RESEARCH ARTICLES

Condom use at last sexual intercourse among female teenagers in Zambia: results from the Zambia Demographic and Health Survey, 2013-2014

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Teenager pregnancy is high in Zambia and efforts to curb this vice, including condom use, have had little success. In order to design interventions to raise condom use prevalence, interventions should be designed based on scientific evidence. The objective of the study was to determine correlates for condom use at last sexual intercourse among female teenagers aged 15-19 years. The Zambia Demographic and Health Survey of 2013-2014 data were used in the study to produce nationally representative results. Logistic regression analyses were conducted to determine correlates for condom use. A total of 1485 sexually active female teenagers of age 15–19 years participated in the survey. About a third were of age 19 years (32.7%) and were resident in urban areas (34.6%); 54.6% had attained secondary or higher level and 54.6% never been married. Out of 1485 teenagers who were sexually active, 403 (24.4%) used a condom in their most recent sexual intercourse. Age, province, residence and marital status were independently associated with condom use. Teenagers of age 17 were 37% (AOR = 0.63, 95% CI [0.45, 0.89]) less likely to use a condom compared to older teenagers of age 19 years. Compared to teenagers in Western province, while teenagers in Central province were 71% (AOR = 1.71, 95% CI [1.09, 2.71]) more likely to use a condom, those in Northern Province were 64% (AOR = 0.36, 95% CI [0.16, 0.79]) less likely to use a condom. Participants in urban areas were 1.38 (95% CI [1.15, 1.67]) times more likely to use a condom compared to their counterparts in rural areas. Teenagers who were never married were 1.88 (95% CI [1.55, 2.27]) times more likely to use condom compared to teenagers who were married, cohabited or once married. Sex partners of age less than 20 years were more likely to use a condom compared with sex partners aged 25 years or older (AOR = 1.51, 95% CI [1.08, 2.12]). Interventions to increase condom use rates should be targeted to female teenagers in rural areas, provinces with low condom uptake and female teenagers who are married, cohabiting or once married to delay child bearing in the process.

Introduction

Zambia has placed considerable attention on adolescent's sexual behaviour and how risky sexual activities contribute to poor reproductive and sexual health outcomes

including unwanted pregnancies, abortions, Sexually Transmitted Infections (STIs) and HIV/AIDS. Teenagers tend to have high levels of knowledge regarding HIV and other sexually transmitted infections, yet are less informed on how to prevent infection. Since knowledge alone does not reduce risky sexual behavior [1], it is important to explore risk reduction strategies. Condom use is one of the two most widely publicized risk reduction strategies for HIV transmission [2], the other being number of sexual partners. It is believed that under almost all conditions of prevalence and infectivity, consistent and careful condom use is a far more effective method of reducing the risk of HIV infection. In Zambia, despite campaigns on early marriages and pregnancy, 23.3% of 15-19-year-olds had given birth before 2014 [3]. There is little evidence based statistics and policy guidelines on this issue. Teenage pregnancy is one of the main reasons for school drop outs in Zambia and this consequently leads to reduced opportunities in life for both the teenage mother and her unborn child.

Decision to use a condom is complex. Studies in family planning indicate that decisions not to use protection during sex may be based on insufficient knowledge and distorted judgments of the risks of acquiring sexually transmitted infections and becoming pregnant [4]. In Cameroon, a study on determinants of having ever used condom and current condom use among young people reviewed that relationships exist between higher levels of condom use and parental support, personal risk perception and self-efficacy [5]. A systematic review on intervention impact on condom use in sub-Saharan Africa and Asia showed that in casual relationships, low condom use is a common practice unless one partner was knowingly HIV-infected or at high-risk or avoiding pregnancy. Another study in Australian university indicated that students with self-perception of being at greatest risk of infection were least likely to use condom and it was further noted that, condom use was not related to peer norms [1].

Figure 1 Map of Zambia showing its provinces and neighbouring countries. Source: http://www.zambiaflora.com/speciesdata/about.php

Research on condom use among female teenagers have either been on school-based populations or conducted in a selected district or included in the 15-24 or 18-24 years' age groups. These populations were not representative of female teenagers in Zambia. The current study is aimed at establishing correlates for condom use among female teenagers aged 15-19 years in Zambia. It is focusing on encouraging additional research and interventions aimed at eroticizing condoms among sexually active female teenagers. The study is intended to bring out information that will be a basis for an increase in level of sexual communication and further encourage female teenagers to adopt risk-reduction practices to protect themselves from unwanted pregnancies, sexually transmitted infections and human immunodeficiency virus (HIV).

