

Full Length Research Paper

Analysis of coital activity, number of sexual partners, and non-use of condoms among High School students in Namibia: Implications for the ABC approach

Kazhila C. Chinsebu^{1*}, Choshi D. Kasanda², Cornelia N. Shimwooshili-Shaimemanya² and Donovan Zealand²

¹Department of Biological Sciences, Faculty of Science, University of Namibia, P/B 13301, Windhoek, Namibia.

²Department of Science, Mathematics and Sports Education, Faculty of Education, University of Namibia, P/B 13301, Windhoek, Namibia.

Accepted 7 September, 2011

Understanding sexual risk behaviours is important in monitoring the effectiveness of HIV/AIDS preventive interventions such as the ABC (abstinence, be faithful, and use a condom) approach. This study analysed the sexual activity, numbers of sexual partners, and non-use of condoms among Namibian High School students. A randomised cross-sectional survey was carried out in 18 High Schools located in six educational regions (a directorate headed by a director responsible for all schools in the region). Data were collected from 829 students that completed a structured questionnaire. Analysis of data was done using parametric and non-parametric statistics. The results showed that 16.1% of students had their coital debut at 8 years of age. Students that were male, in rural areas, Kavango region and Kavango ethnic group, and in Grade 9 had significantly lower ages of coital debut. Caprivi region had highest significant proportion of students that were sexually active. Male gender, Herero ethnicity, HIV testing, invincibility to HIV infection, and boyfriend-girlfriend relationships were positively associated with increased sexual activity. Students that were male and from the Damara-Nama, Lozi, and Herero ethnic groups had significantly higher mean numbers of sexual partners. The mean number of times that students did not use condoms was significantly higher in urban areas, Caprivi region, and among students from the Herero ethnic group. Determinants of condom use were also revealed. The findings of this study highlight the need for disaggregated data in order to target specific A, B, and C messages to appropriate sub-groups of Namibian High School students who are at a higher risk of HIV/AIDS infection.

Key words: Coitus, sexual partners, condoms, High School students, Namibia, ABC approach.

INTRODUCTION

Namibia is a semi-arid country covering an area of 823,145 square kilometres, and with a population of 2.1 million people, Namibia is therefore the second most sparsely populated country in the world (Government of the Republic of Namibia, 2008). The country is divided into thirteen administrative regions: Caprivi, Erongo,

Hardap, Kavango, Karas, Khomas, Kunene, Oshana, Oshikoto, and Otjozondupa (Government of the Republic of Namibia, 2008). In terms of ethnic groups, about 50.0% of the Namibian population consists of the Ovambo, 9.0% are Kavango, 7.0% are Herero, 7.0% are Damara, 5.0% are Nama, 4.0% are Lozi, 3.0% are San, 2.0% are Baster, and 0.5% are Tswana (UNDP, 2000). Ethnic identity is stronger than national identity, with 75.7% of Namibians feeling much stronger ties to people from their own ethnic groups than to fellow nationals of other ethnic groups (Shaw-Taylor, 2008). Namibians from different regions and ethnic

*Corresponding author. E-mail: kchinsebu@unam.na or kchinsebu2008@yahoo.co.uk. Tel: +264-61-2063426. Fax: +264-61-2064577.

groups have various socio-cultural and sexual practices that influence the heterosexual transmission of HIV.

For instance, the Ovambo people have pre-initiation sexual customs such as *ewilo* (which means scooping in English; whereby girls and boys sleep together without being expected to engage into penetrative sex) and sexual initiation ceremonies known as *efundula*, *ohango* and *olufuko* (Mufune, 2003). Young Ovambo boys also perform a dance known as *etenda* (Fairweather, 2006) while young girls do *oudano*, a moonlight dance with praise songs for boys (Shaw-Taylor, 2008). The details of these ethno-cultural practices have been described (Tuupainen, 1970), but to-date, there are contradictory views as to whether these ceremonies delay or encourage coital behaviour among young people.

In the Ovambo culture, multiple sexual partnerships are discouraged through sexual taboos such as *oshaatu*, *oshiwatu*, and *oshili*, which means truth in English (Mufune, 2003). These Ovambo taboos prescribe that married women that are unfaithful can die of cramps during child labour. A taboo called *oshithitikila* also deems that married men that are unfaithful may cause death to their babies or wives (Mufune, 2003). However, in the Herero culture, a practice called *tjiramue* allows males to have sex with their female cousins regardless of whether they are married or not (Desert Soul, 2008). During sex with *tjiramues*, there is no negotiation about condom use (Desert Soul, 2008). Among the Lozi people of the Caprivi region, a female sexual initiation ceremony called *mulaleka* is also known to mediate the transmission of HIV (Chinsemu and Hedimbi, 2010).

Namibia has a generalized AIDS epidemic, and between 2009 and 2010, HIV prevalence rates increased from 17.8 to 18.8% of the adult population (Government of the Republic of Namibia, 2008; Katuta, 2011). Evidence from Uganda and other countries suggests that a prevention approach that includes risk avoidance, partner fidelity, and protected sex, may be effective in reducing the incidence of HIV in generalized epidemics (Green and Herling, 2006). This approach is known by the abbreviation ABC- Abstain, Be faithful, and use Condoms (Green and Herling, 2006). Abstinence (refraining from sex until marriage) and delay of age of coital debut (first sexual intercourse) are risk avoidance measures, while Be faithful messages that invoke sexual behaviours such as partner fidelity and reduction of casual/multiple partners are risk reduction interventions (Green and Herling, 2006). Consistent condom use during sexual intercourse has especially been found to reduce the prevalence of HIV in the general population (Green and Herling, 2006). In Namibia, the Ministry of Education and other stakeholders have been using the ABC approach to educate High School students about the dangers of HIV/AIDS. This is done through the UNICEF-sponsored behaviour change programme *My Future is My Choice* (MFMC) (UNICEF, 2006). At national level, a 'Be faithful' media campaign called 'break the chain, who are you

connected to?' was launched in 2010 (Solomons, 2011). In terms of condom use, about 25 million 'smile' condoms are distributed freely each year by the government (Coates et al., 2008). It is hoped that these interventions will reduce new HIV infections by 50.0% by 2015 (Katuta, 2011).

In order to provide baseline data on the sexual behaviours of Namibian students, the Namibia school-based survey was carried out in 2004 (Ministry of Health and Social Services, 2004). Since that 2004 survey, there has been no follow-up study that has gauged the levels of sexual activity, multiple sexual partners, and condom use among High School students in Namibia. Be that as it may, the use of the findings from the Namibia school-based survey to plan specific HIV/AIDS preventive interventions for High School students was limited because they aggregated data for Primary and High School students together. Moreover, the Namibia school-based survey did not differentiate students from various educational regions and ethnic groups. This makes it difficult to target specific A, B, and C messages to High School students from different regions and ethnic groups. Against this background, the aim of this study was to provide current and disaggregated data on the levels of sexual activity, factors associated with sexual intercourse, multiple sexual partners, non-use of condoms, and determinants of condom use among High School students in Namibia.

