An illicit alcohol production center in rural Bangalore

▲ *The fermentation pit*

▲ *Boiling the fermentation product*

▲ *The still*

▲ *Transporting hooch in inner tubes*

▲ *The distilled spirit*

Discussion

1. Prevalence of alcohol use in Karnataka

Alcohol use is low

Only 15% of all the adults sampled over 5 districts in Karnataka reported any alcohol use over the past 12 months. The low prevalence of alcohol users in this study sample is fairly similar to previously reported figures from epidemiological studies conducted over the past thirty years in specific regions of India (Isaac,1998; Saxena, 1999).

Surveys of Alcohol Use in the General Population in India

Study	Year	Sample	Area	Population	Measure	Rate
Lal and Singh	1978	Rural	Punjab	7000	Current alcohol use	49.6% adults
Sethi and Trivedi	1979	Rural	Uttar Pradesh		Alcohol use	21.4% adults
Varma	1980	Urban	Chandigarh		Ever Use Current use	40% adults 23.7%
Mathrubootham	1989		Tamil Nadu		Alcohol use	33% males
Channabasavanna	1989		Karnataka	5573 students; 4007 adults	Alcohol ever used	42.1% 33.7%
NIMHANS	1990	Rural	Karnataka	32,400	Alcohol dependence	1.15%
Chakravarthy	1990	Rural	Tamil Nadu		Alcohol use	26-50% males
Ponnudorai et al	1991	Urban	Madras		Current use	16.67 % males
Bang and Bang	1991	Rural	Maharashtra	400,000	Use Addicted	25% males 5%
Mohan et al	1992	Urban slum	Delhi		Substance abuse	26%
Murthy et al	1998	Urban slum	Bangalore	5633	Alcohol use	27% males; 2% females

There are extreme gender differences in the prevalence of alcohol use

Alcohol use is still very much a male preserve. Only about a third of the men and as little as a tenth of the women reported any alcohol use within the past year. This is compatible with previous estimates of use from the same region as well as other parts of the country, which have consistently reported female use less than 5% [Isaac. 1998; Saxena, 1999]. One must note here that figures pertaining to female use are liable to be under-reported. Alcohol use and especially alcohol use in women is socially stigmatized and there is a reluctance to report such use. There is some support for this view, as a significant number of male and female users expressed the view that womens' drinking is viewed as somehow more shameful and therefore kept hidden. Even among consumers there is a belief that women drink rarely and in small amounts, which is far from what actually transpires [see below].

It should be noted that, identification of users was primarily conducted through initial information given by a key informant in each family, who was most often (for reasons of social propriety) the male head of house-hold. Under these circumstances there is likely to be a greater chance of under-estimating consumers among the female family members and in the younger males as well. The former would be "protected" from enquiry and the latter would be likely to have hidden their status as consumer from the family.

Users are getting younger

That the latter cause of under-estimation may be operative, can be deduced from the fact that the mean age of the drinking population is above forty years, whereas the age at which the bulk of respondents admitted to having had their first drink and the age by which they had begun regular drinking is near 20 years. This would allow us to presume that a proportion of young people at the beginning of their drinking careers have evaded detection.

This is important as there is evidence from work conducted on heavy alcohol users from this same population, that the average age at which males start regular drinking has dropped to 23 years [1998] from 25 years in 1988. The mean age by which they developed significant alcohol dependence dropped to 29 years from 35 years in the same time period (Benegal, 1998).

The data gathered from this study also points to a significant cohort effect on age at initiation of alcohol use. This points to a progressive lowering of the age at which consumers over time have their first drink of alcohol.

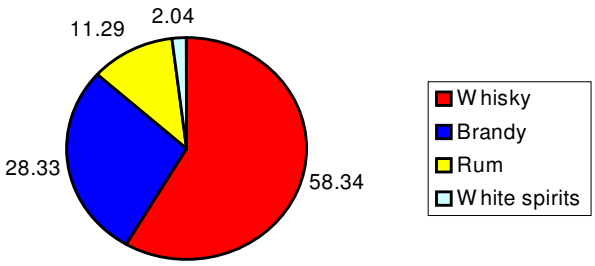
There are strong rural - urban differences in prevalence of use

Prevalence of drinking appears significantly higher in rural areas compared to urban areas, with (61% vs. 39%) or without (52% vs. 48%) the inclusion of the tribal sample in the rural sector. Tribal areas had the highest prevalence of alcohol use in both men and women.

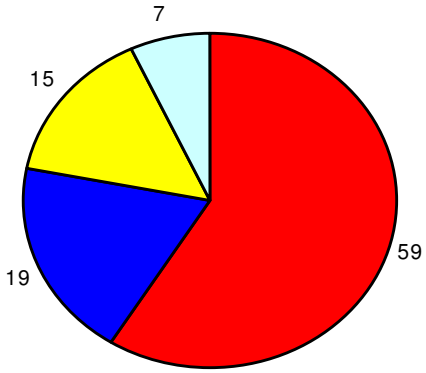
The prevalence of alcohol consumption is related to education and income levels

Abstainers were significantly likely to be better educated and have higher family incomes than alcohol users except in the tribal population. Previous studies have also documented similar findings that alcohol use is more common among lower socio-economic groups. The popular explanation that alcohol provides a way of coping with poverty and deprivation, may certainly explain this phenomenon. However, one needs to consider, in the context of social trends in India, the interesting phenomenon of sanskritisation, in which as a result of social and economic mobility, people of lower socioeconomic class adopt the mores of the higher castes / classes. It has been speculated, that with increasing education and urbanization and the resultant social and economic mobility which saw the growth of the urban middle classes in India, in the last 150 years or less, there have been rapid changes in diet (in favour of vegetarianism and abstinence from

