Chapter - 2

LITERATURE REVIEW
Greenfield, Midanik and Rogers (2000) used the data from the 1984, 1990 and 1995 US National Alcohol Surveys to investigate whether declines shown previously in drinking and heavy drinking across many demographic subgroups have continued. Surveys examining respondents’ consumption have an advantage over aggregate sales/taxation reports in that individual-level demographic characteristics and drinking patterns can be considered. Three alcohol consumption indicators- current drinking (vs abstaining), weekly drinking, and weekly heavy drinking (5 or more drinks in a day) - were assessed for the total US population and for demographic subgroups. Rates of current drinking, weekly drinking, and frequent heavy drinking, previously reported to have decreased between the 1984 and 1990 surveys, remained unchanged between 1990 and 1995. Separate analyses for each beverage type (beer, wine, and spirits) and most demographic subgroups revealed similar temporal patterns. Alcohol consumption levels, declining since the early 1980s, may reach a minimum by the 21st century. Consumption levels should be monitored carefully over the next few years in the event that long-term alcohol consumption trends may be shifting.

Although trends in consumption patterns are of interest in themselves, trend analyses are most useful as indicators of changing risks in terms of social and health harms.

Relatively few studies of drinking among the elderly have been completed despite the growing proportional representation of the elderly in the US population. Mirand and Welte (1996) estimated the prevalence of heavy drinking among the elderly in a general population in Erie County, New York. They also
observed whether active or health-oriented life styles are associated with heavy drinking among the elderly. In that study, random-digit dialling telephone interviews were conducted with 2325 Erie County, New York general population residents aged 60 years or older. The prevalence of heavy drinking was estimated to be 6%. Adjusted analyses revealed positive associations between heavy drinking and being male, having suburban residency, and currently using cigarettes. Negative relationships were observed between heavy drinking and socio-economic status, rural residency and degree of health orientation. Age and level of active life style were not significant contributors to the model. The study revealed that out of the studied variables, health orientation offers the greatest opportunity to address heavy drinking among the elderly.

Alcohol consumption has substantial positive and negative effects on physical, mental, and social health. Moore et al. (2005) examined the demographic predictors of longitudinal patterns in alcohol consumption. They used mixed-effects models to describe individual alcohol consumption and change in consumption with age, as well as the associations between consumption and birth year, national alcohol consumption, and demographic factors, among 14105 adults from the National Health and Nutrition Examination Survey I Epidemiologic Follow-Up Study (the US). It was observed that alcohol consumption declined with increasing age, and individual consumption mirrored national consumption. Higher consumption was associated with male gender, being white, being married, having a higher educational level, having a higher income, being employed, and being a smoker. Faster age-related decline in
consumption was associated with earlier cohorts, being male, being married, having a lower educational level, and being a smoker. Compared with alcohol consumption among earlier cohorts and recent cohorts, recent cohorts declined more slowly with increasing age, suggesting that negative health effects of alcohol could increase in the future.

A report by Johnson et al. (1995) describes the alcohol consumption of adolescents and young adults who participated in the Bogalusa Heart Study, 1981 to 1991. Data were collected in three cross-sectional surveys of school-age children (11 - 19 years) and three surveys of young adults (18 - 32 years). White males had the highest proportion of drinkers and black females had the lowest. By the end of the decade, adult white and black drinkers were about equal. Most individuals drank once or twice a week, but daily drinkers had the highest weekly alcohol intake. An association between alcohol; and high-density lipoprotein cholesterol was found only in the latest survey and probably reflects the ageing of the cohort.

Female alcoholics are under represented in clinical psychiatric practice in India. Consequently, there is no epidemiological data for this population. There has been a report presenting the profile of all females treated for alcohol dependence at NIMHANS during a 12 years period (January 1983 to July 1994). 77 females with a diagnosis of alcohol dependence syndrome aged 39.86 ± 8.5 years at first contact were studied. 85% of them were of lower socioeconomic status. The mean educational attainment in the group was 3.35 ± 4.61 years. 84.4% were Hindus, 13% Christians and the rest Muslims. 67% were married and 16.9% were widowed. A significantly large section of the group (65.8%) had a
family history of alcohol related problem in the first degree relatives and 65% of
the females had alcohol dependent spouses. There was a high prevalence of
preceding (33.8%) and concurrent (75.3%) psychiatric morbidity. Medical
morbidity (68.7%) was also fairly high. The pattern of drinking revealed
significantly low bingeing (20%) and a marked preference for solitary drinking
(42.9%). 49.4% of the group received no further input other than detoxification
and another 49.4% received other modes of treatment in addition. However only
13% of the sample attended follow-up regularly and the population as a whole
showed an alarming dropout rate. These initial findings of this unique group have
implications for planning larger, systematic studies as there appears to have been a
steep increase in the number of female alcoholics reporting for treatment over the
last few years as revealed in this study.

Moos, Brennan and Schutte (2004) used several different guidelines for
appropriate alcohol use to identify patterns of high-risk alcohol consumption among
older women and men and examined associations between these patterns and late-
life alcohol use problems. 9 A sample of 1291 older adults participated in a survey
of alcohol consumption and alcohol use problems and was studied again 10 years
later. It was found that depending on the guideline, 23% to 50% of women and 29%
to 45% of men engaged in potentially unsafe alcohol use patterns. The likelihood of
risky alcohol use declined over the 10 years; however, the numbers of drinks
consumed per week and per day were associated with alcohol use problems at both
assessment intervals. Their findings imply that guidelines for alcohol consumption
should be no more liberal for older men than for older women.
A report by Cismaru, Lavack and Markewich (2008) examines the social marketing programs aimed at preventing or moderating alcohol consumption among young consumers. It shows how protection motivation theory can be used as a theoretical framework to create effective communications targeting young people. Communication materials aimed at preventing or moderating alcohol consumption among young people were identified and gathered from websites in five English-speaking countries (USA, Canada, Australia, New Zealand, and the UK). A qualitative review of these materials revealed that a majority of the alcohol moderation/prevention campaigns targeting young consumers followed the tenets of protection motivation theory by focusing on the threat variables of severity and vulnerability. Some campaigns also focused on costs, as well as self-efficacy and response efficacy. The study has the limitation that since only English-language materials and materials targeting young consumers have been considered, the findings cannot necessarily be generalized to other languages or countries. Future youth alcohol moderation/prevention initiatives should include self-efficacy messages, to increase confidence among young people that they are able to carry out the recommended actions.