METHODS

Ethical approval

Ethical permission to conduct the research was obtained from the Senate Post-graduate Studies Committee of the University of Namibia. Permission to collect data in schools was obtained from the Permanent Secretary of the Ministry of Education in Windhoek. In the regions, permission to visit the schools was obtained from the Regional Directors of Education. At the schools, students were informed that they were free not to participate in the study.

Study and sampling designs

A cross-sectional survey using a three-stage sampling design was utilised. A cross-sectional design was appropriate because it was a snap-shot exploration that allowed a statistically significant sample of a population to be used in estimating the relationships between and among outcomes of interest and population variables as they existed at a particular time. The primary sample included six educational regions of Namibia: Caprivi, Kavango, Ohangwena, Omusati, Oshikoto, and Khomas. These regions were purposively chosen because of their high prevalence of HIV/AIDS (> 15.0%) (Government of the Republic of Namibia, 2008). The secondary sample consisted of eighteen government-run secondary schools. The total number of secondary schools in the six regions was 94; thus, 19% of all secondary schools were sampled. The secondary schools were randomly selected based on proportional representation. Randomization was done using tables of random numbers. Within the selected secondary schools, data were collected from 829 Life Science and Biology students (the tertiary

sampling units). To reduce intimidation, the students were randomly chosen as whole classes of either Grade 9 or Grade 11 (there are five years of High School in Namibia represented by Grades 8-12). The demographic characteristics of the students are shown in Table 1.

Data collection and analysis

Data were collected between October and November, 2009. In order to reduce intimidation of students, teachers were requested to leave the classroom immediately after the researchers were introduced to the students. After obtaining their verbal consent, students were requested to complete a questionnaire without personal identifiers. The questionnaires were written in English and the students' reading ability was generally good. Hence, students read the questionnaires on their own except for a few of them that required minimum help when they could not comprehend certain words. Almost 98% of the students that were invited to participate in the survey completed the questionnaires. Response rates were generally the same across Grades and schools.

In order to measure their age of coital debut, students were asked the question "how old were you when you had sexual intercourse for the first time?" Sexual intercourse was defined as vaginal sex and excluded homosexual activity. To assess whether students had ever engaged in coitus, they were requested to state "yes" or "no" to the question "have you ever had sexual intercourse?" To find out whether students were sexually active, they were requested to state "yes" or "no" to the question "during the past 12 months, have you had sexual intercourse?" Students were also asked about several explanatory variables linked to sexual activity.

In order to find out whether students had sex with multiple partners, they were asked the question: "in the past 12 months, how many people have you had sexual intercourse with?" To ascertain whether students used condoms, they were asked to state "yes" or "no" to the question "during your previous sexual intercourse, did you or your partner use a condom?" Students were also requested to state the number of times that they had sex without condoms over a 12-month period, and explanatory variables associated with condom use were determined.

Data were coded and entered for analysis into the Statistical Package for the Social Sciences (SPSS) software version 18 (Statistical Package for the Social Sciences Inc., 2010). Frequencies and percentage frequencies were computed for students that ever had sexual intercourse and those that had sexual intercourse in the previous 12 months. Missing values were not used during calculations of percentage frequencies. To reveal differences across independent variables such as rural-urban areas, education regions, gender, Grades, and ethnic groups, cross-tabulations and Pearson χ^2 statistics were performed on the percentage frequencies of students that had sex. Analysis of variance (ANOVA) and non-parametric statistics were used to test whether the means and distributions for ages of coital debut, non-use of condoms, and multiple partners were significantly different. To analyse for the factors associated with coital activity and condom use, crude odds ratios and multivariate logistic regression analyses were performed. Post-hoc tests were used to rank the means.

RESULTS

Overall, sexual debut for a total of 447 students ranged from 8 to 21 years, with a mean of 13.70 ± 0.16 years, standard error. The median age of coital debut was 15.00

years. The percentage frequencies of students in the various ages of sexual debut are plotted in Figure 1. Among those students that had sex at 8 years of age, 25.3% ($n = 20$) were Kavango, 22.2% ($n = 4$) were Herero, 14.9% ($n = 35$) were Ovambo, and 9.7% ($n = 9$) were Lozi (Pearson $\chi^2 = 110.79$, $df = 65$, $p < 0.000$). None of the Damara-Nama students had sex at 8 years of age. Therefore, sexual debut at 8 years of age was significantly higher among students from the Kavango and Herero ethnic groups.

Table 2 shows the ages of coital debut for High School students in Namibia. Students from the Kavango region had the lowest mean age of coital debut (12.86 years) while those from the Omusati region (14.50 years) had the highest (ANOVA F-value = 3.39, $df = 5$, $p < 0.005$). Age of coital debut was significantly lower for Grade 9 than Grade 11 students, considerably lower for males than females, and much lower for urban than rural students.

Table 3 shows the frequencies and percentage frequencies of students that ever had sex and were sexually active in the 12 months prior to the survey. The results showed that 48.1% ($n = 384$) of the students ever had sex, and 29.2% ($n = 233$) were sexually-active. The lowest proportion of students that had sex was from the Oshikoto region (39.6%). Sexual activity was significantly higher in urban than rural areas, Grade 11 than 9, and among male than female students (Table 3). In terms of ethnic groups, students that were Lozi, Herero, and Damara-Nama were significantly more sexually active than those that were Kavango and Ovambo (Table 3).

Odds ratios (Table 4) revealed that male gender, attendance of Grade 11, urban location, testing for HIV, thinking one cannot get HIV if they were faithful to one sexual partner, having a boyfriend or girlfriend, alcohol consumption, and cigarette smoking were positively associated with sexual intercourse. Multivariate logistic regression results (Table 5) showed that a number of factors such as Herero ethnicity, male gender, HIV testing, thinking one cannot get HIV if they were faithful to one sexual partner, and having a boyfriend or girlfriend increased students' sexual activity.

Table 6 shows the mean number of sexual partners among the students. Males had a significantly higher mean number of sexual partners than females. There were no significant regional differences in the mean numbers of sexual partners (ANOVA F-value = 1.69, $df = 5$, $p > 0.1340$).

Girls were more faithful to one sexual partner than boys as was demonstrated by the analysis that significantly more girls (42.7%, $n = 88$) than boys (22.8%, $n = 64$) had sex with one partner (Pearson Chi-square value 41.42, $df = 10$, $p < 0.000$). Comparatively, 26.7% of boys and 11.7% of girls had sex with 2-5 partners, 3.7% of boys and 0% of girls had sex with 6-9 partners, and 5.7% of boys and 2.4% of girls had sex with 10-11 partners, respectively.

Table 1. Demographic characteristics of the 829 students that participated in the study.

