

## **Alcohol Perception and its Economic Impact - A Study among Males in Rural Areas**

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### **ABSTRACT**

Alcoholic beverages have been a part of social life for millennia and it has been difficult for the societies to understand and restrain its use. Health problems associated with alcohol consumption have reached alarming levels, and alcohol use contributes to a wide range of diseases, health conditions and high-risk behaviors, mental disorders, loss of productivity, road traffic injuries, liver diseases and spousal violence. Although the prevalence of alcoholism among rural males has been reported, there is a lack of information regarding the prevalence of various types of alcoholism and problem drinking along with the psychosocial and economic aspects of drinking, especially in this part of the region. To highlight these problems the various types of alcoholism and problem have been extensively analyzed in this study.

*Keywords:* Alcoholism, consequences, effect of alcoholism, health problems

### **INTRODUCTION**

Harmful use of alcohol leads to 2.5million death worldwide with 320,000 deaths in the age group of 15-29. Alcohol is one of the leading causes of death worldwide and it attribute to nearly 3.2% of all deaths and results in loss of nearly 4 % of total Disability-Adjusted life year (DALY)(World Health Organisation [WHO], 2014). It results in more deaths

in low income countries of 4.2% deaths as compared to high income countries of 1.6%. Worldwide, alcohol causes more harm to males (6.0% of deaths, 7.4% of DALYs) than females (1.1% of deaths, 1.4% of DALYs) reflecting differences in drinking habits, both in quantity and pattern of drinking.

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The link between alcohol consumption and its consequences is mediated by average volume of consumption and patterns of drinking, and the mediating biochemical mechanisms. Besides the direct loss of health due to alcohol addiction, alcohol is responsible for approximately 20% of deaths due to motor vehicle accidents, 30% of deaths due to oesophageal cancer, liver cancer, epilepsy and homicide, 50% of deaths due to liver cirrhosis and 8.8% of deaths due to psychological illness. It has been estimated that 30% of homicides and 10% of suicides are due to alcohol (WHO, 2009).

The Alcohol in recent times has emerged as important source of revenue generation for most of the states and has been an important commodity of international trade. Analyses of the economic impact of alcohol use, abuse, and dependence can provide important information to policymakers and program planners charged with making decisions about resource allocation. Such studies can be a useful indicator of the magnitude of a health care problem and how that problem compares with others. The economics of alcohol has a multidimensional approach looking from the consumption patterns both at the national level, the stake-holders level and at the individual level. Mere estimation of the alcoholics in a community is not warranting without assessing the social, psychological menace it creates and measuring the economic burden it gives to the individual, family and in turn the entire nation. This prompts the importance of taking up this study which

will be an eye-opener for the public to get the awareness regarding the real burden of the alcoholism and to the policy makers, public health leaders and government agencies regarding the importance of focusing on the intervention and prevention strategies of alcoholism.

### **Alcohol Perception**

Alcoholic beverages can be viewed from several perspectives. To a market economist, beer, wine, spirits and other alcoholic beverages are one more category of consumer products. To a cultural anthropologist, alcoholic beverages are a widely-used medium of sociability. An economic analysis may be more interested in the price of the beverage than its percentage of alcohol content. An ethnographic analysis may be more interested in the symbolism and structure of the drinking occasion than in how much is being drunk. From a public health perspective, alcoholic beverages are an agent of morbidity and mortality.

### **Economic Impact**

Alcohol exerts a substantial economic burden worldwide and this economic burden of drinking is a major public health issue in the modern time. The need for estimates of the economic cost of alcohol is almost self-evident. This estimation is potentially a valuable source of information for policymakers, researchers and public health planners. In addition, it can be used to identify information gaps, research needs and adjustments to national statistical reporting systems (Baumberg, 2006). The

economic impact of alcoholism not just includes the cost of drink but it covers the whole spectrum of the burden it creates upon the family, society and the nation through its consequences. The costs incurred as a consequence of alcoholism is categorized into direct costs which include costs for hospitalization, alcohol costs, costs for physician visits and other health care expenditure, and special equipment and modalities for rehabilitation. The indirect costs include mortality costs, morbidity costs, alcohol related productivity loss, costs of gambling, mortgages and loans, criminal justice costs including drunken driving and damage to the property and the cost of interventions and treatment, not to mention the intangible costs due to family disruptions, neglected children and ruined families.