Consensus is emerging that companies should be socially responsible although the nature and degree of responsibility continues to be the source of debate. Rundle-Thiele, Ball and Gillespie (2008) proposed a shift in view from corporate social responsibility to corporate social performance (CSP) as a means to assess CSR policies and practices. A harmful product category was chosen to illustrate how corporate social performance using a consumer’s point-of-view can
be assessed. Literature concerned with alcohol knowledge was used to design a survey to consider whether consumers were adequately informed about alcohol. A convenience sample was used to survey Australian adults. A total of 217 surveys were analysed. It was found out that Australian alcohol marketers are considered socially responsible promoting an “enjoy responsibly message” amongst many other policies and programs. A shift in view from corporate social responsibility to corporate social performance (CSP) would change the outcome. Consumers are not fully aware of safe consumption levels of alcohol and these data are consistent with US and UK studies. A shift in view would suggest that companies need to revise their policies and practices. This study had the limitation that it was based on a small convenience sample that varied slightly from the Australian population. To meet their social obligations, marketers must ensure that the consumers are armed with sufficient knowledge to make informed decisions. Consumers need to be able to distinguish between safe and risky alcohol consumption levels and they need to know the number of standard drinks/units in alcoholic beverages.

A report by Peele (1993) presented evidence to balance the view that alcohol consumption is unambiguously a social and public health problem. Evidence of beneficial effects of alcohol against coronary artery disease was examined, together with cultural reasons for resistance in the United States to the implications of this evidence. The study revealed that alcohol reduces the risk of coronary artery disease - the major cause of heart disease, America’s leading killer - even for those at risk for such disease. Moreover, recent research indicates that alcohol continues to reduce risk at the higher levels of drinking measured in
general populations. But with the consumption of more than two drinks daily, these gains are increasingly offset by greater mortality from other causes. It was concluded from the study that educators, public health commentators, and medical investigators are uneasy about findings of healthful effects of drinking. A cultural preoccupation with alcoholism and the negative effects of drinking works against frank scientific discussions in the United States of the advantages for the cardiovascular system of alcohol consumption. This set had deep roots in American history but is inconsistent with public health goals.

Midanik and Greenfield (2000) assessed the shifts in self-reported social consequences of alcohol use (and 5 consequences subscales) and dependence symptoms from 1984 to 1995, given the decline in alcohol use in the United States since the 1980s. The study used data from 3 national alcohol surveys based on household probability samples of current drinkers (adults) in 1984, 1990, and 1995; sample sizes were 1503, 1338, and 1417, respectively. It was estimated that overall, few changes in prevalence of social consequences or dependence symptoms were found. Significantly lower prevalence rates of 2 consequences subscales (accidents/legal problems and work problems) were reported between 1984 and 1990, but prevalence rates did not change for any of the scales from 1990 to 1995. It was concluded from the study that this stability in alcohol-related outcomes despite reductions in alcohol consumption may be a result of cultural shifts in which problem amplification occurs in “drier” historical periods. Furthermore, rates of alcohol related problems may be approaching their lowest limit and may not be readily influenced by any additional decreases in alcohol consumption.
In Russia, rates of alcohol consumption and homicide are among the highest in the world, and already-high levels increased dramatically after the breakup of the Soviet Union. Rates of both, however, vary greatly among Russia’s 89 regions. Pridemore (2002) used the newly available vital statistics and socioeconomic data to examine the regional covariation of drinking and lethal violence. Log-log models were employed to estimate the impact of alcohol consumption on regional homicide rates, controlling for structural factors thought to influence the spatial distribution of homicide rates. Results revealed a positive and significant relationship between alcohol consumption and homicide, with a 1% increase in regional consumption of alcohol associated with an approximately 0.25% increase in homicide rates. In Russia, higher regional rates of alcohol consumption are associated with higher rates of homicide.

Wilsnack, Wilsnack and Klassen (1984) studied the pattern of women’s drinking and drinking related problems from a 1981 US national survey of women's drinking interviewed 917 women in the general population, stratified on the basis of screening interviews to include 500 moderate-to-heavy drinkers. The survey found no evidence of any major recent increase in women's drinking, and no evidence of unusually heavy drinking among working wives. Adverse drinking consequences and episodes of extreme drinking were most common among women aged 21-34; women who were unmarried, divorced or separated, or cohabiting; and women with frequent drinkers as spouses or companions. Alcohol-related behavior problems and symptoms of alcohol dependence were
closely related to levels of alcohol consumption. Among women averaging one ounce or more of ethanol per day, 45% had driven while intoxicated in the past year, and 36% reported memory lapses while drinking. Women at this consumption level were also more likely to report experiences with depression (61%). Women with extremely high consumption levels were more likely to have histories of obstetrical and gynecological problems. Some women with alcohol-related problems reported periods of temporary abstention, a pattern not studied heretofore.

Rallings, Martin and Davey (2005) investigated the alcohol consumption and health-related behaviours of Australian police officers. 16 Demographic, work environment, general health and wellbeing, and alcohol consumption measures were obtained from 100 Australian police officers at two time points; the first as they underwent initial training before the commencement of operational policing duties (time 1), and the second after they had completed 12 months of operational duties (time 2). The results obtained by the study indicated a significant increase in the quantity and frequency of alcohol consumption over time. The number of female officers, but not male officers, who reported drinking at harmful levels increased between time periods. Overall, there were no changes in the number of officers who reported risk of harmful drinking or alcohol dependency. Alcohol consumption measure scores were not associated with age, marital status, education level, general health and wellbeing, or work-environment variables. Smoking was associated with harmful drinking behaviour at time 1, but not at time 2. The number of officers who reported smoking increased significantly over time.
There has been a report by MacKintosh et al. (1997) which shows that adolescent drinking varies considerably between the ages of 12 and 17, with 14 and 15-year-olds marking a key group whose members are keen to test their limits with alcohol and drink to intoxication but who do not necessarily enjoy the process of drinking. They dislike the taste of alcohol and the amount which needs to be drunk to reach intoxication. Designer drinks have particular characteristics that meet the needs of this group by minimizing the costs and maximizing the effects of drinking. The brand image of designer drinks matches the perceptions and expectations of 14 and 15-year-old drinkers, while 16 and 17-year-olds view these drinks as “immature”. Furthermore, consumption of these drinks is linked to heavier drinking. These results have implications for health promotion at an individual and environmental level, with a need to educate young people about the hazards of designer drinks, address the semiotic implications of designer drinks and lobby against these drinks.

Saffer and Dave (2002) examined the relationship between bans on advertising alcohol and consumption of alcohol in 20 countries over 26 years from 1970 to 1995. The study confirms that alcohol consumption is increased by alcohol advertising, both through time-series analyses, cross-sectional advertising and multivariate studies of advertising bans. The study takes OECD data, adding alcohol consumption and the number of alcohol advertising bans in each country, and the price of alcohol as well as beer and wine consumption. The advertising bans include cigarette advertising bans. The report also attempted to define each country's alcohol culture to separate social from intoxicative effects. It is found
out that increased alcohol consumption leads to more total advertising bans, and that these are more likely in countries where alcohol is primarily for social use, where cigarettes are banned and the government is actively involved in the economy. Also the falling consumption leads to the rescinding of bans.

