



Perceived Risk of Contracting HIV and AIDS among Sexually Active Unmarried Young People in Zambia

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Authors' contributions

This work was carried out in collaboration among all authors. Author SOCM designed the study, performed the analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AJM and TK managed statistical analysis, the literature review, wrote the discussion and edited the manuscript. All authors read and approved the final manuscript.

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ABSTRACT

The paper explored gender differences in factors affecting perceived risk of contracting HIV and AIDS among sexually active unmarried young people in Zambia. The data used was from the Zambia Demographic Health Survey (2013-2014), logistic regression analysis was used to identify the gender differences in perceived risk of acquiring HIV and AIDS. The study revealed that 61% of females and 64.4% of males reported low perceived risk of contracting HIV and 16.5% of females and 16.6% of males reported having a high risk of getting HIV/AIDS. Logistic regression analysis also identified wealth index, exposure to media, having had STDs in the last 12 months, consistent use of condoms with all partners and drinking alcohol as strong predictors of respondent's likelihood of low risk perception of contracting HIV and AIDS. The analysis further indicated that females who used condoms consistently with all partners were 1.2 times more likely to report being at low risk of contracting HIV and AIDS. This suggests that interventions that seek to reduce the rate of HIV infection may need to focus on increasing risk perception among young people as a protective factor.

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1. INTRODUCTION

According to Haque and Amara (2009) risk perception is the subjective judgment that people make about the characteristics and severity of a risk [1]. Macintyre stipulates that the perception of risk and sexual behaviour is complex and poorly understood, even though perception of risk is considered to be the first stage towards behavioural change from risk taking to safer behavior [2]. The concept of perceived risk refers to general assessments of one's risk to a health hazard and is distinct from beliefs about the consequences of condom use [3]. The belief that using a condom could prevent Sexually Transmitted Infections (STIs), including HIV will encourage condom use [1].

Individuals' perceptions of HIV risk is important to understand how they relate their sexual experiences to the risk of contracting infection [4]. This is important as perceived risk of contracting HIV may have important implications for health if the perceptions are rational and lead to a willingness to avoid risky behavior [1]. In addition, an understanding of the association between perception of risk and sexual behaviour may facilitate the design of HIV-preventive measures necessary to check the spread of the disease among different population subgroups.

Several studies have found that perception of risk is related to an increase in self-protective behavior [5]. This is largely because the adoption of protective behaviour is unlikely to occur unless the person is aware of the risk of HIV infection. However, sometimes people who are at risk of HIV infection may not perceive what puts them at risk and are therefore less motivated to protect themselves, or they may perceive themselves at risk but feel unable to influence their situation [6].

It is generally known that youths sometimes adopt the practice of condom use during sexual intercourse and the factors that necessitate condom use among the youths during sexual activities serve as the determinants of condom usage. Younger people were also more likely to have multiple sexual partners, for example a study of University students in Zambia found that the younger students in the age range of 21-24 were more likely to have more than 1 sexual partners [7]. Additionally, in countries like Nigeria, the determinants of condom use among the youths includes the compulsory paramilitary national service in Nigeria which includes

influence of sexual partner, availability of condom and self-efficacy of condom use [8]. This therefore calls for a need to better understand how condoms would fit within the sexual practices and relationships in Sub-Sahara Africa (SSA).

Bankole [8] identified a multitude of factors that might impede young people's ability to protect themselves by using condoms [9]. These factors include the youths' attitudes towards the ineffective use of condoms. Studies have found that people have concerns about condom safety thus contributing to the negative perception of condom safety among young people [10]. Masoda and Govender stipulated that condoms usually break rendering them ineffective (e.g., condoms have small holes or they can disappear into the vagina), have negative effects on sexual enjoyment, have low quality especially those that are free, and signify infidelity or having an STI [11]. In a number of studies, trust in a sex partner was mentioned as a reason for not using condoms. Although a number of studies have looked at young people's perceptions of condoms, there is little data on the extent to which these perceptions may mitigate condom use [12].

Zambia has experienced a high unmet need for family planning (FP) and high rates of HIV particularly among the youths [13]. While male condoms are widely available and 95 per cent of adults have heard of them, self-reported use in the past 12 months was low among the young people (45%) [14]. Male condoms serve as a cornerstone of family planning and HIV or STI prevention programs. Despite widespread availability and knowledge of this method, barriers to consistent use remain, particularly among young adults [8]. Therefore to ensure protection against both unintended pregnancy and HIV or STI infection, public health programs should emphasize dual protection; dual protection refers to either promotion of barrier methods (such as male or female condoms) for both pregnancy and HIV or STI prevention, or modern contraception coupled with condom use [15].