### **Prevalence of Alcoholism in India**

India was regarded as a 'dry' or 'abstaining' country; the impact of globalization appears to have resulted in a widespread attitudinal shift to greater normalization of alcohol use. Consequently, there has been a significant lowering of age of initiation of drinking. Varma, Malhotra and Dang (1985) reported that 41% prevalence of alcoholism among males in northern India, with 49.5% of alcoholics doing unskilled or semi-skilled work. Sundaram, Mohan, Advani, Sharma, and Bajaj (1984) reported the prevalence of alcoholism among rural males above 15 years as 36.1%. The same study also reported the vulnerable group for alcoholism as illiterate married men, in an age group of

20-35, living in a nuclear family and doing unskilled or semi-skilled occupation.

Ghulam, Rahman, Naqvi, and Gupta (1996) reported a prevalence of alcoholism among urban males above 18 years as 32.9%. Srinivasan and Augustine (2000) reported 20.5% prevalence of alcoholism among hospital patients. Hazarika, Biswas, Phukan, Hazarika, and Mahanta (2000) reported the prevalence of alcoholism among rural males in the border area of Assam and Arunachal Pradesh as 39.4%, with 47.4% of the illiterates.

Pillai et al. (2013) had reported 49% prevalence of alcoholism among rural males in Goa, with 14.3% of binge drinking. Coder et al. (2008) had reported 25.7% prevalence of alcoholism among male inpatients in a rural hospital. Satyanarayana, Chandra, Vaddiparti, Benegal, and Cottler (2009) reported a prevalence of 37% among males. Gladstone et al. had a finding of prevalence of alcoholism among rural males in Goa to be 59% (D'Costa et al., 2007). John et al. (2009) had reported the prevalence of alcoholism among rural males in Tamilnadu as 34.8%. This study also stated the prevalence of current drinkers to be 46.7%.

Nayak, Bond, Cherpitel, Patel and Greenfield (2009) assessed the alcohol related problems among males and came out with a 36% prevalence of among males aged 18-49 years. In that study, 21.1% of the alcoholics consumed daily, 28.3% consumed alcohol on weekly basis. Kavita, Gururaj and Benegal (2010) assessed the alcohol use among men and women in four

communities in Karnataka and had reported the prevalence of alcoholism among the males in the rural community to be 45%. In that study, 29.7% of the rural males consumed alcohol more than 4 days a week while 23.8% consumed on weekly basis. Pillai et al. (2014) had reported a prevalence of 39% among males in Goa with 7% binge drinking. Ghosh, Samanta and Mukherjee (2012) reported a prevalence of alcoholism among males in an urban slum in Kolkata as 65.8%. To highlight these problems the various types of alcoholism and problem have been extensively analyzed in this study.

## **METHODS**

### **Number of Study Participants**

The study was conducted in the rural area of Nemam in Thiruvallur district, Tamilnadu. Although there are numerous studies regarding alcoholism in Indian set up, most of them are hospital-based studies dealing with alcohol dependence patients. Of the few population-based studies, very few had assessed the various drinking levels and patterns prevailing in the community. As far the problem drinking, there are no studies in the state of Tamilnadu assessing the psychosocial problems of drinkers at the community level rather than assessing in the hospital setups. A study on alcoholism will be incomplete if it does not include the economic burden on the individuals and their families. Regarding the economic impact of alcoholism, there is only one study in India, by Benegal, Velayudhan and Jain (2000) which comprehensively assessed the burden of alcoholism. In this

