Alcohol dependence: the case of small Mauritius

1. Introduction

Mauritian culture has been referred to as a "mosaic", "rainbow", or "poly-ethnic" rather than a "melting pot" culture (Eriksen, 1992; 2003; Ng-Tseung, 2006; Luczak *et al.*, 2014). People of different ethnic origins live together on the island and are exposed to the same economic and social environment, but the elements of each subculture remain prominent (Luczak *et al.*, 2014). With globalisation, culture, identity and community often serve as a focus of resistance to centralising and homogenising forces. However, Mauritians live in a country which offers a chance to develop dynamic 'multiple identities' influenced by a variety of biological, social, psychological and cultural, amongst others.

In particular, the drinking culture of Mauritius has changed over recent decades (Luczak *et al.*, 2014). There has been a substantial rise in the consumption of alcoholic drinks over the years. In 2010, the prevalence of alcohol dependence on the island stood at 1.9 per cent against 1.4 per cent for the African region (WHO, 2014). By gender, alcohol dependence across men is 3.3 per cent relative to 0.6 per cent for women. Similarly, the prevalence of alcohol disorders across male is 7.9 per cent and 1.2 per cent across their female counterparts. The average figure for prevalence of alcohol disorders in Mauritius is 4.5 per cent exceeding the average of 3.3 per cent for the African region. Further, alcohol per capita consumption (15+ years) for the period 2008-2010 was 3.6 litres of pure alcohol per year. By gender, the figure stood at 5.9 litres per year for male and 1.4 for female over the same period (WHO, 2014).

The objective of this paper is to examine the behaviour of alcohol dependent individuals in the varied cultural setting and evolving society of the small island. Logistic regression techniques are applied to the survey data of 300 alcohol dependents in different parts of the island by taking into account the socio, cultural and economic characteristics of the respondents. The paper is structured as follows: Section 2 provides a brief on the literature on alcohol consumption while section 3 describes the Mauritian society and culture. Section 4 sets out the methodology. Section 5 analyses the data and section 6 presents the findings. We conclude in section 7.

2. Literature Survey

For small island economies, in particular, the evidence on alcohol consumption is rather limited. For instance, Kessaram *et al.* (2015) find that drinking patterns across twenty Pacific Island economies vary significantly across the islands and across adults and the youth. There are also marked gender differences in alcohol use and abstention. In eight islands, male adults consumed alcohol more frequently and engaged in heavy drinking more than their female counterparts. Similar gender differences occurred in current and heavy drinking among youth. Similarly, Perdrix *et al.* (1999) analyse the drinking patterns in the Seychelles Islands in the Indian Ocean. It was observed that socio-economic status was associated strongly and inversely with home-brew consumption, but slightly and positively linked with consumption of commercially marketed beverages. In addition, alcohol intake was linked to smoking, high cholesterol and blood pressure, amongst others. There was also a major gender disparity in alcohol consumption in the islands with men drinking more than their female counterparts.

For the African continent, Martinez *et al.* (2011) study the factors associated with alcohol use among women across 20 African countries. The current consumption of alcohol ranged from 1 per cent in Malawi to 30 per cent in Burkina Faso. Among current drinkers, heavy drinking varied between 4 per cent in Ghana to 41 per cent in Chad, and risky single-occasion drinking ranged from less than 1 per cent in Mauritius to 58 per cent in Chad. Increasing age was associated with increased odds of being a current drinker in about half of the countries. Some factors related to alcohol use were similar across the different African countries, although the contextual diversity of female drinking in Africa was very much dominant.

Studies on alcohol consumption in Mauritius are very limited. For instance, Luczak *et al.* (2014) examine religious factors associated with alcohol involvement in Mauritius. Religious commitment was associated with reduced probability of drinking only in those who viewed their religion as promoting abstinence. Further, among drinkers, abstention norms and religious commitment were not associated with lower likelihood of alcohol use disorders. In fact, predictions based on reference group theory were largely supported, with religious norms and

commitment differentially related to alcohol use and problems both across religions and among individuals within religions. Further, Sobhee *et al.* (2015) provide evidence that expenditure on alcohol by alcohol-dependent individuals rises as income increases in Mauritius. They also establish that alcohol is viewed as a necessity with an income elasticity of demand being less than one. Besides income, the age when the person first started drinking and the family size are important variables influencing the expenditure of respondents on alcohol.

Whilst existing studies on alcohol behaviour in small island economies have focused on the alcohol intake of the young and older generations, gender and religious differences in alcohol consumption and expenditure on alcohol by alcohol-dependent individuals, none has attempted to model the behaviour of the alcohol dependent individuals in the social and cultural setting and diversity of a small island economy. This paper innovates by focusing on those individuals who drink in the morning, drink at work and also drink on a daily basis and the factors which are pertinent to their behaviour in a highly diversified cultural society. These different cultural settings make Mauritius an interesting case study to model the human behaviour and in particular alcohol behaviour where biological, social and cultural factors are considered.

