REGIONAL PREVALENCE AND DETERMINANTS OF ALCOHOL CONSUMPTION IN INDIA

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ABSTRACT

Introduction: Almost all studies on alcohol consumption in India have been very region to region community to community, so their generalization to the entire country is questionable (Bennett et al., 1998).

Objectives: To understand the regional differences in alcohol consumption in India and to examine the determinants of regional alcohol consumption in India.

Data Source and Methodology: The present study has used the national representative Indian Human Development Surveys II (2011-12). Bi-variate analysis was used to show the regional prevalence of alcohol consumption concerning some selected socioeconomic and demographic background variables. The multivariate logistic regressions were also employed to estimate the odds ratio (95% CI) for regional alcohol consumption. Analysis carried out with the help of STATA.

Findings: The present study showed that 75 per cent of the people never had alcohol in the low consumption states while 53 per cent and 24 per cent who never had alcohol in the moderate and high consuming states. The results for people having rarely alcohol had similar findings in all three consuming states of low, moderate and high. The results showed significant findings in the pattern of daily consumption of alcohol where 26 per cent of people had daily alcohol consumption in the high consuming states while it was 9 per cent and 5 per cent for the moderate and low consuming states.

Keywords: Alcohol, Prevalence, Determinants, Regional level, India

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INTRODUCTION

About 61.7 per cent of the world population had not drunk alcohol in the past 12 months aged 15 years or older (WHO, 2014). More than half of the people of the Americas, Europe and Western Pacific (three WHO regions) consumed alcohol. The percentage of drinkers has declined in Americas, African, European regions and Eastern Mediterranean since 2000, whereas it increased in the Western Pacific Region, and has remained stable in the Southeast Asia Region (WHO, 2018). Business news reports revealed it claim that the Indian market for IMFL is growing at the rate of 8 per cent to 10 per cent a year (Thottam & Hannon, 2009), though IMFL covers a section of the population. One national representative survey showed that 74.1 per cent reported lifetime abstinence whereas 21.4 per cent said being current users of alcohol in the last 30 days aged 12-60 years (WHO, 2004). One more study found that the prevalence of alcohol use in India was only 4.5 per cent (Neufeld et al., 2005). Almost all studies on alcohol consumption in India have been very region to region community to community, so their generalization to the entire country is questionable (Bennett et al., 1998). About 3.3 million deaths took place as a result of harmful consumption of alcohol in 2012 which constitutes around 5.9 per cent of all global deaths, and 5.1 per cent of the disability-adjusted life years (DALYs) were attributable to alcohol consumption (WHO, 2014).

There are several risk factors identified for alcohol consumption, some most critical risk factors for alcohol consumption are Religion (Chowdhury et al., 2006; Subramanian et al., 2005; Gupta et al., 2003), Class, Caste and Ethnicity (Chowdhury et al., 2006); Age (Singh and Mail, 2014; Nadkarni et al., 2013; Goodwin et al., 1987; Wilsnack et al., 2009; Australian Institute of Health and Welfare, 2010), Sex (Singh and Mail, 2014; Goodwin et al., 1987; Wilsnack et al., 2009; Roche and Deehan, 2002; Rahav et al., 2006), Employment status (Nadkarni et al., 2013; Berry et al., 2007), Socioeconomic status (Nadkarni et al., 2013; Goodwin et al., 1987; Neufeld et al., 2005; Rehm et al., 2009; Schmidt et al., 2010; Huckle et al., 2010; Casswell et al., 2003), Place of residence (Bhullar et al., 2013; Neufeld et al., 2005; Australian Institute of Health and Welfare, 2010), Education (Easwaran et al., 2015; Nadkarni et al., 2013; Goodwin et al., 1987; Neufeld et al., 2005; Thappa et al., 2016). Alcohol is the scourge of human society since the dawn of creation. It is continuing to damage innumerable human lives and causes terrible peril to millions of people throughout the world. Alcoholism is a significant health and social problem across the globe. Society is facing several challenges due to conspicuous alcohol consumption. The implication of 'alcohol consumption' is a significant aspect of society. Alcohol is the mother of all evil in the society. Society is facing several problems due to unusual alcohol consumption (domestic violence, crime, etc.). Alcohol is one of the most misused and used drugs known to the human being. Hence, the study concerning the prevalence and determinants of alcohol consumption has been significant.