context, the findings from this current study will be of immense value for drafting and developing an alcohol policy. The study area comprises 5 Panchayats, there were 16 villages included under the study area. Males of age 18 years and above, residing in the study area for more than 6 months were enlisted using voters list. They were found to be 8115. Among them, using probability proportion to size sampling method, equal weightage proportion was given to enlist the study population in each panchayat. The required study samples from each panchayat enumerated by the probability proportion to size sampling method, was selected using Simple Random Sampling method from the computer-generated table of random numbers. The data was collected over a period of 4 months, the Questionnaire was structured in 7 parts comprising demographic details of the participants, Standard of living index, AUDIT questionnaire (For screening alcoholism), Pattern and place of drinking, Questionnaire on economic impact of alcoholism, MAST questionnaire (For psycho-social impact and problem drinking) and Place and reason for healthcare seeking.

### **AUDIT (The Alcohol Use Disorders Identification Test)**

AUDIT can help identify excessive drinking as the cause of the presenting illness. It provides a framework for intervention to help risky drinkers reduce or cease alcohol consumption and thereby avoid the harmful consequences of their drinking. AUDIT also helps to identify alcohol dependence and some specific consequences of harmful

drinking. It is particularly designed for health care practitioners (Patton et al., 2014). The AUDIT was validated on primary health care patients in six countries and is the only screening tool of alcoholism accepted for international use. The AUDIT is so versatile that it can be used in the Primary health centers, General hospital out-patient clinics, Psychiatric hospitals, work place and even at the community level. It can either be self-administered or by oral-interview administration. It was developed and evaluated over a period of two decades, and it has been found to provide an accurate measure of risk across gender, age, and cultures. It consists of 10 questions; 3 pertain to hazardous alcohol use, 3 to dependence symptoms and 4 to harmful use. Scores range from 0 to 40. Scores greater than or equal to 8 indicate hazardous drinking and they are termed to be alcoholics.

### **MAST (Michigan Alcohol Screening Test)**

MAST is one of the widely-used questionnaires for assessing the problem drinkers (alcohol abuse). The MAST is a 25-item questionnaire designed to provide rapid and effective screening for lifetime alcohol related problems including the psychosocial and health problems (Mares, van der Vorst, Engels, & Lichtwarck-Aschoff, 2011). MAST appeared to be a valid instrument for discriminating problem drinkers from alcoholics. The MAST focuses on the consequences of problem drinking and, on the subjects', own perceptions of their

alcohol problems. Total scores for these 25 questions range from 0-54. Initially MAST has a cut-off value of 5 to be diagnosed as a problem drinker. But due to a greater number of false positive cases, at present, a MAST score of 13 and above is termed as a problem drinker.

### **Data Analysis**

Data entry and analysis of the variables was done using Statistical Package for Social Sciences (SPSS) version 16 software. Descriptive statistics were calculated for background variables including demographic and socio-economic characteristics, details of alcohol, its usage and prevalence of alcoholism. The 95% Confidence Interval was calculated for prevalence of alcoholism, pattern of drinking among alcoholics, prevalence of problem drinkers and for the psycho-social problems. Measures of dispersion were used for the data pertaining to the economic impact of alcoholism. Odds ratio was calculated with 95% Confidence Interval to evaluate the association between marital status, educational status, occupation and the standard of living index with that of alcoholism, alcohol dependence and problem drinking. Chi-square test was used as statistical test of significance. Independent t-test was applied to compare the mean alcohol-related expenses by alcoholics and normal drinkers.

## **RESULTS**

### **Frequency of Drinking**

The pattern of drinking by various types of the drinkers was assessed by comparing

their frequency, place and type of drinking. Majority of the normal drinkers (67.5%) usually drank monthly or less than monthly whereas alcoholics (61.7%) consumed on a weekly basis. Most of the problem drinkers (40.3%) consumed almost daily. On the number of drinks on a usual day of drinking, most of the normal drinkers (41.2%) would have stopped with 3-4 drinks while majority of the alcoholics (74.3%) and problem

drinkers (70.6%) consumed 5-6 drinks. (Table 1).