According to Pincoff urban Zambia is an important context for the development of effective condom promotion strategies [12]. Zambia has a high rate of unmet need for FP (27%) and the capital city, Lusaka has high poverty levels and high HIV prevalence rates of

19.4 per cent [16]. Urban women in Lusaka are more likely to use a family planning method than rural women, reflecting wider availability and easier access in urban areas, in addition to other social factors. The Zambian government has demonstrated a strong commitment to expanding FP services [17]. However, consistent condom use overall is low: the 2013-2014 Demographic and Health Survey (DHS) reported male condom use among young adults (15–24 years) at high-risk sex (intercourse with a non-marital, non-cohabitating partner) in the past 12 months was only 45.1% [18].

According to Denué [14] globally, HIV knowledge has thus far been increased on two levels. Firstly, awareness of the existence and transmission of HIV has been promoted [15]. Despite the improvement in the knowledge of HIV prevention, people still engage in unprotected sex, even in countries with high HIV prevalence rates where unprotected sex entails high risks. Many studies have shown low levels of condom use irrespective of infection risks. This has been confirmed by a systematic analysis of condom use in four different cities in Sub-Saharan Africa, where no significant higher condom use was found among populations with higher HIV prevalence rates. A similar result was found among factory workers with a high prevalence rate in Ethiopia, where condom use is low even though knowledge on condoms is widely spread [19].

Most studies report that women are more likely than men to feel that they do not have control over their situation [20]. Studies have shown that individuals who feel that they have little or no influence over what happens to them are more likely to engage in risky sexual behavior [21]. The risk of HIV infection may also appear vague and distant [19]. For instance, in South Africa, underground workers on the gold mines did not use condoms because they perceived the risk of developing AIDS as minimal compared with the risk they face living and working on the mines [22]. A Zambian study showed that sexual violence was a common problem in women [23] and it was more common among younger women [24]. This paper therefore explored the factors related to risk of perception regarding contracting HIV in unmarried young people in Zambia.

2. METHODS

Data used was from the 2013-2014 Zambia Demographic Health Survey (ZDHS) which is freely available for use by researchers for further

analysis. The sample for the survey was designed to provide the estimates of population and health indicators at national and provincial levels. The survey was based on a nationally representative sample carried out by Central Statistical Office with technical assistance from the Demographic Healthy Surveys Programme at ICF International which was funded by the United States Agency for International Development (USAID). The survey used a two-stage stratified cluster sampling design. At the first stage, 722 Enumeration Areas (EA) were selected using systematic random sampling with probability proportional to size. At the second stage, 25 households per EA were selected again using systematic random sampling. Methods and data collection procedures have been published elsewhere [24].

The ZDHS included a special module designed to collect information on various demographic and health indicators including individual characteristics, sexual activity, marriage, family planning knowledge and use, HIV and AIDS related knowledge, attitudes and behaviour. The household questionnaires also collected information on the demographic and economic characteristics of all household members. In this study, the analysis was restricted to unmarried sexually active young people aged 15-24 in order to specifically look at perceived risk of contracting HIV and AIDS among sexually active unmarried males and females in Zambia. The Statistical Package for Social Sciences was used to help compute and analyse the association between the socio-economic factors and the perceived risk of contracting HIV and AIDS.

2.1 Measurement of Variables

2.1.1 Dependent variable

The perception of risk was measured by the question, “Do you think your chances of getting HIV/AIDS are great, small or you have no chance at all”? This question was addressed to all young people who were aware of HIV and AIDS. In this study, two levels of self-addressed risk are used in the multivariate analysis: “low risk’ and ‘high risk’.

The measurement and description of independent variables is shown in Table 1.

2.2 Data Analysis

The data analysis was restricted to sexually active unmarried young people and the analysis

was carried out in two stages. Firstly, cross tabulations were used to examine the relationship between the independent (socio-economic and demographic) and dependent (perceived risk of getting HIV and AIDS) variables, chi-square tests were conducted at the bivariate level for independent variables at $p < 0.01$ and $p < 0.05$ significant levels. Secondly, linear logistic regression was used to identify factors influencing perceived risk of getting HIV and AIDS by considering socio-economic and demographic variables separately for those at low risk and high risk. The results of the logistic regression models were converted into odds ratios, which represented the effect of a one-unit change in the explanatory variable on the indicator of using a condom. Odds ratios larger than one indicated a greater likelihood of using a condom than for the reference category; odds ratios smaller than one indicated a smaller likelihood of using a condom compared to the reference category.

