

THE RELATIONSHIP BETWEEN ALCOHOL PURCHASING, RURALITY, AND POVERTY STATUS IN ZAMBIA

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ABSTRACT

The Zambian alcohol industry continues to facilitate increasing alcohol purchasing and consumption despite high rates of poverty. Data from the 2006 and 2015 Living Conditions Monitoring Surveys were analyzed to examine relationships between self-reported poverty status, alcohol purchasing, and alcohol expenditure stratified by rural-urban status. Across all poverty levels in 2006 and among the moderately poor in 2015, rural households purchased alcohol at similar or greater levels compared to urban households. Overall alcohol purchasing decreased; however, significant differences in alcohol expenditure from 2006 to 2015 were observed among rural ($p = 0.014$) and urban ($p = 0.009$) drinkers. Research is needed, to better understand driving factors for alcohol use and to provide targeted prevention and treatment programs in rural Zambia.

Keywords: alcohol, alcohol use, poverty, rurality, Zambia

INTRODUCTION

Alcohol misuse is a growing issue in low-and-middle-income countries (LMICs) and remains a major risk factor for mortality and disease to which the country of Zambia is not immune (Benegal et al., 2009; Shield et al., 2020; Taylor & Paltzer, 2019). According to the Ministry of Health, 21.7% of Zambians report drinking alcohol and 10.9% of Zambians report engaging in heavy episodic drinking, which is

classified as having 6 or more standard drinks (Zambia Ministry of Health, 2017). Furthermore, harmful alcohol use and alcohol use disorders in Zambia are associated with numerous negative health and social outcomes among youths and adults, making the case for the importance to further explore context-specific determinants of alcohol use and abuse in Zambia (Taylor & Paltzer, 2019).

The expansion of the alcohol industry and commercialization of alcoholic

beverages in rural and urban areas in recent decades continues to increase alcohol use and abuse in Zambia (de Bruijn, 2014; Freund & Kalumba, 1982). The occurrence of alcohol marketing, advertising, promotion, sponsorship, and production has increased due to the growth of the alcohol industry in multiple African countries, Zambia included (de Bruijn, 2014; Swahn et al., 2011). The increased production of and exposure to alcohol from the alcohol industry in Zambia has also contributed to an increase in self-produced, and often unrecorded, traditional beverages (Freund & Kalumba, 1982; McBride & Mosher, 1985). In Zambia, the low-cost commercialized alcoholic beverages and the prevalence of self-produced traditional alcoholic beverages enables the wide accessibility of alcohol in rural and urban areas (Crane et al., 2018; McBride & Mosher, 1985). Therefore, it is clear that the growth of the alcohol industry in Zambia continues to play an important role in the prevalence of alcohol purchasing and consumption in rural and urban areas alike.

Additionally, poverty is a social determinant of health greatly influencing alcohol use and abuse in LMICs, including Zambia (Crane et al., 2018; Manthey et al., 2019). In Zambia, poverty and unemployment contribute to alcohol consumption among adults (Crane et al., 2018). Alcohol consumption often serves as a means to cope with the financial stress that comes with living within a low socioeconomic status (Crane et al., 2018). Youths and young adults in Zambia also face an increased risk for alcohol consumption if they are impoverished. Low socioeconomic status can make it increasingly difficult for youths to obtain an education due to the ever-rising cost of private and public primary and secondary school fees

(Crane et al., 2018; Kaluba, 1986). The inability to obtain an education can mediate unemployment and poverty among young adults and increase the risk for alcohol use and abuse (Crane et al., 2018; Peltzer, 2009).

Poverty as a determinant of alcohol use in Zambia is a widespread issue with 54% of Zambians living in poverty (UNICEF Zambia, n.d.). This means that over half of the population faces an increased risk for alcohol use and abuse (Crane et al., 2018). Furthermore, 42% of the Zambian population lives in extreme poverty with major income disparities existing among urban and rural geographic areas (United Nations Children's Fund, 2015). According to UNICEF, 58% of Zambians living in rural areas compared to 13% of Zambians living in urban areas are extremely impoverished (United Nations Children's Fund, 2015). Poverty and extreme poverty in rural and urban areas vary greatly and should be considered when exploring the relationship between poverty and alcohol consumption and contextualized treatment programs.