3. Situational Analysis

Mauritius is a multi-ethnic Indian Ocean archipelago. Despite its small size, the island is inhabited by around 1.2 million people who are heterogeneous in terms of ethnic group, language, and religious differences. Mauritius has no indigenous population, but became populated by waves of immigrants due to colonialism, plantation slavery, the indentured system, and French and British colonial mercantile interests, which shaped the socio-cultural environment of the island. Sugar cane was introduced from Java into Mauritius under the Dutch to make alcoholic drinks through fermentation. The historical evolution of the rum industry in Mauritius is as extensive as that of the Caribbean or that of the South America. Mauritius is one of a few countries that produce both industrial and agricultural rum.

Mauritius is viewed as a model of stability and economic prosperity in the African region. Once being a monocrop economy, dependent on sugar cane, the island has diversified its economy via

a robust outsourcing and financial services sector, and a vibrant tourism industry and now boasts one of Africa's highest per capita incomes. Though Mauritius is a small society, within its culture exists three religious ethnic groups (Hindus, Catholics and Muslims) that have distinct beliefs and views on proper social behaviour and on consumption of alcohol. For instance, Muslim leaders have at all times stressed orthodoxy and non-drinking practices (Hollup, 1994). Given this proscription, Mauritian Muslims are predicted to have a high prevalence of abstinence (Luczak *et al.*, 2014). Catholic belief is considered tolerant of drinking (Greeley, 1980). Given this, Mauritian Catholics are predicted to have relatively large prevalence of alcohol use (Luczak *et al.*, 2014). Hinduism generally accepts moderate alcohol use although disapproves heavy drinking (Fowler, 1997). Based on these norms, Mauritian Hindus are predicted to drink at prevalence between Muslims and Catholics (Luczak *et al.*, 2014).

Hence, alcohol, being socially accepted is widespread across the island. Alcohol forms part of most socio-cultural ceremonies and is seen as a major leisure activity. Alcohol consumption is also common in the poorest areas of the country. Despite having achieved significant economic progress during the past years, the Mauritian economy is characterised by poverty, growing youth unemployment, spiralling drug addiction, alcohol abuse, gender violence and rising crime rates. In fact, the proportion of households in relative poverty went up from 7.9 per cent in 2006/07 to reach 9.4 per cent (that is 33,600 households) in 2012 (Statistics Mauritius, 2016). The proportion of persons in relative poverty rose from 8.5 per cent in 2006/07 to a high 9.8 per cent (that is 122,700 persons) in 2012. Youth unemployment rate stood at 26.3 per cent (21.6 per cent for male and 32.7 per cent for female) in May 2016 (Statistics Mauritius, 2016). Besides poverty and rising youth unemployment, Mauritius has recently seen a rise in drinking-driving arrests, alcohol dependence admissions and chronic liver disease and cirrhosis death rates.

4. Methodology

4.1 Sampling Strategy

This study collected both qualitative and quantitative data to describe the behaviour of alcohol dependent individuals. The survey instrument involves a detailed questionnaire with specific questions namely the demographic characteristics of the respondent, his/her consumption and expenditure on alcohol and his/her alcohol drinking patterns and frequency and the impact of alcohol abuse on the individual, his/her family and his/her neighbourhood. The questionnaire was translated in 'creole'[1] to facilitate communication with the respondents.

As in Sobhee *et al.* (2015), the study focuses on a sample of alcohol-dependent individuals defined as those people who drink every day, drink in the morning before work and also drink during their work hours. Furthermore, these people drink to get drunk and may also be having health problems related to alcohol. Several factors, including financial costs, time and the desired level of precision were considered while devising the sampling strategy. Thus, to determine the sample size, three criteria were specified namely the level of precision, the level of confidence or risk, and the degree of variability in the attributes being measured (Miaoulis and Michener, 1976). As, we do not know the variability in the proportion of alcohol dependent individuals in Mauritius; we assume $p = 0.5$ (maximum variability). Furthermore, a *95* per cent confidence level and $e = \pm 5.6$ per cent is the level of precision. The sample size was calculated considering a *95* per cent confidence level to obtain a nationally-representative sample and to allow disaggregated data analysis. The resulting sample size is thus demonstrated in the following formulae: $n_0 = \frac{Z^2 pq}{e^2} = \frac{(1.96)^2 (0.5)(0.5)}{(0.0056)^2} = 306.25$. The sample size ($n_0$) is then adjusted as follows: $n = \frac{n_0}{1 + \frac{(n_0 - 1)}{N}} = \frac{306.25}{1 + \frac{(306.25 - 1)}{451{,}446}} = 306.0$, where N is the population size[2].