3. RESULTS

Demographic variables indicated that 59% females and 53% males were aged 15-19 while there were 41% females and 47% males aged 20-24. 81% females and 78% of males were Protestants while 19.3% of the females and 22.4% of the males were Catholic. Similarly, with regard to place of residence, more than half of the female respondents were from rural areas (56%) while the rest were from urban areas (44%). Classification of wealth quintile showed that there were 51% of females and 48% of males from rich backgrounds, 23% of females and 23% of males from middle backgrounds then 26% of the females and 29% of males were from poor backgrounds.

In terms of the participants in the study, 70% of the women and 46.3% of the men were not working while 29.3% of the females and 54% of males were working. There were 28% females and 34% males who had primary education while 72% females and 66.3% males had secondary education.

Aside from that, 60% of the female and 55% of the male respondents were exposed to media less than once a week while 40% females and 45% males were exposed to media at least once a week. Nearly all the respondents reported not having had STDs in the last 12 months (females; 95.4%, males; 95%) meanwhile only 4.6% females and 5.4% males reported to have had STDs in the last 12 months. On perceived

risk of getting HIV, 61% of females and 65% of males reported low or no risk, 22% of females and 19% of the males reported medium risk and 17% of females and 17% of the males reported high risk. Aside from that, 80.3% of the females and 73.1% of the male respondents did not use condoms consistently with all partners while 20% of the females and 27% of the male respondents reported consistent condom use with all partners. Furthermore, 92% of the female respondents and 79% of the males reported that they did not drink alcohol while 8.2% of females and 21.2% of males reported that they did drink alcohol.

Table 3 shows the percentage of respondents who reported at low risk of contracting HIV and AIDS. Overall, 61.2% of the female and 64.4% of the male respondents reported low perceived risk of contracting HIV. Respondents aged 15-19 (59%) were more likely to perceive low risk of contracting HIV as compared to respondents aged 20-24 (59%). Age was not a significant factor in perception of low risk among males. Moreover, females from rural areas (63%) were more likely to perceive low risk of contracting HIV as compared to those from urban areas (59%). Respondents from rich backgrounds (males 64.2%, females 66.2%) were more likely to report perceiving low risk of contracting HIV as compared to those respondents from poor backgrounds (females 57.1%, males 61.2%). Furthermore, those who were not working (females 62.5%, males 66.3%) were more likely to perceive low risk of HIV as compared to those who were working (females 58%, males 62.7%). Females with secondary education (62.3%) were more likely to report low risk perception of contracting HIV as compared to those with primary education (58%). Educational level was not a significant determinant of low risk perception among the males. Respondents who reported not using condoms consistently with all partners (females 60%, males 66%) were more likely to report low risk of contracting HIV as compared to those who reported using condoms consistently with all partners (females 54%, males 59%). Having contracted STI in the last 12 months emerged as a significant determinant among males but not the females. Males who reported not contracting an STI (65.7%) in the last 12 months were more likely to perceive low risk as compared to those who reported contracting an STI (61%). Those respondents who did not drink alcohol (females 61%, males 66%) were more likely to report low risk of contracting HIV compared to those who drank alcohol (females 54%, males 59.3%).

Table 3 demonstrates the percentage of respondents who reported at high risk of contracting HIV and AIDS. Overall, about 17% of the male and 16.5% of female respondents reported high perceived risk of contracting HIV. Respondents aged 20-24 (18%) were more likely to perceive high risk of contracting HIV as compared to respondents aged 15-19 (15.4%). Women from rural residences (18.5%) were more likely to report perceiving high risk of contracting HIV as compared to those from urban residences (15%). Those who were exposed to media less than once a week (Males 18%, females 18.5%) were more likely to perceive high risk of contracting HIV as compared to those who were exposed to media for at least once a week (males 16%, females 13.5). Female respondents with secondary education (18%) were more likely to report high risk perception of contracting HIV as compared to those with primary education (14%). Females who had STDs in the last 12 months (29%) were more likely to perceive high risk in comparison to those who did not contract STDs in the last 12 months (16%). Respondents who reported using condoms consistently with all partners (18.5%) were more likely to report high risk of contracting HIV as compared to those who

reported not using condom consistently with all partner (16%).