Methods

Zambia (Figure 1) has a population of 13,092,666 over an area of 752,612 square kilometers; a population density of 17.4 persons per square kilometer and 39.5% of the population of Zambia live in urban areas with the Lusaka and Copperbelt most urbanized provinces being the most populated provinces with Lusaka having 100.1 persons per square kilometers [6]. Lusaka and the Copperbelt provinces are among the ten provinces of Zambia. The geographical structure of Zambia is such that each province is made up of 74 districts, 150 constituencies make up a district, 1,430 wards make up a district, 8,196 Census Supervisory Areas (CSAs) make up a ward and 25,632 Standard Enumeration Areas (SEAs) make up a CSA [6]. A SEA has on average 110 households with 510 people.

The 2013-14 Zambia Demographic and Health Survey [3] was a nationally representative sample. Details of the methodology that was used in the ZDHS 2013-2014 has been reported before [3]. Briefly, totals of 305 SEAs in urban areas and 417 in rural areas were selected. From each SEA, 25 households were selected. Altogether, 18,050 residential households were to be selected nationally: 7,625 in urban areas and 10,425 in rural areas; resulting in 16,516 women (8,356 in urban areas and 8,160 in rural areas) to be interviewed in the 15-49 years age group.

A list of SEAs obtained from the 2010 census was used as the sampling frame for the 2013-2014 ZDHS. A two-stage stratified sampling was used to draw the sample. Each province was stratified into urban and rural areas, giving a total of 20 sampling strata. In the first stage of sampling, 722 SEAs were

selected with probability proportional to the SEA size. Selected SEAs with more than 300 households were segmented. Only one segment was selected for the survey with probability proportional to the segment size. A cluster was thus either a SEA or a segment of a SEA. In the second stage of selection, a systematic sample of 25 households per cluster was selected. All women in the 15-49 years age group who were usual members of the selected households or who spent the night before the survey in the selected households were eligible for the individual interview. The survey resulted in 16,411 interviews of women aged 15-49 years, giving household response rates of 93% and 88% in urban and rural areas, respectively and individual response rates of 96% and 97% in urban and rural areas, respectively. We, however, abstracted data for females aged 15-19 years who were sexually active.

Table 1 Socio-demographic characteristics of sexually active female teenagers aged 15–19 years in Zambia, 2013-2014 (Total = 1, 485)

Characteristics	n[1] (%)[2]
Age (years)	
15	136 (8.2)
16	222 (14.2)
17	272 (17.4)
18	399 (27.5)
19	456 (32.7)
Province	
Central	124 (9.6)
Copperbelt	109 (11.3)
Eastern	209 (14.8)
Luapula	106 (5.6)
Lusaka	146 (15.7)
Muchinga	96 (4.3)
Northern	136 (7.1)
North-Western	193 (6.0)
Southern	179 (16.4)
Western	189 (9.2)
Residence	
Urban	601 (34.6)
Rural	884 (65.4)
Highest Education Level Attained	
Up to primary	721 (49.3)
Secondary or higher	762 (50.7)
Religion	
Catholic	261 (17.9)
None Catholic	1220 (82.1)
Marital status	
Never married	884 (54.6)
Married, cohabiting or once married	601 (45.4)
Wealth Index	
Poorest	292 (20.7)
Poorer	312 (21.5)
Middle	378 (23.2)
Richer	329 (22.6)
Richest	174 (12.0)

[1]Unweighted frequency; [2]Weighted frequency

Data were obtained from Demographic and Health Survey [7]. Data analyses were weighted to adjust for differing individual response rates in each sampling stratum. SPSS version 16 was used to analyse the data. Frequencies were obtained to describe the sample. Association between exposure factors and condom use were established using logistic regression analyses. Crude odds ratios and adjusted odds ratios were computed together with their 95% confidence intervals. All the significant factors at the 5% significant level in bivariate logistic regression analyses were considered in a

multivariate logistic regression. Backward LR stepwise variable selection method was used to enter variables in the model. Probabilities for Stepwise entry and removal were 5% and 6%, respectively.