A pilot on 10 alcohol dependents was initially undertaken. The survey then covered an additional 300 alcohol dependent individuals in different regions in Mauritius between June and September 2012.

[1] Creole is the mother tongue of the country

[2] As per the latest population census (Digest of Demographic Statistics, 2012), the population of Mauritius stood at 855,012 individuals above 18 years (legal age for consuming alcoholic beverages) in 2011. As per the Mauritius Non Communicable Diseases Survey (2013), 52.8% Mauritian population (41.0% of women and 66.2% of men) were consuming alcohol. Hence, our population turns out to be 451,446 individuals above 18 years consuming alcoholic beverages.

The alcohol dependent individuals were randomly selected though a 2 stage sampling procedure. Thirty enumeration areas were selected from the list of enumeration areas developed by Statistics Mauritius using the Probability Proportional to Size (PPS) sampling method during the first stage. A sample of households was then selected within each enumeration area. Four screening questions were used to identify the appropriate respondents. The latter were asked whether he/ she consumed alcohol every day, consumed alcohol in the morning, consumed alcohol at the place of work and had alcohol related health problems. Respondents who satisfied at least one of these criteria were viewed as being 'alcohol-dependent.' Then, once a household having a member who was alcohol-dependent was identified, the alcohol dependent person was approached for the survey.

All questionnaires were completed through face-to-face interviews with the alcohol dependents in their respective households in different regions. The respondent was surveyed either in their house or at the place of work or a place of alcohol consumption that is either near shops or bars which represent the most common drinking places in Mauritius. Fifteen trained field workers covered the different parts of the island to ensure a nationally-representative sample. For alcohol dependent individuals to agree to participate in the survey, field workers had the difficult task of establishing a good relationship based on trust whereby the respondent will be at ease to participate in the survey. The fieldworkers were trained social workers who knew how to approach the alcohol-dependent individuals. The confidentiality of all respondents is strictly maintained.

4.2. Econometric Modelling

In this study, the profile of an individual who abuses alcohol is one who may be drinking in the morning or at the place of work or drinking every day. To analyse the specific characteristics of the alcohol-dependent individual, the following equation is estimated:

$$DrinkMorning_i = \lambda_0 + \lambda_1 Age_i + \lambda_2 AgeFirstDrink_i + \lambda_3 FamilySize_i + \lambda_4 DrinkingHistory_i + \lambda_5 FamilyDrinking_i + \lambda_6 Substances_i + \lambda_7 Sex_i + \lambda_8 MaritalStatus_i + \lambda_9 EthnicGroup_i + \lambda_{10} Education_i + \lambda_{11} HouseOwner_i + \lambda_{12} Occupation_i + \lambda_{13} SectorActivity_i + \lambda_{14} Region_i + \varepsilon_i$$

where *i* represents the individual in the sample. Three different dependent variables are used. The above equation is first estimated using *DrinkMorning* which is a dummy variable with a value of 1 if the respondent drinks in the morning and 0 otherwise. Then *DrinkWork* is applied and is a discrete variable with a value of 1 if the alcohol dependent drinks at work and 0 otherwise. Lastly, *DrinkEveryDay* is also used as a dependent to capture whether the individual drinks on a daily basis in which case the dummy variable takes the value of 1 and 0 otherwise.

Age denotes the age of the respondent in terms of number of years; *AgeFirstDrink* represents the age at which the individual consumed alcoholic beverages for the first time in his/her life and *FamilySize* controls for the number of members within the family. The drinking history *(DrinkingHistory)* of the respondent is also accounted for, in terms of whether his/her grandparents or parents consumed alcohol in which case the dummy is 1 and 0 otherwise. Another variable relates to whether members of the family in the same house consume alcohol *(FamilyDrinking),* with a value of 1 capturing any possible influence on the alcohol-dependent and 0 otherwise. It was also noted above that alcohol dependents have a tendency to use another substance like cigarettes along with alcoholic beverages. This is represented by the variable, *Substances*, which is a dummy variable with value being 1 if the respondent takes any other substances and 0 otherwise.

Sex is included as a dummy variable with value of 1 for male and 0 for female alcohol dependents. *MaritalStatus* denotes whether the person is married, divorced, separated, single or lived with a partner. *EthnicGroup* is a dummy variable measuring the influence of ethnicity on the alcoholic behaviour of the respondent. Ethnic group covers Hindu, Creole, Muslims and other religions. The variable *Education* controls for the level of education of the respondent namely no education, primary education, secondary and tertiary education. In addition, *HouseOwner* implies whether the individual owns or rents a house or lives with friends/family

members. The occupation *(Occupation)* of the alcohol-dependent is also included to know if he/she is an employee, self-employed, unemployed, retired, housewife or is a student. The sector of activity *(SectorActivity)* is also specified to capture the sector in which the individual is working that is the public, private or informal sector. Lastly, *Region* denotes whether the individual lives in the rural or urban region of the country.