Gupta, Saxena, Pednekar and Maulik (2003) studied the prevalence and pattern of alcohol use in a middle-aged and elderly population in Mumbai, India. 19, 20 50220 men aged ≥ 45 years from the lower and lower-middle sections of the general population were interviewed. It was found that 18.8% were consuming alcoholic beverages, of which 32.8% drank on at least 6 days per week. The most popular beverage was locally distilled products of fruits and grains (country liquor). 75% of the consumers of country liquor consumed over 53 g of ethanol on a day when they drank, with 46.6% of these doing so on at least 6 days per week. It was concluded from the study that abstinence, and also heavy and frequent use of alcohol, are common in this population and the latter is likely to have significant public health implications.

Some patterns of alcohol consumption (e.g. binge drinking, drinking outside of meals) have been associated with detrimental effects on health outcomes. Subjective health provides a global assessment of health status and is a strong predictor of total mortality; however, little is known about its relationship with alcohol drinking pattern. Stranges et al. (2006) examined the association between several drinking patterns (i.e. drinking intensity and frequency, frequency of intoxication, drinking outside of meals, and beverage type) and subjective health in a random sample of 3586 women and men. 20 A population-based cross-
sectional study was conducted. Subjective health was assessed using the physical and mental health component summaries of the Short Form-36 health survey questionnaire. Alcohol consumption refers to the 30 days before the interview. Analysis of covariance compared gender-specific mean scores across alcohol drinking patterns. It was found out that on overall, non-current drinkers reported poorer physical and mental health than life-time abstainers and current drinkers, while no consistent differences were found between life-time abstainers and current drinkers. In female current drinkers, daily drinking, beer and mixed beverage consumption were associated with better mental health. In male current drinkers, moderate alcohol consumption (2-2.9 drinks per day), wine and mixed beverage consumption were associated with better physical health. Intoxication and liquor consumption were associated with poorer mental health in women and poorer physical health in men. No consistent associations were found for drinking outside meals. It was concluded that the aspects of drinking pattern may affect subjective health differentially in women and men. Overall, intoxication and liquor drinking are associated with poorer self-perceived health status than regular, moderate consumption of other alcoholic beverages.

A study by DeCarlo (1997) examines the consumer perceptions regarding the effectiveness of government-mandated alcohol warning labels and organizational efforts to promote responsible drinking from the perspective of social judgment theory. The receiver involvement as a predictor of perceived effectiveness for alcohol warnings and warning labels is investigated. The study found out the relationship between levels of alcohol consumption and perceptions
of warning-label effectiveness to be insignificant; and that health consciousness to be ineffective in predicting perceptions of label effectiveness. However, health consciousness was related to the tendency to read product warning labels. Moreover, the source credibility and language intensity of the message for their effects on perceptions of alcohol warning effectiveness was examined. The findings demonstrated that when highly credible sources use intensely worded alcohol warnings, the message is perceived to be more effective than when high-credibility sources use less intensely worded warnings or when messages are presented by low-credibility sources.

Barnard and Forsyth (1998) assessed the popularity of the new alcoholic carbonates (alcopops) among 14-15 year old school children. The study considered the relationship between last occasion consumption of alcopops and self-reported drunkenness. These data are based on a follow-up study of schoolchildren who self-completed the same standard instrument in 1994 and two years later in 1997. The survey was carried out in five Dundee schools selected in consultation with the Local Education Authority. In 1994, schoolchildren in years S3-4 aged 14-15 were surveyed (n = 373). The survey was repeated again with S3-4 pupils in 1996. Data from those pupils originally sampled as S1-2 pupils and followed up at time 2 (n = 288) are included here. Alcopops were introduced onto the market three months after the first survey was carried out. By the time the original sample was recontacted in 1996, alcopops were the second most likely drink to be consumed by these under-age drinkers (17.3% drank alcopops, the same proportion as drank vodka, 20.8% consumed ordinary beers on the last
occasion). Despite the popularity of alcopops these drinks were not associated with drunkenness. Given the rate of increase in alcopop consumption between the two survey times, it is clear that the alcoholic carbonates are popular among under-age drinkers. The fact that these drinks are not associated with drunkenness suggests the importance of a better understanding of the decisions young people bring to bear on alcohol choice.

The marketing of alcohol and tobacco products and their related public policy implications have become controversial issues worldwide, due mainly to health-related issues. A study by McDaniel and Mason (1993) used a telephone survey methodology to compare attitudes toward Olympic sponsorship by a leading US brewer with general attitudes toward the use of sports sponsorship to promote tobacco products. The results suggested that the respondents have significantly different attitudes towards the two product categories and their use of sponsorship, accepting more readily the use of the Olympics to promote beer. Respondents’ self-interest is also found to significantly affect the level of acceptance for the use of sport to promote alcohol or tobacco products, although in slightly different ways.

From personal interviews obtained for 7,518 incident cases of invasive cancer from the population-based Third National Cancer Survey (The United States), the quantitative lifetime use of cigarettes, cigars, pipes, unsmoked tobacco, wine, beer, hard liquor, and combined alcohol were recorded, as well as education and family income level by Williams and Horm (1977). In an initial screening analysis of these data, Mantel-Haenszel 2x2 contingency tabulations
and multiple regression analyses were used to compare each specific cancer site with controls from other sites to test for associations with the "exposure variables." Significant positive associations with cigarette smoking were found for cancers of the lung, larynx, oral cavity, oesophagus, stomach, pancreas, bladder, kidney, and uterine cervix. Other forms of tobacco were associated with cancers of the oral cavity, larynx, lung, and cervix. Consumption of wine, beer, hard liquor, and all combined showed positive associations with neoplasms of the oral cavity larynx, oesophagus, colon, rectum, breast, and thyroid gland. College education and high income both showed positive associations with cancers of the breast, thyroid gland, uterine corpus, and melanomas in males. These same indicators of high socioeconomic status showed inverse associations with invasive neoplasms of the uterine cervix, lung, lip-tongue, and colon in females. College attendance (but not income) showed an inverse association with stomach cancer and positive association with pancreatic cancer in males. Still other tumour sties showed "suggestive" associations with each of these exposure variables. In the analyses producing these results, age, race, sex, smoking, drinking, education, income, parity, foreign birth, marital status, and geographic location were used as stratification variables separately or in combination when appropriate to assess and control for their potentially confounding affects and to examine results in different strata to assess interaction.