Table 2 Factors associated with condom use at last sexual intercourse among female teenagers aged 15-19 years in Zambia (2013-2014) in bivariate logistic regression analyses

Factor	COR[1] (95% CI[2])
Age (years)	
15	1.40 (1.01, 1.94)
16	1.50 (1.16, 1.95)
17	0.81 (0.62, 1.06)
18	0.93 (0.74, 1.15)
19	1
Province	
Central	1.16 (0.80, 1.68)
Copperbelt	1.62 (1.16, 2.25)
Eastern	1.00 (0.73, 1.39)
Luapula	0.87 (0.53, 1.45)
Lusaka	1.11 (0.81, 1.50)
Muchinga	0.58 (0.30, 1.11)
Northern	0.38 (0.21, 0.69)
North-Western	1.37 (0.88, 2.14)
Southern	1.00 (0.73, 1.36)
Western	1
Residence	
Urban	1.30 (1.15, 1.47)
Rural	1
Highest Education Level Attained	
Up to primary	0.78 (0.69, 0.88)
Secondary or higher	1
Religion	
Catholic	1.04 (0.89, 1.22)
Non-catholic	1
Marital status	
Never married	2.30 (1.98, 2.66)
Married, cohabiting or once married	1
Wealth Index	
Poorest	0.69 (0.53, 0.89)
Poorer	0.66 (0.51, 0.85)
Middle	0.99 (0.78, 1.24)
Richer	1.26 (1.01, 1.58)
Richest	1
Knows that always using a condom reduces risk of getting HIV	
Yes	1.11 (0.94, 1.31)

No or don't know	1
Alcohol consumption at recent sexual intercourse	
Yes	0.98 (0.80, 1.21)
No	1
Total lifetime number of sex partners	
1	0.93 (0.79, 1.10)
2	0.97 (0.80, 1.18)
3+	1

[1]Adjusted Odds Ratio; [2]Confidence interval

Table 3 Heads of households' characteristics and age of sex partner associated with condom use at last sexual intercourse among female teenagers aged 15-19 years in Zambia (2013-2014) in bivariate analyses

Factor	COR[1] (95% CI[2])
Age of sex partner in most recent sexual intercourse (years)	
<20	2.06 (1.57, 2.70)
20–24	0.82 (0.64, 1.06)
25+	1
Age of head of household	
15–29	0.47 (0.37, 0.61)
30–39	1.46 (1.14, 1.86)
40–49	1.05 (0.84, 1.31)
50–59	1.05 (0.81, 1.35)
60+	1
Gender of head of household	
Male	0.84 (0.74, 0.96)
Female	1

[1]Adjusted Odds Ratio; [2]Confidence interval

Results

A total of 1485 participants in a ZDHS 2013–2014 were sexually active female teenagers of age 15–19 years. About a third were of age 19 years (32.7%) and resided in urban areas (34.6%). Close to 1 in 2 of the respondents had attained secondary or higher level of education (50.7%) and had never been married (54.6%). Altogether, 42.2% of the teenagers belonged to poorer or poorest wealth categories. Further description of the sample is shown in Table 1.

Out of 1485 female teenagers who were sexually active, 403 (24.4%) used a condom in their most recent sexual intercourse. Tables 2 and 3 show factors associated with condom use at the most recent sexual intercourse. All the factors except religion, knowing that always using a condom reduces risk of getting HIV, alcohol consumption at most recent sexual intercourse and total lifetime number of sexual partners were significantly associated with condom use at most recent sexual intercourse in bivariate analyses.

Results of multivariate analysis are shown in Table 4. Teenagers of age 17 were 37% (AOR = 0.63, 95% CI [0.45, 0.89]) less likely to use a condom at most recent sexual intercourse compared to older teenagers of age 19 years. Compared to teenagers in Western province, while teenagers in Central province were 71% (AOR = 1.71, 95% CI [1.09, 2.71]) more likely to use a condom, those in Northern Province were 64% (AOR = 0.36, 95% CI [0.16, 0.79]) less likely to use a condom at most recent sexual intercourse. Participants in urban areas were 1.38 (95% CI [1.15, 1.67]) times more likely to use a condom at most recent sexual intercourse

Table 4 Factors associated with condom use at last sexual intercourse among female teenagers aged 15-19 years in Zambia (2013-2014) in multivariate logistic regression analysis

