	0.6%
Other Country	8	2.5%
Ethnicity		
Polynesia	322	99.4%
Melanesia	1	0.3%
Other	1	0.3%
Education		
Primary	9	2.6%
Senior High School	237	73.8%
Tertiary	72	22.4%
Occupation		
Housewife/home duties	213	65.7%
Clerical/Office work	32	9.9%
Not employed	14	4.3%
Other	68	20.1%
Area of Residence		
Urban	174	54.0%
Rural	149	46.0%

Of the 324 women in the survey, 63% had ever been married and 61% were currently married and living with their spouse. A higher proportion of women in the 25 – 49 age group were married and living with their spouse (76%) compared with women in the younger age group (40%). However 90% of women were still in a relationship and living with the father of the unborn child.

Table 6: Reported Marital Status and Living Arrangements, Antenatal Women

	Number	Percentage
Marital Status		
Ever married	203	62.7%
Still in a relationship with the father of your unborn child	291	89.8%
Living Arrangements		
Living with your spouse	198	61.3%
Living with a sex partner (non-married)	91	28.2%
Not living with any sex partner	31	9.6%

Women surveyed were asked about the occupation of the father of the child. Only 5% were reported to be unemployed, 16% were farmers and 10% transport workers. Only two percent reported that their partner was a professional. Nearly 40% of partners were employed in a range of occupational categories, including retail and factory work, with each category comprising less than two percent of respondents.

Table 7: Occupation of Partner of Antenatal Women, Samoa 2008

Partner's Occupation	Number	Percentage
Farmer	50	15.8%
Transport worker (e.g. driver)	31	9.8%
Carpenter	23	7.3%
Construction/Labourer/Landscaping	20	6.3%
Hospitality	17	5.4%
Engineer/Mechanic	15	4.7%
Clerical	9	2.8%
Fisherman/seafarer	7	2.2%
Professional (e.g. teacher, lawyer)	7	2.2%
Not employed	17	5.4%
Other employment	121	38.2%
Total	317	100%

Pregnancy characteristics

Overall approximately 15% of women in the survey were primiparous, although this was the first pregnancy for more than a quarter of the women under 25 years. Over half of the under 25 years had no children compared with only 8% of women over 25 years.

Women were eligible for the survey if they were on their first antenatal visit, but 64%were in the third trimester and only three percent in the first trimester. There was no difference between the age groups.

Less than half (45%) of all women surveyed reported that they had been trying to become pregnant. Again there were no significant differences between the age groups, despite the fact that almost half of the older age group had had three or more live births, compared with only7% in the under 25 age group.

Details the pregnancy characteristics of the women surveyed are provided in Table 8.

Table 8 Pregnancy characteristics of antenatal women aged 15-49 years, Samoa 2008

	15 to 24 years		25 to 49 years		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Number of previous pregnancies						
0	34	26.0%	12	6.5%	46	14.5%
1	42	32.1%	29	15.6%	71	22.4%
2	37	28.2%	33	17.7%	70	22.1%
3	14	10.7%	39	21.0%	53	16.7%
4 or more	4	3.1%	73	39.2%	77	24.3%
Total	**131**	**100.0%**	**186**	**100.0%**	**317**	**100.0%**
Number of live births						
0	69	52.3%	15	7.9%	84	26.2%
1	41	31.1%	46	24.3%	87	27.1%
2	13	9.8%	37	19.6%	50	15.6%
3	9	6.8%	30	15.9%	39	12.1%
4 or more	0	0.0%	61	32.3%	61	18.0%
Total	**132**	**100.0%**	**189**	**100.0%**	**321**	**100.0%**
Trimester of current pregnancy						
1	5	3.7%	4	2.2%	9	2.8%
2	42	31.6%	62	33.5%	104	32.7%
3	86	64.7%	119	64.3%	205	64.5%
Total	**133**	**100.0%**	**185**	**100.0%**	**318**	**100.0%**
Planned pregnancy						
Yes	57	43.2%	87	45.8%	144	44.7%
No	75	56.8%	101	53.2%	176	54.7%
Total	**132**	**100.0%**	**190**	**100.0%**	**322**	**100.0%**

Sexual behaviours

The mean age at first sex was 19.6 years, with a range of 12 to 34 years. Overall 53% of women surveyed reported having only one sexual partner and a further 29% reported having two sexual partners in their lifetime. The average number of lifetime partners was 1.9 and 97% of women reported having only one partner in the last 12 months.

Table 9: Reported Sexual History, Antenatal Women

	Mean	Range
Age at when first had sex	19.6	12-34 years
Number of sex partners in lifetime	1.9	1-18 partners
Number of sex partners in the last 12 months	1	1- 4 partners

Only seven women (2%) reported sex below the age of 15 years. Less than one percent of all the antenatal women surveyed reported having more than one sexual relationship at the same time in the last twelve months. A similar percentage reported having sex with someone other than their partner while off island in the last twelve months.