OBJECTIVES

1. To understand the regional differences in alcohol consumption in India.

2. To examine the determinants of regional alcohol consumption in India.

METHODS

Data Source

The present study used the national representative Indian Human Development Surveys II (2011-12). It covered all states and union territories of India except Lakshadweep and Andaman & Nicobar Island. The India Human Development Survey-II (IHDS-II), 2011-12 is a multi-topic survey of 42,152 households in 1,503 villages and 971 urban neighbourhoods across India. These data are mostly re-interviews of households interviewed for IHDS-I (ICPSR 22626) in 2004-05. This survey collects information on health, education, employment, economic status, marriage, fertility, gender relations, and social capital.

Study Settings

We have selected all states and union territories of India except Lakshadweep and Andaman & Nicobar Island.

Variable Measures

Outcome Variable: The alcohol consumption was utilized as the outcome or dependent variable in the study. In the present study, we have divided whole India into three regions, i.e. "Low consumption states", "Moderate consumption states", and "High consumption states" by the prevalence of alcohol consumption. Low consuming states are those states which had less than 25 per cent of alcohol consumption prevalence; Moderate consuming states are those states which had less than 55 per cent of alcohol consumption prevalence, whereas high consuming states are those states which had more than 55 per cent of alcohol consumption prevalence. We have categorised the alcohol consumption into two categories, i.e. "never" and "ever" for easy understanding in table one. Never labels the percentage of people who never had alcohol, and ever comprises of the percentage of people who had alcohol on a daily basis, sometimes and rarely. Though in table two we have shown four categories, i.e. Never, Rarely, Sometimes and Daily for all the three regions of India.

Explanatory Variables: Age group, Sex, Place of residence, Religion, Caste, Economic status, Education, Migration status have been selected as independent variables.

Statistical Analysis

Bivariate analysis was used to show the prevalence of alcohol consumption about some selected socioeconomic and demographic background variables. To estimate the odds ratio (95% CI) multivariate logistic regression was also employed. STATA was employed to carry out the analyses.

RESULTS

Table1 shows the regional distribution of alcohol consumption in India (IHDS, 2011-12). So from the table, we found that among the low consuming states, the response for never had alcohol was highest for the state of Gujarat where 87.7 per cent of people never had alcohol followed by Uttar Pradesh (78.5%) and Rajasthan (76.9%). Likewise, among the moderate consuming states, the response for never had alcohol was highest for the state of Delhi where 64.2 per cent of people never had alcohol followed by Tripura (63.9%) and Haryana (57.5%). For the high consumption states, the responses of having alcohol ever are high for all states within the high consuming states of alcohol. So we found the highest percentage of responses for never had alcohol among the high consuming states is that of the state of Nagaland where 43.6 per cent of people never had alcohol followed by Dadra & Nagar Haveli (37.7%) and Daman & Diu (37.4%).

Table 2 shows the regional analysis of alcohol consumption in India 2011-12. Among the low consuming states of alcohol, Gujarat (GJ) had the least percentage of consumption of alcohol where 87.4 per cent of people never had alcohol followed by UP (78.56%) and Rajasthan (RJ: 76.95%). Daily use of alcohol was least in the state of Meghalaya (ML) 1.64 per cent followed by Uttar Pradesh (UP: 2.34%) and Madhya Pradesh (MP: 2.69%). Likewise, among the moderate consuming states of alcohol, Tripura (TR) had the least consumption of alcohol where 63.92 per cent of people never had alcohol followed by Delhi (DL: 64.22%) and Haryana (HR: 57.7%).