Variable	Respondents N (%)
Regions	
Caprivi	103 (12.4)
Kavango	140 (16.9)
Khomas	166 (20.0)
Ohangwena	108 (13.0)
Omusati	208 (25.1)
Oshikoto	104 (12.5)
Location of school	
Rural	420 (50.7)
Urban	409 (49.3)
Gender	
Male	365 (44.1)
Female	462 (55.9)
Ethnic group	
Damara-Nama	30 (3.6)
Herero	29 (3.5)
Kavango	123 (14.8)
Lozi	114 (13.8)
Ovambo	514 (62.0)
Others	19 (2.3)
Students' grades	
Grade 9	301 (36.4)
Grade 11	527 (63.6)
Age (years)	
13	5 (0.6)
14	32 (3.9)
15	109 (13.3)
16	173 (21.0)
17	245 (29.8)
18	130 (15.8)
19	74 (9.0)
20	37 (4.5)
21	9 (1.1)
22	5 (0.6)
23	2 (0.2)
27	1 (0.1)

Across the regions, Khomas (38.1%) and Caprivi (30.6%) had the highest statistically significant percentage frequencies of students that had sex with multiple partners while Kavango region (19.1%) had the lowest proportion of students that reported multiple partners (Pearson Chi-square value = 85.97, $df = 50$, $p < 0.001$). Multiple sexual partners were most frequently reported by students that were Damara-Nama (46.2%) and Herero (39.0%) and least frequently reported

by students from the Kavango ethnic grouping (16.6%) (Pearson Chi-square value = 100.66, $df = 50$, $p < 0.000$).

Throughout the study, 20.0% of students and their partners did not use condoms during their previous sexual intercourse. Analysis of the mean number of times that students that had sex without condoms is shown in Table 7. Non-use of condoms was significantly high among students from urban areas, four regions (Caprivi, Kavango, Ohangwena, Khomas, and Oshikoto), and

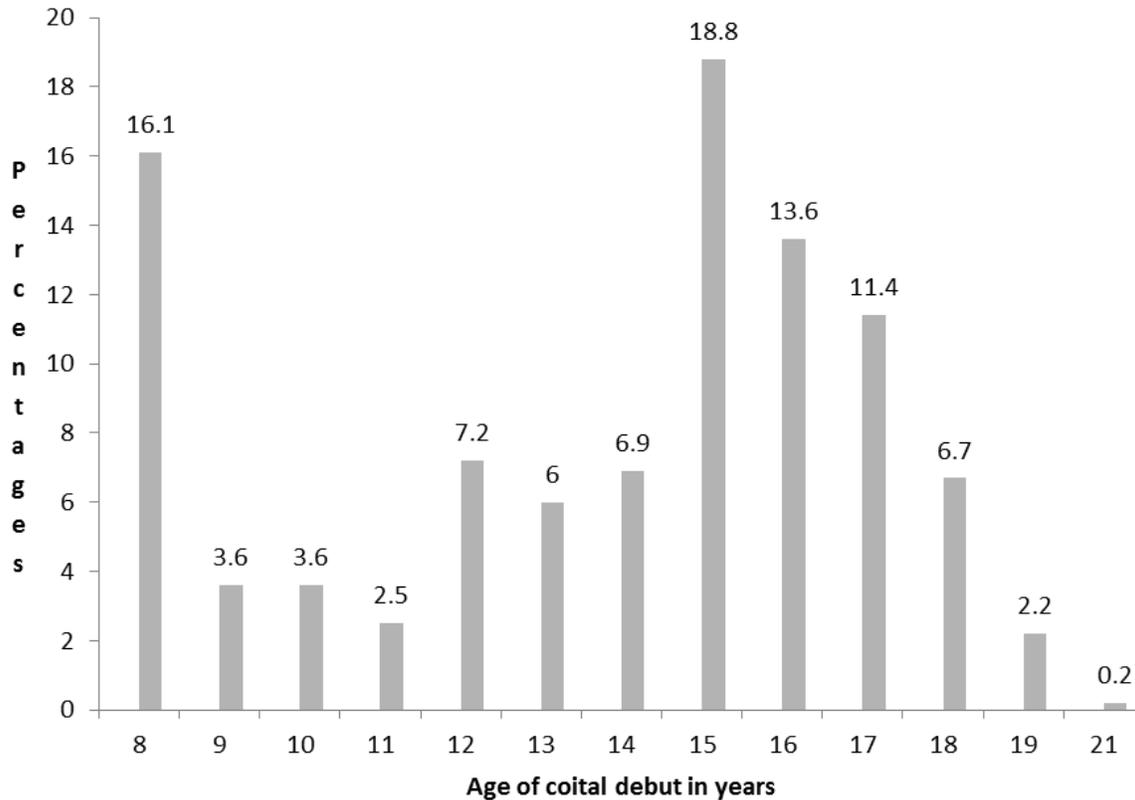


Figure 1. Students' ages of sexual debut.

Table 2. Ages' of coital debut for High School students in Namibia.

Independent variable	Mean \pm SE	ANOVA F-value (<i>p</i> -value)	Non-Parametric statistics (<i>p</i> -value)
Rural	14.19 \pm 0.25	7.66(<i>p</i> < 0.006)	Independent-Samples Mann-Whitney U test (reject null hypothesis, <i>p</i> < 0.000)
Urban	13.30 \pm 0.20		
Male	12.86 \pm 0.21	45.00(<i>p</i> < 0.000)	Independent-Samples Mann-Whitney U test (reject null hypothesis, <i>p</i> < 0.000)
Female	14.97 \pm 0.22		
Grade 9	12.40 \pm 0.27	31.03(<i>p</i> < 0.000)	Independent-Samples Mann-Whitney U test (reject null hypothesis, <i>p</i> < 0.000)
Grade 11	14.28 \pm 0.19		
Kavango	12.86 \pm 0.39a	3.39(<i>p</i> < 0.005)	Independent-Samples Kruskal-Wallis test (reject null hypothesis, <i>p</i> < 0.001)
Oshikoto	13.10 \pm 0.55a		
Khomas	13.10 \pm 0.38a		
Caprivi	13.83 \pm 0.29ab		
Ohangwena	14.44 \pm 0.44b		
Omusati	14.50 \pm 0.35b		
Kavango	12.67 \pm 0.41	2.27(<i>p</i> < 0.047)	Independent-Samples Kruskal-Wallis test (retain null hypothesis, <i>p</i> > 0.052)
Others	13.12 \pm 1.17		
Ovambo	13.89 \pm 0.23		
Herero	13.89 \pm 0.92		
Lozi	13.94 \pm 0.27		
Damara-Nama	15.40 \pm 0.52		

Means \pm SE with same letter(s) are not significantly different (*p* = 0.05) according to Duncan's multiple comparison's test.

Table 3. Sexual activity of High School students in Namibia.