Sample estimates



Industry estimates



From: Indian Spirits Market, by RaboIndia Finance Ltd. April 2002

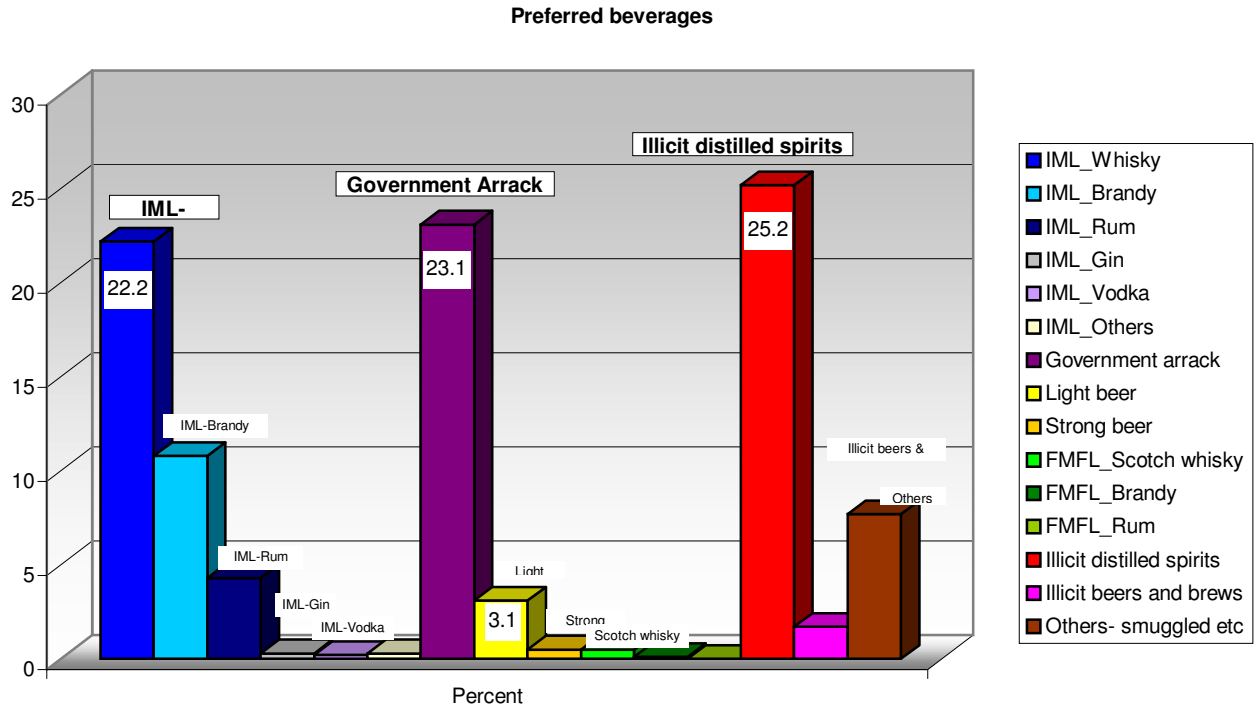
alcohol) as lower castes/classes adopted the cultural mores of the higher castes / classes in order to better adapt to their changed positions in the social hierarchy. In this view, the larger rural and tribal populations felt no pressure to change their drinking habits. (See discussion later)

The beverage alcohol market is dominated by spirits

94.7% of the beverages drunk, whether they are licit or illicit are spirits (Indian made foreign liquors: Whisky, Brandy, Rum etc @ 42.8 % v/v, or Arrack, the government licensed country liquor @ 33.3% v/v or various forms of illicit spirits of indeterminate strength…which we have for convenience assumed to be @42.8 % v/v.

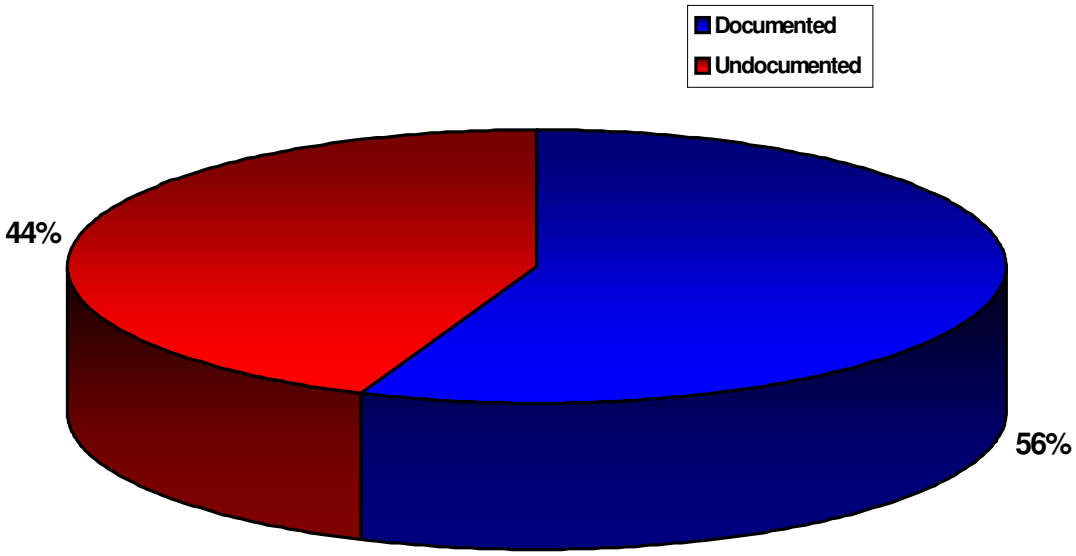
The IMFL consumption is dominated by whisky and this is representative of market trends all over India. Whisky accounts for about 58.3% of the IMFL consumption in our sample. Brandy accounted for 28%, Rum for 11.3% and White spirits for 2%. This is uncannily similar to the industry figures, which estimate that the branded spirits market is dominated by sales of cheap whisky, which constitute 59% of the spirits business, leaving a limited market to be divided among the other hard liquors like brandy, gin and vodka.

That spirits constitute the lion's share in the licit market (over 72 million cases, nationally) is well known to local and trans-national companies. The introduction of new branded spirits (as opposed to beers and wines) has dominated the marketing agenda of most new commercial ventures. Observers note that this coincides with sharp down turns in alcohol consumption (especially spirits) in Western Europe and North America and fear that this might lead to dumping of spirits in the Indian market.



2. Undocumented consumption

More than 40% of all alcoholic beverages consumed in the state are undocumented
More than 40% of the beverage of first choice i.e the beverage that the respondents drank on most occasions, belonged to the undocumented category.



Projected alcohol drunk by presumed 5.11 million consumers in the state: 100.87 million litres absolute alcohol equivalent per year (56.53 million litres of excise paid beverage and 44.34 million of undocumented beverage).

35% of the consumption was accounted for by beverages, which were clearly illicitly produced.