In summary, the growing alcohol industry in Zambia continues to facilitate increasing rates of alcohol purchasing and consumption despite high rates of poverty experienced by over half of the Zambian population. Disparities in poverty exist between urban and rural areas indicating that the risk for alcohol use and abuse may vary by rurality or urbanicity. However, despite the differences in poverty status among rural and urban areas, there remains a lack of information specific to peri-urban or rural areas regarding the prevalence and impact of alcohol use. Therefore, further investigation is warranted to understand the role of poverty status and rurality on alcohol

purchasing and consumption. This study aims to answer the following questions: 1) what is the relationship between alcohol purchasing, rural-urban status, and poverty status in Zambia, and 2) has the relationship between alcohol purchasing, rural-urban status, and poverty changed from 2006 to 2015?

METHOD

Study design

The present study is a secondary data analysis using large previously collected survey data. Two surveys administered over nine years were utilized. The surveys used in this analysis were obtained through the Zambia Central Statistical Office.

Living Conditions Monitoring Surveys

In 1991, the Zambian government introduced the Structural Adjustment Programme (SAP) to reform the economy. To monitor the effects of this program on the living conditions of the population, the Living Conditions Monitoring Survey (LCMS) was developed. The survey was first conducted in 1996, then subsequently administered in 1998, 2002/2003, 2004, 2006, 2010, and 2015 (Republic of Zambia Central Statistical Office, 2016). LCMS serves to measure the wellbeing of the population of Zambia and to discover trends in various societal wellbeing measures (Republic of Zambia Central Statistical Office, 2016).

Data used in this analysis were from the LCMS V (2006) and the LCMS VII (2015). The LCMS V was administered in both rural and urban areas in all 9 Zambian provinces at the time. The intended sample size was 20,000 households with 97.77%

of the originally selected households responding to the survey. Similarly, the LCMS VII was administered in rural and urban areas in all 10 of the current provinces. The survey was designed to reach a sample of 12,260 households with a 98% national response rate.

A two-stage stratified cluster sample design was employed for both the LCMS V and LCMS VII to select the samples. In this sampling design, all provinces were divided into districts and subdivided into constituencies, wards, and then Census Supervisory Areas (CSA). CSAs were further subdivided into Standard Enumeration areas (SEAs) for the LCMS V or Enumeration Areas (EAs) for the LCMS VII which were the primary sampling units for each survey (Republic of Zambia Central Statistical Office, 2012; Republic of Zambia Central Statistical Office, 2016). Data were collected for both surveys through personal interviews with a structured questionnaire; however, the LCMS VII used an electronic questionnaire with the Computer Assisted Personal Interviewing (CAPI) technique (Republic of Zambia Central Statistical Office, 2012; Republic of Zambia Central Statistical Office, 2016).

Measures

The measures used to evaluate the relationship between alcohol purchasing, rural-urban status, and poverty status in Zambia include self-reported poverty status, region (rural-urban), alcohol purchasing, and mean alcohol expenditure. Self-reported poverty status is a measure of self-perceived poverty status categorized as either extremely poor (listed as very poor in the LCMS VII), moderately poor, or non-poor. Region is based on the rural or urban location of the respondent's household. Alcohol purchasing

was measured as either *Yes* or *No* and was determined from any reported alcohol expenditures (> 0 Kwacha). Alcohol expenditure is a self-reported value of the household's total expenditure on alcohol. Annual alcohol expenditure was converted to 2019 U.S. dollars using the U.S. Bureau of the Fiscal Service historical currency exchange rates and the U.S. Bureau of Labor and Statistics Consumer Price Index tool (U.S. Bureau of the Fiscal Service, 2020; U.S. Bureau of Labor and Statistics, 2020). Demographic data for the head of households were also collected, as it was assumed that the head of the household completed the survey and represents the family. Head of household demographic information included average age in years, household size, and sex.