Reported transactional sex (in exchange for money, goods or favours) was very low at around 0.5% of all women surveyed.

More than ten percent of antenatal women reported having ever been forced to have sex against their will and in nearly 60% of cases this was by their partner. These results are shown in Table 10.

Table 10: Reported Sexual Behaviours of Antenatal Women, Samoa 2008

	Number	Percentage
Age at first sex less than 15 years	7	2.1%
More than two sexual relationships during the same time period, in the last 12 months	3	0.9%
Has been off-island in the last 12 months	54	16.7%
Had sex with someone (other than partner) while off-island	3	0.9%
Ever forced to have sex against heir will	36	11.1%
Relationship with the person who forced you to have sex		
Partner	20	57.1%
Work colleague	3	8.6%
Stranger	1	2.9%
Other	7	20.0%

Knowledge and use of condoms is summarised in Table 11.

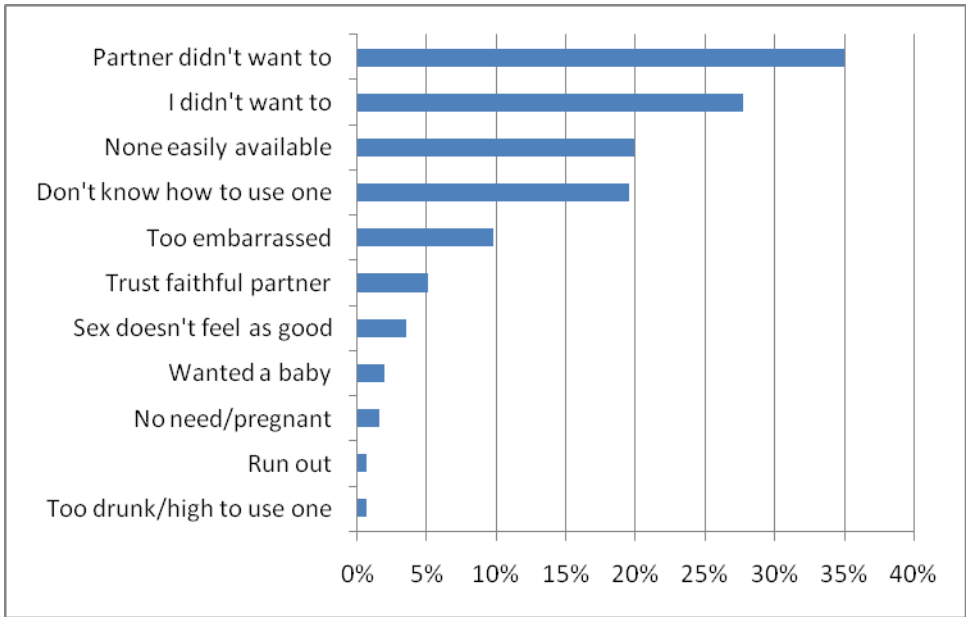
Table 11*: Reported Knowledge of Condoms and Condom Use, Antenatal Women, Samoa 2008*

	Number	Percentage
Ever heard of a male condom	218	67.3%
Ever heard of a female condom	45	13.9%
Ever used a condom		
Male condom only	31	9.6%
Female condom only	1	0.5%
Used a condom at last sex		
Yes	4	1.2%
No	317	97.8%
Condom use in past 12 months		
Every time	1	0.3%
Sometimes	17	5.2%
Never	303	93.5%

Approximately two thirds of antenatal women had heard of male condoms, although knowledge of female condoms was much lower at 14%. Condom use, however, was very low, with only 10% of women surveyed reporting ever having used a male condom.

Condom use at last sex and in the last twelve months was extremely low ((1.2% and 5.7% respectively, which is not unexpected in a population of antenatal women. The reasons given for not using a condom at last sex are shown in Figure 1.

Figure 1 Reasons for not using condoms at last sex, Antenatal Women, Samoa 2008



While some women gave more than one reason, the most common reasons were that either the partner or the survey participant did not want to use a condom (35% and 28% respectively). However one fifth of women reported that condoms were not easily available and a fifth also reported not knowing how to use them. None of the antenatal women surveyed cited cost as a reason for not using condoms.

Substance use

Of the 324 survey participants, 25 (8%) refused to answer questions on alcohol consumption and 72% of participants reported never drinking alcohol. Of those responding to the question,68 (22.7%) reported consuming alcohol and 4.6% reported consuming 5 or more standard drinks on at least a weekly basis (binge drinking) in the 12 months prior to becoming pregnant. However on 4% of women reported having drunk alcohol since becoming pregnant. These results are summarised in Table 12.

