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A Statistical Analysis of Alcohol Consumption and Socio-Economic Status in Sarguja District

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Abstract
Alcoholism is known to significantly affect an individual's social and economic stance. Alcohol abuse leads to financial problems, loss of productivity, strained family and social relationships, and reduced overall quality of life, including economic well-being. This research seeks to study the relationship between alcoholism and the living conditions of people in the Sarguja District of Chhattisgarh. Primary data collected from 80 respondents provided information regarding varying degrees of alcohol dependence and their economic and social profiles. For the participants of this research, it was evident that alcoholism significantly lowers overall status in terms of income, employment, and education. These findings highlight the need to address alcohol dependence not only as a public concern but also as a critical issue impacting social mobility and economic welfare. Further research is needed to better understand this relationship within the regional context.

Keywords: Alcoholism, Socio-Economic Status (SES), Sarguja, Chhattisgarh

1. Introduction

The drinking of alcoholic beverages impacts people's lives, especially in rural areas where agriculture-based economies depend on seasonal labor. In the Sarguja district of Chhattisgarh, alcoholism affects the productivity and income especially in the indentured employment and agricultural sectors. Alcohol dependent individuals tend to be more unproductive, increasing absenteeism and presenteeism in the form of reduced occupational engagement and increased precarious employment. Besides losing household income, these factors also impact broader economic development in the region. It poses a serious challenge of designing adaptive management interventions aimed at improving productivity in rural workforce in reliance to alcohol consumption and socio-economic status (SES).

Conducting surveys in rural areas, this research uses Alcohol Dependency Scale (ADS) developed by the Addiction Research Center at the University of Wisconsin, Madison. The ADS is a validated, retrievable instrument to measure comparative drinking behavior and dependency level accurately for quantitative sociological analysis. For socio-economic stratification, this research employed Kuppuswamy scale which is perhaps the most widely used benchmark socio-economic scale from India in late 1970s. The Kuppuswamy scale stratifies households on their education, occupation, and income, thus capturing multidimensional socio-economic standing in Indian context.

Out of all the respondents from the Sarguja district, 80 were selected based on their socio-economic status (SES) and alcohol consumption levels. With this data, the study performs a statistical assessment of

alcohol dependence in relation to the socio-economic strata. Based on the study's parameters, descriptive statistics were computed, while inferential analysis was executed through the non-parametric one-way ANOVA alternative, the Kruskal-Wallis H test, because the Alcohol Dependency Scores (ADS) did not follow a normal distribution within the sample.

By tackling the managerial and economic ramifications of alcohol consumption, this study enhances understanding of rural alcoholism and its effects on India's workforce quality and economic productivity. The study will aid business and government leaders as well as social architects in crafting sophisticated policies intended to strengthen human capital, reduce economic risks, and promote sustainable rural socio-economic development. This research highlights the convergence of behavioral health and socio-economic systems, advocating for integrated frameworks in rural revitalization.

2. Literature Review

Alcoholism" is recognized as a major public health problem – socially, economically, and in terms of overall health. The intertwining connection between alcohol use and socio-economic status (SES) has been the focus of several studies, underlining the complexity of this relationship. Most researchers agree that people from lower socio-economic groups face greater challenges as a result of alcohol misuse, not because of its consumption, but as a result of lack of available healthcare, rehabilitation, and social services (WHO, 2018).

This issue is exacerbated by the cultural, regional, and economic diversity of a given country like India. Alcoholism is very high among rural and tribal folk, as exposed by the studies of Prasad (2009) and Murthy (2015). The combination of poverty, illiteracy, and limited employment opportunities fuels substance abuse. Appearances about the consumption of alcohol in these communities is usually associated with short-term benefits while its long-term consequences are largely ignored – meaning that they have little or no access to medical or psychological support often means easy access to alcohol dependency.

Factors such as income, education level, and occupation belong to the socio-economic spectrum. To some extent, these elements have been observed to influence personal behaviour concerning alcohol consumption. Gupta et al. (2017) noted that people from lower income brackets tend to engage in more hazardous drinking due to stress, unemployment, and social isolation. Conversely, Reddy & Chandrashekhar (2010) claimed that people from higher socio-economic groups may drink more often, but their better healthcare access and coping strategies mitigate the consequences.