Risky and high-risk alcohol consumption is prevalent amongst young females and university students. Relatively little research in Australia has focused on these groups. A study by O'Hara, Harker, Raciti and Harker (2008) used social marketing and consumer behavior principles to examine the attitudinal, normative
and demographic factors which influence alcohol consumption amongst 18-24 year old female university students. A total of 230 female students in this age group were surveyed utilizing a personally administered, self-report questionnaire. These participants were categorized as either low risk alcohol consumers (n=122) or high-risk alcohol consumers (n=108).

The findings from this research indicated that a mixture of attitudinal, normative and demographic factors influence alcohol consumption amongst young, female university students. First, with relation to attitude this research found that the more favorable the attitude toward alcohol consumption, the more likely the individual will consume a greater quantity of alcohol. This finding supports previous research in the alcohol consumption literature. The perception of group norm is likely to be higher amongst those who consume alcohol at greater quantities. This research identified that group norm may be an important variable in alcohol research which lends support for previous findings from Johnston and White (2003) and, Terry and Hogg (1996). These studies found that group norm was more important in influencing behavior than subjective norm. The significance of group norm supports the proposition suggested by Grube and Morgan (1990) that behavior is likely to be exhibited if the individual is surrounded by a favorable environment. Residence was identified as a factor that may influence alcohol consumption amongst young, female university students. Individuals who were independent were more likely to be high-risk alcohol consumers. This finding supports previous research by Shim and Maggs (2005) who found that living arrangements with fewer restrictions were associated with
higher alcohol consumption. The significance of this factor has important implications for those correcting this problematic behavior. Moreover, the problem is compounded, when the “dry” campus condition is factored into the mix. Young females, living away from home on a campus that has no bars, appear to show greater determination in fuelling their habit than their city colleagues where convenient on-campus drinking places are common.

Subjective norm and age were not significant in influencing alcohol consumption amongst young, female university students. The finding that subjective norm was not significant concurs with other research which found that subjective norm did not influence alcohol consumption [McMillan and Conner (2003) and Trafimow (1996)]. Surprisingly, age was not a significant factor in this research. However, this may have been due to the relative small age bracket tested in this research. This research adds to the growing body of knowledge surrounding high-risk alcohol consumption amongst young female university students. Consequently, this cohort should be targeted to reduce the prevalence of this behavior. The incidence of high-risk alcohol consumption amongst university students in Australia suggests that steps should be taken design and implement intervention strategies to influence attitudes and undesirable behavior. A number of good, and not so successful, advertisements addressing the issue of young female drinking behavior have been shown around the world. A social marketing approach emphasizes, however, that advertising, and communication generally, are just a part of the social marketing effort. Social marketing campaigns need to be carefully
researched, planned, implemented and monitored and there are eight principles that program planners need to encompass as they embark on the mission of changing attitudes and behavior in a social setting.\(^{33}\)

A number of policies in addition to social marketing may also be implemented to target this cohort. First, to reduce the fatalities on the road often associated with younger drivers, especially in the findings of this research where the “dry” campus condition and the tyranny of distance, forced young drinkers into their cars, the blood alcohol limit for operating a vehicle could be decreased to zero for Australian drivers under the age of 25 [Wechsler et al. (2003) \(^{34}\)]. Finally, reducing the accessibility of cheap alcohol has also been recommended by researchers [Chaloupka and Wechsler (1996) \(^{35}\), Williams, Chaloupka and Wechsler (2005) \(^{36}\)] and may be instigated by implementing a policy which restricts alcohol retailers and premises and “promotions” in locations around educational institutions. This study aids in the development of targeted interventions to mitigate risky and high-risk alcohol consumption amongst this cohort.

Berggren and Nystedt (2006) analysed the factors associated with alcohol consumption, and how these changed over the period 1988-97, a period during which Sweden entered the European Union. \(^{37}\) The data were used from two waves (1988-89 and 1996-97) of the representative longitudinal micro-level ULF survey in Sweden to estimate a two-part model of consumption. It was found out that experiencing financial stress, monthly salary, and not being married were all correlated with alcohol consumption, especially for males in 1988-89. In 1996-97, these correlations were much weaker, revealing a levelling-out trend towards
conformity. The pattern was less clear for females. Further, the youngest age group (16-29 years) increased its consumption significantly more than the older age groups. It was concluded from the study that there were significant changes in alcohol behaviour, especially for males, coinciding with Sweden joining the EU and preceding the very substantial general increase in consumption levels since 1998. This underlying process should be kept in mind when analysing the more recent trends. The results support the contention that alcohol policy should be a combination of measures targeting the whole population (e.g. via public health campaigns) with specific measures directed towards more vulnerable groups (e.g. young people).

Food and alcohol are symbolically and physically linked in many cultures. Pettigrew and Charters (2006) explored Australians' perceptions of the relationships between food and two of the more popular forms of alcohol - wine and beer. The findings from two parallel alcohol studies are reported. One study examined the role of wine consumption in Australian culture (n=105), while the other study performed the same function in terms of beer consumption (n=115). Interviews and focus groups were used in both studies to collect data from consumers and industry representatives to identify expectations of appropriate food and alcohol pairing. Results showed that wine was found to be strongly associated with food along three dimensions: complementarity, social meaning, and lubrication. This association occurs in the context that it is generally deemed inappropriate to consume wine without food. By comparison, a much weaker association appears to exist between food and beer. Interviewees reported
regularly consuming beer in both eating and non-eating contexts, with the nature of the occasion influencing beer consumption rather than any food that may or may not be present. Consumers' expectations of the appropriate pairing of food with beer and wine are discussed in terms of their implications for those wishing to align particular food and alcohol products in the marketplace. A theoretical contribution is provided through a discussion of the ways in which different alcoholic beverages are assigned different symbolic meanings to allow them to facilitate divergent food consumption experiences.