Independent variables	Frequency counts (percentage frequencies) of students that had sexual intercourse	
	Have you ever had sexual intercourse?	During the past 12 months, have you had sexual intercourse?
Regions		
Caprivi (n = 103)	60 (61.2)	50 (49.5)
Kavango (n = 140)	67 (49.3)	40 (29.0)
Khomas (n = 166)	70 (44.6)	41 (27.2)
Ohangwena (n = 108)	53 (50.0)	35 (32.7)
Omusati (n = 208)	94 (46.8)	43 (21.2)
Oshikoto (n = 104)	40 (39.6)	24 (24.5)
	Pearson $\chi^2 = 10.80$, df = 5, $p > 0.056$	Pearson $\chi^2 = 28.40$, df = 5, $p < 0.000$
Rural areas (n = 420)	187 (45.8)	102 (25.0)
Urban areas (n = 409)	197 (50.4)	131 (33.6)
	Pearson $\chi^2 = 1.66$, df = 1, $p > 0.198$	Pearson $\chi^2 = 7.10$, df = 1, $p < 0.008$
Ethnic groups		
Damara-Nama (n = 30)	11 (37.9)	11 (37.9)
Herero (n = 29)	14 (50.0)	11 (40.7)
Kavango (n = 123)	64 (54.2)	35 (28.9)
Lozi (n = 114)	65 (59.6)	53 (47.3)
Ovambo (n = 514)	220 (44.3)	117 (23.7)
Others (n = 19)	10 (55.6)	6 (37.5)
	Pearson $\chi^2 = 12.20$, df = 5, $p < 0.033$	Pearson $\chi^2 = 28.30$, df = 5, $p < 0.000$
Grade 9 (n = 301)	115 (29.9)	68 (29.2)
Grade 11 (n = 527)	269 (70.1)	165 (70.8)
	Pearson $\chi^2 = 13.07$, df = 1, $p < 0.000$	Pearson $\chi^2 = 7.63$, df = 1, $p < 0.006$
Males (n = 365)	228 (59.4)*	143 (61.4)*
Females (n = 462)	156 (40.6)	90 (38.6)
	Pearson $\chi^2 = 69.51$, df = 1, $p < 0.000$	Pearson $\chi^2 = 38.69$, df = 1, $p < 0.000$

Counts may not give same percentages due to missing values;* discrepancy due to missing values.

some ethnic groups such as Herero, Lozi, Kavango, and Ovambo (Table 7). The odds of using condoms were significantly higher for students that were willing or had been tested for HIV/AIDS, had strict parents, belonged to HIV/AIDS awareness clubs, were from schools that had AIDS awareness clubs and *My Future is My Choice*, and students that were willing to get or buy condoms from clinics, hospitals, pharmacies, Shebeens (places where beer is sold), shops, and Cuca-shops (small shops) (Table 8). Drinking beer or alcohol reduced the use of condoms (odds ratio = 0.92) (Table 8). Multivariate logistic regression did not reveal significant differences for any of the variables.

DISCUSSION

Since early coital debut was defined as first sex at 15

years or younger (Mathews et al., 2009), our results clearly demonstrate that ages of coital debut for Namibian High School students were very low. To our knowledge, our data provide the first report of coital debut at 8 years of age among Namibian students. It was not clear whether self-reports of first coitus at 8 years were spurious, and it remains to be seen whether children of 8 years may be physiologically and psychologically ready to engage in 'real' sexual intercourse. One possibility is that these very young students may have been lured into commercial sex, or forced into sex by older people at home and elsewhere. This epitomizes the silent existence of countless paedophiles and child sex offenders in Namibia.

Further, it was argued that boys of 8 years of age could not have produced spermatozoa. Accordingly, sexual debut at 8 years of age for 16.1% of the students was hard to believe. However, according to the Law Reform

Table 4. Odds ratios for explanatory variables associated with sexual intercourse in the 12 months prior to the survey.

Variable	Percent frequency of students that had sex	
	Pearson χ^2 values	Odds ratios (95% C.I.)
Gender	38.70 ($p < 0.000$)	
Male		2.67 (1.95, 3.66)
Female		1.00
Grade	7.60 ($p < 0.006$)	
Grade 11		1.17 (1.05, 1.30)
Grade 9		1.00
Rural/Urban	7.10 ($p < 0.008$)	
Urban		1.23 (1.06, 1.42)
Rural		1.00
I have been tested for HIV	4.75 ($p < 0.029$)	
Yes		1.43 (1.04, 2.00)
No		1.00
You cannot get HIV if you stick to one sexual partner	4.20 ($p < 0.039$)	
Yes		1.38 (1.02, 1.89)
No		1.00
Do you have a boyfriend or girlfriend?	111.12 ($p < 0.000$)	
Yes		7.29 (4.87, 10.89)
No		1.00
Do you drink beer or any other alcoholic drink?	12.46 ($p < 0.000$)	
Yes		1.77 (1.29, 2.43)
No		1.00
Do you smoke cigarettes?	15.17 ($p < 0.000$)	
Yes		3.70 (1.84, 7.48)
No		1.00

Table 5. Multivariate logistical regression analysis of explanatory factors associated with sexual intercourse in the 12 months prior to the survey.

Variable	Odds ratios(95% CI)	p -value
Ethnic groups		
Herero	2.97 (1.03, 8.57)	0.044
Ovambo	1.00	
Male	2.81 (1.92, 4.10)	0.000
Female	1.00	
I have been tested for HIV		
Yes	1.50 (0.99, 2.26)	0.050
No	1.00	
You cannot get HIV if I stick to one sexual partner		
Yes	1.56 (1.07, 2.27)	0.002
No	1.00	

Table 5. Contd.

Do you have a boyfriend or girlfriend?		
Yes	6.63 (4.24, 10.36)	0.000
No	1.00	

Table 6. Mean number of sexual partners among High School students in Namibia.

Independent variables	Means \pm SE	ANOVA F-values (<i>p</i> -values)	Non-parametric tests (<i>p</i> -values)
Rural	1.33 \pm 0.16	1.83 (<i>p</i> > 0.176)	Independent-samples Mann-Whitney U test (reject null hypothesis, <i>p</i> < 0.012)
Urban	1.63 \pm 0.14		
Grade 9	1.76 \pm 0.21	3.12 (<i>p</i> > 0.078)	Independent-samples Mann-Whitney U test (retain null hypothesis, <i>p</i> > 0.534)
Grade 11	1.36 \pm 0.12		
Male	1.75 \pm 0.15	8.22 (<i>p</i> < 0.004)	Independent-samples Mann-Whitney U test (reject null hypothesis, <i>p</i> < 0.004)
Female	1.13 \pm 0.13		
Omusati	1.19 \pm 0.24	1.69 (<i>p</i> > 0.134)	Independent-samples Kruskal-Wallis test (reject null hypothesis, <i>p</i> < 0.007)
Oshikoto	1.39 \pm 0.24		
Khomas	1.45 \pm 0.31		
Ohangwena	1.16 \pm 0.28		
Kavango	1.19 \pm 0.24		
Caprivi	2.04 \pm 0.32		
Others	3.27 \pm 0.13a		
Damara-Nama	2.31 \pm 0.71ab	3.62 (<i>p</i> < 0.003)	Independent-samples Kruskal-Wallis test (reject null hypothesis, <i>p</i> < 0.000)
Lozi	2.02 \pm 0.31ab		
Herero	1.89 \pm 0.59ab		
Ovambo	1.31 \pm 0.13ab		
Kavango	1.02 \pm 0.19b		

Means \pm SE with same letter(s) are not significantly different (*p* = 0.05) according to Scheffe's multiple-comparison's test.

and Development Commission of Namibia, the definition of sexual intercourse was not premised on the ejaculation of spermatozoa. The Namibian Law Reform and Development Commission (2006) defined sexual intercourse as vaginal intercourse between a boy and a girl and was complete upon penetration, whether or not there was emission of seed. This definition was limited as it did not speak to the existence of homosexual relations in Namibian society.