Table 12: ***Reported Frequency and Consumption of Alcohol, Antenatal Women, Samoa 2008***

	Number	Percentage
Frequency of alcohol use in the 12 months prior to becoming pregnant		
Never	232	71.6%
4 or more times a week	4	1.2%
2 to 3 times a week	10	3.1%
2 to 4 times a month	13	4.0%
Don't know	4	1.2%
Monthly or less	36	11.1%
Total	**299**	**92.2%**
Number of standard drinks usually consumed in the 12 months prior to becoming pregnant		
1 to 2	38	12.7%
3 to 4	15	5.0%
5 to 9	10	3.3%
10 or more	5	1.7%
Total	**68**	**22.7%**
Frequency of drinking 5 or more standard drinks in the 12 months prior to becoming pregnant		
Daily or almost daily	1	0.3%
Weekly	13	4.3%
Less than monthly	32	10.7%
Monthly	10	3.3%
Total	**56**	**18.7%**
Has drunk alcohol while pregnant	13	4.0%

Tobacco was the most commonly used drug, with 22% of all women having ever used tobacco and eight percent having used it in the last twelve months. Other drug use was low and none of the women surveyed reported ever having injected drugs. The results are shown in Table 13.

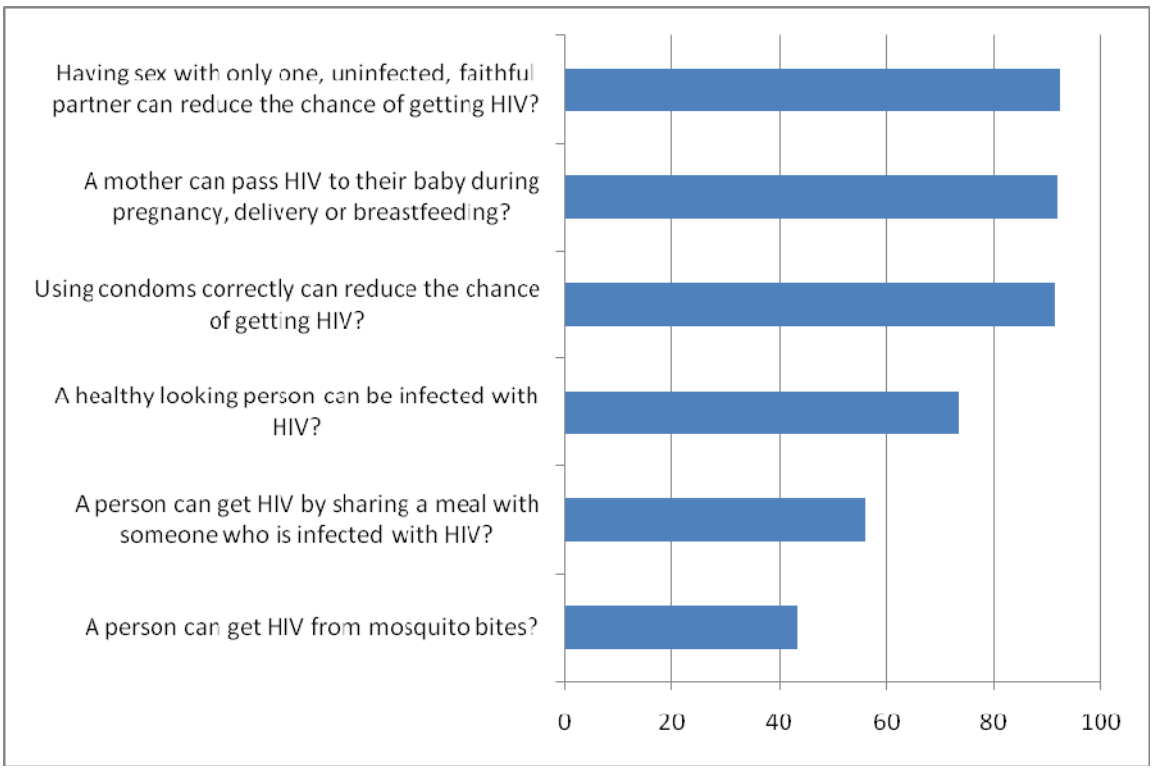
Table 13: Reported Recreational Drug Use, Antenatal Women, Samoa 2008

Drug	Ever used		Used in last 12 months		
	Number	Percentage	Number	Percentage ever users	Percentage all respondents
Tobacco	71	21.9%	25	35.2%	7.7%
Marijuana/cannabis	8	2.5%	1	12.5%	0.3%
Kava	2	0.6%	2	100.0%	0.6%
Amphetamines/Ecstasy	2	0.6%	0	0.0%	0.0%

HIV knowledge and attitudes

Of the 324 women surveyed, 69 women (21.3%) had not heard about HIV before. A higher percentage of women in the younger age group had not heard of HIV compared with the older age group (25% compared with 18%). The correct responses of women to knowledge questions are shown as a percentage of those who had heard of HIV (Figure 2) and as a percentage of all 324 respondents (Table 14).