Table 3 shows the regional distribution of alcohol consumption by some background characteristics. It is interesting to find that the highest alcohol consumption for low consuming states is found in the age group of above 30 years while for the moderate and high alcohol consumption states it is found in the below 30 years' age groups. The consumption of alcohol is more for men than women is all the low, moderate and high consuming states. Likewise, regarding religious background, the least alcohol consumption is found in Muslims in all the low, moderate and high consuming states. It is found that in low consuming states the consumption of alcohol is low in Muslims (6.4%) followed by Hindu (25.5%), others (36.3%), Sikhs (50.2%) and Christians (55.7%) respectively. But

interestingly the consumption of alcohol for Christians is found to be least 43.8% and 75.9 % only after Muslims 12.5% and 51.4% in the moderate and high consuming states respectively. The highest consumption is found in Sikhs for both moderate and high consuming states.

The highest alcohol consuming among the different caste for low and moderate consuming regions are STs (41% and 65% respectively), but for high consuming region, it is SCs (78.8%) followed by OBC (77.5%). In low consuming as well as moderate consuming regions, poor category consumes more alcohol (25.5% and 53.8% respectively), but in the high consuming region, non-poor people consume more alcohol (76.4%). The gap between poor and non-poor category regarding alcohol consumption in those three regions are approximately 3%, 7% and 8% respectively. The result shows that, in low consumption region, no education category consumes the highest level of alcohol (24.2%) and graduate, and higher education category consumes the lowest alcohol (20.2%), whereas moderate and high consumption region, higher secondary education categories consume the highest level of alcohol (56.8% and 88.0% respectively) and graduate and higher education consume the lowest alcohol (45.0% and 69.0% respectively). We also find that people in urban area consume (24%) more alcohol in the low consuming region but in moderate and high consumption region it is the rural people that consume more alcohol than urban (49.2% and 76.0% respectively). In all three regions, migrants are consuming more alcohol than non-migrants. The gap between migrants and non-migrants on alcohol consumption are approximately 7%, 4% and 7% respectively for low, moderate and high alcohol consuming region.

Table 4 shows the logistic regression results for alcohol consumption of three regions separately. The independent variables considered for the analysis are age group, sex, place of residence, caste, religion, economic status, education, and migration status. The alcohol consumption of age group (20-29) is 3.13 times (95% CI: 2.21-4.41), 2.81 times (95% CI: 2.19-3.59) are more likely to consume alcohol compared to the reference category (below 20 years) for moderate and high alcohol consumption regions. Alcohol consumption of female is 0.16 times (95% CI: 0.12-0.22), 0.10 times (95% CI: 0.08-0.12), 0.11 times (95% CI: 0.10-0.13 %) less likely to consume alcohol than of males for low, moderate and high alcohol consumption regions respectively. Alcohol consumption of Sikhs is 1.81 times (95% CI: 1.36-2.40), 4.12 times (95% CI: 1.36-12.97) and 5.12 times (95% CI: 1.67-15.64) more likely to consume alcohol than of Hindu for low, moderate and high alcohol consumption regions respectively. Alcohol consumption of OBCs is 1.38 times (95% CI: 1.13-1.68), 1.14 times (95% CI: 1.00-1.31), 1.26 times (95% CI: 1.14-1.39) more likely to consume alcohol as compared to the reference category of General castes for low, moderate and high alcohol

consumption regions respectively. Alcohol consumption of migrants is 1.35 times (95% CI: 0.92-1.95), 1.21 times (95% CI: 1.02-1.45) times as well as 1.11 times (95% CI: 1.00-1.24) more likely to consume alcohol as compared to the non-migrants for low, moderate and high alcohol consumption regions respectively.