The low ages of coital debut may be explained by prevailing peer norms about sex. Low ages of sexual debut among Namibian students could also be attributed to the erosion of traditional family systems coupled with the rapid socio-economic changes that have created a different environment for students. Increased moral decay, accelerated urbanization, and the rapid uptake of information and communication technologies may have contributed to the lower mean age of sexual debut among urban students (Ministry of Health and Social Services,

2004). The results of this study were similar to those in Ethiopia where Molla et al. (2008) found that the norm of virginity had waned in urban areas. Pressure on young women to remain virgins prior to marriage (lipinge, 2003) could have delayed the sexual debut for female students in this study.

But we contend that ecological and ethnic factors may have lowered the mean age of coital debut for students from the Kavango region and Kavango ethnic group. For women aged 20-49 years, the Namibia Demographic and Health Survey (2006) also found that Kavango region had the lowest age at sexual debut (17.5 years), while Omusati had the highest (21.5 years). Interestingly, Chinsebu (2010) found that Kavango region had significantly low percentage frequency of students that belonged to HIV/AIDS awareness clubs. This finding implies that failure to belong to AIDS awareness clubs, in collusion with other factors, may have contributed to the low age of coital debut in the Kavango region.

Table 7. Number of times Namibian High School students had sex without condoms in the 12 months prior to the survey.

Independent variables	Means \pm SE	ANOVA F-values (<i>p</i> -values)	Non-parametric tests (<i>p</i> -values)
Rural	0.45 \pm 0.12	8.20 (<i>p</i> < 0.000)	Independent-samples Mann-Whitney U test (reject null hypothesis, <i>p</i> < 0.000)
Urban	0.91 \pm 0.11		
Grade 9	0.67 \pm 0.13	0.05 (<i>p</i> > 0.81)	Independent-samples Mann-Whitney U test (retain null hypothesis, <i>p</i> > 0.375)
Grade 11	0.71 \pm 0.10		
Male	0.81 \pm 0.11	2.53 (<i>p</i> > 0.112)	Independent-samples Mann-Whitney U test (reject null hypothesis, <i>p</i> < 0.006)
Female	0.56 \pm 0.12		
Omusati	0.28 \pm 0.17a	4.16 (<i>p</i> < 0.001)	Independent- samples Kruskal-Wallis test (reject null hypothesis, <i>p</i> < 0.000)
Oshikoto	0.48 \pm 0.24 ab		
Khomas	0.62 \pm 0.18ab		
Ohangwena	0.72 \pm 0.22ab		
Kavango	0.76 \pm 0.20ab		
Caprivi	1.42 \pm 0.20b		
Damara-Nama	0.29 \pm 0.46a		
Ovambo	0.44 \pm 0.10ab		
Kavango	0.74 \pm 0.21ab		
Other	1.13 \pm 0.49ab		
Lozi	1.33 \pm 0.19ab		
Herero	1.48 \pm 0.40b		

Means \pm SE with same letter(s) are not significantly different (*p* = 0.05) according to Scheffe's multiple-comparison's test (for regions) and Duncan's test (for ethnic groups). Scheffe's test failed to separate the means for ethnic groups.

Table 8. Factors associated with condom use in 12 months.

Variables	Percent frequency of students that used condoms during previous sexual intercourse	
	Pearson Chi-square value(<i>p</i> -value)	Odds ratios (95% C.I.)
Do you drink beer or any other alcoholic drink?	0.19 (<i>p</i> > 0.0661)	
Yes		0.92 (0.63, 1.34)
No		1.00
I have been tested for HIV	7.29 (<i>p</i> < 0.007)	
Yes		1.76 (1.16, 2.65)
No		1.00
I would like to be tested for HIV	9.93 (<i>p</i> < 0.002)	
Yes		2.77 (1.44, 5.35)
No		1.00
My parents are very strict	4.54 (<i>p</i> < 0.033)	
Yes		3.46 (1.03, 11.60)
No		1.00
I belong to an HIV/AIDS awareness club	4.75 (<i>p</i> < 0.029)	
Yes		1.50 (1.04, 2.16)
No		1.00

Table 8. Contd.

I would get condoms from a store or shop or from a street vendor, Cuca-shop or shebeen	8.62($p < 0.003$)	
Yes		1.88 (1.23, 2.87)
No		1.00
I would get condoms from a pharmacy, clinic or hospital	6.60($p < 0.010$)	
Yes		1.61 (1.12, 2.33)
No		1.00
My school offers <i>My Future is My Choice</i>	4.63 ($p < 0.031$)	
Yes		1.54 (1.04, 2.28)
No		1.00
My school has an AIDS awareness club	3.85 ($p < 0.050$)	
Yes		1.45 (1.00, 2.11)
No		1.00

Be that as it may, our study did not specifically investigate factors that shaped coital debut. However, there are reports that the first coital encounter for most Namibian adolescents was due to forced sex (UNICEF, 2006). Chinsemu also found that 17.0-26.2% of High School students in Namibia reported forced sexual intercourse (Chinsemu, 2010). Elsewhere, early sexual debut was common among children that watched sex on television (Collins et al., 2004), lived in urban areas, and lacked traditional values (Molla et al., 2008). Males (Brown et al., 2005), and children that lived in poor socio-economic conditions (Henderson et al., 2008) also had lower ages of coital debut.

According to UNICEF (2007), 16.0% of Namibian youth had sex by the age of 15 years. The Namibia school-based survey report of 2004 also found that the age at coital debut for 30.1% of students was 11 years or younger (Ministry of Health and Social Services, 2004). But data from the Namibia school-based survey did not differentiate students that were younger than 11 years, and those that were older than 16 years. It was not clear why Grade 9 students initiated sex earlier than those in Grade 11. However, reports from South Africa indicated that contemporary adolescents tended to mature earlier than they did a few years ago because of eating better and more diverse foods (Zwang and Garenne, 2008). However, this does not necessarily point to drastic changes in sexual debut within a couple of years.