Figure 2: ***Correct Responses to Knowledge Questions as Percentage of those who had heard of HIV, Antenatal Women, Samoa 2008***



Of the 255 women who had heard of HIV, over 90% correctly answered the questions on mother to child transmission and prevention strategies (234, 235 and 233 respectively). However, a much lower proportion rejected common misconceptions. For instance only 111 (43%) of the women asked (or 34% of all women surveyed) knew HIV could not be transmitted by mosquito bites. Overall only 16% (53) of antenatal women surveyed provided the correct response to all six questions.

Table 14*: Correct responses to Knowledge Questions as Percentage of Total Survey Respondents, Antenatal Women, Samoa 2008*

	Correct response	
	Number	Percentage
Correct knowledge of mother to child transmission		
A mother can pass HIV to their baby during pregnancy, delivery or breastfeeding	*234*	*72.2%*
Correct knowledge of prevention strategies		
Having sex with only one, uninfected, faithful partner can reduce the chance of getting HIV	*235*	*72.5%*
Using condoms correctly can reduce the chance of getting HIV	*233*	*71.9%*
Rejects common misconceptions		
A healthy looking person can be infected with HIV	*187*	*57.7%*
A person can get HIV from mosquito bites	*111*	*34.3%*
A person can get HIV by sharing a meal with someone who is infected with HIV	*143*	*44.1%*
Overall knowledge		
Correct response to the two prevention strategies	*216*	*66.7%*
Correct response to all three misconceptions	*61*	*18.8%*
Correct response to all six questions	*53*	*16.4%*

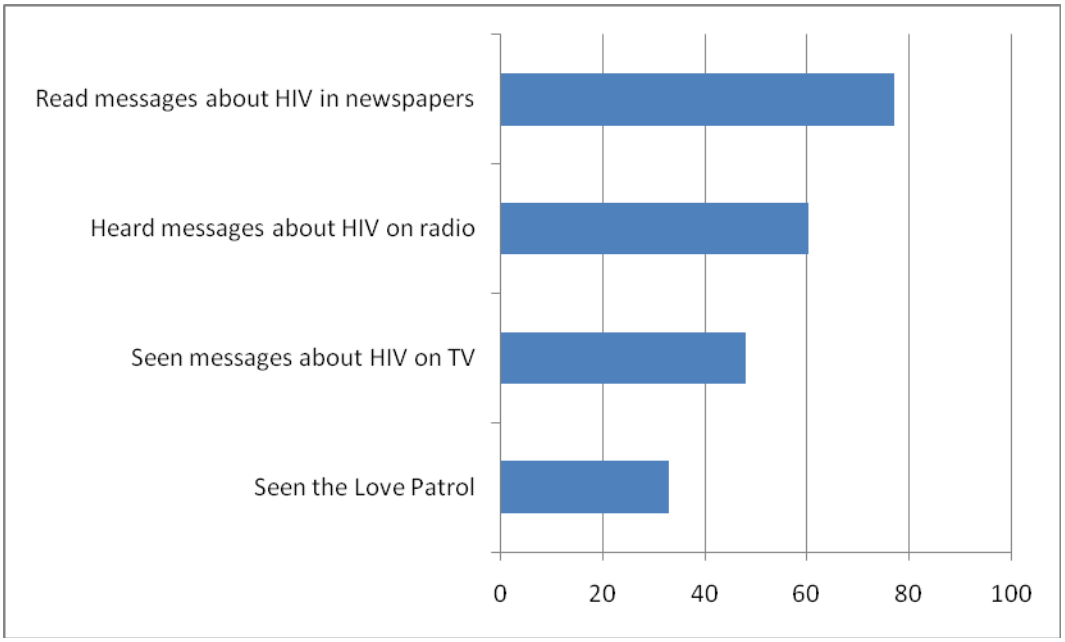
All the women in the survey were asked questions to determine their attitudes towards people living with HIV and AIDS (PLWHa). The results of all five questions are presented in Table 15.

Table 15*: Attitudes towards Those Living with HIV, Antenatal Women, Samoa 2008*

	Agreed with Statement	
	Number	Percentage
You would buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?	*87*	26.9%
If a member of your family became ill with HIV, the virus that causes AIDS, you would want it to remain secret?	*46*	14.2%
If a member of your family became sick with HIV, you would be willing to care for her or him in your own household?	*207*	63.9%
In your opinion, if a female teacher has HIV and is not sick, she should be allowed to continue teaching in the school?	*80*	24.7%
A person should be able to keep his/her HIV status private (no one else needs to find out)	*124*	38.4%

Attitudes towards family members compared with non family members differed significantly. Only around a quarter of respondents reported that they would buy vegetables from a shopkeeper with HIV or agreed that a teacher with HIV should be allowed to teach, but almost two thirds reported they would care for a family member with HIV in their own household.