Factor	AOR[1] (95% CI)[2]
Age (years)	
15	0.87 (0.57, 1.34)
16	1.37 (0.99, 1.89)
17	0.63 (0.45, 0.89)
18	1.23 (0.92, 1.64)
19	1
Province	
Central	1.71 (1.09, 2.71)
Copperbelt	1.35 (0.86, 2.12)
Eastern	1.28 (0.84, 1.94)
Luapula	0.75 (0.38, 1.51)
Lusaka	0.88 (0.58, 1.34)
Muchinga	0.74 (0.33, 1.67)
Northern	0.36 (0.16, 0.79)
North-Western	1.05 (0.60, 1.85)
Southern	1.03 (0.70, 1.50)
Western	1
Residence	
Urban	1.38 (1.15, 1.67)
Rural	1
Marital status	
Never married	1.88 (1.55, 2.27)
Married, cohabitation or once married	1
Age of most recent sexual partner (years)	
<20	1.51 (1.08, 2.12)
20-24	0.79 (0.60, 1.04)
25+	1

[1]Adjusted Odds Ratio; [2]Confidence interval

compared to their counterparts in rural areas. Teenagers who were never married were 1.88 (95% CI [1.55, 2.27]) times more likely to use condom at most recent sexual intercourse compared to teenagers who were married, cohabited or once married. Sex partners of age less than 20 years were more likely to use a condom at most recent sexual intercourse compared with sex partners aged 25 years or older (AOR = 1.51, 95% CI [1.08, 2.12]).

Discussion

Socio-demographic factors (age, province, residence and marital status) were the main determinants for condom use at last sexual intercourse in the current study. The study found that age of the teenager was significantly associated with condom use at first sexual intercourse. The 17 years old teenagers were less likely to use condoms at first sexual intercourse compared to those aged 19 years. Teenagers aged 17 may have been in a relationship for a short period of time compared to the 19-year-old teenagers, this reasoning conforms to the findings elsewhere which indicate that adolescents who have been in relationship for shorter period are less likely to use a condom at the first sexual intercourse [8]. It's also true that at 17 years, teenagers are less informed about preventive measures. Zelnik et al [9] argued that for most young men and women, the initiation of sex seems to be a spur-of-the moment decision and that the majority of them do not plan and so many of them especially teenage women depend upon their partners to use either a condom or withdrawal.

Teenagers in Central province were more likely to use condoms at first sexual intercourse while teenagers in Northern Province were less likely to use condoms at their first sexual intercourse. This could be explained by differences in levels of sensitization on condom use in different provinces. The Catholic religion has a large following in Northern Province. Catholic faith is against use of condoms and this may explain why teenagers were less likely to use condoms at first sexual intercourse in Northern Province compared to the other provinces. Agha et al [10] found that young women affiliated to conservative religious groups were more likely to delay sexual initiation but less likely to use condoms during first sex. It is not clear why teenagers in Central province were more likely to use a condom compared to teenagers in Western province.

Teenagers in urban areas were more likely to use condoms on first sexual intercourse compared to rural areas. This could be explained by the levels of literacy levels that

are high in urban areas compared to rural areas in Zambia [6]. A study done in Lusaka, Zambia showed that consistent use of condoms and lower levels of sexual activities were associated with school attendance and knowledge of AIDS [11].

Teenagers who reported never been married were more likely to use condoms at their first sexual intercourse compared to the married teenagers [12]; this agrees with the findings in Malawi which indicate that condom use is not common in marriage. Never married teenagers may have been more concerned about unwanted pregnancies, HIV and other sexually transmitted infections and this could have made them to opt for condom compared to married/cohabitation/once married.

The age of the teenager's partner was also significantly associated with the likeliness to use a condom. Teenagers with partners aged less than 20 years (in the same 15-19 years age group) were more likely to use condoms. Females might have more sexual relationship power to negotiate condom use if they are of the same age as sex partner and more so if they are older. Older sex partners are more likely to have increased sexual relationship power, self-esteem, and self-efficacy to use condoms [13]. In another study, it was indicated that gender differences play a role on the determination to use condoms despite a partner's objections and the difficulty to use condoms in moments of passion [1].

The study was designed to produce a nationally representative sample for females aged 15-49 years. We nested our study in this sample. We believe that the sample in our study will represent all females aged 15-19 years in the nation. We are unable to generalize findings in the current study to other countries because other countries may have different demographic patterns as well as possible correlates for condom use. In conclusion, interventions to increase condom use rates should be targeted to female teenagers in rural areas, provinces with low condom uptake and female teenagers who are married, cohabiting or once married to delay child bearing in the process.

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SS obtained the data from DHS, analyzed it and participated in the interpretation and drafting of the manuscript. DM drafted the Introduction and Discussion sections of the manuscript. MLM conceived the study, interpreted the results and participated in the drafting of the manuscript. EMN and MK participated in the interpretation of the results and drafting of the manuscript. All authors approved the final version of the manuscript to be submitted for publication.

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