Preliminary checks were performed to detect the presence of major outliers and to test for heteroscedasticity. This is done using the Cook and Weisberg (1983) test. We also use the Shapiro-Wilk test for normal data and the Kernel density estimates to test for the normality of the residuals. Since there is no serious problem, we use logistic regression technique with a discrete dependent variable.

5. Data Analysis

5.1 Socio-Demographic Characteristics of Alcohol dependents

Table 1 below provides a detailed analysis of the socio-demographic characteristics of the alcohol dependents. Male (82 per cent) dominates the sample. This is in line with other studies namely Assanangkornchai1 *et al.* (2010) for Thailand, Hao *et al.* (2003) for China where alcohol consumption is more pronounced for men.

[Insert Table 1]

From the table, we note that the highest percentage of alcohol-dependent (18.1 per cent) are in the age group of 36-40 years followed by 15.7 per cent in the age bracket of 46-50 years. We also observe by marital status, that alcohol dependents are essentially married individuals (50 per cent). In terms of family size, the average number of family members in the household is 4.1. In addition, most alcohol dependents (around 42 per cent) have only primary education. Further, around 68 per cent are employees, around 9 per cent are unemployed and 15.8 per cent are self-employed. Moreover, a high percentage of alcohol dependents operate in the informal sector (43 per cent) while 21 per cent work in the public sector and 36 per cent are in the private sector.

The respondents were also asked their starting age of alcohol consumption. It is observed that, at the first percentile, 1 per cent of the sample have on average started drinking alcohol at the age of 10.5 years with the smallest value being 8 years. For the first quartile (that is 25th percentile), the starting age of drinking is 15 years and the mean age in the sample is around 18 years. In fact, in Mauritius, the minimum legal drinking age of consuming alcohol is 18 years. The national legal minimum age for off-premise sales and on-premise sales of alcoholic beverages is 18 years. However, there is no restriction as to the location for on/off premise sales of alcoholic beverages (WHO, 2011). On average male start drinking at an earlier age (17.6 years) relative to their female counterparts (20.8 years). Further, the family history of alcohol consumption is studied. Around 88 per cent of alcohol dependents have either their grand-parents or parents consuming alcohol and only 12 per cent have no family history of alcohol consumption. In fact, hereditary factors may play an important role. For instance, children of alcohol dependents are between 4 and 10 times more likely to become alcohol dependents than are children who have no close relatives with alcoholism (Russell, 1990).

5.2 Drinking Behaviour

5.2.1 Frequency of Alcohol Intake

White rum was the main type of alcohol consumed followed by beer and wine. Similar evidence are obtained for other countries namely Wechsler and Rohman (1981) found males to drink beer (95 per cent), followed by spirits (92 per cent) and wine (86 per cent). Among females, the highest proportion drank spirits (95 per cent) followed by wine (91 per cent) and beer (77 per cent). Preferences for alcoholic beverages are country-specific and depend largely on the cultural, social and economic environment of alcohol dependents.

The frequency of alcohol intake varies across gender, sex and education levels as shown in Table 2. Around 51 per cent of the respondents drink every day. In particular, 55.7 per cent of male and 31.5 per cent of women have the identical daily drinking behaviour. The mean frequency of drinking is higher among men than among women being 5-6 times per week for men compared to 3-4 times per week for women. There are several reasons for the differential in drinking

patterns between men and women. Windham and Aldridge (1965) pointed out that women traditionally were economically dependent on and subordinate to men. However, over the years, women's roles have changed, especially changes that involve exposure to formerly masculine environments and roles. This has subsequently changed the drinking behaviour of women.

[Insert Table 2]

Educational attainment is also associated with the likelihood of having an alcoholic drink on most days. A lower percentage of respondents with secondary (47 per cent) and tertiary education (38.9 per cent); drinks daily relative to those with primary education (59.2 per cent). Studies have also reported either relatively little difference or negative association between drinking frequency and education (Lotterhos *et al.*, 1990; Schall *et al.,* 1991; Gross, 1993).

5.2.2 Alcohol Dependence (Drinking in the Morning, Alone or at Work)

From Table 3, around 40 per cent of the respondents drink in the morning. It is observed that 43.9 per cent of male alcohol dependents and 26.4 per cent of female alcohol dependents have a similar behaviour. By age group, the highest percentage of those taking alcoholic beverages in the morning is the youth (55.6 per cent). The percentage of respondents drinking at wake up time, however, declines with age. Further, by education background, around 62 per cent of those alcohol dependents with no education have alcohol intake in the early morning. There is also a negative association between education and early morning alcohol intake as the percentage of respondents consuming alcohol at wake up time declines as we shift to higher education categories.