To understand factors influencing the perceived risk perception, Logistic Regression analysis was carried out considering socio-economic and demographic variables' influences. Results of the logistic regression analysis are presented in Table 4. Logistic analysis identified age, exposure to media, having STDs in the last 12 months, using condoms consistently with all partners and drinking alcohol as strong predictors of low risk perception of contracting HIV/AIDS among the unmarried sexually active female youths. Respondents aged 20-24 were less likely to report low risk perception of contracting HIV/AIDS as compared to those who were aged 15-19. Being exposed to media at least once a week increased the odds of low risk perception among females in the study. Those who were exposed to media at least once a week were 1.1 times more likely to report low risk perception of contracting HIV/AIDS. Respondents who had STDs in the last 12 months showed strong prediction of low risk perception as compared to those who had not contracted HIV. Consistent condom use with all

Table 1. Description and measurement of independent variables

Variable	Description
Age	Age of the respondent is categorized as 15-19 and 20-24.
Religion	Religion was classified as Catholics or Protestants.
Residence	Place of residence was coded as urban or rural.
Wealth index	To measure socioeconomic status, we used Zambia Demographic Health Survey (ZDHS) wealth index, which divides households into three groups: poor, middle and rich according to the number of goods owned by the household.
Work status	Work status of the respondent was classified into two categories; those working and not working.
Educational level	Educational level of the respondent was categorized into primary, secondary or higher education.
Reading newspaper at least once a week	Exposure to media was measured by frequency of reading newspaper at least once a week. It was classified as those who read newspapers at least once a week or those who read less than once a week.
Listening to radio at least once a week	It was classified as those who listen to radio at least once a week or those who listen less than once a week.
Watching television at least once a week	It was classified as those who watch television at least once a week or those who watch less than once a week.
Exposure to media	Exposure to media was measured by frequency of watching television, listening to radio and reading newspapers. It was classified as those who are exposed to media at least once a week or those who are exposed to media less than once a week.
Drinks alcohol	It was grouped into two, those who drink alcohol or those who do not drink alcohol

Table 2. Sample distribution of sexually active males and females in the study

Characteristics	Women	N	Men	N
Age				
15-19	59.0	1251	53.0	1635
20-24	41.0	871	47.0	1450
Religion				
Catholic	19.3	408	22.4	689
Protestant	80.7	1714	77.6	2396
Place of residence				
Rural	56.1	1190	50.1	1545
Urban	43.9	932	49.9	1540
Wealth Index				
Poor	25.8	548	28.8	889
Middle	23.1	490	23.0	709
Rich	51.1	1084	48.2	1487
Work status				
Not-working	70.0	1491	46.3	1427
Working	29.3	621	53.7	1655
Educational level				
Primary	27.9	593	33.7	1039
Secondary or higher	72.1	1529	66.3	2046
Exposure to media				
Less than once a week	59.9	1271	54.8	1690
At least once a week	40.1	851	45.2	1395
Had STDs in the last 12 months				
No	95.4	95.4	94.6	2917
Yes	4.6	4.6	5.4	168
Perceived risk of getting HIV				
Low or no risk	61.4	1297	64.7	1987
Medium risk	22.1	466	18.7	576
High risk	16.6	359	16.7	522
Used condom consistently with all partners				
No	80.3	1704	73.1	2254
Yes	19.7	418	26.9	831
Drinks alcohol				
No	91.8	1948	78.8	2431
Yes	8.2	174	21.2	654

partners among females was positively associated with low risk perception as compared to those who inconsistently used condoms. Those who used condoms consistently with all partners were 1.2 times more likely to report low risk perception as compared to those who did not use condoms consistently with all partners. Drinking alcohol reduced the odds of male respondents reporting low risk perception among the sexually active unmarried females in the study.