Analysis

Data were analyzed using STATA version 16 (StataCorp LLC, College Station, TX, USA). Frequencies and proportions stratified by rural-urban status were reported for all categorical variables while means and standard deviations stratified by rural-urban status were reported for all continuous variables. Demographic variables, self-reported poverty, alcohol purchasing, and mean alcohol expenditure were compared by rural-urban status using chi-square tests for categorical variables and independent samples t-tests for continuous variables. Chi-square tests were also used to determine statistically significant differences in rural-urban status and alcohol purchasing by self-reported poverty status. Lastly, non-parametric Mann-Whitney U tests were used to determine statistically significant differences between median alcohol expenditure among all, rural, and urban drinkers in 2006 and 2015.

RESULTS

Demographics

Among LCMS V respondents (N = 18,677), the mean age was 41.5 years. 77.2% of all respondents were male and 22.8% were female. The mean household size was 5.2 ± 2.8 persons. Among LCMS VII respondents (N = 12,251), the mean age was 43 years. 76.3% of all respondents were male and 23.7% were female. The mean household size was 5.1 ± 2.6 persons. Independent-samples t-tests results indicate that rural-urban differences in the average age of the head of household and household size were statistically significant in the LCMS V; $t(18663) = 10.59, p < 0.01$) and LCMS VII; $t(12249) = 8.27, p < 0.01$). However, chi-square tests indicate that rural-urban proportions of the male and female heads of households were not significantly different. Demographic information for rural and urban groups in the LCMS V and LCMS VII is provided in Table 1.

Poverty Status, Alcohol Purchasing, and Alcohol Expenditure

For LCMS V rural respondents, 44% reported being "Extremely Poor", 26.4% reported "Moderately Poor", and 29.5% reported being "Non-Poor". Among urban respondents, 9.0% reported "Extremely Poor", 14.0% reported "Moderately Poor", and 77.0% reported "Non-Poor". In rural areas, 17.7% of participants reported spending any money on alcohol compared to 20.3% in urban areas. Mean 2019 U.S. dollars spent among rural respondents and urban respondents were \$19.10 and \$71.90, respectively. For LCMS VII rural respondents, 51% reported being "Very Poor", 39.1% reported "Moderately Poor", and 9.7% reported being

Table 1. Living Conditions and Monitoring Survey Respondents Head of Household Demographics

Living Conditions and Monitoring Survey V (2006)				
	Total (n = 18677), n (%)	Rural (n = 9138), n (%)	Urban (n = 9539), n (%)	p-value ^a
Age in years	41.5 (14.0)	42.6 (15.4)	40.5 (12.4)	<0.01*
Household size	5.2 (2.8)	5.2 (2.8)	5.3 (2.7)	<0.01*
Sex				
Male	14427 (77.2)	7005 (76.7)	7422 (77.8)	0.061
Female	4250 (22.8)	2133 (23.3)	2117 (22.2)	
Living Conditions and Monitoring Survey VII (2015)				
	Total (n = 12251), n (%)	Rural (n = 6547), n (%)	Urban (n = 5704), n (%)	p-value ^a
Age in years	43.0 (14.4)	44.0 (15.5)	41.9 (12.9)	<0.01*
Household size	5.1 (2.6)	5.2 (2.7)	5.0 (2.5)	<0.01*
Sex				
Male	9346 (76.3)	5030 (76.8)	4316 (75.7)	0.127
Female	2904 (23.7)	2133 (23.3)	2117 (22.2)	

Note: Independent-samples t-tests were used to determine statistically significant differences between rural-urban status and continuous variables (age and household size) and chi-square tests were used to determine statistically significant differences between rural-urban status and categorical variables (sex).

Note: LCMS V (2006) age $t(18667) = 10.59$, household size $t(18663) = -3.03$, sex $\chi^2(1) = 3.51$

Note: LCMS VII (2015) age $t(12248) = 8.27$, household size $t(12249) = 3.70$, sex $\chi^2(1) = 0.13$

^ap-values < .05 are considered statistically significant

*Statistically significant

“Non-Poor”. Among urban respondents, 19.8% reported being “Very Poor”, 48.8% reported “Moderately Poor”, and 31.4% reported “Non-Poor”. In rural areas, 11.4% of participants reported spending any money on alcohol, compared to 12.7% in urban areas. Mean 2019 U.S. dollars spent among rural respondents and urban respondents were \$15.90 and \$53.90, respectively. Chi-square and independent-samples t-tests indicate that rural-urban differences in self-perceived poverty status (2006 $\chi^2(2) = 4500$, $p < 0.01$) (2015 $\chi^2(2) = 1600$, $p < 0.01$), alcohol purchasing (2006 $\chi^2(1) = 20.14$, $p < 0.01$) (2015 $\chi^2(1) = 4.76$, $p < 0.05$) and mean alcohol expenditure are all statistically significant (2006 $t(18660) = -15.95$, $p < 0.01$) (2015 $t(12249) = -9.68$, $p < 0.01$).