**Pattern of Drinking**

The pattern of drinking by various types of the drinkers was assessed by comparing their type of drink, place of drinking and the habit of concurrent tobacco use while drinking. On assessing the most sought-out

Table 1  
*Frequency of drinking*

Drinking characteristics	Normal drinkers		Alcoholics		Problem drinkers	
	N (114)	%	N (206)	%	N (119)	%
<b>Frequency of drinking</b>						
Monthly once or less	77	67.5	8	3.9	2	1.7
Monthly 2-4 times	37	32.5	127	61.7	52	43.7
Weekly 2-3 times	0	0	19	9.2	17	14.3
Weekly 4 times or more	0	0	52	25.2	48	40.3
<b>Number of drinks* on a day of drinking</b>						
1-2	21	18.4	1	0.5	1	0.8
3-4	47	41.2	30	14.5	15	12.6
5-6	46	40.4	153	74.3	84	70.6
7,8,9	0	0	20	9.8	19	16.0
>10	0	0	2	0.9	0	0
<b>Frequency of 6 or more drinks per occasion</b>						
Never	49	43.0	9	4.4	2	1.7

Table 1 (Continue)

Less than monthly	47	41.2	16	7.7	8	6.7
Monthly	18	15.8	31	15.1	6	5.0
Weekly	0	0	99	48.1	54	45.2
Daily or almost daily	0	0	51	24.7	49	41.2

\* 1 drink = 325ml of Beer/30ml of Spirits/ 140 ml Wine

drinks of the various drinkers, it was found that most of the normal drinkers (43.9%) preferred beer whereas alcoholics (79.1%) and problem drinkers (88.2%) preferred spirits (whisky, brandy). Normal drinkers (47.4%) usually drank in their home while alcoholics (63.1%) and problem drinkers (70.6%) preferred bar or wine shop to drink. Only 37.3% of normal drinkers used tobacco in concurrence with their drinking but 79.1% of alcoholics and 94.1% of problem drinkers concurrently used tobacco (Table 2).

#### Pattern of Drinking- AUDIT zone-wise

In this study, majority of the alcohol dependents (88.5%), binge drinkers (83.7%) and harmful drinkers (68.2%) preferred to drink sprits (whisky, brandy) whereas the normal drinkers (43.9%) preferred beer.

As per the place of drinking, majority of the normal drinkers (47.4%) drank in their home or in their friends' home. Majority of the harmful drinkers (54.1%), binge drinkers (72.1%) and alcohol dependents (67.9%) preferred to drink in bar or wine shops. Among the normal drinkers 37.7% has the habit of tobacco consumption while 93.6% of the alcohol dependents have concurrent tobacco use (Table 3).

#### Age-wise pattern- Frequency of drinking

Among the younger age group, 59.5% of the current drinkers in the age group of 18-24 and 72.5% in the age group 25-34 years used to drink on weekly basis (i.e.) up to 4 times

Table 2  
Pattern of drinking

Pattern	Normal drinkers		Alcoholics		Problem drinkers	
	N (114)	%	N (206)	%	N (119)	%
<b>Type of drinks</b>						
Spirits (Whisky, Brandy)	45	39.5	163	79.1	105	88.2
Beer	50	43.9	12	5.8	2	1.7
Others	19	16.7	31	15.1	12	10.1

Table 2 (Continue)

<b>Place of drinking</b>						
Bar / Wine shop	29	25.4	130	63.1	84	70.6
Home / Friend's home	54	47.4	35	16.9	13	10.9
Public place	31	27.2	21	10.2	3	2.5
Work place	0	0	20	9.8	19	16.0
<b>Concurrent tobacco use</b>						
Yes	43	37.7	163	79.1	112	94.1
No	71	62.3	43	20.9	7	5.9