Figure 3: Exposure to HIV Prevention Activities, Percentage of Antenatal Women, Samoa 2008



Access to testing

All women surveyed were asked if they believed it was possible to get a confidential HIV test. The majority (59%) did not believe it was possible, twelve percent did not know and 28% believed it was possible. While less than five percent of women thought testing was not available in Samoa, the majority believed confidentiality was the issue.

Only 32 women, around ten percent, reported having been tested, nine of them in last twelve months. Almost half of them (48.4%) knew the result of the test. The results of questions regarding access to testing are presented in Table 16.

Table 16*: Reported Access to HIV Testing, Antenatal Women, Samoa 2008*

	Number	Percentage
Believe it is possible for someone in the community to get a confidential test	91	28.1%
Reasons why you can't get a confidential test		
HIV testing is not available	11	4.7%
Testing site too public	61	26.3%
Everyone will find out	147	63.4%
Testing site too difficult to get to	22	9.5%
Opening hours not convenient	9	3.9%
Ever been tested for HIV	32	9.9%
When did you have you last HIV test		
In the last 3 months	7	22.6%
In the last year	2	6.5%
Over a year ago	14	45.2%
Why did you have your last HIV test?		
I asked for it	2	6.3%
Medical check	23	71.9%
Received result of HIV test	15	48.4%

Prevalence of STIs

Few symptoms of STIs were reported, except for lower abdominal pain which was reported by 18% of survey respondents. Most of the survey respondents were tested for a range of STIs including HIV. The results are presented in Table 17.

Table 17*: Prevalence of STIs, Antenatal Women, Samoa 2008*

	Reactive/ positive	Number tested	Prevalence	95% Confidence Intervals
HIV	0	298	0	-
Hepatitis B (Antigen)	32	298	10.7%	7.6 - 15.0%
Chlamydia	88	321	27.5%	22.8 - 32.8%
Gonorrhoea	4	321	1.3%	0.4 - 3.4%
Syphilis (Active cases)*	0	298	0	-
Any STI	105	321	32.8%	27.7 – 38.2%

**Active Syphilis was defined by a positive TPPA test, positive RPR and RPR titre of ≥1:8*

Overall 105 women (32.8%) had at least one STI and 11 (3.4%) had two STIs. The most common STI was Chlamydia, with 28% of women testing positive. Approximately ten percent of women tested were found to have hepatitis B, but the prevalence of other STIs was very low, with no cases of HIV or syphilis in the survey population and gonorrhea prevalence of 1.3%.

Table 18 shows that there was a significant association between age and Chlamydia infection, with younger women twice as likely to be affected as those over 25 years, but the difference is not significant for gonorrhea.

Table 18: Prevalence of Chlamydia & Gonorrhoea by Age, Antenatal Women, Samoa 2008

	Age group	Reactive/ positive	Number tested	Prevalence	95% Confidence Intervals
Chlamydia					
	15 to 24 years	54	132	40.9%	32.4 - 49.8%
	25 to 49 years	34	188	18.1%	12.9 - 24.3%
Gonorrhoea					
	15 to 24 years	3	132	2.3%	0.5 - 6.5%
	25 to 49 years	1	188	0.5%	0 - 2.9%

Table 19 shows the prevalence of Chlamydia infection by selected risk factors. Chlamydia infection is associated with women not being married. However the difference is not statistically significant for either the number of lifetime sex partners or the number of partners in the last 12 months.

Table 19: Prevalence of Chlamydia by Selected Demographic and Risk Factors, Antenatal Women, Samoa 2008

		Reactive/ positive	Number tested	Prevalence
Marriage				
	Yes	38	193	19.7%
	No	49	120	40.8%
Number of lifetime sex partners				
	1	43	119	26.5%
	>1	43	146	29.5%
Number of sex partners in last 12 months				
	1	82	303	27.1%
	>1	4	9	44.4%

UNGASS indicators

Table 20*: UNGASS indicators, Antenatal Women, Samoa 2008*

	15 to 24 years		25 to 49 years	
	Number (%)	Denominator	Number (%)	Denominator
***7**. Percentage of women aged 15-49 who received an HIV test in the last 12 months and who know their results*	0	134	1 (0.5%)	190
***13**. Percentage of antenatal women aged 15-24 who both correctly identify ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission*	15 (11.2%)	134		
***15.** Percentage of antenatal women aged 15-24 who have had sexual intercourse before the age of 15*	4 (3.0%)	134		
***16**. Percentage of antenatal women aged 15-49 who have had sexual intercourse with more than one sexual partner in the past 12 months*	7(5.3%)	134	2 (1.1%)	190
***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*	1(14.3%)	7	0	2

Comparison of Data from 2005 and 2008 SGS Surveys

Table 21 shows a comparison of a range of demographic and pregnancy characteristics of antenatal women surveyed in 2005 and 2008. These show no significant differences except for the percentage of women reporting their occupation as housewife (down from 75% to 66%) and parity – only 15% of antenatal women surveyed in 2008 reported that the current pregnancy was their first, compared with 34% in 2005.