Alcohol use is a global, health-related problem that spans a continuum ranging from low-risk, at-risk, and problem drinking to alcohol dependence and chronic abuse. Clinicians and researchers alike have the need to quantify drinking patterns to determine the risk for adverse, health-related events such as injury, liver damage, and cancer. Biochemical measures of ethanol consumption are affected by temporal patterns of drinking as well as individual characteristics such as gender and age. The choice of a laboratory analysis to determine ethanol consumption is complex; no single laboratory test will predict drinking accurately across all drinking patterns, across the life span, and across gender. In conjunction with interviews and physical assessment, Sommers et al. (2003) determined that biochemical laboratory tests are sensitive tools used to measure both recent and long-term patterns of alcohol consumption. 39

There is very little information on trends and determinants of alcohol consumption in the Portuguese population, which is usually characterized by high wine consumption. Cross-sectional studies were conducted in 1995/1996 and
1998/1999 in a representative sample of 0.5% of the mainland Portuguese population (49,768 participants in 1995/1996 and 48,606 in 1998/1999), aged 15 years or more by Marques-Vidal and Dias (2006). Alcohol consumption was assessed by asking whether the participants had consumed alcohol in the previous week and how many drinks of wine/beer/whisky/port wine they consumed on average during that week. It was found out that prevalence of reported alcohol consumption decreased slightly between 1995/1996 and 1998/1999 (men: 65.7 vs. 64.0%, p < 0.001; women: 26.9 vs. 26.0%, p < 0.001). Among drinkers, the most frequently consumed alcoholic beverage was wine, followed by beer, whisky, and port wine. The amount of alcohol and wine consumed decreased in both sexes, whereas the amount of beer, whisky, and port wine consumed increased in men and the increase in beer consumption was borderline significant in women (p = 0.056). In both sexes, participants <50 years of age tended to consume less wine and more beer, whisky, and port wine than their older counterparts. Also, higher education was related to a higher frequency of alcohol consumption, whereas smoking was related to a lower consumption of wine [odds ratio (OR): 0.69 (95% confidence interval [CI]: 0.62-0.77) for men and OR: 0.76 (95% CI: 0.61-0.95) for women] and a higher consumption of beer [OR: 1.43 (95% CI: 1.33-1.54) for men and OR: 2.13 (95% CI: 1.84-2.42) for women and whisky [OR: 1.28 (95% CI: 1.21-1.35) for men and OR: 2.61 (95% CI: 2.25-3.02) for women]. It was concluded from the above study that the pattern of alcohol consumption is changing in Portugal: the prevalence of drinkers is decreasing, and younger generations are shifting from wine to beer and spirits. Educational level seems to be a powerful mediator in the choice of alcoholic beverage.
Jayne, Valentine and Holloway (2006) explored the geographical contributions to the study of alcohol, drinking and drunkenness. They argued that where alcohol studies have engaged with geographical issues research has been dominated by a case study approach that has undertheorized the relationship between practices and processes relating to alcohol, drinking and drunkenness and the people and places being studied. They also emphasized the ways in which human geographers are approaching alcohol, drinking and drunkenness via complex interpenetrations of political, economic, social, cultural and spatial issues and unpacking connections, similarities, differences and mobilities between supranational, national, regional and local spatial scales. It was argued that such an approach represents a conceptually and empirically important contribution to alcohol studies research. If geographers are to have a central role in shaping future research agendas then they must engage with theoretical issues in a more detailed and sustained manner, particularly in relation to epistemological and ontological impasses that have to date characterized the study of alcohol, drinking and drunkenness.

Powell (1994) identified the factors most likely to lead to the implementation of an alcohol policy by employers. The study also examined the types of policy adopted and assessed the process by which the policies were initiated and implemented. It was concluded that previous studies have probably overestimated the prevalence of health-oriented alcohol policies in England, but employers could be encouraged to introduce health goals into disciplinary policies.
India is experiencing an epidemic of Type 2 diabetes mellitus (DM) in young adults. Raghupathy et al. (2010) reported the prevalence of glucose intolerance, and insulin profiles, and their relationship to lifestyle factors in 2218 young adults (aged 26-32 years; 997 urban, 1221 rural) in South India. They were drawn from a cohort of 10,691 individuals born during 1969-1973 in Vellore and nearby villages. Family history, socio-economic status, physical activity and tobacco and alcohol use were recorded. Oral glucose tolerance tests were performed for diagnosis (WHO recommendations). Insulin resistance and secretion were derived from plasma insulin concentrations. Median BMI was 20.0 kg/m². The prevalence of Type 2 DM and impaired glucose tolerance (IGT) was higher in urban than in rural subjects (3.7% versus 2.1%, \( p=0.02 \); 18.9% versus 14.3%, \( p=0.002 \), respectively), while prevalence of impaired fasting glycaemia (IFG) was similar in urban and rural populations (3.8% versus 3.4%, \( p=0.04 \)). Type 2 DM, IGT, IFG or higher insulin resistance and increment were associated with higher socio-economic status (more household possessions) and higher percentage body fat, body mass index and waist/hip ratio. Insulin increment was lower in men with higher alcohol consumption. The study suggested high levels of glucose intolerance in young rural and urban adults highlighting an urgent need for preventive action to avert a public health catastrophe in India.

The study by Neufeld et al. (2005) provides the national estimates of regular tobacco and alcohol use in India and their associations with gender, age, and economic group obtained from a representative survey of 471,143 people over the age of 10 years in 1995-96, the National Sample Survey. The national prevalence
of regular use of smoking tobacco is estimated to be 16.2%, chewing tobacco 14.0%, and alcohol 4.5%. Men were 25.5 times more likely than women to report regular smoking, 3.7 times more likely to regularly chew tobacco, and 9.7 times more likely to regularly use alcohol. Respondents belonging to scheduled castes and tribes (recognized disadvantaged groups) were significantly more likely to report regular use of alcohol as well as smoking and chewing tobacco. People from rural areas had higher rates compared to urban dwellers, as did those with no formal education. Individuals with income below the poverty line had higher relative odds of use of chewing tobacco and alcohol compared to those above the poverty line. The regular use of both tobacco and alcohol also increased significantly with each diminishing income quintile. Comparisons were made between these results and those found in the United States and elsewhere, highlighting the need to address control of these substances on the public health agenda.

Oral cancer is one of the most common cancers in the world, with two-thirds of the cases occurring in developing countries. While cohort and nested case-control study designs offer various methodological strengths, the role of tobacco and alcohol consumption in the etiology of oral cancer has been assessed mainly in case-control studies. The role of tobacco chewing, smoking and alcohol drinking patterns on the risk of cancer of the oral cavity was evaluated using a nested case-control design on data from a randomized control trial conducted between 1996 and 2004 in Trivandrum, India by Muwonge et al (2007). Data from 282 incident oral cancer cases and 1410 matched controls were analyzed using multivariate conditional logistic regression models. Tobacco chewing was
the strongest risk factor associated with oral cancer. The adjusted odds ratios (ORs) for chewers were 3.1 (95% confidence interval CI) = 2.1-4.6) for men and 11.0 (95%CI=5.8-20.7) for women. Effects of chewing pan with or without tobacco on oral cancer risk were elevated for both sexes. Bidi smoking increased the risk of oral cancer in men (OR=1.9, 95%CI=1.1-3.2). Dose-response relations were observed for the frequency and duration of chewing and alcohol drinking, as well as in duration of bidi smoking. Given the relatively poor survival rates of oral cancer patients, cessation of tobacco and moderation of alcohol use remain the key elements in oral cancer prevention and control.