About 7% of the beverages consumed appeared to be identifiable as "seconds" liquor, as the unit retail prices of these were below the minimum suggested retail price for any IMFL. One must assert here, that a door to door sampling approach is most likely to under-estimate such seconds consumption, as not every retailer passes the price advantage of un-taxed beverages to the consumer and to a large proportion of consumers, licit beverages and seconds beverages are indistinguishable. Effectively, however, this means that the proportion of undocumented consumption is really more than 40% of the total consumption. Even the figures from the Taxation Task Force of Karnataka, assert that the real measure of 'seconds' beverage sold in the market is almost two and a half times the reported sales of IMFL.

Less than a fourth of the consumers reported having a second preference beverage. When it came to the second choice beverage, the proportion contributed by the undocumented segment rose to as high as 55%. Since most consumers who were given to the use of an alternate beverage, drank significantly larger quantities of alcohol, more frequently; had significantly more severe patterns of alcohol use; and were more likely to be both economically and educationally worse off, their use of a second beverage, appears to be a matter of settling for a cheaper illicit alcohol when the first choice was unaffordable or unavailable.

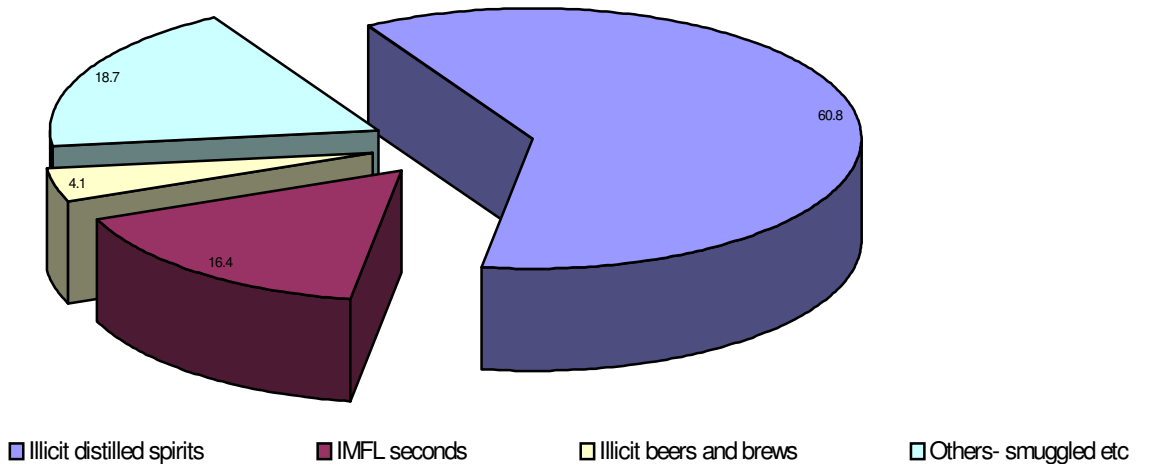
Undocumented consumption is significantly more in rural populations

Illicit / undocumented beverages were most drunk among the tribal sample, then in rural areas and least popular in the urban areas. This finding is along intuitively expected lines. It is no surprise that extensive availability of both IMFL and cheap country liquor outlets in urban areas should dictate the choice of the urban consumer, rather it is a surprise that despite the vigilance of the excise and police, despite the ubiquitous presence and reach of the alcohol beverage industry, there should be a market for illicit alcohol at all, albeit small.
Apart from the observation that the tribal areas account for the largest prevalence of illicit alcohol consumption, one must note that the production and distribution of beverage alcohol in these sites, was considerably different than in the rural and urban areas. The beverages were most often home-made, by the women of the house and meant only for personal consumption or at least for a small group of known consumers. One is also struck by the fact that the procedure for brewing and distillation and the ingredients used, seem not to have changed in centuries (Achaya, 1998). Or in other words, in tribal areas, the production and use of beverage alcohol appears to be a continuation of traditional practice and custom. Not so, in the some of the rural and more so in urban regions where the production is often on the scale of small scale industries, managed by people for whom this is not a traditional practice, for profit and in league with a criminal nexus. The production practices also involve a lot of short cuts and admixture of the beverage with other substances to give an extra kick. Often, this may result in trying to boost the alcohol content by adding more alcohol; unfortunately sometimes due to ignorance or greed this may result in addition of rectified spirit or industrial spirits containing a proportion of methanol.

While it has been customary to explain these rural – urban differences in alcohol use, as a function of the greater availability of licit alcohol in urban areas, this does not satisfactorily explain the increased consumption or normalization of use in tribal and rural populations compared to urban groups. Lower economic and educational status certainly plays a part. However, it is tempting to speculate that this is also due in no small measure to the process of 'sanskritisation' [see section on Social Economic and political aspects].

Illicitly brewed spirits are over represented among beverages that evade the record
The largest segment of undocumented beverages, were the illicitly distilled spirits. The names and manufacturing processes varied widely across geographical locations and often in the same region there was a wide variety of beverages available. Illicitly distilled spirits are likely to represent the largest constituent of the undocumented segment, throughout the country (Carstairs, 1979).
The next large segment was constituted by the seconds liquor. This segment is an important

Distribution: Undocumented beverages



constituent of undocumented consumption in states like Karnataka, Andhra Pradesh and other states which have many beverage alcohol production units. It is likely that seconds, do not constitute such a large source of undocumented consumption, uniformly throughout the country.

There are no seconds as far as available evidence goes, in the beer trade. However, low alcoholic beverages have been a mainstay of traditional drinking practices in the country. There are a wide variety of beers and wines which have been manufactured since antiquity. To name a few: there is the chang or millet beer in the North Eastern states, mohwa or mahua produced from the mahwa flowers and the toddy produced in southern India. This is also a sector, which is the source of much ambivalence, among governments. In the south of India, for instance toddy has always been freely brewed by farmers from the spathe of palm trees. Various governments, one suspects, at the behest of the large beer manufacturers lobby in the state have at times attempted to ban the largely unorganized production and sales of toddy, however these bans have been short-lived. In the recent past, the government ban on tapping coconut trees has been stymied by a widespread pestilence of the coconut mite. However, at the time of the study the ban had just been lifted and most of the respondents did not rate this as high on their priority list of drinks.