[Insert Table 3]

In addition, we note that 58 per cent of alcohol dependents drink at work. Around 62.5 per cent of male and 33 per cent of women consume alcoholic beverages at their work place. As we progress to higher education levels, alcohol intake at work declines, 29.4 per cent for tertiary education compared to 77.8 per cent for those with no education level. In our survey, we note that 31.4 per cent of the respondents drink alone and by gender, 43.4 per cent of women drink

alone compared to 28.9 per cent for men. This confirms the fact that women are more likely to drink at home on their own. In the Mauritian society, drinking with friends and drinking in bars are less acceptable for women.

In the overall sample, we find that 35.5 per cent can handle more drinks now. Women tend to be more prevalent in the alcohol dependence categories as around 40 per cent of them can handle more alcohol drinks now compared to 34.3 per cent of male alcohol dependents. Further, 70.4 per cent of women drink to get drunk compared to 67.8 of their male counterparts. Binge drinking tends to be more prevalent across women. Information was also gathered on the ability of alcohol dependents to stop drinking when they want to and it was observed that 47.7 per cent of alcohol dependents in the sample cannot stop drinking when they wish. Around 48 per cent of male alcohol dependents and 44 per cent of female have the same behaviour. In addition to alcohol, 72.1 per cent of respondents also consume other substances. From a gender perspective, 77.9 per cent of male and 45.3 per cent of female take other substances along with alcoholic drinks. A high percentage of female and male alcohol dependents in fact smoke. Similar behaviour has been observed by DiFranza and Guerrera (1990) where 83 per cent of alcohol dependents were smokers and this is explained by the vulnerability of alcohol dependent individuals to addictive drugs.

6. Findings

Our findings in Table 4 below reveal that age has a positive influence on the individual drinking either at work or on a daily basis. Besides, the earlier the respondent started drinking, the more likely he/she would become dependent on alcohol. McGue *et al.* (2001b) found that those who first started drinking before age 15 compared to those who started later were at much higher risk for developing alcohol dependence as well as other drug dependence. However, other studies have shown that alcohol consumption patterns and alcohol-related problems are not linked to age of onset and more dependent on the social and cultural setting of the country. In fact in Mauritius, for most socio-cultural gatherings and ceremonies, alcoholic beverages are present. Alcohol is often drunk by many respondents for pleasure or as a performance enhancer on a daily basis, in the morning and at work.

[Insert Table 4]

Men are more likely to drink in the morning, at work and everyday compared to their female counterparts. However, over the years, women have increasingly started to adopt the drinking behaviours of men. A process seen as the result of emancipation, in which women increasingly, move into profession and/or lifestyles similar to those of men. This is the convergence hypothesis and the closing of the gender gap in alcohol consumption which prevail essentially in developed countries. For instance, Bloomfield *et al.* (2001) observe a greater number of Finnish women becoming current drinkers and of a greater relative increase in women's mean consumption of alcoholic beverages.

In addition, the consumption of other substances increases the probability of the alcohol dependent to drink at work. DiFranza and Guerrera (1990) show that 83 per cent of alcohol dependents were smokers compared to 34 per cent of the non-alcoholic subjects. Besides, being married and owning a house decrease the probability of the individual to drink at work and in the morning. This may be due to family responsibilities and possibility of losing their jobs in case they drink at work or before work. Similarly, being self-employed raises the probability of the respondent to drink at work while being an employee reduces the probability of drinking in the morning and on a daily basis compared to an unemployed individual but seems more likely to drink at the place of work.

The informal workforce typically survives on subsistence earnings, with few opportunities to accumulate enough capital to move into the "formal" economy (Sundquist, 2011). The informal sector is further characterised by low income, lack of benefits, less security and strenuous working conditions. With no social protection, lack of social support and facing major financial difficulties, workers in the informal sector are more inclined to fall into alcohol consumption. Indeed, Mauritius is witnessing the growth of an unregulated informal sector and growing poverty. In fact, more educated individuals are not only more likely to have a higher level of cognitive abilities, skills and knowledge, but are also less likely to be unemployed (Hobcraft,

2000), face financial difficulties (Blundell, 2000), lack social support, suffer from mental health problems (Ross and van Willigen, 1997) and have more to lose from engaging in alcohol consumption than the less educated (Cowell, 2006). The latter are more likely to face financial difficulties and see alcohol as an escape mode from their daily troubles and difficult life. Living in the urban area lowers the probability of drinking at work and on a daily basis. Lastly, the evidence shows that on average ethnicity does not influence the probability of the respondent to drink at work or in the morning or on a daily basis.

7. Conclusion and Policy Recommendations

This paper investigates the drinking behaviour of alcohol dependents in Mauritius. Though, Mauritius has imposed a number of policies to curb alcohol consumption namely levying taxes, controlling advertisements, minimum drinking age limits, restricting the time on sales of alcoholic beverages and enacting drunk driving laws; alcohol dependence remains a major problem in the island economy.