Self-reported poverty, alcohol purchasing, and mean alcohol expenditure compared by rural-urban status are provided in Table 2.

As presented in Table 3, the proportion of respondents who purchased alcohol in rural areas was higher across all poverty status groups in the LCMS V. However, among those who self-reported being moderately poor, there was a significantly higher proportion of those in rural areas who purchased alcohol compared to those in urban areas, 19.1% versus 13.1%, respectively ($\chi^2(1) = 22.47$, $p < 0.01$). Contrastingly, in the LCMS VII, the proportion of respondents who purchased alcohol in rural areas was only higher among the moderately poor with purchasing being higher among very poor and non-poor

Table 2. Self-Reported Poverty Status, Alcohol Purchasing, and Mean Alcohol Expenditure Stratified by Rurality

Living Conditions and Monitoring Survey V (2006)				
	Total (n = 18662), n (%) or Mean ± SD	Rural (n = 9132), n (%) or Mean ± SD	Urban (n = 9530), n (%) or Mean ± SD	p-value^a
Self-Perception of Poverty				
Extremely Poor	4877 (26.1)	4022 (44)	855 (9.0)	<0.01*
Moderately Poor	3751 (20.1)	2413 (26.4)	1338 (14.0)	
Non-Poor	10034 (53.8)	2697 (29.5)	7337 (77.0)	
Alcohol Purchasing				
Yes	3544 (19.0)	1614 (17.7)	1930 (20.3)	<0.01*
No	15118 (81.0)	7518 (82.3)	7600 (79.7)	
Mean Alcohol Expenditure in 2019 US dollars	46.1 ± 227.8	19.1 ± 93.8	71.9 ± 303.1	<0.01*
Living Conditions and Monitoring Survey VII (2015)				
	Total (n = 12251), n (%) or Mean ± SD	Rural (n = 6547), n (%) or Mean ± SD	Urban (n = 5704), n (%) or Mean ± SD	p-value^a
Self-Perception of Poverty				
Very Poor	4481 (36.6)	3351 (51.2)	1130 (19.8)	<0.01*
Moderately Poor	5338 (43.6)	2557 (39.1)	2781 (48.8)	
Non-Poor	2427 (19.8)	634 (9.7)	1793 (31.4)	
Alcohol Purchasing				
Yes	1473 (12.0)	748 (11.4)	725 (12.7)	<0.05*
No	10778 (88.0)	5799 (88.6)	4979 (87.3)	
Mean Alcohol Expenditure in 2019 US dollars	33.6 ± 217.7	15.9 ± 102.7	53.9 ± 298.3	<0.01*

Note: Independent-samples *t*-tests were used to determine statistically significant differences between rural-urban status and continuous variables (mean alcohol expenditure) and chi-square tests were used to determine statistically significant differences between rural-urban status and categorical variables (self-perceived poverty status and alcohol purchasing).

Note: LCMS V (2006) poverty $\chi^2(2) = 4500$, alcohol purchasing $\chi^2(1) = 20.14$, alcohol expenditure $t(18660) = -15.95$

Note: LCMS VII (2015) poverty $\chi^2(2) = 1600$, alcohol purchasing $\chi^2(1) = 4.76$, alcohol expenditure $t(12249) = -9.68$

^a*p*-values < .05 are considered statistically significant

*Statistically significant

urban compared to very poor and non-poor rural respondents. While the proportion of respondents who purchased alcohol is still higher among moderately poor rural than moderately poor urban, this difference was not found to be statistically significant in the LCMS VII. The percentage of rural and urban respondents who reported purchasing alcohol is stratified by poverty status for the LCMS V and LCMS VII in Figures 1 and 2, respectively.