Smuggling of alcohol across state borders is also sizeable and is virtually untraceable. In our sample, such evidence of smuggled alcohol was found in the border district of Uttara Kannada, adjoining the state of Goa. Goa is famous for its distilled alcoholic beverage made from coconuts and sometimes cashew nuts, called fenny. A lot of this fenny finds its way into the Uttara Kannada district. Admittedly, distilleries in Karnataka also produce small quantities of fenny, but the majority of fenny drunk by the respondents in this district, has to be undocumented in the state excise records of Karnataka.

3. Levels of alcohol consumption

Per capita consumption figures are significantly larger than those represented in most existing databases

Population based alcohol surveys allow the collection of consumption data specific to socio-demographic groups within a population. They also have the advantage that they can be used to gather data on drinking patterns, including high quantity intake that is linked to intoxication and acute adverse consequences.

Per capita estimates calculated by dividing alcohol volumes by population (usually the average volume of alcohol consumed for all individuals aged 15 years and older) are another way to assess alcohol consumption. Since per capita estimates are derived from alcohol sales or production and from import and export data, usually collected for taxation purposes; combined, these represent the total amount of taxable alcohol available for a country or region. Per capita estimates exclude home-made and illicit commercial alcohol, duty free and smuggled alcohol and overseas consumption.

In the context of temperance cultures, with an overall low prevalence of alcohol use in the population, such a method is bound to yield erroneously lower estimates of individual consumption

Population based alcohol survey estimates of consumption and estimates of taxable income available for consumption are sometimes compared. However, discrepancies between these two measures occur, with the majority of population based alcohol surveys substantially under-estimating taxable alcohol available for consumption, attributed to under-reporting of consumption by survey respondents. However in countries where a high level of untaxed alcohol is consumed, it is possible for surveys to produce estimates higher than taxable income.

Alcohol consumption data were collected by using beverage-specific questions. These data were subsequently used to estimate the absolute alcohol content consumed by each respondent. The

annual volume of total absolute alcohol consumed by an individual was calculated by multiplying alcohol consumed on a typical occasion by the frequency of drinking. The annual volume of total absolute alcohol consumed by the sample population was the sum of each respondent's annual consumption. This was then extrapolated to the estimated population of alcohol consumers in the state (using the average prevalence figures over the 5 sampling sites) to derive a presumed figure for total annual consumption in the state.

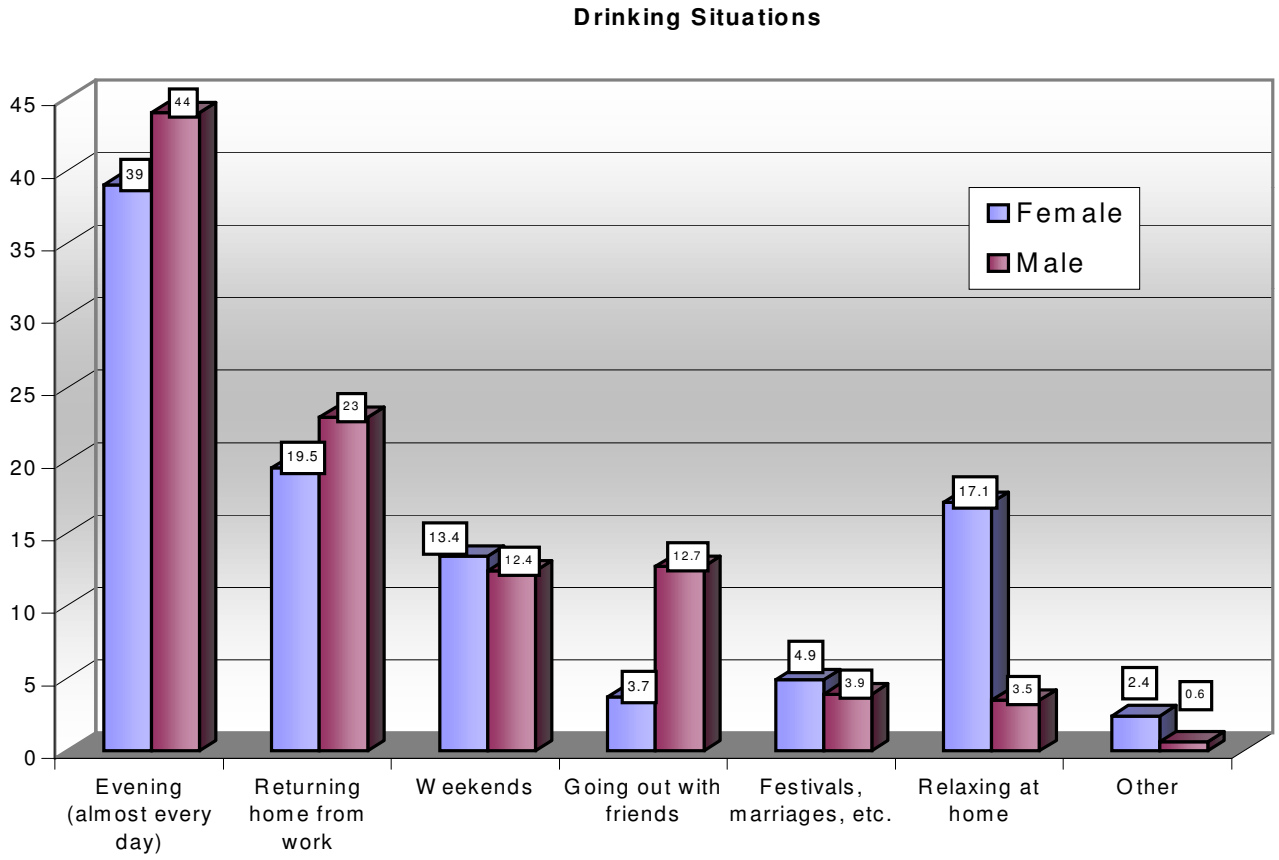
If one were to project the total beverage alcohol drunk by the sample population [24307 litres absolute alcohol equivalent of excise paid beverage + 19061 litres absolute alcohol equivalent of undocumented beverage] to the presumed 5.11 million consumers in the state [28.4% of 17.3 x 10^6 adult males + 1.4% of 16.5 x 10^6 adult females] one arrives at an annual consumption of 100.87 million litres absolute alcohol equivalent (56.53 million litres absolute alcohol equivalent of excise paid beverage and 44.34 million absolute alcohol equivalent of undocumented beverage).
This is a surprisingly high per capita consumption of 2.98 litres absolute alcohol equivalent per adult person per year (1.67 litres absolute alcohol equivalent of excise paid beverage per person per year and 1.31 litres absolute alcohol equivalent of undocumented beverage per person per year . However, keeping in mind the large numbers of abstainers, a more appropriate measure of actual consumption would be the consumption per drinker, which in this case is an enormous 19.73 litres absolute alcohol equivalent per consumer per year.
These figures are certainly much higher than those usually quoted in International databases [for example the Global Status Report on Alcohol mentions that the per capita consumption of alcohol in India is 0.2 litres per person per year (WHO,1999)] although some have pegged it much higher. A SEARO publication on Health situation in the South-East Asia Region 1994-1997 mentions that in India, the per capita consumption in adult male drinkers is much higher, at eight litres per year [WHO,1999].
The derived figure for consumption of presumed excise paid beverages is at 56.53 million litres absolute alcohol equivalent much higher than the recorded sales of 46.42 million litres absolute alcohol equivalent of excise paid beverage in the state for the year 2000-01. This difference is a measure of the amount of *seconds* liquor in circulation (which to the consumer would be indistinguishable in packaging, label and tax sticker from the legal stuff).
If one were to subtract the volume of legal, excise paid (documented) beverage alcohol sold and consumed that year from the projected figure of total beverage alcohol drunk in the state that year, one presumes one would arrive at a reasonably accurate estimate of undocumented consumption. This amounts to 54.45 million litres absolute alcohol available to 33.8 million adults in the state i.e. 1.6 litres of absolute alcohol in undocumented consumption per person per year. More realistically, in view of the large numbers of abstainers, this amounts to 54.45 million litres absolute alcohol drunk by 5.11 million consumers in the state, which works out to 10.65 litres of absolute alcohol in undocumented consumption per person per year.