Figure 1 regional difference in alcohol consumption. Graph showing the pattern of alcohol consumption in the three states of low, moderate and high consumption states. It is pertinent from the graph that 75 per cent of the people never had alcohol in the low consumption states while 53 per cent and 24 per cent who never had alcohol in the moderate and high consuming states. The results for people having rarely alcohol had similar findings in all three consuming states of low, moderate and high. The results showed significant findings in the pattern of daily consumption of alcohol where 26 per cent of people had daily alcohol consumption in the high consuming states while it was 9 per cent and 5 per cent for the moderate and low consuming states. So the nature of this high daily consumption of alcohol is contributing to the overall consumption high consumption of alcohol in these states. The result is also similar for the people consuming alcohol sometimes where the percentage is highest for the high consuming states (43%) followed by moderate consuming states (27%) and low consuming states (14%).

DISCUSSION AND CONCLUSION

The results showed significant findings of the alcohol consumption in the different regions of India. We examined the use of alcohol in India at the regional level where we find that there is a prominent regional level difference in the consumption of alcohol. From the low consuming states, the response for never had alcohol was highest for the state of Gujarat where 87.7 per cent of people never had alcohol followed by Uttar Pradesh (78.5%) and Rajasthan (76.9%). Talking about the moderate consuming states, the response for never had alcohol was highest for the state of Delhi where 64.2 per cent of people never had alcohol followed by Tripura (63.9%) and Haryana (57.5%). We also found the highest percentage of responses for never had alcohol among the high consuming states is that of the state of Nagaland where 43.6 per cent of people had never alcohol followed by Dadra & Nagar Haveli (37.7%) and Daman & Diu (37.4%).

Daily consumption of alcohol in the moderate consuming state was least in the state of Mizoram (MZ), Chhattisgarh (CT), and Tripura (TR). Talking about the high consumption states, the states of Pondicherry (PY), Goa (GA), and Daman & Diu (DD) had the highest percentage of people having a daily consumption of alcohol as 79.2 per cent, 61.6 per cent, and 47.7 per cent respectively. The least percentage of consumption of alcohol among the high consuming states was that of Nagaland (NL), Dadra & Nagar Haveli (DN) and, Daman & Diu (DD) where 43.6

per cent, 37.7 per cent, and 37.4 per cent of people never had alcohol respectively. Likewise, if we look at some of the background characteristics like sex, caste, education, income category, place of residence we find that more percentage of males consume alcohol in all the three regions than the counterpart of females which is the similar result with many existing literatures (Goodwin et al., 1987; Wilsnack et al., 2009; Roche and Deehan, 2002; Rahav et al., 2006). The highest alcohol consuming among the different caste for low and moderate consuming regions are STs (41% and 65% respectively), but for the high consuming region, it is SCs (78.8%) followed by OBC (77.5%). Poor category consumes more alcohol (25.5% and 53.8% respectively), but in the high consuming region, non-poor people consume more alcohol (76.4%). Concerning the education-based results, no education category consumes the highest level of alcohol (24.2%). People in urban area consume (24%) more alcohol, but in moderate and high consumption region it is the rural people that consume more alcohol than urban (49.2% and 76.0% respectively). In all three regions, migrants are consuming more alcohol than non-migrants.

The present study showed that the problem of alcohol is a severe one and is likely to grow in the coming times where there is a need to understand the consumption of alcohol at different geographical or regions. Alcohol consumption seriously affects the health of a person and is a serious public health issue. There is a need to conduct more research and awareness along with educating the people particularly among vulnerable groups and marginalised communities so that suitable preventive measures can be adopted. Different measures to improve the educational status of the neglected community should be initiated by the government, which can assist in bringing down the consumption of alcohol to some extent. Health education and behaviour change approaches should be developed for the alcoholics, and all health-care providers should be trained in this field.

Strengths and Limitations

A survey that contains a full range of human development issues faces practical challenges not encountered by more single focus projects. The data source (India Human Development Survey) covered all the states of India except Lakshadweep, and Andaman and Nicobar Islands. So, the present study can throw light on both national, regional as well as states level regarding alcohol consumption. Alcohol consumption was not self-reported by the participants; the head of the household was asked about all the members of his or her family ("Does anyone of your household drink alcohol"). So there could be a chance for bias answer because the head of the household is answering on behalf of someone else's behaviour.