Our results also demonstrated that it was feasible to delay sexual debut until students were 21 years old. Lawoyin and Kanthula (2010) found that 9.0% of Ovambo youths initiated sex between 21 and 30 years of age. Such evidence can be used in behaviour change communication interventions aimed at widening the 'window of hope' (UNICEF, 2007) by way of maintaining

the virginity of students in High Schools. But the finding that Namibian boys experienced sexual debut earlier than girls was very interesting as it raised the question as with whom these younger boys were having sex. Earlier reports showed that 42.9% of boys and 36.4% of girls in Namibia had their first sexual intercourse with a commercial sex partner or client (Mufune et al., 2004).

Throughout this study, students from the Caprivi region consistently reported the highest levels of sexual activity. Thus, evidence from this study was unequivocal that students from the Caprivi region were the most sexually active. For example, Caprivi region registered the highest percentage frequency of students that ever had sexual intercourse (61.2%) and the highest proportion of students that had coitus in the 12 months leading to the survey (49.5%). Of all the ethnic groups that participated in this study, the Lozi (most inhabitants of the Caprivi region) also had the highest significant proportion of students that had ever engaged in sexual intercourse (59.6%).

Although previous studies implicated *mulaleka*, a cultural practice that initialized girls into sex (McFadden and Khaxas, 2007), Chinsemu (2010) illuminated other factors that may have contributed to the significantly high sexual activities that characterized *Caprivian* students. He found that Caprivi region had the lowest school boyfriend-girlfriend relationships, statistically very high percentage frequencies of students that had older men as boyfriends, and significantly high proportions of students that engaged in sex for money or gifts. Chinsemu's (2010) results suggested that sexually active students in the Caprivi region may have been involved in intergenerational and transactional sexual relationships, possibly with sugar-daddies, and outside school boyfriend-girlfriend circles. In addition, ethnic and

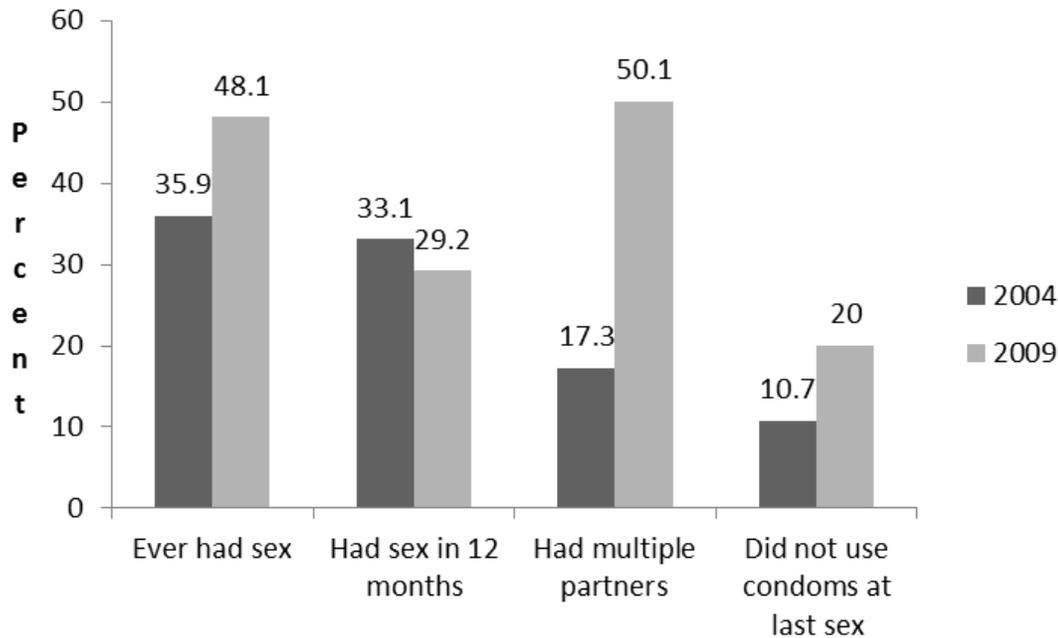


Figure 2. Comparisons of students' sexual behaviours in 2004 and 2009. (2004, data from the Namibia school-based survey; 2009, data from this study)

traditional norms may have contributed to the high sexual activity of students from the Caprivi region or Lozi ethnic group.

When our data were compared to those from the Namibia school-based student health survey of 2004, we found that the proportions of students that ever had sex, had multiple sexual partners, and did not use a condom at last sex increased between 2004 and 2009 (Figure 2). These findings clearly demonstrate that school-based or adolescent HIV/AIDS preventive strategies premised around the ABC approach have not produced the desired impacts in Namibia.

It was not clear why testing negative or positive for HIV/AIDS increased students' chances of sexual intercourse (odds ratio = 1.43). However, it was reasoned that a negative HIV test result may have incentivized students to frequently engage into sexual intercourse with one seemingly faithful partner. Further research is needed to unravel the linkage between coital frequency and HIV testing. Nonetheless, the results of this study underlined the point that Voluntary Counselling and Testing (VCT) for HIV was at the crossroads of AIDS prevention and transmission among High School students in Namibia. Previous studies found risky sexual behaviours after individuals had tested for HIV (Sherr et al., 2007; Weinhardt et al., 1999; Kawichai et al., 2004).

Increasing the number of boyfriends or girlfriends also increased sexual activity. It has been reported that social networking with friends increases the likelihood of coital encounters (Siziya et al., 2008). Drinking alcohol was positively associated with sexual activity. Under the

influence of alcohol (intoxication), greater risk-taking behaviours were more likely to occur. Inhibitions are lowered and cognitive processing is impaired, so students are less likely to resist coital behaviour (Duncan et al., 2002). Moreover, the results showed that the odds of coital activity in the 12 months prior to the survey were higher for students that thought one could not get HIV if they were faithful to one sexual partner. This finding denotes invincibility to HIV/AIDS among Namibian students. Invincibility reduces self-efficacy and correct decision-making pertinent to HIV/AIDS preventive behaviour (Duncan et al., 2002). Cultural inclinations to *tjiramues* may have also increased the coital behaviour of students from the Herero ethnic group (Desert Soul, 2008).

Multiple sexual relationships contribute to a rapid spread of HIV/AIDS in Namibia. The fact that 50.1% of students had multiple sexual partners 12 months prior to this study suggests that the 'Be faithful' message in the ABC campaign had not changed over half of the students' behaviour against multiple sexual partners. Although UNAIDS reported that the rates of sex with more than one partner over a 12-months period had decreased among young Namibian people (UNAIDS, 2008), the comparative analysis depicted in Figure 2 pointed to the contrary. Yet, the fact that multiple sexual partners were significantly prevalent in certain ethnic groups (Damara-Nama, Lozi and Herero) implied that ethnic and cultural traits may have predisposed these students to this high risk coital behaviour. For example, among Herero girls, it is understood by tradition that their

consent is unnecessary when boys or men wish to have sex with them (Talavera, 2002). Such traditional beliefs may have contributed to multiple sexual relations among Herero students in this study.