4. Patterns of consumption

While the prevalence of alcohol drinking is fairly low, among men and women who do drink, consumption is frequent and heavy
Patterns of alcohol consumption are probably more important than per capita levels of alcohol use in predicting whether people will experience problems with their drinking.
Temporal variations in drinking [Quantity x Frequency]: The quantity of alcohol drunk by both men and women, on typical drinking occasions is, as has been earlier documented [Saxena,1999; Isaac, 1998] very high. In fact what is surprising is that there is no major difference between the amounts drunk by men and women. At an average of five standard drinks consumed each drinking occasion technically qualifies for a 'heavy drinking situation'.

The frequency of use however varies between men and women, with men drinking more frequently than the women. However the difference though significant should be viewed against the perspective that both men and women consumers were drinking fairly frequently. While almost 70% of the men drank daily or almost daily 55% of the women consumers did so too. This can hardly be termed "infrequent" drinking. This is contrary to earlier reports that assert that the prevalent pattern is infrequent use of large quantities [Saxena,1999; Isaac,1998].
The pattern that begins to emerge is that while the prevalence of alcohol drinking is still fairly low, among those who do drink, consumption is fairly frequent and heavy.
This is similar to what has been observed in Slavic and Scandinavian cultures [Room,2002]. The difference lies in the fact that the prevalence of users is still very low.

Under-socialized and solitary drinking of mainly spirits marks the pattern of drinking; drinking to intoxication and other features of drinking found in dry cultures is the signature pattern



Drinking situations
a. Settings and activities associated with drinking:
The setting in which most drinking occurred was essentially under-socialized and solitary. For men most drinking appeared to occur after work, before coming home, in male oriented pubs, bars or liquor shops essentially among strangers or drinking acquaintances. A fairly large number drank alone on streets or deserted places. Very rarely was drinking done at home. Drinking in bars or taverns are related to higher levels of drinking and self reported drinking problems (Single and Wortley, 1993). Respondents who predominantly drank in bars, pubs or in solitude were significantly more likely to have a more hazardous pattern of alcohol use (estimated by scores on

the AUDIT), and be less educated than subjects who drank in more socialized settings. They also tended to drink more on typical occasions, and at least among men, were significantly younger.
For women, drinking was even more of a solitary pursuit. Drinking was mainly done alone at home or in lonely places, away from public gaze. Solitary drinking, in women much more than in men, was related to hazardous drinking, and tended to predict higher consumption.
From the above, it is clear that the purpose of drinking is not social intercourse! As some commentators have described, drinking in the Indian context is all about drinking to get intoxicated.

b. Drinking style
Licit and illicit spirits and country liquor (near in alcohol content to the spirits) are clearly the beverages of choice. Drinking is a hasty furtive pursuit. And this is marked by the large proportion of men and women who drink alone or in the relative anonymity of darkly lit taverns and bars, gulping down large amounts of cheap alcohol (drinking the maximum possible in the shortest possible time), without dilution; and hurrying home.

c. Drinking and food
This drinking pattern is very different from the "Mediterranean" pattern of drinking accompanying a meal. Most respondents in fact expressed the opposite that they preferred to finish drinking before eating anything, and if they did eat anything with their drinks it was merely a few snacks usually consisting of fried items or nuts [salty and likely to increase thirst !].

d. Normalisation of drinking activity
In the Indian social-political discourse, this is an area loaded with polemical arguments and often well entrenched emotionally charged positions.
Despite, rapidly increasing production and sales figures of beverage alcohol, alcohol use still has a low prevalence in the population. This in no way, diminishes the assertion that more people are starting to drink at younger ages [see earlier].
The other assertion often heard is that alcohol use is more in lower socio economic and less educated groups. While, drinking is more common among lower socio economic groups than upper socio economic groups . It is apparent that it is more prevalent in rural areas than in the urban areas. Tribal areas appear to have the highest penetrance in terms of use. This is a phenomenon which has been repeatedly observed before, by other studies (Rahman,2002; Musgrave & Stern, 1988, Thimmaiah, 1979) It is not clear from this data set whether this is because of a continuation of permissive attitudes to alcohol use, persisting from earlier historical contexts, wherein as members of lower castes, in the Indian social hierarchy, they are less bound by the principles of temperance traditionally prescribed for the Brahmins and higher castes. The alternative explanation, often offered has been that such heavy alcohol use is a consequence of tribal populations having suddenly gained access to industrially mass produced cheap alcohol, and is seen as a function of the corrupting effect of civilization on a simpler, untrammeled lifestyle. This is probably inaccurate as well as being paternalistic, as home-brewed alcohol seems to be the predominant beverage drunk in the tribal population.
Less than 5% of males reported drinking in mixed company. In contrast is the fact that almost 50% of the women drank in the presence of men. However, this is easily explained as most women consumers belonged to families where, their male spouses or other male relatives drank. Drinking thus took place in the company of men (and perhaps contingent on male drinking occasions!).