Despite decreases in alcohol purchasing observed for rural and urban respondents

and across all poverty status groups, alcohol expenditure among those who reported purchasing any alcohol increased slightly from 2006 to 2015. As seen in Table 4, the median annual alcohol 2019 U.S. dollars spent on alcohol among drinkers were found to be \$83.8 and \$101 in 2006 and 2015, respectively. The Mann-Whitney U test revealed no significant differences in median alcohol expenditure between drinkers in 2006 and 2015. However, a 20.5% increase in median alcohol expenditure among all drinkers from

2006 to 2015 was observed. A significant difference in alcohol expenditure from 2006 to 2015 was observed among rural ($p = 0.014$) and urban ($p = 0.009$) drink-

ers and the percent increase in median annual alcohol expenditure from 2006 to 2015 among urban and rural drinkers was 11.6% and 33.9%, respectively.

Table 3. Differences in Rurality and Alcohol Purchasing by Self-Reported Poverty Status

Living Conditions and Monitoring Survey V (2006)						
		No Alcohol Purchased, <i>n</i> (%)	Alcohol Purchased, <i>n</i> (%)	χ^2	<i>df</i>	<i>p</i> -value ^a
Extremely Poor	Rural	3486 (86.7)	536 (13.3)	1.65	1	0.198
	Urban	755 (88.3)	100 (11.7)			
Moderately Poor	Rural	1951 (80.9)	462 (19.2)	22.47	1	0.000*
	Urban	1163 (86.9)	175 (13.1)			
Non-Poor	Rural	2081 (77.2)	616 (22.8)	0.09	1	0.764
	Urban	5682 (77.4)	1655 (22.6)			
Living Conditions and Monitoring Survey VII (2015)						
		No Alcohol Purchased, <i>n</i> (%)	Alcohol Purchased, <i>n</i> (%)	χ^2	<i>df</i>	<i>p</i> -value
Extremely Poor	Rural	2996 (89.4)	355 (10.6)	1.80	1	0.180
	Urban	994 (88.0)	136 (12.0)			
Moderately Poor	Rural	2239 (87.6)	318 (12.4)	1.01	1	0.315
	Urban	2460 (88.5)	321 (11.5)			
Non-Poor	Rural	559 (88.2)	75 (11.8)	3.75	1	0.053
	Urban	1525 (85.0)	268 (15.0)			

^a*p*-values < .05 are considered statistically significant

*Statistically significant

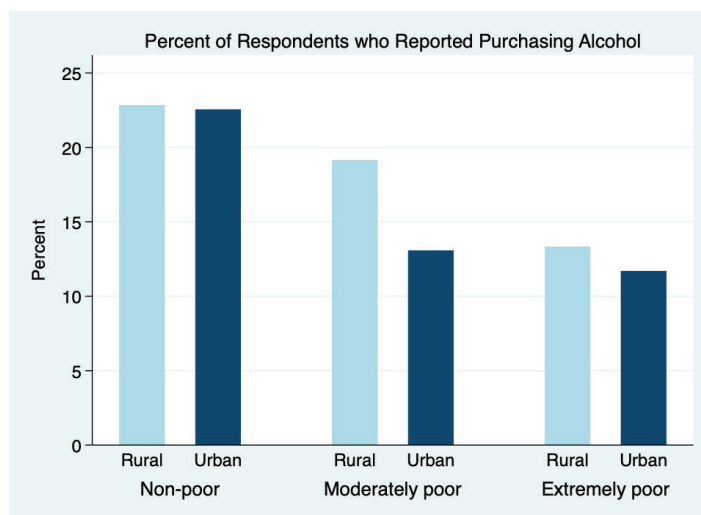


Figure 1. Percent who purchased alcohol by rurality and self-reported poverty status in 2006.