Table 3  
AUDIT zone-wise pattern of drinking

Particulars	Zone 1		Zone 2		Zone 3		Zone 4	
	N (114)	%	N (85)	%	N (43)	%	N (78)	%
<b>Type of drinks</b>								
Spirits (Whisky, Brandy)	45	29.6	58	68.3	36	83.7	69	88.5
Beer	50	43.9	11	12.9	0	0	1	1.2
Others	19	16.7	16	18.8	7	16.3	8	10.3
<b>Place of drinking</b>								
Bar / Wine shop	29	25.4	46	54.1	31	72.2	53	67.9
Home / Friend's home	54	47.4	23	27.1	8	18.7	4	5.1
Public place	31	27.2	16	18.8	3	5.8	2	2.6
Work place	0	0	0	0	1	2.3	19	24.4
<b>Concurrent tobacco use</b>								
Yes	43	37.7	55	64.7	35	81.4	73	93.6
No	71	62.3	30	35.3	8	18.6	5	6.4

a month. Among the middle-aged current drinkers, 39.4% in the age group 35-44 and 36.7% in 45-54 years had consumed alcohol 2-4 times a month. Among the elderly, 37% in the age group 55-64 and 42.1% above 65 years used to drink 4 or more times a week (Table 4).

#### Age-wise pattern-Number of drinks on a day of drinking

In this study, among the younger age group, 48.6% in 18-24 years age group had consumed 3-4 drinks on a day of drinking, whereas 72.5% in 25-34 age group had

consumed 5-6 drinks. In the middle-aged men, 78.9% in 35-44 age group and 71.4% in 45-54 age group consumed 5-6 drinks on a drinking occasion. Among elderly, in 55-64 years age group, 66.7% had consumed 5-6 drinks while 47.4% of the men above 65 years, used to take 3-4 drinks on a drinking day (Table 5).

#### Economic Impact of Alcoholism

In this study, the economic impact of the alcohol was calculated for all the current drinkers (320). The economic impact of drinking was classified into cost of drinking

Table 4

*Age-wise pattern- Frequency of drinking*

Age of the Participants	Monthly or Less		Monthly 2-4 Times		Weekly 2-3 Times		Weekly 4 Times/more		Total %
	N	%	N	%	N	%	N	%	
18-24	27	36.5	44	59.5	2	2.7	1	1.4	100
25-34	14	17.5	58	72.5	4	5.0	4	5.0	100
35-44	23	32.4	28	39.4	3	4.2	17	23.9	100
45-54	15	30.6	18	36.7	4	8.2	12	24.5	100
55-64	4	14.8	11	40.7	2	7.4	10	37.0	100
65 and above	2	10.2	5	26.3	4	21.1	8	42.1	100

Table 5

*Age-wise pattern- Number of drinks on a day of drinking*

Age of the Participants	1 or 2		3 or 4		5 or 6		7,6,9		More than 10		Total %
	N	%	N	%	N	%	N	%	N	%	
18-24	14	18.9	36	48.6	24	32.4	0	0	0	0	100
25-34	4	5.0	15	18.8	58	72.5	3	3.8	0	0	100
35-44	2	2.8	4	5.6	56	78.9	9	12.7	0	0	100

Table 5 (Continue)

45-54	2	4.1	7	14.3	35	71.4	4	8.2	1	2.0	100
55-64	0	0	6	22.2	18	66.7	2	7.4	1	3.7	100
65 and above	0	0	9	47.4	8	42.1	2	10.5	0	0	100

and the alcohol-impact expenses (Sacks, Gonzales, Bouchery, Tomedi, & Brewer, 2015). Cost of drinking includes the cost of alcohol, refreshments, travel expenses and cost of tobacco.

Alcohol-impact expenses include health costs (costs for injuries and hospital admission), work related expenses (loss of pay due to absenteeism and borrowing in work place) and social costs (debts, mortgages, gambling and damage to properties) (Igumnov & Osipchik, 2012). The cost of drinking including the expenses for alcohol related consequences for a current drinker of alcohol was found to be 21,053 INR (Indian Rupee Rate) during the study period of past 12 months.