Logistic regression analysis identified wealth status, place of residence, wealth status, having STDs in the last 12 months, using condoms consistently with all partners and drinking alcohol as strong predictors of low risk perception of

getting HIV/AIDS among the unmarried sexually active young males. Respondents from urban residence were 1.3 times more likely to report of reporting low risk perception as compared to those from rural residence. Respondents from rich backgrounds and those from middle class backgrounds showed a strong likelihood of low perceived risk as compared to those from poor backgrounds. Males from rich and middle backgrounds were 1.6 and 1.3 respectively more likely to report using condom consistently as compared to those from poor backgrounds. Respondents who had STDs in the last 12 months showed strong prediction of low risk perception as compared to those who had not contracted HIV. Consistent condom use with all partners among males was negatively associated

with low risk perception as compared to those who inconsistently used condoms. Drinking alcohol reduced the odds of male respondents reporting low risk perception among the participants.

Logistic analysis identified age, exposure to media, having STDs in the last 12 months, using condoms consistently with all partners and drinking alcohol as strong predictors of high risk perception of contracting HIV/AIDS among unmarried sexually active young females (Table 4). Respondents aged 20-24 were more likely to report high risk perception of contracting HIV/AIDS as compared to those who were aged

15-19. Those aged 20-24 were 1.3 times more likely to report high risk as compared to those aged 15-19. Moreover, being exposed to media at least once a week reduced the odds of high risk perception of contracting HIV/AIDS among the participants in the study. Those who were exposed to media at least once a week were 1.1 times more likely to report low risk perception. Drinking alcohol increased the odds of male respondents reporting high risk perception among the unmarried sexually active young males in the study. Those who drink alcohol were 1.3 times more likely to report high risk perception as compared to those who did not drink.

Table 3. Percentage of sexually active unmarried young females and males who reported a low risk of contracting HIV/AIDS

Characteristics	% who reported low risk of getting HIV and AIDS		% who reported high risk of getting HIV and AIDS	
	Female	Male	Female	Male
Age				
15-19	62.6*	65.6	15.7	15.4*
20-24	59.0	63.0	17.7	17.9
Religion				
Catholic	62.5	65.5	14.0	14.9
Protestant	60.8	64.1	17.1	17.1
Place of residence				
Rural	62.9*	63.8	15.8	18.5**
Urban	58.8	65.0	17.4	14.7
Wealth Index				
Poor	57.1**	61.2*	17.7*	17.1
Middle	58.8	64.6	19.6	16.8
Rich	64.2	66.2	14.5	16.2
Work status				
Not-working	62.5*	66.3*	16.3	16.0
Working	58.0	62.7	16.6	17.2
Educational level				
Primary	58.1*	63.7	16.9	13.9**
Secondary or higher	62.3	64.8	16.4	17.9
Exposure to media				
Less than once a week	59.8	63.3	18.5**	18.0*
At least once a week	63.1	65.8	13.5	14.9
Had STDs in the last 12 months				
No	61.4	65.6**	16.5	15.9**
Yes	55.1	44.0	17.3	28.6
Used condom consistently with all partners				
No	60.1*	65.7**	17.0	15.9*
Yes	65.3	60.9	14.4	18.5
Drinks alcohol				
No	61.8*	65.8**	16.3	16.4
Yes	53.8	59.3	17.9	17.4
Total	61.2	64.4	16.5	16.6

*** Significant at $P < 0.01$; ** Significant at $P < 0.05$

Table 4. Logistic regression analysis data of socio-economic and demographic variables on low risk perception of getting HIV/AIDS among never married youths

Variables	Females			Males		
	aOR	95% CI	P- value	aOR	95% CI	P- value
Age						
15-19	1.0000	0.000	0.0000	1.0000	0.000	0.0000
20-24	0.7012	0.62-0.79	0.0000	1.0192	0.84-1.18	0.8007
Religion						
Catholic	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Protestant	0.9652	0.82-1.13	0.6511	0.9358	0.79-1.10	0.4380
Place of residence						
Rural	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Urban	1.0372	0.88-1.21	0.6490	1.2817	1.06-1.53	0.0072
Wealth Index						
Poor	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Middle	1.0322	0.86-1.22	0.7186	1.2535	1.03-1.52	0.0222
Rich	1.1739	0.96-1.42	0.2086	1.5569	1.25-1.92	0.0000
Work status						
Not-working	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Working	1.0613	0.93-1.20	0.3595	0.9495	0.81-1.09	1.0998
Educational level						
Primary	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Secondary or higher	1.0661	0.93-1.22	0.3527	0.9568	0.81-1.12	0.4894
Exposure to media						
Less than once a week	1.0000	0.000	0.0000	1.0000	0.000	0.0000
At least once a week	1.1471	1.00-1.30	0.0370	1.0890	0.94-1.25	0.2409
Had STDs in the last 12 months						
No	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Yes	0.7220	0.54-0.95	0.0214	0.4019	0.30-0.53	0.0000
Used condom consistently with all partners						
No	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Yes	1.2388	1.02-1.49	0.0271	0.8365	0.71-0.98	0.0272
Drinks alcohol						
No	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Yes	0.6955	0.54-0.88	0.0036	0.7918	0.66-0.93	0.0063