Table 21: Comparison of Selected Demographic and Pregnancy Characteristics, Antenatal Women, Samoa 2005 and 2008

	2005		2008	
	Number	Percent	Number	Percent
Age Group (years)				
15-24	119	39.8	134	41.4
25-49	180	60.2	190	58.6
Education				
Primary	18	6	9	2.6
Secondary	186	62.2	237	73.8
Tertiary	95	31.8	72	22.4
Marital Status				
Ever married	189	63.2	203	62.7
Living with spouse	178	59.5	198	61.3
Living with sex partner	76	25.4	91	28.2
Occupation				
Housewife/home duties	225	75.3	213	65.7
Pregnancy characteristics				
Primiparous	103	34.4	46	14.5

Figure 4 shows some of the same data as a graph.

Figure 4: Comparison of Selected Demographic and Pregnancy Characteristics as Percentage of Antenatal Women, Samoa 2005 and 2008

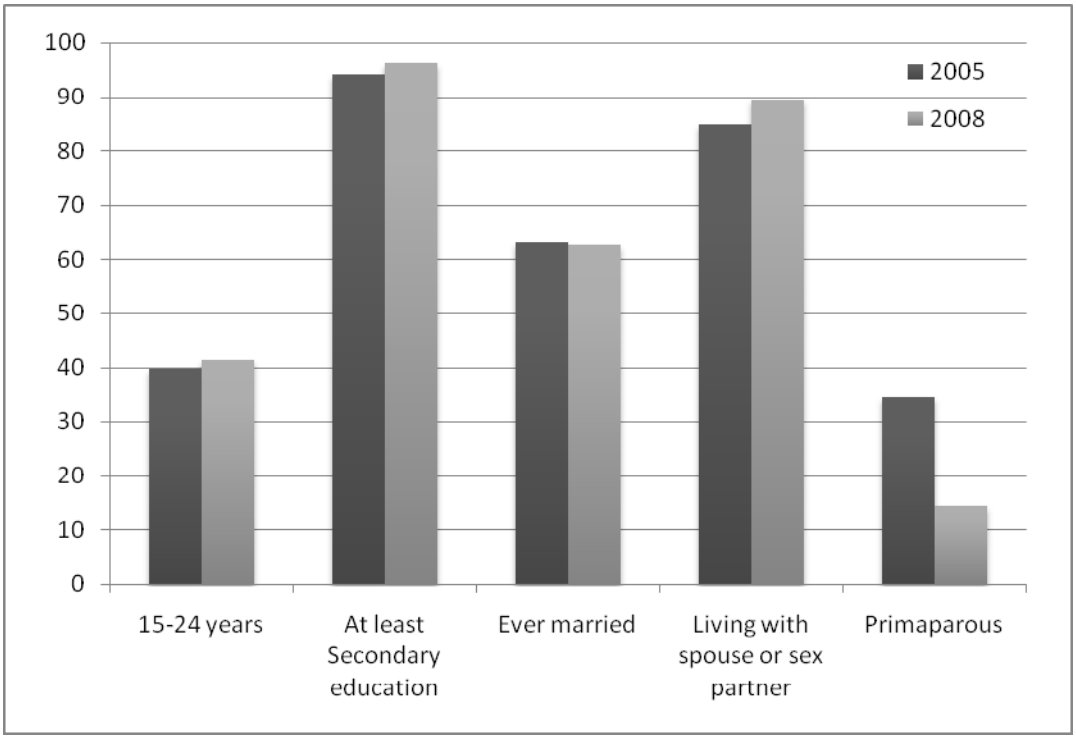


Table 22 shows that the mean age of participants (26.9 years compared with 27.1 years), plus the age range, and the mean gestation at first antenatal visit (30 weeks compared with 28 weeks) are comparable in 2005 and 2008. The majority of women do not attend their first antenatal appointment until the third trimester of pregnancy. The mean age at first sex and the range has not changed significantly (19 years in 2005 and 19.6 years in 2008)

Table 22: Age of Participants, Gestation and Age at First Sex, Antenatal Women, Samoa 2005 and 2008

	2005		2008	
	Mean	**Range**	**Mean**	**Range**
Age of survey participants	26.9 years	15 - 44 years	27.1 years	15 - 48 years
Gestation	30 weeks	4 - 39 weeks	28 weeks	8 - 40 weeks
Age at first sex	19 years	12 - 34 years	19.6 years	12 - 34 years

As Table 23 shows, while the percentage of women reporting more than one lifetime sexual partner has remained constant between the two surveys (45% in 2005 and 46% in 2008), the percentage of women reporting more than one sexual partner in the last twelve months has fallen from 12% in 2005 to three percent in 2008. The percentage of women reporting concurrent sexual partners and transactional sex have also fallen, but the figures should be interpreted with caution due to the very small number involved.