A current drinker, on an average had spent 11,498 INR for his drinks and refreshments and 3,273 INR for his health expenses in the past 12 months. On the account of the burden of drinking behavior on a current drinker, the workplace related expenses amounted to 14,046 INR and the social costs amounted to 12,632 INR. But due to the wide range in the spending for various expenses, median values were considered instead of mean values. Hence, a current drinker of alcohol in this study, spent around 8,250 INR for his drinks and refreshments and 15,000 INR for the alcohol-related consequences, which

include health cost (1,200 INR), social costs (6,250 INR) and work place related expenses (12,500 INR) in the past 12 months. (Table 6)

**DISCUSSION**

**Comparison of Alcohol-related Expenses between Alcoholics and Normal Drinkers**

In this study, the mean amount spent on alcohol related expenses by the alcoholics and the normal drinkers were compared using independent t-test. An alcoholic on an average spent 1,537 INR for his health expenses due to alcohol related problems as compared to a normal drinker who had spent 65 INR. The difference is found to be statistically significant ( $p < 0.0001$ ). On comparing work expenses, an alcoholic had a work expense (loss of pay due to absenteeism and expense out of borrowed money) of 9,887 INR whereas a normal drinker had an expense of 246 INR. The difference is found to be statistically significant ( $p < 0.0001$ ). An alcoholic on an average had an alcohol-impact expense of 15,233 INR while the same expense for a normal drinker was found to be 388 INR. The difference is found to be statistically significant ( $p < 0.0001$ ) (Table 7).

**Proportion of Annual Income Spent on Alcohol**

Table 6  
*Monetary cost of drinking (12 months)*

Expenses	Number of Drinkers	Mean (INR)	Median (INR)	Range (INR)	
				Minimum	Maximum
Health Related	99	3,273	1,200	50	24,050
Workplace Related	147	14,046	12,500	1,000	62,500
Loss of Pay	139	13,809	12,500	1,000	62,500
Expenses out of Borrowed Money	56	3,086	2,500	1,000	10,000
Social Expense	60	12,632	6,250	750	1,00,000
Alcohol Impact	180	17,679	15,000	50	1,06,500
Alcohol	320	11,498	8,250	800	58,400
Alcohol Alone	320	6,794	3,675	400	47,450
Food	318	1,821	1,225	100	7,000
Tobacco	206	4,066	5,000	100	10,500
Expenses for Alcohol and Alcohol-impact	320	21,053	13,400	800	1,30,000

Table 7  
*Comparison of alcohol-related expenses between alcoholics and normal drinkers*

Alcohol Related Expenses	Alcoholics	Normal Drinkers	P Value
Health Expenses	1,537	65	0.0001
Work Expenses	9,887	246	0.0001
Social Expenses	3,636	77	0.0003
Alcohol Impact Expenses	15,233	388	0.0001

Current drinkers spent 13.4% of their annual income for alcohol and alcohol-related expenses. On stratifying them based on their standard of living index, large difference is found on the proportion of annual income spent on alcohol (Shimotsu et al., 2013). Current drinkers having high standard of living, spent only 6.3% of their

annual income for alcohol and alcohol related expenses whereas those having low standard of living spent 36.2% of their annual income (Table 8).

#### **Behavioral Problems Perceived by the Alcoholic and his Family**

In this study, 72.8% of the alcoholics had

Table 8  
*Proportion of annual income spent on alcohol*

Particulars	Number of subjects	Mean Annual Income (INR)	Mean Alcohol Expense (INR)	Proportion of Annual Income (%)
Low SLI	55	1,02,218	37,039	36.2
Middle SLI	138	1,38,652	22,348	16.1
High SLI	127	2,00,692	12,722	6.3
Current Drinkers	320	1,57,012	21,053	13.4

a false perception that they were just a normal drinker. Ghosh et al. (2012) had a similar finding were 84% of the alcoholics had this perception. Ironically 93.7% of the alcoholics were not seeking help from anyone regarding their drinking problem. In this study, 73.3% of the alcoholics were unable to limit their drinking to certain places and time while 56.8% of them were unable to stop with one or two drinks. These findings revealed the level of dependence the rural men were reeling under the alcohol. These problems tempt them to do binge drinking, drink at public places and workplace drinking which would lead to social and legal issues.

