Alcohol Consumption and its Correlates Among Residents of Mining Town, Kitwe, Zambia: 2011 Population Based Survey

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ABSTRACT

Alcohol consumption is a risk factor for non-communicable diseases such as cardiovascular diseases, liver cirrhosis and cancers. It has also been associated with risky sexual behaviors, hence, attributed as a factor in the increase of HIV incidence and prevalence. A cross sectional study was conducted using a modified World Health Organizations Global Non Communicable Diseases (NCD) Surveillance Initiative NCD-STEPs 1and 2. Multivariate logistic regression was used to examine the determinants of alcohol consumption. A total of 1627 individuals participated in the survey, of which 42.3% were males. Some 22.3% (36.2% of male and 12.1% of female; $p<0.001$) participants reported to have consumed alcohol during the 30 days preceding the survey. The factors considered to be associated with alcohol consumption were age, sex and smoking. Compared to respondents age 25-34 years, respondents of age 35-44 years were 38% (AOR = 1.38, 95%CI [1.11, 1.70]) more likely to report having consumed alcohol and those aged 45 years or older were 26% (AOR = 0.74, 95%CI [0.60, 0.93]) less likely to report having consumed alcohol. Female respondents were 47% (AOR = 0.53, 95%CI [0.46, 0.60]) less likely to report consuming alcohol compared to male respondents. Compared to respondents who reported smoking cigarettes, those who did not smoke cigarettes were 51% (AOR = 0.49, 95%CI [0.40, 0.59]) less likely to consume alcohol. The rate of alcohol consumption is high in this mining town. Factors identified in this study as associated with alcohol consumption, i.e., male sex, age, cigarette smoking, should be considered in designing interventions to curtail the level of alcohol consumption.

Keywords: Smoking, Adults, Urban Community, Developing Country

1. INTRODUCTION

Alcohol is one of the leading causes of the global disease burden (58 million Disability-Adjusted Life Years (DALY), contributing 4.0% of the total global DALYs) (Lopez et al., 2006; Rehm et al., 2006). Alcohol consumption is a risk factor for Non-Communicable Diseases (NCD) such as cancers (Rehm et al., 2010; Baan et al., 2007; Corrao et al., 2004), hypertension and cardiovascular diseases (Corrao et al., 2004; Beilin and Puddey, 1992; Klatsky, 2007). Through complex mechanisms, including behavioral or lifestyle intermediate variables and compromised immune status, it has also been associated with infectious diseases such as tuberculosis and HIV/AIDS (Lonnroth et al., 2008; Szabo and Mandrekar, 2009; Neuman et al., 2006). As

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compared to high income nations, the disease burden due to alcohol is lower in low income nations; nevertheless, there is a growing concern that urbanization is associated with alcohol intake (Kilonzo *et al*., 2004; WHO, 2004; Room *et al*., 2002). Alcoholism has been reported as the most common substance abuse problem in sub-Saharan Africa (Parry *et al*., 2002) and has been associated with risky sexual behavior and HIV incidence and prevalence (Fritz *et al*., 2002). It has been shown that alcohol consumption has been associated with a greater likelihood of paying for sex (Fritz *et al*., 2002; Simbayi *et al*., 2004) and the failure and improper use of condoms (Fritz *et al*., 2002; Mnyika *et al*., 1997). A study in Zimbabwe showed that HIV prevalence in Harare increased with the increasing levels of alcohol consumption (Fritz *et al*., 2002). There is a paucity of data on alcohol consumption in Zambia, especially in the cities. The latest study conducted by Nzala *et al*. (2011) in Lusaka showed that men were more likely to abuse alcohol than women. No other factor was independently associated with alcohol consumption. Correlates for alcohol consumption may vary between communities and it is important that determinants for alcohol consumption are established so that public health workers are well informed when designing interventions to curtail alcohol consumption. Further, anecdotal evidence suggests that alcohol consumption among mining communities is higher than those in non mining communities. We therefore set out to determine the prevalence and correlates for alcohol consumption in a mining town.

2. MATERIALS AND METHODS

2.1. Setting and Design

A cross sectional study utilising a modified WHO global Non Communicable Diseases Surveillance Initiative NCD-STEPs 1and 2 (WHO, 2004) was used to conduct a study in this city. The details of the survey methodology have already been published elsewhere (Nsakashalo-Senkwe *et al*., 2011).

2.2. Sample Size and Sampling

The sample size of the study was 1627. The multi-stage sampling technique was used to sample the participants. One ward was selected from each constituency. The number of Standard Enumeration Areas (SEAs) selected from each ward was proportional to its population size. SEAs were selected from a line list obtained from the Central Statistical Office (2000

population census) using a systematic random sampling method. The line lists of SEAs from districts comprised the sampling frames. From the selected SEAs, households were systematically sampled in order to widely cover the selected SEA. All individuals (male or female) aged 25 years or more in a household were eligible to participate in the study.