Table 23: Comparison of Sexual Behaviours, Antenatal Women, Samoa 2005 and 2008

	2005		2008	
Sexual behaviours	**Number**	**Percent**	**Number**	**Percent**
>1 lifetime sexual partner	135	45.2	152	46.9
>1 sex partner in last 12 months	35	11.7	10	3.0
Concurrent partners in last 12 months	12	4.0	3	0.9
Transactional sex	8	2.7	2	0.5
Ever used a condom	41	13.7	32	10.1

Of some concern is the fact that the percentage of antenatal women surveyed reporting that they had ever used a condom has also fallen slightly from 14% in 2005 to 10% in 2008. Comparison of sexual behaviours is shown graphically in Figure 5.

Figure 5: Comparison of Sexual Behaviours as Percentage of Antenatal Women, Samoa 2005 and 2008

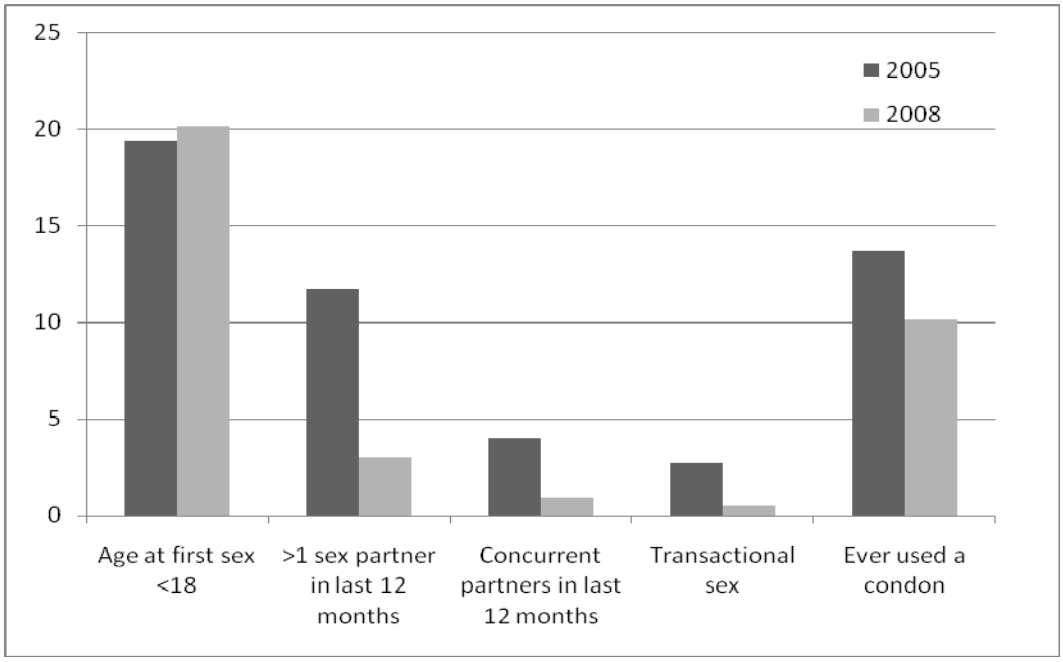


Table 24 shows that knowledge of mother to child transmission of HIV was lower amongst women surveyed in 2008 compared with 2005 (72% compared with 91%). Belief that confidential testing was available also fell significantly from 85% in 2005 to 28% in 2008.

Table 24: Comparison of Knowledge and Beliefs, Antenatal Women, Samoa 2005 and 2008

	2005		2008	
	Number	Percent	Number	Percent
Knowledge of MTCT	271	90.6%	234	72.2%
Believe confidential testing is available	253	84.6%	91	28.1%

STI rates show no significant difference between 2005 and 2008. (Table 25)

Table 25: Prevalence of Chlamydia and Gonorrhoea, Antenatal Women, Samoa 2005 and 2008

	Prevalence 2005	95% Confidence Intervals	Prevalence 2008	95% Confidence Intervals
Chlamydia	26.8%	21.8 -31.9%	27.5%	22.8 - 32.8%
Gonorrhoea	2.3%	0.6 – 4.1%	1.3%	0.4 - 3.4%
Syphilis	0		0	

Discussion

The consecutive sampling strategy enabled recruitment of the majority of pregnant women who attended for antenatal care for the first time during the survey period. This sample is likely to be fairly representative of all pregnant women in Samoa, as most attend antenatal clinics during pregnancy. However, the survey may be subject to interviewer bias. In small island settings it is common that people are known by health care providers and therefore truthful reporting might be compromised especially around sensitive questions on sexual behaviour.

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% and the fact that no HIV was detected should not be taken to mean it is not present in Samoa.