Even though there is an increasing body of literature internationally, empirically, the rural Indian border has not been documented, let alone the under-explored Sarguja district in Chhattisgarh. Most studies examine urban dwellers or populations, averaging the entire country, which eliminates the understanding of the local socio-economic context and patterns of alcohol use in rural areas.

This is what this research intends to answer. It supplements the existing literature with region-specific data and statistics to analyse varying levels of alcohol consumption among different socio-economic strata in rural Sarguja. This not only adds to the empirical scholarship of alcohol consumption in rural India, but also informs policymakers and targeted interventions tailored for these populations.

3. Objective of the Research

This objective focuses on comparing alcohol consumption rates across different socio-economic categories in the Sarguja district. It aims to examine whether there are significant differences in socio-economic status among individuals with varying levels of alcohol consumption.

4. Research Gap

Though many researchers have looked at the international and national levels on the link between alcohol use and socio-economic status, there is much less concentrated research of sarguja district of Chhattisgarh. No such scientific studies have been undertaken in spite of the socio-cultural uniqueness of the region and the conspicuous alcohol use to systematically study the socio-economic determinants of alcohol dependency for the population. This gap aptly illustrates the need for focused research on the issue of alcohol consumption in not well studied and tribal dominated areas like Sarguja.

5. Research Methodology

The present study was carried out with respect to the Sarguja district of Chhattisgarh to study the association of alcohol with the socio-economic status (SES) of people. The geographical location of the study area is illustrated in Figure 1. 80 respondents were a part of the research. Alcohol-related experiences determined relevance, faster with purposive sampling techniques. These aided in narrowing down individuals needed for the study. To ensure the reliability and validity of the data, standardized tools were used, such as the Kuppuswamy Socioeconomic Status Scale, which classifies individuals into five socioeconomic categories: Upper, Upper-middle, Lower-middle, Upper-lower, and Lower. The Kuppuswamy scale assesses socioeconomic status based on three key indicators: income, education, and occupation. Each indicator is assigned a score depending on the respondent's level, with higher scores reflecting better educational attainment, occupational status, and household income. These individual scores are then summed to generate an aggregate SES score, which can range up to 29. Based on this composite score, individuals are categorized as follows: Upper (26–29), Upper-middle (16–25), Lower-middle (11–15), Upper-lower (5–10), and Lower (<5). However, in the present study, none of the participants fell into the Upper or Upper-middle categories. Therefore, for the purpose of analysis, three socioeconomic groups (SES_Cat) were generated: Lower-middle, Upper-lower, and Lower

Figure 1: Map of the Study Area – Sarguja District, Chhattisgarh

On the other hand, Alcohol dependency scale (ADS) which is developed by Addiction Research Center, University of Wisconsin Madison was utilized in quantifying alcoholism as it gave a score (ADS_Score) to quantify the level of alcohol dependency. Once the data was collected appropriate statistical analysis tool were applied to perform the analysis, additionally the study presents group-wise descriptive statistics pertaining to different socio-economic group to provide deeper insights into variations in alcohol consumption among them.

6. Demographic and Socio-Economic Characteristics of Participants

Descriptives

	N	Mean	Median	SD
Age	80	2.61	3.00	0.864
Gender	80	1.34	1.00	0.476
Education	80	2.79	3.00	1.402
Occupation	80	2.94	2.50	1.745
Income	80	1.88	1.00	1.072

Table 1. Descriptive statistics of demographic and socio-economic variables (N = 80)

The sample contained 80 respondents whose mean age turns out to be 2.61 which means most fall within the age bracket of 31 to 40 years (Median=3). It was found that most of the participants were male (Mean Gender =1.34). the mean of education level stood at 2.79 which suggest that most of the participants had primary to middle school education (Median=3). Occupational status was averaged at 2.94, suggesting workers in elementary occupations or associated trades. Overall income was low and averaged at 1.88 which means most earned between less than 10,702 and 31,977.