We found that significantly more boys than girls had multiple sexual partners. This finding was supported by previous studies that in many African societies, males were traditionally permitted to have multiple sexual partners and sex outside the relationship, whereas even a suspected sexual affair by a girl or woman would result in ostracism and abandonment (Burgoyne and Drummond, 2008). Even in marriage, men were culturally-allowed to have sexual partners outside marriage, yet female extramarital sex was culturally suppressed (Burgoyne and Drummond, 2008). Namibian boys have also been known to show their sexual prowess by having coitus with many virgin girls (Mufune et al., 2004).

Sex without condoms increases the risks of sexually transmitted infections including HIV/AIDS. Figure 2 shows that the number of students engaging in unprotected sex doubled over the five-year period between 2004 and 2009. Again, the results show that the 'C' messages of the ABC campaign were ineffective among High School students in Namibia. These figures were corroborated by the fact that 47.0% of Namibian students indicated that mistrust was communicated when one used or suggested the use of a condom (Chinsembu, 2010). It follows, therefore, that without effective education and empowerment, the free distribution of condoms may not be enough to reduce new HIV infections.

The use of condoms among sexually active students was not ubiquitous, and the average 20% of students that did not use condoms were at a higher risk of HIV infection and transmission. Lack of condom use among students is not socially desirable. The use of condoms among urban students was lower because condoms were not available in most urban schools (Chinsembu, 2010).

Although the free distribution of condoms in Namibian schools is a socially-divisive issue and is still not backed by official government policy, most rural schools freely distributed 'smile' condoms. Caprivi region had the highest mean number of times that students had sex without condoms. Previous studies also showed that condom use in the Caprivi region was low, with about 72.0% of adolescents not using condoms (Mensah et al., 1998). Adolescents that engage in transactional sex with sugar-daddies unlikely use condoms. Sex without condoms was also significantly high among students from the Herero ethnic group. These results imply that 'C' messages in the ABC approach should especially target students from the Caprivi region and the Herero ethnic group.

The findings that the use of condoms was increased by HIV testing, parental strictness, AIDS clubs, and the willingness to access condoms seem to be in line with the Theory of Planned Behaviour (Ajzen and Manstead,

2007; Ajzen, 1985; 1991; Ajzen et al., 2009). Thus, it was hypothesized that the use of condoms by students from urban areas, Caprivi and Kavango regions, and the Herero and Lozi ethnic groups may be improved by using interventions that encouraged HIV testing, participation in AIDS awareness clubs, parental strictness, and the willingness to acquire condoms.

LIMITATIONS OF STUDY RESULTS

One of the challenges to studying coital behaviour is the validity of the data which may have been influenced by respondents' recall and social desirability biases. Such biases and the failure to recall the exact number of times that they engaged in coital activity may have posed limitations on the accuracy of the results of this study. All data in this study were self-reported and not collected through objective measurements. The reliability of self-reported data on personal and sensitive issues such as sexual behaviour may not be guaranteed. All over the world, people tend to lie about sex and sexual behaviour; hence the value of these results should be taken with caution.

The design of the study was cross-sectional, and although some associations between variables were logical, cross-sectional designs limit causal inferences. Since data on sexual activity were recalled over a 12-month period, they may not have been representative of students' current or recent sexual behaviours. Comparisons across ethnic groups may have been biased by the small sample sizes of students that were Damara-Nama and Herero. Factors associated with low ages of coital debut, sexual activity, multiple sexual partners, age of the partners, and non-use of condoms are not presented in this paper. The results of this study pertained to heterosexual relations rather than homosexual ones.

CONCLUSIONS AND RECOMMENDATIONS

We found that High School students in Namibia had very low ages of coital debut. There were also high levels of sexual activity, multiple sexual partners, and non-use of condoms. Several factors were positively associated with sexual activity and condom use. Our disaggregated data reinforce the need for the roll-out and targeting of ABC messages to High School students in specific strata (regions, urban-rural areas, gender, ethnic groups, Grades) at a higher risk of HIV/AIDS infection. Focussing ABC messages to high risk groups will save time and financial resources, and maximize the benefits of the ABC preventive approach. We therefore recommend that 'A' messages can have greater behaviour change impact if they are more significantly targeted at students that are male, from the Caprivi region, urban areas, and the Lozi

ethnic group. 'B' messages could also have greater impact if they considerably target students that are male, and those from the Damara-Nama, Lozi, and Herero ethnic groups. Likewise, 'C' messages should more preferentially target students from urban areas, Caprivi region, and the Herero ethnic group. Although targeting has several challenges such stigma, marginalization, and lack of organizational structures, we still believe that targeting ABC messages to specific at-high risk groups of students will be synonymous to the principle of "let us first harvest the low-hanging fruits". Peer educators may be employed to deliver ABC messages to targeted students. Further qualitative research is urgently needed to understand the context or factors associated with early coital debut and the role of culture or gender in influencing sexual behaviours. ABC messages need to become embodied in the development of new social norms or the revitalization of cultural norms that power students and their communities towards HIV prevention. We recommend that current sex education and HIV/AIDS preventive programmes premised on the ABC approach should be urgently re-worked if they are to tip the HIV epidemic downwards. One area of priority is for such programmes to de-stigmatize the use of condoms or inculcate a sense of trust so that regular sexual partners can muster the willingness to acquire and use condoms.

ACKNOWLEDGEMENTS

The Namibian Ministry of Education, regional directors of education, school principals, teachers, and students are thanked for their permission and cooperation during the study.