Informed Consent

No primary data were collected for this study, so informed consent was not obtained from individual participants in the study.

Ethical Treatment of Experimental Subjects (Animal and Human)

The Present study did not contain any studies either with human or animal participants performed by any of the authors.

Ethical Statement

The study is based on secondary (publicly available) data and no ethical issues are involved.

Funding

Acknowledgments

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Table 1 Regional Distribution of Alcohol Consumption in India (IHDS, 2011-12) (in %)								
Low consumption states			Moderate consumption states			High consumption states		
State	Never	Ever	State	Never	Ever	State	Never	Ever
Jammu & Kashmir	66.9	33.0	Uttrakhand	46.3	53.6	Himachal Pradesh	31.9	68.2
Rajasthan	76.9	23.1	Haryana	57.5	42.5	Punjab	25.8	74.3
Uttar Pradesh	78.5	21.4	Delhi	64.2	35.7	Chandigarh	25.0	75.0
Meghalaya	70.3	29.6	Bihar	53.1	46.9	Sikkim	25.6	74.4
West Bengal	76.4	23.5	Arunachal Pradesh	45.8	54.1	Nagaland	43.6	56.4
Orissa	69.5	30.4	Mizoram	52.3	47.6	Manipur	0.0	100.0
Madhya Pradesh	75.1	24.9	Tripura	63.9	36.1	Dadra & Nagar Haveli	37.7	62.3
Gujrat	87.4	12.6	Assam	46.1	53.9	Andra Pradesh	19.5	80.5
Maharashtra	75.3	24.6	Jharkhand	49.4	50.6	Goa	5.1	94.9
Karnataka	70.3	29.6	Chhattisgarh	46.7	53.3	Kerala	35.5	64.5
Total	74.7	25.3	Tamilnadu	55.1	44.9	Pondicherry	4.9	95.1
			Total	52.7	Total	Daman & Diu	37.4	62.6
						Total	24.3	75.7

Table 2 Regional analysis of Alcohol Consumption in India 2011-12 (in %)

Low Consumption States				Moderate Consumption States				High Consumption States			
STATE	Never	Rarely	Sometimes	Daily	STATE	Never	Rarely	Sometimes	Daily	STATE	Never	Rarely	Sometimes	Daily

STATE	Never	Rarely	Sometimes	Daily	STATE	Never	Rarely	Sometimes	Daily	STATE	Never	Rarely	Sometimes	Daily
JK	66.98	2.65	25.87	4.51	UT	46.33	7.08	39.25	7.45	HP	31.95	4.84	58.46	5.08
RJ	76.95	2.29	16.71	4.14	HR	57.5	5.25	26.73	10.61	PB	25.84	8.85	51.65	13.85
UP	78.56	6.11	12.98	2.34	DL	64.22	3.84	25.05	6.94	CH	25.05	13.94	50.01	11.12
ML	70.39	16.97	11.59	1.64	BR	53.14	5.65	32.69	8.66	SK	25.66	4.77	43.05	26.87
WB	76.45	7.48	12.65	3.43	AR	45.85	20.12	10.37	23.65	NL	43.61	7.92	46.90	1.64
OR	69.57	11.93	11.65	6.85	MZ	52.31	27.01	20.74	0.00	MN	0.04	0.08	100.08	0.05
MP	75.07	4.02	18.24	2.69	TR	63.92	14.63	15.68	5.83	DN	37.72	1.62	30.38	30.42
GJ	87.42	1.79	3.52	7.28	AS	46.15	23.14	23.58	7.16	AP	19.57	5.50	49.05	26.08
MH	75.39	6.28	13.45	4.94	JH	49.44	5.44	35.26	9.91	GA	5.18	4.74	28.66	61.64
KA	70.38	4.56	13.53	11.53	CT	46.72	4.07	45.93	3.32	KL	35.53	22.40	32.24	9.83
Total	74.74	6.44	13.94	4.94	TN	55.17	6.36	26.78	11.79	PY	4.94	4.97	11.02	79.21
					Total	52.74	11.04	27.44	8.64	DD	37.42	3.05	11.91	47.71
										Total	24.35	6.86	42.76	26.02