Logistic regression analysis identified wealth index, Religion, Place of residence, Educational level, exposure to media and having STDs in the last 12 months as strong predictors of high risk perception among the sexually active unmarried young males. Religion also emerged as a strong determinant of high risk perception of getting HIV among male participants in the study. Males from protestant denomination were 1.2 times more likely to report high risk perception as compared to those from catholic. Respondents from urban residence were less likely to report high risk perception as compared to those from rural residence. Respondents from rich backgrounds showed a negative association with high perceived risk as compared to those from middle and poor backgrounds. Furthermore, analysis on education showed that males with secondary

education were more likely to report high risk perception as compared to those who had only primary education. Moreover, respondents who had STDs in the last 12 months showed stronger prediction of low risk perception as compared to those who had not contracted HIV. Those who reported having had STDs in the last 12 months were 2.2 times more likely to report high perceived risk of contracting HIV/AIDS.

4. DISCUSSION

Research has repeatedly shown that risk perception is a significant determinant of condom use and HIV contractions [22]. In this paper gender differences were examined across social economic and demographic factors in risk perception among sexually active unmarried

young people aged 15-25 in Zambia. This study revealed that age was a strong determinant of risk perception of contracting HIV among the young people in Zambia. However, age 20-24 was negatively associated with the likelihood of low risk perception among females. These results were interesting because for males, age did not determine their risk perception, consistent with the findings of other authors who found that young and unmarried men were more likely to engage in risky sexual behaviors compared to the older ones [25,26].

The place of residence was a significant predictor of low risk perception among males than it was among females. Males from urban areas were 1.3 times more likely to report low perceived risk of contracting HIV compared to

men from rural areas. Place of residence did not show any significant association to low risk perception among females. This study also found that coming from rich and medium wealth backgrounds was positively associated in males with low risk perception than those from poor backgrounds. Having STIs in the last 12 months was negatively associated with low risk perception for both males and females, therefore those who reported having had STIs in the last one year were more likely to perceive themselves as being at a risk to contract HIV compared to those who had not contracted STDs. A study carried out in Northern Laos found that along with socio-demographic factors, knowledge of STIs/HIV and the level of exposure to STIs were the main determinants of perception of risk of STIs/HIV [27].

Table 5. Logistic regression analysis data of socio-economic and demographic variables on high risk perception of getting HIV/AIDS never married youths

Variables	Females			Males		
	aOR	95% CI	P- value	aOR	95% CI	P- value
Age						
15-19	1.0000	0.000	0.0000	1.0000	0.000	0.0000
20-24	1.3007	1.60-1.53	0.0019	1.0384	0.85-1.25	0.6984
Religion						
Catholic	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Protestant	1.1463	0.92-1.41	0.2023	1.2364	0.98-1.54	0.0628
Place of residence						
Rural	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Urban	0.8325	0.67-1.02	0.0857	0.6283	0.49-0.79	0.0001
Wealth Index						
Poor	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Middle	1.0003	0.79-1.25	0.9978	0.8609	0.66-1.10	0.2432
Rich	0.8061	0.62-1.04	0.1023	0.6259	0.47-0.82	0.0010
Work status						
Not-working	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Working	0.9989	0.84-1.18	0.9900	1.0536	0.87-1.27	0.5889
Educational level						
Primary	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Secondary or higher	1.1444	0.95-1.37	0.1416	1.4099	1.14-1.73	0.0013
Exposure to media						
Less than once a week	1.0000	0.000	0.0000	1.0000	0.000	0.0000
At least once a week	0.8361	0.70-0.99	0.0431	0.7526	0.62-0.90	0.0026
Had STDs in the last 12 months						
No	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Yes	1.0976	0.76-1.17	0.6105	2.1628	1.57-2.97	0.0000
Used condom consistently with all partners						
No	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Yes	0.8671	0.67-1.12	0.2772	1.1662	0.95-1.42	0.1337
Drinks alcohol						
No	1.0000	0.000	0.0000	1.0000	0.000	0.0000
Yes	1.2934	0.95-1.75	0.0880	0.9794	0.78-1.21	0.8512

Females who used condoms consistently were likely to have low risk perception as compared to those who did not use condoms consistently. Interestingly, for the males on the other hand, those who used condoms consistently were likely to have high risk perception of contracting HIV compared to those who did not use condoms consistently. These results, especially for males, to some extent is consistent with the conclusion of a recent study in South Africa that reported that perceived risk for HIV infection had no significant impact on consistency in using condoms for both males and females [28].