The study by Mattioli et al. (2005) was designed to establish the relationship between personality factors, socio-economic factors and acute life stress with development, spontaneous cardioversion and recurrences of acute lone atrial fibrillation. The study group consisted of 116 patients with lone atrial fibrillation cardioverted within 48 h of the onset of arrhythmia; they underwent a series of cognitive tests to evaluate acute psychological stress and personality type. The socio-economic status and other covariates (alcohol consumption, smoking, and body mass index) were investigated. A control group, age- and sex-matched, was selected and compared. In the logistic regression analysis, the presence of spontaneous conversion to sinus rhythm was used as the dependent variable. Independent variables were indicator variables representing categories of stress, Type A behaviour pattern, coffee consumption and body mass index. Variables considered for logistic analysis were only those with independent prognostic value. Results showed that Type A behaviour pattern was found in 23 (20%) patients with
atrial fibrillation and in 11 (9%) controls ($P<0.001$). The mean score among patients with atrial fibrillation was 8±2.7, while in control subjects it was 5.5±2. The mean acute life stress score among patients with atrial fibrillation was 56±33, while in controls it was 34±27 ($P<0.01$). Spontaneous conversion of atrial fibrillation to sinus rhythm was observed in 72 patients (63%). In univariate analysis alcohol consumption, income, education and smoking habits did not affect spontaneous conversion. High coffee consumption (OR 0.3 95% CI 0.11-0.49; $P<0.008$) and high body mass index were associated with a significantly greater risk of atrial fibrillation (OR 1.5 95% CI 1.2-1.7). It was concluded that Type A behaviour pattern and acute life stress affect the development and spontaneous conversion of atrial fibrillation. Patients with acute stress showed the highest probability of spontaneous conversion followed by patients with Type A behaviour. Other socio-economic factors affect spontaneous conversion and recurrences of lone atrial fibrillation to a lesser extent.

American police officers are not immune to the detrimental effects and risks associated with alcohol abuse. In fact, it has been estimated that approximately 20 per cent of police officers in the USA maintain harmful levels of alcohol consumption - a figure thought to be double that of the general population. Of the limited studies that have examined American police officers and their alcohol consumption, results offer a mixed story as to why they drink and the extent of their consumption. First, alcohol consumption among American police officers has been linked to a variety of sources: stress, low job satisfaction, a “drinking culture”, and gender (i.e. policing is a male-dominated career where men are more apt to bond through alcohol than females). Second, regarding the extent of
drinking, some studies reported that alcohol consumption by American police officers is relatively modest and at a level similar to other occupations. By contrast, other research has found that police administrators view alcohol abuse as a major concern for law enforcement. Lindsay (2008) argued that these disparate research findings suggest the need for a more comprehensive study that examines the characteristics of alcohol consumption among American police officers. 47 To that end, the World Health Organization’s Alcohol Use Disorders Identification Test (AUDIT) was administered to a sample of full-time Mississippi police officers, sheriff’s deputies, and state police officers. The AUDIT instrument is a ten-item questionnaire designed to identify an individual’s frequency and amount of alcohol consumption as well as others’ reaction to their drinking.

Depending on a respondent’s AUDIT score, an individual’s consumption level is ranked as no risk, harmful, or hazardous. The AUDIT instrument was administered over a three-month period and netted a final sample 663 completed questionnaires (49.92% response rate). Overall, the sample reflected the characteristics of the general Mississippi law enforcement population. Descriptive statistics from the AUDIT instrument provided some cursory information about the characteristics of alcohol consumption among the sample of Mississippi officers. It was analysed that the majority of police officers (73.7%) had AUDIT scores between 0 and 7 indicating they were at no risk of alcohol problems. However, 16.8% of the sample scored between 8 and 15, meaning they are at a harmful risk level for alcohol problems. Finally, only 1% of the officers consumed alcohol at a hazardous risk level. Chi-square analysis was used to determine if any
significant relationships existed between officer characteristics and AUDIT risk categories. Results indicated that race, marital status, region, and drinking companions were significantly related to certain risk categories. White and single officers were more likely to have harmful or hazardous drinking habits. Officers who work the day shift were more likely to fall into the harmful or hazardous risk categories.

Officers from the harmful risk group drank mostly with non-coworker friends while officers from the hazardous risk group drank mostly with other officers. Officers from the Southern or Coastal region of Mississippi were more likely to drink at harmful or hazardous levels relative to officers from the Northern region. Lindsay (2008) also examined whether levels of alcohol consumption differed between the sample of officers and the general population. Results indicated no statistically significant difference between the amount of alcohol consumed by Mississippi officers and the general population. The data showed that alcohol consumption levels among the general population were marginally greater than those of the surveyed officers.

As mentioned earlier, most of the officers who do consume alcohol do so within healthy parameters as designated by the AUDIT instrument. Lindsay (2008) also compared the level of Mississippi officers who had alcohol problems with estimates founds in other studies from America and Australia. Similar to the previous estimate that 20% of American police officers have drinking problems, 19.6% of Mississippi officers drank at a harmful or hazardous level. Despite this similarity, this consumption level is much lower than the estimated
33.2% of Australian officers who maintain risky drinking levels. The study thus demonstrated that drinking patterns among police officers and the general public are not different. However, since police officer drinking is likely to remain a concern among law enforcement administrators, this article is useful in that it identifies the characteristics of officers that are associated with alcohol problems.

King (1995) considered the issues relevant to alcohol education for young people, such as the behaviour and attitudes of adults they encounter. The influences that affect young people's perceptions of safe levels of alcohol consumption, including advertising, the easy availability of alcohol and role models in the media were described. It was concluded that reinforcing young people's skills, knowledge and attitudes can help them to make considered and informed decisions about their drinking. The report urges health educators to find out what pupils know before deciding what to teach.

The Baltic countries--Estonia, Latvia, and Lithuania--are considered to be an example of regional homogeneity over the period of transition. The World Health Organization cross-national study on Health Behaviour in School-aged Children (HBSC) allows a comparison and time trends analysis of behavioural patterns among adolescents in this region. Zaborskis, Sumskas, Maser and Pudule (2006) estimated the prevalence and trends of alcohol consumption and drunkenness among adolescents of Estonia, Latvia, and Lithuania in 1993/94, 1997/98, and 2001/02. Representative samples of 5286 boys and 6485 girls aged 15 from Estonia, Latvia, and Lithuania were surveyed in 1993/94, 1997/98, and 2001/02 school-year within the framework of HBSC study. The standardized survey
methods were applied. The research focused on the following outcome variables: i) frequency of drinking beer, wine, and spirits; and ii) frequency of drunkenness. The same wording of questions on the consumption of alcohol was retained in each survey. Beer was the most frequently used alcoholic beverage across the Baltic countries among adolescents. The rate of weekly drinking of any alcoholic beverage increased considerably during the eight years of observation, especially among Estonian and Lithuanian students. In 2001/02, 25% of boys and 12.5% of girls have reported drinking alcohol at least weekly.