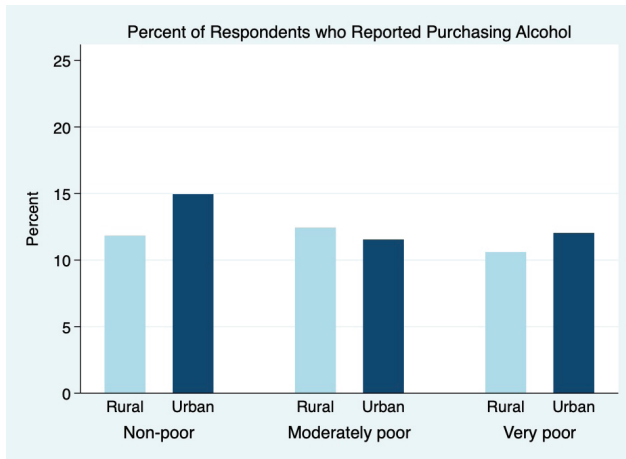


Figure 2. Percent who purchased alcohol by rurality and self-reported poverty status in 2015.

Table 4. Comparison of Alcohol Expenditure Among Drinkers in 2006 and 2015

	Median (US\$2019)		z	p-value ^a	2006-2015 Percent change
	2006	2015			
All drinkers	83.8	101.0	-1.565	0.118	+20.5
Rural	41.9	56.1	-2.462	0.014*	+33.9
Urban	167.6	187.0	-2.631	0.009*	+11.6

Note: Alcohol expenditure is presented in 2019 U.S. dollars.

Note: All drinkers N = 5,017, rural drinkers N = 2,362, urban drinkers N = 2,655

^ap-values < .05 are considered statistically significant

DISCUSSION

The main finding of this study is that across all poverty levels in 2006 and among the moderately poor in 2015, rural households purchase alcohol at similar or greater levels compared to urban households. This finding supports other studies comparing rural versus urban differences in substance use but is one of the first to show the reality in central Africa (Borders, 2007; Morojele et al. 2010). This difference is critical to understanding the risk factors and determinants around alcohol use in rural areas. This observation may be explained by the fact that rural areas in sub-Saharan Africa tend to have fewer

safety nets available to minimize the impacts of mental and behavioral health disorders including limited access to mental health treatment services which can propagate further hazardous drinking (Ng et al., 2019). These results are in line with studies that suggest the prevalence of alcohol use disorders is greater in rural versus urban areas and highlight the need to test interactions with other social and economic factors (Borders, 2007; Dixon & Chartier, 2016; Morojele et al. 2010; Judd et al. 2002).

Another finding of this study is the overall decrease in alcohol purchasing between 2006 and 2015. The decrease in overall alcohol purchasing may be due to

many factors such as the increase in rural and urban poverty or governmental efforts to address alcohol in these years. In recent decades, the relatively weak nature of alcohol policies in sub-Saharan Africa and the need to enforce the policies that do exist has been widely established in the literature (Ferreira-Borges et al., 2015). However, efforts to address alcohol use in Zambia have been initiated in recent years. For example, the Ministry of Health's 2008 study to explore non-communicable diseases (NCDs) and the 2013-2016 strategic plan for addressing NCDs, provided prevalence rates of alcohol consumption and estimated the health risk of alcohol in Zambia (Zambia Ministry of Health, 2008; Zambia Ministry of Health, 2015). In 2011, the Zambian Parliament also passed the Liquor Licensing Act establishing manufacturing, possession, supply, and sales regulations for alcoholic beverages (Parliament of Zambia, 2011). While these early efforts were limited in their scope and depth, they may have contributed to the decrease in alcohol purchasing from 2006 to 2015.

The results also show an increase in annual median alcohol expenditure among drinkers from 2006 to 2015. While the overall population may have decreased their alcohol purchasing, drinkers were spending significantly more money on alcoholic beverages. A possible explanation for this observation could be the increased emphasis of the global alcohol industry in rural and urban communities in sub-Saharan Africa including Zambia (de Bruijn, 2014; McCall, 2017). This increase in alcohol expenditures was also observed when drinkers were stratified by rural-urban status, with an 11.6% increase in median alcohol expenditure observed among urban drinkers compared

to a 33.9% increase among rural drinkers. This observation may be related to the increase in alcohol advertising combined with changes in employment opportunities resulting in greater poverty across rural and urban populations alike, with rural areas in Zambia tending to already have higher levels of poverty (Crane et al., 2018; Peltzer, 2009). This finding highlights the need to focus on rural drinkers as they continue to increase their alcohol expenditure but also remain more impoverished compared to urban drinkers.