2.3. Data Collection

2.3.1. Interviews

An interview schedule was used to elicit responses from the interviewees. The questionnaire included the following sections: demographic information, tobacco use, alcohol consumption, sedentary behaviour, educational level and anthropometric measurements (including height and Weight). The questionnaire was administered in the respondents' homes by trained research assistants who included nurses and laboratory technologists.

2.4. Measurements

2.4.1. Height

The Seca Brand 214 Portable Stadiometer was used to measure the height of the participant. Height was measured without the participant wearing foot or head gear. Before the reading was taken, the participant was requested to have feet together, heels against the back board, knees straight and look straight ahead. Height was recorded in centimetres.

2.5. Weight

Weight was measured using the Heine Portable Professional Adult Scale 737. Participants were asked to stand still, face forward and place arms on the sides of the body. Weight was recorded in kilograms.

2.6. Data Management and Analysis

Two data entry clerks were trained to enter the data using Epi Data software. Data were double entered and validated. The data entry template had consistency and range checks embedded in it. The validated data was exported to SPSS version 11.5 for analysis. Missing data were declared as missing and were excluded from the analysis. Proportions were compared using the Yates corrected Chi-square. Bivariate and multivariate logistic regression analyses were conducted. In multivariate analysis, a backward variable selection method was used. The cut off point for statistical significance was set at the 5% level. Body Mass Index (BMI) was categorized as

<18.5 (lean), 18.5-24.9 (normal), 25.0-29.9 (over weight) and 30+ (obese); waist-hip ratios was grouped into two: <1 (normal) and >1 (raised); blood pressure of more than 140/90 was considered to indicate hypertension.

2.7. Ethical Considerations

The study protocol was reviewed by the University of Zambia Biomedical Research Ethics Committee. Consent was obtained after the interviewer explained the purpose of the study to the eligible participant. Entry forms were viewed only by approved study personnel.

3. RESULTS

A total of 1627 individuals participated in the survey, of which 42.3% were males. About half of the participants were of age 25-34 years (56.0%) and 41.7% had attained secondary level of education. Altogether, 22.3% of participants consumed alcohol during the 30 days prior to the survey, with significantly (p<0.001) more males (36.2%) than females (12.1%) having consumed alcohol. These results are shown in **Table 1**.

Table 1. Demographic characteristics and alcohol consumption among residents of Kitwe

Factor	Total n (%)	Male n (%)	Female n (%)
Age Group (years)			
25-34	899 (56.0)	387 (56.8)	512 (55.4)
35-44	346 (21.6)	127 (18.6)	219 (23.7)
45+	360 (22.4)	167 (24.5)	193 (20.9)
Education			
None	78 (4.9)	22 (3.3)	56 (6.0)
Primary	499 (31.1)	160 (23.7)	339 (36.5)
Secondary	670 (41.7)	277 (41.0)	393 (42.3)
College/university	359 (22.4)	217 (32.1)	142 (15.3)
Currently Consumed Alcohol			
Yes	360 (22.3)	247 (36.2)	113 (12.1)
No	1254 (77.7)	435 (63.8)	819 (87.9)

Table 2. Factors associated with alcohol consumption Kitwe, Zambia

Factor	Unadjusted OR (95%CI)	*Adjusted AOR (95%CI)
Age (years)		
25-34	1	1
35-44	1.17 (0.97, 1.42)	1.38 (1.11, 1.70)
45+	0.84 (0.69, 1.02)	0.74 (0.60, 0.93)
Sex		
Male	1	1
Female	0.49 (0.44, 0.56)	0.53 (0.46, 0.60)
Completed level of education		
None	1	-
Primary	0.92 (0.74, 1.15)	
Secondary	0.97 (0.79, 1.20)	
College/university	1.10 (0.87, 1.39)	
Body Mass Index (BMI)		
<18.5	1	-
18.5-24.9	1.11 (0.91, 1.35)	
25.0-29.9	0.99 (0.78, 1.25)	
30+	0.85 (0.65, 1.11)	
Time usually spent sitting or reclining on a typical day		
<1.5	1	-
1.5-3.4	1.09 (0.79, 1.51)	
3.5+	1.00 (0.77, 1.31)	
Smoking		
Yes	1	1
No	0.36 (0.30, 0.44)	0.49 (0.40, 0.59)

* Cox and Snell R square = 12.4%
1 indicates Referent

Among the factors considered to be associated with alcohol consumption in **Table 2**, the most important predictors for alcohol consumption were age, sex and smoking. Compared to respondents age 25-34 years, respondents of age 35-44 years were 38% (AOR = 1.38, 95%CI [1.11, 1.70]) reported more likely to have consumed alcohol and respondents aged 45 years or older were 26% (AOR = 0.74, 95%CI [0.60, 0.93]) less likely to report consuming alcohol. Female respondents were 47% (AOR = 0.53, 95%CI [0.46, 0.60]) less likely to report consuming alcohol compared to male respondents. Compared to respondents who reported smoking cigarettes, those who did not report smoking were 51% (AOR = 0.49, 95%CI [0.40, 0.59]) less likely to consume alcohol. The model was only able to explain 12.4% of variation in alcohol consumption.