e. Attitudes and expectancies
The dominant expectancy related to alcohol use among men and women consumers was that most people drank to intoxication, most of the time that they drank. Such expectancies have been documented earlier from temperance cultures, and is strongly contributory to the spectrum of high risk behaviours associated with alcohol use in such groups.

f. Subjective perception of drink related problems

The predominant drinking related problems reported, were economic. Physical ill health and problems at work, even problems in the family related to alcohol use were not perceived as major problems. The drain on economic resources among consumers is understandable as consumers, on average, apparently spent more than one fourth of their family income on buying alcohol. The impact of alcohol spending on family income was greater among rural consumers than urban consumers.

The impact of alcohol use [and heavy alcohol use at that] on physical health is clearly minimized. Independent evidence from another study on alcohol and injuries conducted in the same population, during the same time window, estimated that nearly 60% of all injuries presenting to the largest medical emergency department in the state, were alcohol related. Data from this study revealed that the major proportion of injury was due to someone else's drinking and that the largest proportion of these injuries comprised violent injuries. Earlier studies of drinking in temperance cultures have highlighted the strongly held belief that alcohol use is expected to lead to intoxication, disinhibition and violence.

It is not surprising that more than 15% of all users had experience of problems due to other people's alcohol use, most of which was violent in nature.

Hazardous drinking is observed in 80% of all consumers

All the above factors add up to a predominant pattern of hazardous use. 80% of all consumers (80% of male consumers and 65% of female consumers were clearly drinking at hazardous levels. This is a strong re-iteration of earlier findings in this same population as also from the rest of the country that more than one out of two people who drink, do so at hazardous levels.

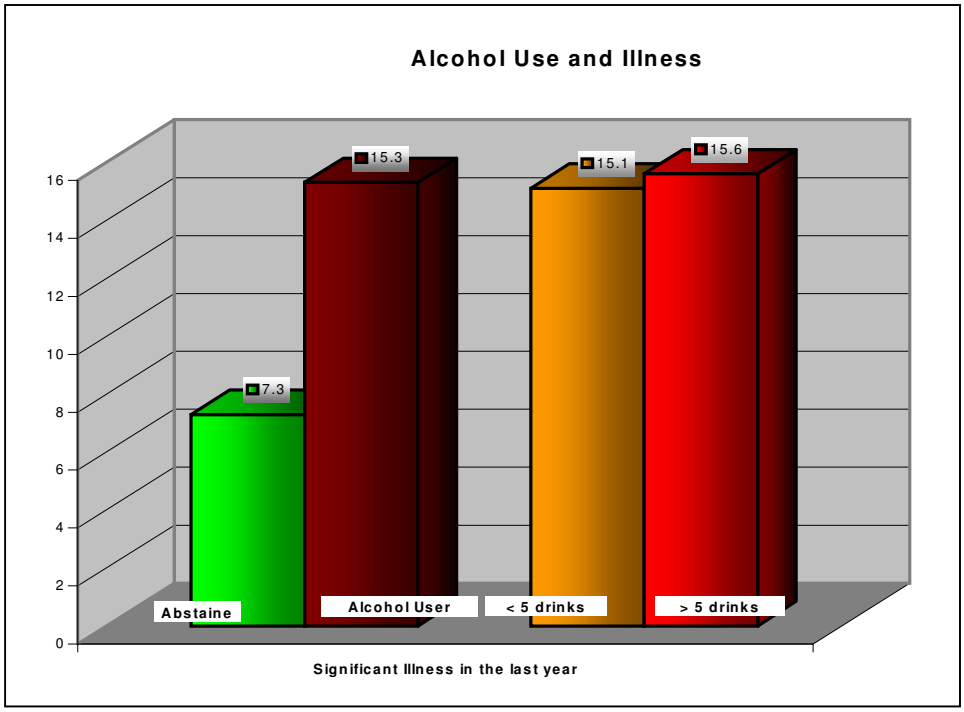
The heavy drinkers were more likely to drink multiple beverages. Those who drank multiple beverages had significantly lower income, less education, greater occurrence of hazardous drinking patterns, and spent a larger proportion of their income in buying alcohol. It is not surprising that a greater proportion of their consumption, belonged to the illicit/undocumented variety, because of the price advantage.

5. Alcohol and health

There is significant alcohol related health damage in consumers

Alcohol users were more likely to have had a significant illness in the previous year than people who were abstinent.

Heavy drinkers (those who drank more than 5 standard drinks per representative



drinking occasion) were significantly more likely to suffer emotional problems like depression and anxiety, stomach pain presumably indicative of alcohol related erosive gastritis, and other somatic problems like headache and generalized aches and pains. While not statistically significant this population also reported more frequent heart ailments, diabetes and increased blood pressure.
Alcohol users, both male (78%) and female (75%) were also more likely to use various forms of tobacco than non-users (22% and 8% respectively), thus increasing the risk of health damage.

6. Costs of alcohol use

Alcohol users spend more than a fourth of their monthly family income on alcohol
Alcohol users spent an average of more than Rs. 400 per month on alcohol. This amounted to more than a fourth of their monthly family income. These are merely a fraction of direct costs due to alcohol use. The social cost [direct + indirect costs] is likely to be significantly more. An earlier study in this same population estimated that the social cost due to the alcohol dependent population alone (less than 4% of the adult male population) to be around Rs. 18000 million [1997 figures].
If one extrapolates this monthly cost to the presumed 5.11 million consumers in the state, one arrives at an annual spend on alcoholic beverages amounting to Rs. 25386.50 million.
Rural consumers were also more likely to spend a greater proportion of their family income on alcohol than urban consumers.