Despite the clear lack of education and low-income levels, the data portrays the community's socio-economic burdens. Understanding these characteristics is critical when examining patterns of alcohol consumption and proposing tailored strategies.

7. Data Analysis

Before conducting the statistical analyses, the data were first tested for normality to determine the appropriate testing method. Based on the normality results, either parametric or non-parametric tests were applied to ensure valid and reliable results aligned with the data distribution characteristics.

Shapiro-Wilk			
	N	**W**	**P**
ADS_Score	80	0.983	< .001

Table 2. Shapiro-Wilk Test Results for Normality of ADS_Score

An assessment for normality was performed on Alcohol Consumption Score (ADS_Score). The result of Shapiro-Wilk's test on normality showed significant results (W=0.983, p<.001), therefore confirming that

the data was not normally distributed. Because of this assumption violation the non-parametric Kruskal-Wallis test was performed.

The Kruskal-Wallis test does not assume normal distribution and is therefore more appropriate for analyzing data with such characteristics.

7.1. Comparison of Alcohol Consumption Across Socio-Economic Status Groups

Kruskal-Wallis

	χ^2	df	p	ε^2
SES_Cat	73.3	14	< .001	0.928

Table 3. Kruskal-Wallis Test Results Comparing Alcohol Consumption Scores Across Socio-Economic Status Categories

The Kruskal-Wallis test was conducted to examine differences in alcohol consumption scores across various socio-economic status (SES) categories. The results showed a highly significant difference among the groups, $\chi^2(14) = 73.3$, $p < .001$, indicating that alcohol consumption varies substantially across different SES categories in the sample. The effect size ($\varepsilon^2 = 0.928$) suggests a very strong relationship between SES and alcohol consumption, with SES accounting for a large proportion of the variance in drinking behavior. This significant finding supports the hypothesis that socio-economic status influences alcohol consumption patterns, with individuals from different SES groups exhibiting distinct levels of alcohol use. Given the high effect size, the difference is not only statistically significant but also practically meaningful, highlighting the importance of considering SES in studies related to alcohol consumption.

To further understand the differences in alcohol consumption across socio-economic status groups, group-wise descriptive statistics for ADS Score were examined. These statistics provide insights into which SES categories have higher or lower average alcohol consumption. By comparing mean scores and other measures such as median and range within each group, it becomes possible to identify patterns of alcohol use related to socio-economic background. This step is crucial for interpreting the Kruskal-Wallis test results and for pinpointing specific groups that may be at greater risk of higher alcohol consumption.

7.2 Alcohol Consumption Patterns Across Socio-Economic Groups

Descriptives

	SES_Cat	N	Mean	SD
ADS_Score	Lower	9	19.33	1.32
	Upper-Lower	57	14.30	1.99
	Lower-Middle	14	8.93	1.59

Table 4. Group-wise Descriptive Statistics of ADS Score by SES Categories

Group-wise descriptive statistics for alcohol consumption (ADS_Score) reveal clear differences across socio-economic status categories. The Lower SES group exhibited the highest mean score (M = 19.33, SD = 1.32), indicating greater alcohol consumption compared to other groups. The Upper-Lower group showed a moderate level of consumption with a mean score of 14.30 (SD = 1.99). Meanwhile, the Lower-Middle SES group had the lowest mean ADS_Score of 8.93 (SD = 1.59), suggesting significantly lower alcohol use. These findings align with the overall Kruskal-Wallis test results and highlight that individuals from lower socio-economic backgrounds tend to consume more alcohol.

8. Discussion

The results of the current study indicate a notable link between socio-economic status (SES) and alcohol consumption. The Lower SES group had the highest mean Alcohol Dependency Score (ADS), which indicates a greater level of alcohol use compared to those in the Upper-Lower and Lower-Middle groups. Perhaps one explanation is that people from lower socio-economic backgrounds engage in drinking that is more reckless or less regulated, perhaps as a response to economic or social strain.