Table 3 Regional Analysis of Alcohol Consumption by Background Characteristics 2011-12 (in %)			
Background Characteristics	**Low Consumption States (%)**	**Moderate Consumption States (%)**	**High Consumption states (%)**
Age			
<20	9.0	24.7	81.8
20-29	24.1	52.9	80.9
30-39	29.8	57.3	83.0
40-49	26.7	52.1	81.1
50-59	22.8	45.2	72.5
60 +	16.2	37.7	64.0
Sex			
Male	27.9	54.5	79.1
Female	4.6	13.9	38.4
Religion			
Hindu	25.5	51.4	77.1
Muslim	6.4	12.5	51.4
Christian	55.7	43.8	75.9
Sikh	50.2	68.4	83.7
Others	36.3	64.9	94.0
Caste			
General	16.4	37.5	70.9
OBC	20.0	42.9	77.5
SC	30.1	52.6	78.8
ST	41.7	65.2	74.3

Others	23.3	22.3	52.1
Economic Status			
Non Poor	22.9	46.0	76.4
Poor	25.5	53.8	68.4
Education			
No Education	24.2	48.7	77.8
Primary Education	21.8	47.9	69.2
secondary Education	22.1	45.0	75.8
Higher Secondary	22.0	56.8	88.0
Graduate and Higher	20.2	39.0	69.0
Place of Residence			
Rural	23.4	49.2	76.0
Urban	24.0	44.9	75.6
Migration Status			
No	22.9	47.8	75.4
Yes	29.3	51.1	82.3

Table 4 Logistic Regression of three Region by Background Characteristics 2011-12

Covariates	Low consumption states			Moderate consumption states			High consumption states		
	Odds Ratio	[95% Conf. Interval		Odds Ratio	[95% Conf. Interval]		Odds Ratio	[95% Conf. Interval	
		Lower	Upper		Lower	Upper		Lower	Upper
Age									
<20*									
20-29	1.17	0.533	2.549	3.13***	2.219	4.417	2.81***	2.194	3.598
30-39	1.29	0.610	2.748	3.97***	2.845	5.559	3.59***	2.829	4.580
40-49	1.35	0.637	2.845	3.53***	2.532	4.928	3.52***	2.773	4.486
50-59	0.93	0.442	1.970	2.71***	1.947	3.797	3.02***	2.379	3.858
60+	0.59	0.280	1.254	1.9***	1.354	2.681	2.02***	1.575	2.591
Sex									
Male®									
Female	0.16***	0.125	0.222	0.10***	0.086	0.124	0.11***	0.104	0.138
Religion									
Hindu®									
Muslim	0.18***	0.131	0.258	0.14***	0.120	0.186	0.23***	0.201	0.277
Christian	1.41**	1.028	1.958	0.62***	0.473	0.835	1.82***	1.335	2.481
Sikh	1.81***	1.367	2.405	4.12**	1.364	12.497	5.12***	1.677	15.642
Others	3.93**	1.107	13.991	1.31	0.912	1.868	1.089	0.848	1.398
Caste									
General®									
OBC	1.38***	1.134	1.687	1.148**	1.002	1.316	1.26***	1.147	1.393
SC	0.99	0.812	1.211	1.56***	1.339	1.820	2.13***	1.919	2.372
ST	1.43*	0.958	2.142	3.39***	2.769	4.169	3.40***	3.001	3.874
Others	0.64	0.333	1.241	1.09	0.533	2.236	2.25***	1.635	3.101
Economic Status									
Non Poor®									
Poor	0.84	0.651	1.093	1.14**	1.015	1.286	1.020	0.939	1.108
Place of residence									
Rural®									
urban	1.14	0.955	1.358	0.98	0.873	1.091	1.22***	1.125	1.327
Education									
No Education®									
Primary Education	0.84*	0.694	1.028	0.95	0.831	1.084	0.84***	0.773	0.923
secondary Education	1.04	0.800	1.355	0.93	0.792	1.083	0.89*	0.787	1.011
Higher Secondary	2.20	0.756	6.412	1.48*	0.991	2.212	0.770	0.556	1.066
Graduate and Higher	1.91	0.858	4.275	0.82	0.526	1.271	0.62**	0.438	0.904
Migration Status									
No®									
Yes	1.35	0.927	1.952	1.21**	1.021	1.456	1.11**	1.006	1.243