7. Gender aspects of alcohol use

There are striking gender differences relating to alcohol use, alcohol expectancies, stigma and health consequences due to alcohol use
Women consumers usually have their initial drink and begin regular drinking at significantly later ages than men. This is strikingly different than in the case of tobacco where such a wide difference in age at initiation of use is not seen between men and women. This is a further comment on how unacceptable the use of alcohol is in Indian society, compared to that of tobacco products.
What is striking, in comparison to comparable figures from other countries, is that when women drink, they tend to match the men, drink for drink, so to speak. Average quantities drunk during typical drinking occasions are roughly the same. As discussed above, these quantities tend to be large, 5 or more standard drinks on average per occasion !
The difference lies in the frequency of drinking occasions, with women drinking on far fewer days of the month than the men.
The health implications are grave. It is well appreciated (Heath,2000; Stockwell et al, 1996) that binge drinking and drinking to intoxication are associated with more adverse consequences, particularly acute consequences. There is also mounting evidence that women suffer earlier and relatively graver medical and physical consequences, at lower doses of ethanol than men.
In an unpublished study of female alcoholics in this same population (Murthy, et al. personal communication) the average age at onset of use in women was significantly later than that in males, however, the age at which both males and females had developed severe enough problems which prompted them to seek help for the first time were quite similar. This finding is in keeping with most of the 'Western' literature which points to a more rapid development or "telescoping" of the course of alcohol related illness in women.Again, women were significantly more likely to present with co-morbid psychiatric symptoms or dual diagnoses than the men. Depression and depressive disorder were significantly high. Physical complications , especially gastritis and anemia were also much higher than in their male counterparts. Women appear to develop late-stage physical damage more rapidly than men and have a higher prevalence of psychiatric dual diagnoses.

In a sense this is evident from the data in this study as well. Women consumers had a higher prevalence [albeit statistically non-significant] of significant illness in the past year than the men.

Results from another collaborative multi-centre WHO study on Alcohol and Injuries, noted that a very high proportion of the injuries reporting to an emergency department in Bangalore city, were alcohol related. Almost a fourth of all persons [31% of all males and 4% of all females] presenting with injuries to the ED had alcohol use prior to the occurrence of their injury. This is much higher than that reported in international studies where between 10 and 18 percent of injury cases were found to be alcohol-related (Benegal et al, 2002).

A parallel and most significant finding is that injuries with indirect association to alcohol, i.e. alcohol use by the perpetrator of the injury and not by the injured person, appear to be very common. Injuries 'definitely linked' to alcohol use (injuries to subjects consequent to their own alcohol use as well as injuries to non drinker victims of others' alcohol use account for 37% of all injuries (91.6% of the men and 8.4% of the women). Inclusion of injuries which were 'possibly linked' (where the alcohol intoxication in the perpetrator was reported by secondary sources -relatives, bystanders etc. and not by the primary injured, often afraid of indicting a close family member] raises the proportion of alcohol related injuries to 59% of all injuries i.e (82.2% of the men and 17.8% of the women).

A large proportion of the injuries (all injuries or alcohol related injuries comprised injuries due to interpersonal violence. [WHO multi center collaborative studies on Alcohol related injuries]

There are are other important differences, in drinking situations, drinking expectancies, stigma and consequences of drinking (including alcohol related injuries/violence) between men and women.

While male drinking occurred primarily, in public places like pubs, bars, liquor shop counters and restaurants (70%), women preferred to drink mostly at home or in solitary places (56%). In the same vein, while most men (86%) reported drinking in social situations, whether in predominantly male or mixed company, women reported that their typical drinking situations were solitary (43%). Drinking in women was influenced by use in other family members (65%) who were most of the time male (52%), unlike in men (less than 40%). This strongly suggests that for women consumers to drink, it required to be done with the forbearance of a male companion or in secret solitude. An earlier study from Bangalore [Selvaraj et al, 1997] found that while peer pressure was an important influence in drinking behaviour in men, drinking in women was associated with heavy drinking among key family members, usually male.

There are strong social and cultural taboos against women drinking. Social expectations about how men and women should behave also seem to determine choice of place and preferred mode of drinking. There was more solitary drinking among the women (though a sizeable number drank in the company of their spouses or close family, it was still within the confines of the home), while most of the men drank away from the home usually with same sex peers.

Gender expectations also governed the extent to which the women could indulge in externalizing behavior due to the disinhibitory effect of alcohol. Very few of the women were reported to behave in aggressive or disinhibitory fashion after consuming alcohol, whereas that was a major complaint in the men.

In the study of female alcoholics noted above, positive expectancies influencing initiation of alcohol use, cited by men and women differed significantly. While women attributed mood elevating and antidepressant properties to alcohol, men on the other hand used it to improve sleep or decrease tiredness and fatigue. The second most common attribution among women was that alcohol had major restorative properties after child-birth. (One must make mention here that alcohol use after parturition has found mention in the ancient Hindu medical texts: the Ayurveda and the Charaka samhita and continues to be a ritual observance among many social groups in India till today).

The next most common reason for initiation of drinking was in order to keep company with their husbands. And several women who previously considered alcohol as unclean often rationalised their drinking as being consonant with fulfilling their social expectations as a wife.

8. Social, economic and political issues

When one factors in earlier observations of drinking patterns from India, one is tempted to speculate that there has been a dynamic shift from earlier permissive patterns represented by a relatively widespread use of a variegated spectrum of low alcohol beverages. The creation of alcohol monopolies during the colonial period, resulted in the replacement of the traditional beverages with industrially produced high alcohol content beverages of questionable merit. Also, in furthering the revenue aims of such monopolies, the pattern of use of alcoholic beverages changed, as one notes from contemporary accounts. Home grown movements against alcohol use such as the Devi movement in Gujrat, along with Temperance campaigns from the West, combined with the process of sanskritisation to radically alter public attitudes towards alcohol use. This has resulted in a pattern of alcohol use typically seen in temperance cultures, marked by a low prevalence of alcohol use in the population, but one in which alcohol users engage in binge drinking, drinking to intoxication in relatively solitary circumstances and act out on the basis of expectancies encouraging hazardous use and dangerous alcohol induced behaviors. All of which contribute to an increased burden on health.

There is concern that as a country like India moves from being a high mortality developing region to a low mortality developing region (a process currently well under way), the burden of health attributable to alcohol will represent the single largest contributor to disability shifting focus from micro-nutrient deficiencies. This is evident from the recent World Health Report 2002 (Ezzati et. al., 2002).