**CONCLUSION**

Findings from this study reveal the magnitude of the alcohol menace among the rural males in India. With one half of the rural males be drinkers and one-third to be alcoholics, the burden it gives to the family and society is huge. Psychosocial problems along with the health problems faced by the alcoholics not only affect himself but also his family and in turn the society. With one-fifth of the rural males are problem drinkers, the burden

it generates is substantial. With majority of rural population having low standard of living, a current drinker by spending a hefty portion of his annual income for alcohol and alcohol related expense, further depletes his economic status. This study gave an opportunity to assess the various levels of drinking prevailing in a rural community and also portray the psycho-social and economic burden faced by the drinker. The finding of high prevalence of alcoholism and problem drinking among rural males and the magnitude of psychosocial and economic impact on them warrants the need for a cost-effective, community-based alcohol policy at the national level.

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## REFERENCES

- Baumberg, B. (2006). The global economic burden of alcohol: A review and some suggestions. *Drug and Alcohol Review*, 25(6), 537–551. <http://doi.org/10.1080/09595230600944479>
- Benegal, V., Velayudhan, A., & Jain, S. (2000). The social cost of alcoholism (Karnataka). *NIMHANS Journal*, 18(1–2), 67–76.
- Coder, B., Freyer-Adam, J., Bischof, G., Pockrandt, C., Hartmann, B., Rumpf, H. J., ... & Hapke, U. (2008). Alcohol problem drinking among general hospital inpatients in northeastern Germany. *General Hospital Psychiatry*, 30(2), 147–154. <http://doi.org/10.1016/j.genhosppsych.2007.10.007>
- D'Costa, G., Nazareth, I., Naik, D., Vaidya, R., Levy, G., Patel, V., & King, M. (2007). Harmful alcohol use in Goa, India, and its associations with violence: A study in primary care. *Alcohol and Alcoholism*, 42(2), 131–137. <http://doi.org/10.1093/alcalc/agl1103>
- Ghosh, S., Samanta, A., & Mukherjee, S. (2012). Patterns of alcohol consumption among male adults at a slum in Kolkata, India. *Journal of Health, Population and Nutrition*, 30(1), 73–81. <http://doi.org/10.3329/jhpn.v30i1.11279>
- Ghulam, R., Rahman, I., Naqvi, S., & Gupta, S. R. (1996). An epidemiological study of drug abuse in urban population of Madhya Pradesh. *Indian Journal of Psychiatry*, 38(3), 160–165.
- Hazarika, N. C., Biswas, D., Phukan, R. K., Hazarika, D., & Mahanta, J. (2000). Prevalence and pattern of substance abuse at bandardewa, a border area of Assam and Arunachal Pradesh. *Indian Journal of Psychiatry*, 42(3), 262–266.
- Igumnov, S. A., & Osipchik, S. I. (2012). P-42 - Social and economic consequences of alcohol consumption in the republic of belarus. *European Psychiatry*, 27(Supplement 1). [http://doi.org/10.1016/S0924-9338\(12\)74209-8](http://doi.org/10.1016/S0924-9338(12)74209-8)
- John, A., Barman, A., Bal, D., Chandy, G., Samuel, J., Thokchom, M., ... & Balraj, V. (2009). Hazardous alcohol use in rural southern India: Nature, prevalence and risk factors. *The National Medical Journal of India*, 22(3), 123–5.
- Kavita, R., Gururaj, G., & Benegal, V. (2010). Alcohol use and implications for public health: patterns of use in four communities. *Indian Journal of Community Medicine : Official Publication of Indian Association of Preventive & Social Medicine*, 35(2), 238–244.
- Mares, S. H. W., van der Vorst, H., Engels, R. C. M. E., & Lichtwarck-Aschoff, A. (2011). Parental alcohol use, alcohol-related problems, and alcohol-specific attitudes, alcohol-specific communication, and adolescent excessive alcohol use and alcohol-related problems: An indirect path model. *Addictive Behaviors*, 36(3), 209–216. <http://doi.org/10.1016/j.addbeh.2010.10.013>
- Nayak, M. B., Bond, J. C., Cherpitel, C., Patel, V., & Greenfield, T. K. (2009). Detecting alcohol-related problems in developing countries: A comparison of 2 screening measures in India. *Alcoholism: Clinical and Experimental Research*, 33(12), 2057–2066. <http://doi.org/10.1111/j.1530-0277.2009.01045.x>
- Patton, R., Deluca, P., Kaner, E., Newbury-Birch, D., Phillips, T., & Drummond, C. (2014). Alcohol screening and brief intervention for adolescents: the how, what and where of reducing alcohol consumption and related harm among young people. *Alcohol and Alcoholism (Oxford, Oxfordshire)*, 49(2), 207–212. <http://doi.org/10.1093/alcalc/agt165>
- Pillai, A., Nayak, M. B., Greenfield, T. K., Bond, J. C., Hasin, D. S., & Patel, V. (2014). Adolescent drinking onset and its adult consequences among men: a population based study from India. *Journal of Epidemiology and Community Health*, 68(10), 922–927. <http://doi.org/10.1136/jech-2014-204058>