Based on a survey of 300 alcohol dependents, we find evidence that men are more likely to drink in the morning, at work and everyday compared to their female counterparts. The gender gap in alcohol consumption is well established in the small pluriethnic society. This finding is in line with previous empirical studies on small developing states. Though alcohol consumption tends to be more pronounced among men, the alcohol-related problems tend to impact more on women, children and the family. Hence, there is a need for a gender analysis of alcohol dependence and alcohol-related problems which will focus on interventions targeting the changing socio-cultural norms about gender and drinking.

Further, operating in the informal sector or being self-employed enhances the probability of the individual to become dependent on alcohol through daily intake and consumption at the work place. The informal sector provides a livelihood to several thousands of people on the island but a large number are working poor individuals with low wages and facing bad working conditions. Mainstreaming the informal sector and building up linkages with the formal economy could be one channel of reducing vulnerability of workers in informal activities. Hence, alleviating their

financial difficulties may help in reducing their dependence on alcohol consumption. With a rise in poverty and income inequality on the island, coupled with rising unemployment and lack of leisure activities, alcohol dependence is an escape for many. It remains a serious issue which necessitates both government attention and actions.

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References

ASSANANGKORNCHAI, S., SAMANGSRI, N. and RERNGPONGPAR, S., 2010, "Anxiolytic and hypnotic drug misuse in Thailand: findings from a national household survey", *Drug Alcohol Review*, Vol. 29, pp. 101 – 11.

ASSANANGKORNCHAI, S., SAUNDERS, J.B. and CONIGRAVE, K.M., 2000, "Patterns of drinking in Thai men", *Alcohol*, Vol. 35, pp. 263 – 9.

BLOOMFIELD, K., AHLSTROM, S. and KNIBBE, R., 2001, "Gender differences in drinking patterns in nine European countries: Descriptive findings", *Substance Abuse*, Vol. 22, pp. 69 – 85.

BLOOMFIELD, K., AHLSTROM, S., ALLAMAN, A. and CHOQUET, M., 1999, "Alcohol consumption and Alcohol problems among women in European countries", *Project final report. Berlin: Institute for Medical Informatics, Biostatics & Epidemiology*, Free University of Berlin.

BLUNDELL, R., 2000, "Comments on James Heckman's Policies to foster human capital", *Research in Economics, Elsevier*, Vol. 54(1), pp. 57 – 60.

COOK, R.D. and WEISBERG, S., 1983, "Diagnostics for heteroscedasticity in regression", *Biometrika*, Vol. 70, pp. 1 – 10.

COWELL, A.J., 2006, "The relationship between education and health behaviour: some empirical evidence", *Health Economics*, Vol. 15, pp. 125-146.

DIFRANZA, J.R. and GUERRERA, M.P., 1990, "Alcoholism and Smoking", *Journal of Studies*, Vol. 51, pp. 130 – 135.

FOWLER J. 1997, "Hinduism: Beliefs and Practices', Sussex Academy Press; Brighton.

GREELEY AM. 1981, "Ethnic Drinking Subcultures", Praegar Publishers; New York.

GROSS, W., 1993, "Gender and age differences in college students' alcohol consumption", *Psychological Reports*, Vol. 72, pp. 211 – 216.

HAO, W., SU, Z., LIU, B., ZHANG, K., YANG, H., CHEN, S., BIAO, M. and CUI, C., 2004, "Drinking and drinking patterns and health status in the general population of five areas of China", *Alcohol & Alcoholism*, Vol. 39(1), pp. 43 – 52.

HOBCRAFT, J., 2000, "The roles of schooling and educational qualifications in the emergence of adult social exclusion", *London School of Economics Centre for Analysis of Social Exclusion*, Vol. 43.

HOLLUP O. 1994, "The disintegration of the caste and changing concepts of Indian ethnic identity in Mauritius", *Ethnology*, Vol. 33, pp. 297–316.

KESSARAM, T., MCKENZIE, J., GIRIN, N., MERILLES, O.E.A., PULLAR, J., ROTH, A., WHITE, P. and HOY, D. 2015, "Overweight, obesity, physical activity and sugar-sweetened beverage consumption in adolescents of Pacific islands: results from the Global School-Based Student Health Survey and the Youth Risk Behavior Surveillance System", *BMC Obesity*, Vol. *2*(1), p.1.

LOTTERHOS, J.F., HOLBERT, D. and GLOVER, E.D., 1990, "The impact of a 21-year drinking age law on university students' alcohol use, 1986-1989", *American Alliance for Health, Physical Education, Recreation and Dance Conference*, New Orleans, LA.

LUCZAK, S.E., PRESCOTT, C.A., DALAIS, C., RAINE, A., VENABLES, P.H. and MEDNICK, S.A., 2014, "Religious factors associated with alcohol involvement: Results from the Mauritian Joint Child Health Project", *Drug and Alcohol Dependence*, Vol. 135, pp. 37-44.