REFERENCES

- Ajzen I, Czasch C, Flood MG (2009). From intentions to behaviour: Implementation intention, commitment, and conscientiousness. *J. Appl. Soc. Psychol.*, 39:1356-1372.
- Ajzen I, Manstead ASR (2007). Changing health-related behaviours: an approach based on the theory of planned behaviour. In *The scope of social psychology: theory and applications*, pp. 43-63 (Eds. Van den Bos, K., Hewstone, M., de Wit, J., Schut, H. & Stroebe, M.). New York: Psychology Press.
- Ajzen I (1985). From intentions to actions: a theory of planned behavior. In *Action-control: From cognition to behaviour*, (Eds. Kuhl, J. & Beckman, J.). Heidelberg: Springer. pp. 11-39.
- Ajzen I (1991). The theory of planned behaviour. *Organizational Behaviour and Human Decision Processes*, 50: 179-211.
- Brown J, Sorrell J, Raffaelli M (2005). An exploratory study of constructions of masculinity, sexuality and HIV/AIDS in Namibia, Southern Africa. *Cult. Health Sex*, 7: 585-598.
- Burgoyne AD, Drummond PD (2008). Knowledge of HIV and AIDS in women in sub-Saharan Africa. *Rev Afr Santé Reprod.*, 12: 14-31.
- Chinsembu KC, Hedimbi M (2010). An ethnobotanical survey of plants used to manage HIV/AIDS opportunistic infections in Katima Mulilo, Caprivi region, Namibia. *J. Ethnobiol. Ethnomed.*, 6: 25.
- Chinsembu KC (2010). HIV/AIDS and science education in Namibian secondary schools. University of Namibia, PhD dissertation.
- Coates TJ, Richter L, Caceres C (2008). Behavioural strategies to reduce HIV transmission: how to make them work better. *Lancet*, 372: 669-684.
- Collins RL, Elliot MN, Berry SH, Kanouse DE (2004). Watching sex on television predicts adolescent initiation of sexual behaviour. *Pediatrics*, 114: 280-289.
- Desert Soul (2008). Multiple and concurrent sexual partnerships in Namibia. One love, a target audience research report, September, Windhoek: BP/Koninkrijk/DFID/EU/Irish Aid.
- Duncan C, Miller DM, Borskey EJ, Fomby B, Dawson P, Davis L (2002). Barriers to safer sex practices among African American college students. *J. Natl. Med. Assoc.*, 94: 944-951.
- Fairweather I (2006). Heritage, identity and youth in postcolonial Namibia. *J Southern Afr. Stud.*, 32: 719-736.
- Government of the Republic of Namibia (2008). Report of the 2008 national HIV sentinel survey. Windhoek: Ministry of Health and Social Services.
- Green EC, Herling A (2006). Paradigm shift and controversy in AIDS prevention. *J. Med. Person*, 4: 23-33.
- Henderson M, Butcher I, Wight D, Williamson L, Raab G (2008). What explains between-school differences in rates of sexual experience? *BMC Public Health* 2008, 8:53 doi:10.1186/1471-2458-8-53.
- lipinge S (2003). The relationship between gender roles and HIV infection in Namibia. In B. Otaala (Ed.), *Government leaders in Namibia responding to the HIV/AIDS epidemic* (pp. 130-152), Proceedings of a workshop held from June 23-24, 2003, Safari Court Hotel, Windhoek, Namibia: University of Namibia Press.
- Katuta F (2011). The HIV/AIDS epidemic in Namibia: towards zero infections, zero discrimination, and zero HIV deaths. The 50 by 15 prevention movement and human rights discussion and press conference, Windhoek country club; 3 February 2011.
- Kawichai S, Beyrer C, Khamboonruang C, Celentano DD, Natpratan C, Ringruengthanakit K (2004). HIV incidence and risk behaviours after voluntary HIV counselling and testing (VCT) among adults aged 19-35 years living in peri-urban communities around Chiang Mai city in northern Thailand. *AIDS Care*, 16: 21-35.
- Law Reform and Development Commission (2006). Draft criminal code with explanations/comments: Law reform and Development Commission, Republic of Namibia.
- Lawoyin OO, Kanthula RM (2010): Factors that influence attitudes and sexual behaviour among constituency youth workers in Oshana region, Namibia. *Afr. J. Reprod. Health*, 14: 55-69.
- Mathews C, Aaro LE, Flisher AJ, Mukoma W, Wubs AG, Schaalma H (2009): Predictors of early first sexual intercourse among adolescents in Cape Town, South Africa. *Health Educ. Res.*, 24: 1-10.
- McFadden P, Khaxas E (2007). Research report on patriarchal repression and resistance in the Caprivi region in Namibia. Windhoek: Women's Leadership Centre.
- Mensah M, Black S, Gamatham J (1998). Adolescent reproductive health: needs assessment report, Caprivi region. Windhoek: Namibia Planned Parenthood Association (NAPPA).
- Ministry of Health and Social Services (2004). Report on the Namibia school-based student health survey 2004. Windhoek: Primary Health Care Services Directorate.
- Molla M, Berhane Y, Lindtjorn B (2008). Traditional values of virginity and sexual behaviour in rural Ethiopian youth: results from a cross-sectional study. *BMC Public Health*, 8:9 doi: 10.1186/1471-2458-8-9.
- Mufune P, Kaundjua MB, Indongo N, Nickanor N, Mchombu K (2004). 2002 baseline survey on sexual and reproductive health and HIV/AIDS among adolescents and youth. Windhoek: University of Namibia/United Nations Population Fund.
- Mufune P (2003). Changing patterns of sexuality in northern Namibia: implications for the transmission of HIV/AIDS. *Cult. Health Sex.*, 5: 425-438.
- Shaw-Taylor Y (2008). Measuring ethnic identification and attachment in sub-Saharan Africa. *Afr. Sociol. Rev.*, 12: 155-166.
- Sherr L, Lopman B, Kakowa M, Dube S, Chawira G, Nyamukapa C, Oberzaucher N, Cremin I, Gregson S (2007). Voluntary counselling and testing: uptake, impact on sexual behaviour, and HIV incidence in a rural Zimbabwean cohort. *AIDS*, 21: 851-860.
- Siziya S, Muula A, Kazembe LN, Rudatsikira E (2008). Harmful lifestyles' clustering among sexually active in-school adolescents in Zambia. *BMC Pediatr.*, 8: 6.
- Solomons A (2011). The multiple concurrent partnerships multi-media campaign. The 50 by 15 prevention movement and human

- rights discussion and press conference, Windhoek country club; 3 February 2011.
- Statistical Package for the Social Sciences, Inc (2010): PASW Statistics 18 version 18 for windows user's guide. Chicago: SPSS Inc.
- Talavera P (2002). Sexual cultures in transition in the northern Kunene- is there a need for a sexual revolution in Namibia. In W. Volker, T. Fox, & P. Mufune (Eds.), *Namibia-Society-Sociology*, Windhoek: University of Namibia Press. pp. 46-71
- Tuupainen M (1970). Marriage in a matrilineal African tribe- a social anthropological study of marriage in the Ondonga tribe in Ovamboland. Helsinki: Transactions of the Westermarck Society, volume 18.
- UNAIDS [Joint United Nations Programme on HIV/AIDS] (2008). *AIDS outlook/09. UNAIDS World AIDS Day report*. Geneva: UNAIDS; 2008.
- UNDP [United Nations Development Programme] (2000). *Namibia Human Development Report 2000*. Windhoek: UNDP.
- UNICEF [United Nations Children's Fund] (2006). *My Future is My Choice. Facilitator's manual*. Windhoek: HAMU/UNICEF.
- UNICEF [United Nations Children's Fund] (2006). *Revised country programme document, Namibia*, Windhoek: UNICEF.
- UNICEF [United Nations Children's Fund] (2007). *Window of opportunities for the children of Namibia, Government of Namibia- UNICEF program for HIV life skills: "window of hope"*. Windhoek: UNICEF.
- Weinhardt LS, Carey MP, Johnson BT, Bickman NL (1999). Effects of HIV counselling and testing on sexual risk behaviour: a meta-analytic review of published research, 1985-1997. *Am. J. Public Health*, 89: 1397-1405.
- Zwang J, Garenne M (2008). Social context of premarital fertility in rural South Africa. *Afr. J. Reprod. Health*, 12: 98-110.