- Pillai, A., Nayak, M. B., Greenfield, T. K., Bond, J. C., Nadkarni, A., & Patel, V. (2013). Patterns of alcohol use, their correlates, and impact in male drinkers: A population-based survey from Goa, India. *Social Psychiatry and Psychiatric Epidemiology*, *48*(2), 275–282. <http://doi.org/10.1007/s00127-012-0538-1>
- Sacks, J. J., Gonzales, K. R., Bouchery, E. E., Tomedi, L. E., & Brewer, R. D. (2015). 2010 national and state costs of excessive alcohol consumption. *American Journal of Preventive Medicine*, *49*(5), e73–e79. <http://doi.org/10.1016/j.amepre.2015.05.031>
- Satyanarayana, V. A., Chandra, P. S., Vaddiparti, K., Benegal, V., & Cottler, L. B. (2009). Factors influencing consent to HIV testing among wives of heavy drinkers in an urban slum in India. *AIDS Care*, *21*(5), 615–21. <http://doi.org/10.1080/09540120802385603>
- Shimotsu, S. T., Jones-Webb, R. J., MacLehose, R. F., Nelson, T. F., Forster, J. L., & Lytle, L. A. (2013). Neighborhood socioeconomic characteristics, the retail environment, and alcohol consumption: A multilevel analysis. *Drug and Alcohol Dependence*, *132*(3), 449–456. <http://doi.org/10.1016/j.drugalcdep.2013.03.010>
- Srinivasan, K., & Augustine, M. K. (2000). A study of alcohol related physical diseases in general hospital patients. *Indian Journal of Psychiatry*, *42*(3), 247–252.
- Sundaram, K. R., Mohan, D., Advani, G. B., Sharma, H. K., & Bajaj, J. S. (1984). Alcohol abuse in a rural community in India. Part I: Epidemiological study. *Drug and Alcohol Dependence*, *14*(1), 27–36. [http://doi.org/10.1016/0376-8716\(84\)90016-4](http://doi.org/10.1016/0376-8716(84)90016-4)
- Varma, V. K., Malhotra, A., & Dang, R. (1985). An alcohol and drug dependence clinic in North India: Initial five years experience. *Indian Journal of Clinical Psychology*, *12*(2), 51–61.
- World Health Organisation [WHO]. (2009). Global health risks: Mortality and burden of disease attributable to selected major risks. *Bulletin of the World Health Organization*, *87*, 646–646. <http://doi.org/10.2471/BLT.09.070565>
- World Health Organisation [WHO]. (2014). *Global status report on alcohol and health*. World Health Organization. Retrieved June 24, 2017, from [http://doi.org//entity/substance\\_abuse/publications/global\\_alcohol\\_report/en/index.html](http://doi.org//entity/substance_abuse/publications/global_alcohol_report/en/index.html)