MARTINEZ, P., RØISLIEN J., NAIDOO N., and CLAUSEN T., 2011, "Alcohol abstinence and drinking among African women: data from the World Health Surveys." *BMC Public Health* Vol. 11(1), pp. 1.

MCGUE, M., IACONO, W.G. and LEGRAND, L.N., 2001, "Origins and consequences of age at first drink: I. Associations with substance use disorders, dis-inhibitory behavior and psychopathology, and P3 amplitude", *Alcoholism: Clinical and Experimental Research*, Vol. 25(8), pp. 1156–1165.

Ministry of Health and Quality of Life (2013), "The Trends in Diabetes and Cardiovascular Disease Risk in Mauritius The Mauritius Non Communicable Diseases Survey 2015", pp 1-56.

PERDRIX, J., BOVET, P., LARUE, D., YERSIN, B., BURNAND, B. and PACCAUD, F., 1999, "Patterns of alcohol consumption in the Seychelles Islands (Indian Ocean)", *Alcohol and Alcoholism*, Vol. 34(5), pp.773-785.

ROSS, C.E. and VAN WILLIGEN, M., 1997, "Education and the Subjective Quality of Life', *Journal of Health and Social Behaviour,* Vol. 38, pp. 275-297.

RUSSELL, M., 1990, "Prevalence of alcoholism among children of alcoholics. In: Windle, M., and Searles, J. Children of Alcoholics: Critical Perspectives", *New York: Guilford Press*, pp. 9 – 38.

SCHALL, M., WEEDE, T.J. and MALTZMAN, I., 1991, "Predictors of alcohol consumption by university students", *Journal of Alcohol and Drug Education*, Vol. 37(1), pp. 72-80.

SOBHEE S., KASSEEAH H., TANDRAYEN-RAGOOBUR V., GOPAUL A., 2015,"An empirical analysis of the determinants of expenditure on alcohol by alcohol dependent individuals in Mauritius", Drugs and Alcohol Today, Vol. 15 Iss3, pp. 158 – 172.

STATISTICS MAURITIUS 2012; "Digest of Demographic Statistics, 2012", Ministry of Finance and Economic Development, Port-Louis.

WECHSLER, H. and ROHMAN, M., 1981, "Extensive users of alcohol among college students", *Journal of Studies on Alcohol*, Vol. 42, pp. 149 – 155.

WINDHAM, G.E. and ALDRIDGE, N.M., 1965, "The use of beverage alcohol by adults in two Mississippi communities", *Social Science Research Center,* Mississippi State University.

World Health Organisation (WHO), 2007, WHO Expert Committee on Problems Related to Alcohol Consumption. WHO Technical Report Series edition. Geneva: WHO.

World Health Organisation (WHO), 2011, Publications, *Bulletin of the World Health Organization.*

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Table 1: Characteristics of Respondents in the Sample

Characteristics	Percentage	Number
Sex		
Male	82	246
Female	18	54
Age		
16-25	9.7	29
26-35	18.8	56
36-45	30.8	90
46-50	15.7	47
51-60	19.1	57
>60	6.7	20
Religion		
Hindu	62.0	186
Créole	29.7	89
Muslim	5.0	15
Other	3.33	10
Marital Status		
Divorced	17.0	51
Married	49.7	149
Single	21.7	65
Widow	6.3	19
Partner	5.3	16
Education		
No Education	7.4	22
Primary	41.8	125
Form 3	18.7	56
Form 5	19.7	59
Form 6	6.4	19
Diploma/ Vocational	3.0	9
Degree	3.0	9
Occupation		
Employee	68.1	203
Unemployed	8.8	26
Self-Employed	15.8	47
Housewives/ Pensioner/Retired	7.4	22
Family Size		
0-1	5.7	17
2-3	32.1	96
>3	62.2	186
Number of Children		
0-1	45.6	136
2-3	45.3	135
>3	13.2	27