The rate of regular alcohol drinking was two times higher in boys, while irregular drinking was more prevalent in girls. Two or more episodes of drunkenness in the lifespan were reported by 30% of boys and 15% of girls in 1993/94 and by 52% of boys and 36% of girls in 2001/02. The use of alcoholic beverages was related to the perceived family wealth: the students from the families perceived by them as wealthy were more likely to drink weekly as compared to the students from the families perceived by them as not wealthy. It was concluded that over the period between 1993 and 2002 the prevalence of alcohol consumption among adolescents increased considerably across the Baltic countries. The efforts of dealing with this problem should employ a combination of measures, including the strategies relevant for the period of transition.

The demand for alcohol is a well-researched topic, yet the published literature regarding consumer responses to changes in the price of alcohol includes many conflicting and inconsistent results. Cook and Moore (2000) presented an excellent summary of the contribution economics has made to understanding the market for
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alcohol. The only topic in their comprehensive review not fully explored, is the own-price elasticity of demand for alcohol. Cook and Moore's approach is understandable, as Edwards et al. (1994) presented summary information on an extensive number of alcohol elasticity studies. Fogarty (2006) analysed the known own-price elasticity estimates, and attempted to demonstrate why reported results differ. The approach taken to analysing the data is the meta-regression approach. Specifically, the meta-regression considers 150 beers, spirits, and wines, own price elasticity point estimates, which have been drawn from studies that consider demand responses to changes in the price of alcohol in 18 different countries. The results of the empirical work reported by Fogarty (2006) suggest that the year of the study, the length of study, the per capita level of alcohol consumption, and the relative ethanol share of a beverage are important factors when explaining variations in consumer demand responses to changes in the price of alcohol. Interestingly, the study also suggests that country-specific and beverage-specific effects are not important. The paper is valuable as it uses the meta-regression framework to control for study design characteristics and, once these characteristics are controlled for, it becomes possible to identify the underlying trend in the demand for alcohol. The trend was shown to be one where the demand for alcoholic beverages became increasingly inelastic up to 1969 and decreasingly inelastic thereafter.

In recent years, research seeking to identify factors contributing to drinking has recognised the influence of the workplace. The characteristics of particular occupations may add some explanatory power to why some individuals drink at harmful levels. Research conducted into alcohol consumption within the police
service, either to provide information on the nature and prevalence of drinking, or to identify aspects of the police work environment that may contribute to drinking by some officers, has been limited. Like most occupations there are many police officers who do not drink alcohol or who drink alcohol rarely and in small amounts. However there are also those who drink at harmful levels. The current study examined the influence of the police workplace on officers’ risk of harmful alcohol consumption. Davey, Obst and Sheehan (2000) examined the aspects of the work environment, which may impact on individual police officers’ risk of harm from alcohol consumption. 53

A self report survey containing demographic questions, the AUDIT and questions relating to perceived control over the job, overtime, pressure, boredom and job satisfaction was completed by 67 per cent of officers in an Australian state police service. The results of the current study indicate that gender, age and marital status, are individual risk factors for problem drinking, as has been shown in previous research. Within the policing context, years of service, job satisfaction, perceived control within the job and being an operational officer, also emerged as significant predictors of at risk alcohol consumption patterns. Findings further suggest that there is a strong norm of drinking at work or after a shift, which suggests a culture of acceptance of drinking within the workplace. This acceptance is strongly predictive of both risk of alcohol dependency and negative consequences from drinking within the police service. This study suggests directions for future research, which may lead to the introduction of informed interventions within the police service that could reduce officers’ risk of harm from alcohol consumption.
The prevalence of alcohol use disorders is significantly higher among patients visiting a primary care practitioner than among the general population. For this reason, clinicians have the opportunity to play a key role in detecting alcohol problems and in initiating prevention or treatment efforts. A variety of relatively brief screening instruments are available for this purpose. These instruments do not provide a diagnosis, but help identify patients who might benefit from a more thorough assessment of their drinking behaviour. Following screening, the presence of an alcohol use disorder can be confirmed using standard clinical diagnostic criteria. The success of this approach has been demonstrated. In one study, 80% of patients whose screening results were confirmed by a formal diagnosis of alcohol dependence accepted referrals to alcoholism treatment programs. Patients should be screened not only for alcohol use disorders, but also for drinking patterns or behaviours that may place them at increased risk for developing adverse health effects or alcoholism (i.e., risky drinking). Risky drinkers who have not yet become alcohol dependent often can be treated successfully within the primary care setting. The Alcohol Alert presents information on selected screening instruments for use with primary care patients as well as other patient populations among whom alcohol use is either highly prevalent or hazardous. Given the impact of heavy drinking on overall health and the prevalence of patients in the primary care system who have an alcohol use problem, screening and referral should be considered part of sound clinical practice, rather than simply added patient services.

Two types of alcoholism-screening instruments are available. The first type includes self-report questionnaires and structured interviews; the second type includes
clinical laboratory tests that can detect biochemical changes associated with excessive alcohol consumption. The value of a screening instrument for measuring alcohol problems or other conditions is related to its sensitivity and specificity.

Sensitivity refers to a test’s accuracy in identifying people who have an alcohol problem (i.e., people with the condition test positive). Specificity refers to the test’s effectiveness in identifying people who do not have an alcohol problem (i.e., people without the disease test negative). No screening instrument is perfect. It is not possible to optimize both sensitivity and specificity in the same screening instrument. The likelihood of over identifying alcohol use disorders occurs with increased sensitivity and the possibility of missing people who have an alcohol problem grows with increased specificity. Despite these limitations, research supports the use of formal screening instruments to increase the recognition of alcohol problems. 58, 63

Screening instruments vary in their ability to detect different patterns and levels of drinking and in the degree of their applicability to specific subpopulations and settings. 54 This section compares features of some of the most widely used screening questionnaires.