The demographic characteristics of the women surveyed in 2008 are very similar to those surveyed in 2004-5. The only significant difference is that the percentage of women who had a tertiary education is down from 32% to 22%. The proportion of women in the two age groups (15 to 24 years and 25 to 49 years), marital status and living arrangements are similar in both surveys allowing valid comparisons to be made.

With regards to pregnancy characteristics there was a significant reduction in the number of primiparous women from 34% in 2005 to only 14% in 2008. In both surveys only a small percentage of women attended their first antenatal appointment in the first trimester and the majority (64% in 2008) attended for the first time in the third trimester. This has implications for the identification and treatment of complications, including STIs.

Over half of antenatal women surveyed had had only one lifetime sexual partner and 97% had had only one sexual partner in the past twelve months. Very small numbers of women surveyed had engaged in high risk behaviours such as concurrent sexual relationships (0.9%), transactional sex (0.5%), sex with someone other than their usual partner while off island (0.9%) or sex below the age of fifteen years (2.1%). However, 11% of women reported ever having been forced to have sex, the majority (67%) by their partner.

Alcohol and drug use, which can be associated with risky sex practices, were very low with 72% of women reporting they never drink alcohol and less than 4% reporting they had ever used drugs (excluding tobacco). No injecting drug use was reported.

However, amongst the survey sample, although 67% had heard of condoms, only ten percent of women had ever used one. Over 20% of antenatal women also stated that they had not heard of HIV prior to the survey.

While knowledge of mother to child transmission of HIV and prevention strategies was high amongst those survey participants who had heard of HIV (over 90%), a significant percentage of these also had misconceptions about HIV transmission. If survey participants who had not heard of HIV are included, only 67% correctly identified two prevention strategies and less than one in five women correctly identified three misconceptions. Overall only 16% or survey participants correctly answered all six questions to test knowledge of HIV. Only the question on mother to child transmission was asked in both surveys, but 91% of survey participants answered this correctly in 2005 compared with only 72% in 2008.

Attitudes towards PLWHAs were poor, with only around a quarter of survey participants agreeing that they would buy vegetables from a vendor known to have HIV or that a teacher who was not sick should be allowed to continue to teach. Attitudes to family with HIV, compared with non-family, was markedly different with over 60% of participants agreeing that they would care for a relative with HIV in their own home.

Only just over a quarter of the antenatal women surveyed believed it was possible to get a confidential HIV test. This is down significantly from the 2005 survey when 85% believed it was possible. There was a lack of trust in the privacy and confidentiality of testing in Samoa. Less than 10% of women reported that they had ever had an HIV test and less than half of these women knew the result.

No cases of HIV or Syphilis were detected during this survey, but the prevalence of Chlamydia was high at 28%. This is very similar to the rates found in 2005 and amongst the highest in the Pacific. An association was found between Chlamydia infection and younger age group, with 41% prevalence in women under 25 years compared with 18% in those 25 years and over. No significant association was found between Chlamydia rates and not being married, having more than one sexual partner in the previous twelve months or number of lifetime sexual partners.

Conclusion

The high rates of STIs, low condom use and poor HIV knowledge suggest that antenatal women in Samoa are a vulnerable group, at risk for the introduction and spread of HIV infection, despite reported low rates of risky behaviours such as multiple partners and transactional sex. More information about the behaviours of male partners is required.

Interventions need to be developed to screen and treat antenatal women and their partners for STIs early in pregnancy to reduce complications and long term sequelae. STI and HIV awareness also needs to be increased for women, but in particular for male partners, and condom use promoted, especially with non regular partners.

The prevalence of STIs is likely to be as high or higher in other sectors of the population engaged in higher risk behaviours. Health promotion activities and the availability of testing and treatment also need to be aimed at the wider community.

Recommendations

1. There is a need to ensure pregnant women access antenatal services early in pregnancy to identify and treat complications, including STIs, and reduce risks for mother and child.
2. A comprehensive STI control programme should to be developed in Samoa, including the availability of testing and treatment of antenatal women, their partners and the wider community, particularly those under 25 years.
3. The feasibility, in terms of cost, acceptability and effectiveness of presumptive treatment of antenatal women less than 25 years, their partners and potentially other identified risk groups should be examined.
4. There should be increased health promotion activities to raise awareness of STIs and HIV and the availability of voluntary confidential counselling testing with all sectors of the community in Samoa, but in particular young people as the prevalence of Chlamydia is higher in the under 25 year age group.
5. Research into knowledge, attitudes and behaviours of men should be undertaken to better understand the high levels of STIs in women with low reported risk behaviour in Samoa, in order to develop appropriate behaviour change strategies.
6. The findings of this survey should be used as an advocacy tool with political, community and religious leaders.

Indicators UNGASS and MDG

This is a list of relevant UNGASS indicators

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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