Moreover, drinking alcohol was found to be negatively associated with low risk perception across both genders. Those who took alcohol were less likely to report low risk perception as compared to those who did not drink. These results are consistent with Kogan who found that drinking alcohol was positively associated with low risk perception and risky behavior among African American youths in Georgia [26].

Religious denomination was strongly associated with high risk perception for the males but not for the females. Protestant males were 1.2 times more likely to report high risk perception as compared to Catholic males. These results are inconsistent with studies reporting involvement with all religious activities to be associated with lower HIV risk perception, for example a study conducted in Malawi reported regular attendance at religious services is associated both with reduced odds of reporting extramarital partners and with lower levels of perceived risk of infection. Place of residence was also found to be associated with the likelihood of young people reporting high risk perception by both genders. Living in urban residences was negatively associated with the likelihood of the young people reporting high risk perception. These results were not in line with a study done in South African by Cleland which found that women from urban areas were more likely to be high risk perceivers of getting HIV in comparison to rural women [20]. Another socio economic variable to influence HIV risk perception was the wealth index. Men from rich backgrounds were less likely to perceive high risk of getting HIV as compared to men from middle and low status backgrounds. Wealth status did not show significant association in the case of the females. These results may be explained by the fact that wealthiest men have been found to have a series of sexual partners as their status attracts so much attention from the females hence the low risk perception.

Similar to the findings of a study on condom use, risk perception and HIV knowledge in Nigeria by Lammers, VanWijnbergen and Willebrands education was found to be strongly associated with the likelihood of male youths reporting high risk perception of getting HIV. However, education level in this study was not significantly associated with the likelihood of females' high risk perception of contracting HIV [24]. Having more exposure to media was positively associated with high perceived risk of contracting HIV as compared to having less than once a week of media exposure across both genders. This is not surprising as many HIV campaigns in Zambia are done through radio and TV and most people in both urban and rural Zambia have access to radio. Through media, people get access to reproductive health information which may make them aware of how at risk they are of getting HIV.

Another interesting finding involved having a history of STD infection in the last one year. This was strongly associated with the likelihood of youths reporting high perceived risk of getting HIV compared to those who did not have such a history. However, this was only significant for the males but not for the females. Moreover, it would appear a logical thing to do for people who reported having had STDs before to take precaution and understand how at risk they were. However, the non-significant result on females needs more investigation through further research. Females who took alcohol were more likely to report high risk perception of getting HIV as compared to those who did not drink. Drinking alcohol was not significantly associated with the likelihood of reporting high risk perception among the males. These results are contrary to a US study by Kogan, Brody, Chen, Grange, Slater and DiClemente who found that drinking alcohol was positively associated with low risk perception and risky behavior among African American youths in Georgia [26].

5. CONCLUSION

In conclusion, this study shows varying results determining risk perception across gender. Some demographic and economic factors only affected one gender but not the other. The study suggests that interventions that seek to increase risk perception among young people should take into account gender differences so as to differentiate the structure of these interventions between genders. Some interventions such as social support and yoga have been previously

used with adolescents in Zambia and has been found to be effective in improving their psychological wellbeing [29]. Secondly researchers should consider examining the role of religious factors on risk perception because its inclusion to some intervention may bring unexpected positive results in the fight against HIV and AIDS.

CONSENT AND ETHICAL APPROVAL

The survey procedure and instruments for the 2013 Zambia Demographic Health Survey was ethically approved by the Zambia Biomedical Research Ethics Committee. A written consent was taken from all of the respondents prior to starting the interview and all aspects of the ZDHS were strictly confidential. Since this study is based on analysis of secondary data, the ethical approval was not necessary; however, permission to use this data was sought and granted by Central Statistics Office and Macro Inc.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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