4. DISCUSSION

During the 30 days prior to the survey, 22.3% of participants (36.2% of males, 12.1% of females) of participants reported to have consumed alcohol in previous 30 days to the survey. The predictors for alcohol consumption were age, gender and smoking. The prevalence of alcohol consumption was lower than that reported in Botswana, Zimbabwe and South Africa (Weiser *et al*., 2006; Lewis *et al*., 2005; Parry *et al*., 2005). Differences in prevalence of alcohol consumption between studies may be due to differences in study methodologies that were used. In a similar study investigating the prevalence of alcohol consumption in Lusaka, Zambia, Nzala *et al*. (2011) found a prevalence of 20.7% which was similar to that found in our current study. Both study sites in Kitwe and Lusaka are urban and money may have been available to buy alcohol.

The age of the respondent was a predictor of alcohol consumption. Our current results showed that those who were 35-44 years old consumed alcohol more than those who were 25-34 years old. These findings were contrary to those of regional studies, which have shown the peak age of alcohol consumption to be 25-34 years (Parry *et al*., 2005; Mbatia *et al*., 2009). The difference in age could imply that an individual has no parental restrictions and the ability to access money to purchase alcohol. However, our study observed no association between level of education and alcohol consumption. This was similar to observations made in Tanzania (Mbatia *et al*., 2009).

Alcohol consumption is higher in men than in women in other parts of Africa (Parry *et al*., 2005; Mbatia *et al*., 2009) and even other regions of the world (Grant, 1997).

This pattern conforms to our current study, which showed that men consume alcohol more than women. The explanation for this phenomenon could be that it is not yet socially acceptable for women to consume alcohol and this may lead to underreporting of alcohol consumption among women. The other plausible explanation is that women may not have access to money to purchase alcohol. Although the prevalence of alcohol consumption among women in Kitwe (12.1%) is lower than that in the region as a whole (Weiser *et al*., 2006; Parry *et al*., 2005), it is twice the reported prevalence of the entire country (5.9% of women countrywide).

Our current results showed that smoking was a predictor of alcohol consumption. People who consume alcohol are more likely to smoke than those who do not consume alcohol. There is a social aspect to this in that people who smoke and consume alcohol patronise the same drinking places hence the probability of smoking or consuming alcohol is high. There is a genetics aspect as well; a twin study done by Koopmans *et al*. (1997) in Dutch population showed that adolescents and young adults who smoked were more likely to consume alcohol than non-smokers. The association between alcohol consumption and smoking was found within the twin pair; alcohol consumption in one twin was correlated with smoking in the co-twin. This suggested that there is a familial gene which contributes to the association between alcohol consumption and smoking (Koopmans *et al*., 1997).

4.1. Strengths and Limitations

The strength of this study lies in the fact that it involved a large sample. Apart from the prevalence of alcohol, our study determined the risk factors associated with alcohol consumption. We do realize however that our study had some limitations that may make our results not generalizable to the entire population. The study did not have information on the number of household members of age of 25 years or older making it difficult for us to compute the response rates. We therefore could not compute weights that could be used in the analysis. Our results may be biased to the extent that the non-responses differed from those that participated in the study. We are however unable to suggest the direction of the bias. The adjusted model only explained 12.4% of variation in alcohol consumption, and hence there is need to explore for more variables that may be associated with alcohol consumtion such as economic factors and, family history. The study excluded persons from the age below 25; most

of the studies compared with our study included this group. Our lower prevalence of alcohol consumption could be due to the absence of the adolescents in the analysis hence under estimating number.

5. CONCLUSION

Alcohol consumption is a risk factor for hypertension and cardiovascular diseases and sexual risk behaviors escalating the spread of HIV. There is a need to explore for more factors that may be associated with alcohol consumption. Health education and awareness campaign to the residents especially the miners is urgently needed. Structural changes such as regulating opening and closing of drinking places, raising taxes for alcohol and medical and psychological treatment programs for problem drinking also need to be considered when appropriate.

6. ACKNOWLEDGEMENT

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