FIGURE 1. REGIONAL DIFFERENCE OF ALCOHOL CONSUMPTION %
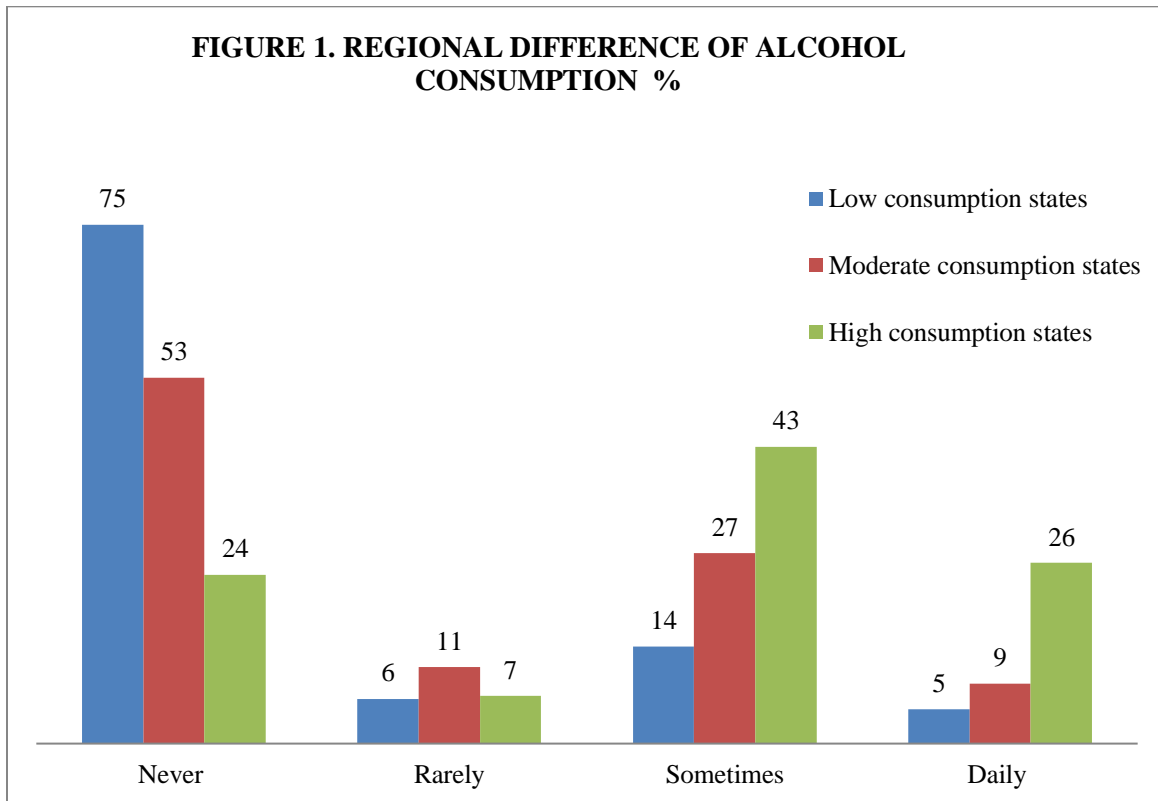
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