Source: Survey Data

Table 2: Dinking Behaviour by Sex, Age and Education Levels

		Sex		Age Structure					Education Levels			
Percentage	**Total**	**Male**	**Female**	**16-20**	**21-30**	**31-45**	**46-60**	**>60**	**None**	**Primary**	**Secondary**	**Tertiary**
Types of Alcohol Consumed												
Beer	52.7	57.7	29.6	55.6	79.2	58.5	38.5	28.6	40.9	37.6	67.2	61.2
Wine	41.3	35.8	66.7	33.3	62.5	39.0	38.5	23.8	50.0	40.8	41.0	38.9
Whisky	13.3	14.2	9.3	0.0	16.7	15.3	9.6	19.1	4.6	4.0	19.4	44.4
White Rum	85.7	87.8	75.9	100.0	77.1	83.9	89.4	90.5	95.5	94.4	79.9	55.6
Locopops	9.7	8.5	14.8	11.1	20.8	10.2	4.8	4.8	13.6	9.6	7.5	22.2
Frequency of Drinking												
1-2 times per week	2.7	2.9	1.9	11.1	4.2	3.4	-	4.8	-	1.6	3.7	5.6
3-4 times per week	27.0	23.6	42.6	33.3	29.2	27.1	26.9	19.1	18.2	25.6	29.1	33.3
5-6 times per week	19.0	17.9	24.1	11.1	20.8	22.9	17.3	4.8	36.4	13.6	20.2	22.2
Everyday	51.3	55.7	31.5	44.4	45.8	46.6	55.8	71.4	45.5	59.2	47.0	38.9
Day with the Highest Consumption												
Monday	0.7	0.8	-	-	2.1	0.9	-	-	-	1.6	-	-
Tuesday	-	-	-	-	-	-	-	-	-	-	-	-
Wednesday	0.4	0.4	-	-	-	0.9	-	-	-	-	0.8	-
Thursday	-	-	-	-	-	-	-	-	-	-	-	-
Friday	2.4	1.6	5.6	-	6.3	1.7	1.4	-	4.6	0.8	3.0	5.5
Saturday	29.9	32	20.4	55.6	31.3	27.4	30.1	28.6	22.7	23.2	37.1	33.3
Sunday	15.4	13.1	25.9	-	14.6	17.9	14.6	14.3	27.3	10.4	17.4	22.2
Everyday	46.0	45.9	46.3	44.4	39.6	45.3	48.5	52.4	40.9	58.4	35.6	38.9
Weekend	4.4	4.9	1.9	-	6.3	3.4	4.9	4.8	4.6	4.8	4.6	-
Public Holidays	1.0	1.2	-	-	-	2.5	-	-	-	0.8	1.5	-
Drinking at Work	58.0	62.5	33.3	85.7	71.1	51.3	55.8	71.4	77.8	62.0	55.2	29.4
Drinking in the Morning	40.7	43.9	26.4	55.6	33.3	41.9	41.8	40.0	61.9	47.2	33.3	22.2

Source: Survey Data

Table 3: Alcohol Dependence by Sex

	Overall Sample	Male	Female
Drinking at work	58.0	62.5	33.3
Drinking in the morning	40.7	43.9	26.4
Drinking alone	31.4	28.9	43.4
Handling more alcoholic drinks	35.5	34.3	40.0
Not able to stop drinking when you wish	47.7	48.4	44.4
Don't know if they are able to stop drinking when they wish	32.7	32.1	35.2
Drink to Get Drunk	68.2	67.8	70.4

Source: Survey Data

Table 4: Logistic Regression – Alcohol Dependence

Variable	Drinking At Work	Drinking in the Morning	Drinking Every day
Age	0.006*	0.005	0.009***
	(0.003)	(0.003)	(0.003)
AgeFirstDrink	-0.007	-0.024**	-0.014*
	(0.009)	(0.010)	(0.008)
Family Size	0.064***	0.006	-0.013
	(0.020)	(0.018)	(0.018)
DrinkingHistory	0.013	-0.050	0.027
	(0.160)	(0.132)	(0.135)
FamilyDrinking	0.147	-0.126	-0.125
	(0.125)	(0.010)	(0.010)
Substances	0.265***	0.094	0.043
	(0.084)	(0.074)	(0.078)
Sex	0.365***	0.217***	0.283***
	(0.119)	(0.081)	(0.084)
Married	-0.165*	-0.141**	-0.110
	(0.085)	(0.068)	(0.072)
HouseOwner	-0.188*	-0.175**	0.019
	(0.098)	(0.092)	(0.089)
Urban	-0.298***	-0.071	0.202**
	(0.100)	(0.081)	(0.087)
No Education	0.353***	0.277	-0.201
	(0.095)	(0.192)	(0.182)
Primary	0.237	0.153	-0.088
	(0.167)	(0.159)	(0.177)
Secondary	0.209	0.039	-0.167

	(0.163)	(0.157)	(0.169)
Technical/Vocational Training	-0.374	-0.147	-
	(0.274)	(0.266)	-
Public Sector	0.173*	-0.119	-0.032
	(0.090)	(0.094)	(0.104)
Informal Sector	0.217***	0.008	0.158**
	(0.078)	(0.076)	(0.079)
Hindu	-0.313*	-0.046	0.216
	(0.146)	(0.186)	(0.190)
Creole	-0.196	-0.152	0.171
	(0.185)	(0.170)	(0.192)
Muslim	-0.185	-0.211	0.276
	(0.237)	(0.157)	(0.171)
Employee	0.201*	-0.228**	-0.160*
	(0.124)	(0.100)	(0.096)
Self-Employed	0.345***	-0.116	-0.147
	(0.084)	(0.107)	(0.121)

Source: Authors' Estimation