This study contributes to the knowledge base regarding alcohol use disorders in Zambia in multiple ways. First, this study highlights the need for research to better understand the different peri-urban and rural factors leading to alcohol use and alcohol use disorders that can inform appropriate treatment and prevention programs for these communities. There is a dearth of epidemiologic data on alcohol and substance use in Zambia and the available data comes primarily from urban areas (Swahn et al. 2011; Kane, 2016). Research is needed to better understand the cultural, social, spiritual, and economic drivers of substance use in rural areas to adapt existing evidence-based screening and diagnostic tools for identifying substance use disorders. Failure to understand these underlying drivers will result in inefficient and ineffective interventions to address rural alcohol consumers, especially in impoverished rural communities.

Second, the concurrent decrease in alcohol purchasing and increase in alcohol expenditure among drinkers, especially in rural areas, highlights the need to build on community capacity for mental health treatments and enhance the perceived need for screening and brief interventions to address alcohol use disorders in rural

areas. Rural populations are at a greater vulnerability when it comes to health-care access, in general, but even more so when the treatment options are simply not available or surrounded by stigma. The higher prevalence of poverty, the increasing influence from the alcohol industry and alcohol commercialization, and the limited availability of healthcare resources in rural areas exacerbate the vulnerability related to substance use not only for the individual but for entire rural communities (Morojele et al. 2010).

Strengths of this study include the population-based data used to determine the difference between urban and rural expenditures. The study was able to stratify by rurality and poverty levels to understand how poverty modifies the effect of rurality on alcohol expenditure. This study was also able to compare poverty, rural-urban status, and alcohol purchasing and expenditure over time using the 2006 LCMS V and the 2015 LCMS VII which span nearly ten years.

Limitations include the inability to link the demographic and alcohol expenditure sections of the LCMS V data set given the lack of a household identifier in the sections used for this analysis. The measures of poverty status and alcohol expenditures were based on self-report, which could be a source of information bias. The study did not control for other potential confounding variables such as age, sex, and health status given the inability to link sections. Additionally, this study utilized the LCMS which was not developed to intentionally quantify and understand alcohol use and abuse. However, the socio-economic implications of the alcoholic expenditure questions from the survey were utilized to explore alcohol expenditure and assumed consumption.

Future research should examine cultural, social, spiritual, and economic determinants of substance use in peri-urban and rural areas. Studies should aim to increase alcohol and substance use epidemiological data specific to peri-urban and rural contexts. Such data will improve the identification of alcohol and substance use disorders utilizing evidence-based screening and diagnostic tools. Accurate and culturally appropriate tools are important to understand the specific health outcomes associated with substance use and measure the true health burden in the community. Additionally, research that discriminately explores peri-urban and rural areas will be able to assist researchers, policymakers, and mental health professionals in informing, developing, and supporting appropriate and effective prevention and treatment programs for alcohol and substance use disorders in Zambia.

CONCLUSION

In summary, the proportion of those reporting alcohol purchasing has decreased in rural and urban areas across all poverty status groups from 2006 to 2015. When stratified by poverty status, alcohol purchasing in 2006 was higher in rural areas across all poverty groups and was significantly higher among the moderately poor. In 2015 however, alcohol purchasing in rural areas was only higher among the moderately poor and was no longer statistically significant. Lastly, despite decreases in rural and urban alcohol purchasing across all poverty groups from 2006 to 2015, alcohol drinkers reported spending slightly more money on alcohol in 2015 than in 2006. There was no observed statistically significant difference between all drinker's

annual median alcohol expenditure in 2006 and 2015; however, differences in annual median alcohol expenditure from 2006 to 2015 were significant for rural and urban drinkers. The percent increase in median annual alcohol expenditure from 2006 to 2015 among urban and rural drinkers was 11.6% and 33.9%, respectively. The findings presented in the study highlight the need for research to better understand the different driving factors leading to alcohol use and alcohol use disorders in rural areas in Zambia and the need to enhance capacity for behavioral health screening and treatment interventions to address alcohol use disorders in rural areas in Zambia.

CONFLICT OF INTEREST

Authors report no conflicts of interest.

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