Government monopolies have been shown to better serve the aim of regulation of alcohol use in the population. However, in India, where excise on alcohol forms the second largest source of revenue, sheer economic necessity will militate against efforts to seriously enforce supply reduction strategies. The forces of the free market economy and commitments to world trade agreements have already opened the flood-gates for trans-national alcohol producers to dump cheap alcoholic beverages in India as markets shrink in the developed world. This, has already resulted, not in supplanting indigenous production but in increasing the availability of beverage alcohol in circulation and consequent increases in volumes sold and consumed. Experience in other developing economies has clearly demonstrated that the diffusion of European style commercial alcoholic drinks adds to and modifies older patterns of drinking, more than it substitutes, thus tending to increase total consumption and drinking situations. While considerable short term economic benefits accrue from the growth of alcoholic beverage industries, in forms of profit, employment and taxes; at the same time, however, there is a gradual rise of long-term social and economic costs as a result of alcohol consumption.Attempts by the government to restrict the transnational companies by licensing, joint ventures, sales of technology and similar means are usually ineffectual as these means are shown to be as effective for the corporations as outright legal ownership in exercising influeance. (McBride and Mosher, 1985).

In a historical perspective, India has had no mainstreams of ideas either in medical or sociological research on alcoholism. The trend during the last 50 years or so, is reflected in the preoccupation with prohibition policies, which were interwoven within the freedom movement and finally laid out in Article 47 of the Directive Principles of the Indian Constitution. One reason is its close association with the political and moral movement reflected in the prohibition approach. Second, it did not appear as an issue of immediate or remote concern in national health policy. Health planners have tended to focus more on immediate problems eg. communicable diseases, nutrition and infections rather than simultaneously planning preventive activites, in problems such as alcohol, road traffic accidents and industrial safety which will bear fruit in decades to come (Mohan & Sharma, 1985).

Policies based solely on the principles of supply reduction, especially ones entrenched in the prohibition discourse are more likely to increase the volume of undocumented illicit beverages being consumed. Apart from the obvious and immediate health consequences of toxic forms of alcoholic beverages in widespread circulation, there is also the long-term consequence that such moves promote the flourish of criminal black-market economies – a solution worse than the problem.

As the findings from this study underline, the patterns of alcohol use in the country, leave no room for doubt that alcohol abuse and its consequences represents a serious and incremental public health problem. Policy makers and health planners in India urgently need to plan and fund research and interventions to deal with this impending epidemic.

9. Critical aspects of study design

Embedding the alcohol use questionnaire within a general health assessment increased the acceptance among the respondents. There were very few refusals, in fact they were less than one percent of all households approached.

A screener was used to collect, basic socio-demographic data on the family, as well as screen for the presence of alcohol and tobacco use and any significant illness in the last year. This data was collected primarily from the head of household. Attempts were made to triangulate this information from other family members. Only family members thus nominated were approached to answer the detailed Individual questionnaire.

Approaching the head of household (usually male) ensured greater compliance among the other family members. However, this method, with hindsight, we realized also contributed to under estimation of alcohol use among the younger males and the females in families. The male head of household, was likely to 'protect' the women and be 'protected from the knowledge' of alcohol consumption in the younger males.

Consequently, this method is also likely to have contributed to some underestimation of prevalence of alcohol use as a whole.

The better but more time-consuming option would certainly have been to approach all adult members of the family separately. But this study was designed as a rapid pilot study to determine the need for larger country-wide studies.

The study provides a methodology to accurately assess the proportion of undocumented consumption in other parts of the country. The results certainly underline the need to conduct similar studies in the rest of the country.

The door-knocking assessment of type and quantity of use is an effective method for tapping the proportion of illicit alcohol use in a community. However, as mentioned earlier in the discussion, this method does not accurately gauge the proportion of "seconds" liquor being used by that community. The "seconds" beverages are not that much of a problem in most other parts of the country.

The study also re-iterated observations from an earlier WHO Collaborative study in the same region, regarding the widespread pattern of hazardous drinking.

Using the Human development Index to determine the first level of sample selection, we feel enabled a more accurate representation of the complex socioeconomic variation in the state, than merely factoring in urban and rural representation. In the final analyses, the sample was representative of the male – female ratios in the state as well as broadly similar in terms of per capita income.

The study is intended as a pilot for larger and more extended studies. India is a large country with wide diversity. This study highlights the need to expand the scope of this line of enquiry, in different socio-cultural zones. Meanwhile, we feel that these results are compelling enough to be used to advocate urgent and widespread public health approaches to the alcohol problem in India.

10. Summary

Alcohol use is low in the Indian population. This is in keeping with the traditional assertion that India represents a Temperance culture.

There are extreme gender differences in the prevalence of alcohol use. The data supports the view that alcohol use is a predominantly male activity in the context of India.

Users are getting younger. The age at initiation of alcohol use has decreased significantly in comparison with older cohorts. Earlier use usually results in greater alcohol related morbidity in the population.

There are strong rural - urban differences in prevalence of use. Rural and especially tribal populations have a greater prevalence of use.

The prevalence of alcohol consumption is related inversely to education and income levels

The beverage alcohol market is dominated by spirits.

More than 40% of all alcoholic beverages consumed in the state are undocumented. This is likely to be an under-estimation as the methodology of the current study was unlikely to accurately measure the proportion of excise evaded "seconds" liquor. Nonetheless, the current study provides a window to the extent of undocumented consumption in the state.

Undocumented consumption is significantly more in rural (and tribal) populations

Illicitly brewed spirits are over represented among beverages that evade the record.

Per capita consumption figures are significantly larger than those represented in most existing databases of alcohol consumption in India. This will certainly impact on any calculations assessing health burden attributable to alcohol.

While the prevalence of alcohol drinking is fairly low, among the men and women who do drink, consumption is frequent and heavy

Under-socialized and solitary drinking of mainly spirits marks the pattern of drinking; drinking to intoxication and other features of drinking found in dry cultures is the signature pattern

Hazardous drinking is observed in 80% of all consumers. Hazardous patterns of drinking are the rule among most consumers.

There are significantly more health problems in alcohol consumers compared to abstainers. Heavy drinkers have significantly more gastritis, insomnia, depression and anxiety.

Alcohol users spend more than a fourth of their monthly family income on alcohol. These are only part of the direct costs.

There are striking gender differences relating to alcohol use, alcohol expectancies, stigma and health consequences due to alcohol use

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