In addition, the relationship between alcoholism and SES is both complex and extensive. Chronic alcohol consumption impairs the income-earning potential of people, especially those who work in more physically demanding roles (blue-collar workers). Research by Frone (2006) and MacDonald & Wells (1994) documented how alcoholism impairs productivity, increases absenteeism and unemployment, and subsequently, undermines the financial stability of such individuals, reinforcing economic hardship. This loss in income, in turn, limits spending and adversely impacts the ability to save and invest, worsening the economic precariousness.

Alcoholism not only has a direct impact on the economy but also has long-term consequences that span generations. These consequences include raising children who are emotionally neglected and educationally disengaged, along with having no aspirational career goals. This unstable upbringing can lead to behavioral problems, poor academic performance, and lower socio-economic mobility. Studies have shown that parental alcohol misuse is strongly associated with adverse child outcomes, including increased risk of substance abuse, mental health issues, and lower educational attainment in later life (Anda et al., 2002; Kuppens et al., 2020; Velleman & Templeton, 2007). These effects contribute to a cycle of disadvantage, where the children of today—neglected and unsupported—are likely to become the underproductive workforce of tomorrow. This underscores how alcohol dependency not only affects individuals but also weakens the quality and productivity of future generations, reinforcing social and economic disparities over time.

9. Findings

2. Alcoholism has an inverse relationship with an individual's socio-economic status (SES). Greater dependency on alcohol is associated with lower productivity, decreased income, and poor financial management, which subsequently reduces socio-economic standing.
3. Though both lower and higher socioeconomic groups of people consume alcohol, people from lower socioeconomic groups have a higher prevalence of alcohol consumption. This is likely due to drinking patterns associated with the economically disadvantaged. Studies conducted by Bloomfield et al. (2006) and Grittner et al. (2012) support this claim where people from lower socioeconomic status are found to drink alcohol more frequently in an irresponsible manner because of stress or lack of awareness.

4. Predominately lower SES increases the rate of alcoholism which results in increased expenditure. This curbs their ability to save and invest capital. The constant financial burden augments the economic challenges and inhibits ever achieving long-term financial goals.

10. Recommendations

As per the findings of this study, specific steps need to be taken to curtail the rising alcoholism problem alongside its decreasing impact on the socio' economic standing of the Sarguja district. To begin with, community centered programs should be initiated to spread awareness on the effects of alcohol abuse on an individual's health, social life, and finances. Governmental and non-governmental bodies must work a step further and provide de-addiction and counseling centers in the hinterlands. Special attention should be directed towards vulnerable lower socio-economic groups, especially the Upper-Lower classes, predisposed towards greater alcoholism. Reduced availability of alcohol coupled with employment and skill development programs can serve as means to alleviate stress, curb dependency, and lower alcoholism. Educative prevention campaigns aimed at abstinence should involve the youth, schools, and local institutions. Finally, restriction on alcohol sales in rural areas with the aid of grassroots initiatives should reduce the long-term impact of easy access to alcohol.

11. Conclusion

This research analyzes the association between alcohol use and socio-economic status (SES) in Sarguja district of Chhattisgarh. The analysis shows a stark and alarming trend: greater alcohol dependency negatively affects an individual's socio-economic status. Individuals within lower socioeconomic classes demonstrated considerably higher alcohol consumption, which may stem from more reckless drinking, lack of awareness, and limited support structures available to them. The Kruskal-Wallis test showed the difference in alcohol usage across various SES groups to be significant, with the Lower SES group ranked first in mean ADS scores.

Health and financial burdens are not the only concerns arising from alcohol dependency among lower SES groups. The combination of low income combined with alcoholism contributes to diminished earning capacity, reduced productivity, and low ability to save or invest, thus sustaining the poverty cycle. Furthermore, the effects of alcohol dependency go beyond just the person suffering from the addiction. The children of alcoholics often face educational and developmental hindrances because of dependent parents, which can severely undermine their future opportunities.

The research highlights the focus on specific vulnerable socio-economic groups that require additional knowledge-based programs as well as targeted action. Thoughtful policies can help not only mitigate alcohol dependence, but also interrupt the cycle of intergenerational socio-economic disadvantage.

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