The CAGE questionnaire 64 has been evaluated in several studies, showing sensitivities ranging from 43 to 94 percent for detecting alcohol abuse and alcoholism. 58 CAGE is well suited to busy primary care settings because it poses four straightforward yes/no questions that the clinician can easily remember and requires less than a minute to complete. However, the test may fail to detect low but risky levels of drinking. 58 In addition, CAGE often performs less well among women and minority populations. 65, 66 The performance of CAGE can be improved
by incorporating questions about the quantity and frequency of drinking, as recommended by NIAAA in *The Physicians’ Guide to Helping Patients With Alcohol Problems.* 68 A study found that the screening strategy suggested in the Physicians’ Guide effectively identified alcohol abuse and dependence in a general population sample. 68 The same approach also demonstrated better sensitivity and similar specificity compared with CAGE alone among African American patients in an urban emergency room. 69

The Alcohol Use Disorders Identification Test (AUDIT) also incorporates questions about quantity and frequency of alcohol use. 70 In contrast to CAGE, AUDIT compares favourably with other instruments in detecting risky drinking, but is less effective in identifying alcohol abuse and alcoholism. 58,71 Originally developed for primary care settings, AUDIT has proven useful among medical and psychiatric inpatients, in emergency rooms 71, and in the workplace. 71-73 AUDIT is relatively free of gender and cultural bias 64,71,74 (11,17,20). In addition, it shows promise for screening adolescents and older people, populations in which standard screening instruments produce inconsistent results. 65,71,75-77 The major disadvantage of AUDIT is its length and relative complexity; clinicians require training to score and interpret the test results. 56

Screening pregnant women for alcohol use has become increasingly important in light of new research showing that even low levels of prenatal alcohol exposure can harm the foetus. Unfortunately, although approximately 20% of women consume some alcohol during pregnancy, maternal drinking can be difficult to detect. 78 At least two questionnaires are available that are appropriate for pregnant women, both
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derived in part from CAGE. T-ACE\textsuperscript{79} takes approximately 1 minute to complete and is more accurate than AUDIT for detecting current alcohol consumption and risky drinking, as well as a history of past alcoholism; however, it is less specific.\textsuperscript{78} The five-item TWEAK\textsuperscript{80} performs similarly to T-ACE and can be used to detect a range of drinking levels from moderate to high-risk consumption.\textsuperscript{81}

Alcohol consumption plays a role in a large percentage of trauma incidents, including motor vehicle crashes. RAPS4 is a four-item questionnaire derived in part from TWEAK and AUDIT. In both primary care and emergency room settings, RAPS4 showed consistently high sensitivity for detecting alcoholism across gender and ethnic subgroups, although its utility for screening for risky drinking or alcohol abuse has yet to be proven.\textsuperscript{82,83}

Computers have been widely and successfully used in screening and in assisting alcoholism intervention.\textsuperscript{71,84} Studies have found no significant difference in accuracy between computerized and paper-and-pencil versions of AUDIT among inpatient alcoholics.\textsuperscript{85} Similar results have been achieved with CAGE in the primary care setting.\textsuperscript{85} In addition; small laptop computers have been used in large-scale alcohol screening surveys. For example, in Audio Computer Assisted Self-Interviewing (ACASI), a recorded voice asks questions that can be answered by pressing a few keys. Advantages include ease of use for respondents with poor literacy or computer skills, as well as increased privacy, although the interviewer remains nearby to offer assistance if necessary.\textsuperscript{86} The Internet provides an increasingly accessible, low-cost medium for screening and brief intervention.\textsuperscript{84} A pilot web site incorporating AUDIT and other alcohol history questions
attracted more than 10,000 people during an initial 172-day trial. Of 2,253 people who took the test, 89% had scores suggesting harmful drinking or alcoholism, although 94% of participants of the total sample had never been diagnosed. \textsuperscript{84} The procedure is completely automated and self-administered.

In contrast to self-report questionnaires, clinical laboratory procedures provide objective evidence of problem drinking. They are generally less sensitive and specific than questionnaires, but are valuable for corroborating results of interviews and questionnaires. \textsuperscript{87} The accuracy of these markers is affected by various factors such as non-alcoholic liver damage, use of medications or drugs, and by metabolic disorders. Three widely used tests and one promising new marker are described here. Gamma-glutamyl transferase (GGT) is the most commonly used biochemical measure of drinking. \textsuperscript{87} Chronic drinking of 4 or more drinks per day for 4 to 8 weeks significantly raises levels of this blood protein, at least in alcoholics. \textsuperscript{87} Four to five weeks of abstinence are usually required for GGT levels to return to within normal range. \textsuperscript{87} The ability of this test to detect long-term heavy drinking in the recent past makes GGT useful for monitoring abstinence in recovering alcoholics. However, non-alcoholic liver disease also can increase GGT levels, increasing the likelihood of false-positive results.

Carbohydrate-deficient transferring (CDT) is another blood protein that increases in concentration with heavy alcohol consumption. \textsuperscript{88} CDT values become elevated substantially earlier (1 to 2 weeks) in response to prolonged excessive drinking than conventional markers such as GGT. \textsuperscript{89} GGT and CDT are approximately equal in their ability to identify alcoholism. However, few
conditions other than heavy drinking will elevate CDT levels, decreasing the probability of false positives. \textsuperscript{89} Disadvantages include lower sensitivity in women and adolescents, and the high cost of the laboratory analysis. \textsuperscript{87}

Mean corpuscular volume (MCV), an index of red blood cell size, increases with excessive alcohol intake after 4 to 8 weeks. \textsuperscript{87} The sensitivity of MCV is too low to justify its use as a single indicator. \textsuperscript{89} However, it has higher specificity compared with other tests. MCV can detect evidence of earlier drinking after a long period of abstinence. For this reason, it is a poor indicator of recovery among alcoholics who have stopped drinking. \textsuperscript{89}

Fatty acid ethyl esters (FAEEs) show promise as markers of maternal drinking. FAEEs are formed by the interaction of alcohol and natural fatty substances in the body. They have been detected in samples of meconium (i.e., the waste product of newborns). Some evidence suggests that analysis of FAEEs in meconium may indicate timing of prenatal alcohol exposure. \textsuperscript{88}

A report by Ramanathan and Ganesan (2010) reveals that the liquor market is one of the major contributors to the Kerala Government exchequer. On an average, liquor market contributes around twenty percentage of the tax revenue collected by the state. On an average, liquor market contributes around 13\% of revenue receipts by Kerala state. \textsuperscript{90}

A scanning of the available literature on alcohol consumption presented above revealed the fact that so far the majority of the research works in this field were directed in examining the health related consequences of alcoholism. In India very limited investigations were conducted to study the pattern of liquor
consumption. There was not much effort to study the factors influencing the liquor consumption habits of Keralites. So the researcher finds ample reason for doing an in-depth analysis of the various socio-economic factors influencing the liquor consumption habits of Keralits and moreover to the impact of liquor consumption on the mental, physical and social health of Keralites.
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