ALCOHOL CONSUMPTION AND HEAVY DRINKING: A SURVEY IN THREE ITALIAN VILLAGES

I. GUERRINI, C. GENTILI, M. GUZZELLI

Molecular Psychiatry Laboratory, Windeyer Institute of Medical Sciences, Department of Mental Health Sciences, Royal Free and University College London, London Medical School, 46 Cleveland Street, London W1T 4JF, UK

INTRODUCTION

Italy ranks first among the European countries in terms of wine production and tenth for annual pro-capita alcohol consumption (Cipriani and Innocenti, 1993). According to several national statistic surveys (ISTAT-1986–1990), there are noteworthy regional differences with regions such as Valle d’Aosta, Veneto, and Tuscany at the highest level of alcohol consumption and Sardinia, Calabria, and Sicily at the lowest (Cipriani and Innocenti, 1993). In the literature, the ratio between drinkers and abstainers in Italy has been estimated as 2:1, with ~150,000 alcoholics (3% of the population) and 3,500,000 problem drinkers (Allamani et al., 1988; Cipriani and Innocenti, 1993; Quartini et al., 1997). According to independent data published by Eurispes (1993) in Italy ~30,000 deaths every year are alcohol related: 15,000 for cirrhosis, 3,500 for oesophageal cancer, 3,000 for road accidents, and 8,500 for other alcohol-related problems.

Other estimates include those by Corrao and co-workers (2002) who reported that in Italy ~68,000 and 42,000 deaths were attributed to alcohol consumption in 1983 and in 1996, respectively, mostly from haemorrhagic stroke, liver cirrhosis, cancer, and various injuries. Light intake (<25 g/day) caused ~30% of deaths in females. In males, about one-half of the deaths were attributable to the highest category of intake (>100 g/day), with a lower proportion (7%) of deaths attributed to light intake.

Very little is known about geographical variations in drinking behaviour (Plant, 1979; Plant et al., 2000) and few studies have analysed the alcohol consumption in diverse social contexts in order to better understand the relationship between environmental, cultural, and personal variables (Crawford et al., 1985; Allamani et al., 1988; Donato et al., 1995; Plant et al., 2000). Some factors are definitively linked to a ‘problem drinking’ behaviour; including gender, age, and culture (Scafato, 2004). A research carried out on Italian students in 10 different locations by Donato and co-workers (1995) showed that alcohol consumption was greater among males than females. In two separate age groups, 14–15 and 18–19 years, the rate of male daily drinkers was 22.5 and 31.3%, respectively, and that of female daily drinkers 9 and 10%, respectively. The same trend was observed for higher alcohol intake. The males who declared an alcohol intake ≥7 alcohol units a week were 26.8 and 42.7%, respectively, while the females were 11.1 and 13.9%, respectively. The authors reported that in their samples alcohol consumption was not associated with any specific socio-economic, cultural, and demographic background. Digrande and colleagues (2000) showed that in a sample of 1911 Sardinian university students a significantly higher rate of males rather than females reported alcohol binge drinking and alcohol-related driving problems.

With that as background, the purpose of our population study was to investigate the drinking habits and the prevalence of heavy and problem drinking in a sample of three Italian communities. ‘Heavy drinking’ was defined as an alcohol consumption ≥40 g/day for males and ≥20 g/day for females and ‘Problem drinking’ as a consumption ≥80 g/day for males and ≥40 g/day for females. The samples were selected to be representative of the entire population of three villages, two in Tuscany and one in Sardinia. The villages were selected in order to compare in Tuscany a population from a wine producing area (Castagneto) with one from a non-producing area (Fosdinovo). The third sample (Orune) was recruited in order to compare Castagneto and Fosdinovo with completely different settings in terms of economical, social, and cultural contexts.
background (Orune, Sardinia). Information was collected by way of an ad hoc designed questionnaire, which included a masked form of the CAGE rating.

MATERIALS AND METHODS

As reported above, the data were collected in the Italian villages of Castagneto Carducci (CAS) in Southern Tuscany (total population: 8290), Fosdinovo (FOS) in North-West Tuscany (3964), and Orune (ORU) in Sardinia (3133).

Frequency distributions of all residents according to age, gender, marital status, education, and occupation were obtained from the demographic offices of the three municipalities. Sample sizes were chosen in order to be within 3% of the actual relative ratio to the entire population. All General Practitioners (GPs) of the three villages collaborated to the survey, allowing the enrolment in the study of individuals aged 18 years and above, attending the GP practices. These were chosen as settings in which the individuals could feel comfortable to answer questions regarding health issues, a hypothesis corroborated by the low rate of refusals (<1%). Sampling efforts were monitored using a computer and directed towards correcting possible deviations from the expected figures for each category. Data collection was halted when the number of questionnaires reached a pre-defined sample size and the category distributions of each demographic variable matched expectation.

Each respondent was asked to fill in a multiple-choice questionnaire with four sections for a total of 110 questions. Section A was about socio-demographic information, including birthplace, age, gender, marital status, residence, education and occupation, duration of residency in the village, and, in case of immigrants, place of origin. Section B included a series of questions on drinking habits, beverage preferences, and subjective perception of excessive drinking. Section C comprised the four questions of the CAGE questionnaire (Mayfield et al., 1974). Section D dealt with questions about family structure and drinking habits of first-degree relatives (data not shown in the present paper).

According to the frequency of alcohol intake, the respondents were segmented in three categories: abstainers, occasional drinkers, and daily drinkers. Following WHO guidelines, ‘Heavy drinking’ was defined as an alcohol consumption of \( \geq 40 \, \text{g/day} \) for males and \( \geq 20 \, \text{g/day} \) for females and ‘Problem drinking’ as a consumption of \( \geq 80 \, \text{g/day} \) for males and \( \geq 40 \, \text{g/day} \) for females.

RESULTS

A total of 2972 subjects were included in the study, 1309 from CAS, 748 from FOS, and 915 from ORU. Participation rate was very high, with only 20 individuals refusing to be enrolled in the study. Table 1 shows the age distribution by village and by gender, and the age distribution of the total resident populations. The samples collected in each village were a relevant proportion of the total adult resident populations (18.8, 22.5, and 35.4% in total for CAS, FOS, and ORU, respectively). Statistically significant variations from a homogeneous sampling were only found for the age class (18–29) in the FOS sample.

### Table 1. Age distribution of the three samples and age distribution of the total residents

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
<th>CAS sample</th>
<th>CAS population</th>
<th>Males</th>
<th>Females</th>
<th>FOS sample</th>
<th>FOS population</th>
<th>Males</th>
<th>Females</th>
<th>ORU sample</th>
<th>ORU population</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;18</td>
<td>119</td>
<td>167</td>
<td>--</td>
<td>286</td>
<td>1335</td>
<td>--</td>
<td>--</td>
<td>634</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>551</td>
</tr>
<tr>
<td>18–29</td>
<td>119</td>
<td>101</td>
<td>220</td>
<td>1039</td>
<td>61</td>
<td>81</td>
<td>142</td>
<td>485</td>
<td>95</td>
<td>98</td>
<td>193</td>
<td>493</td>
</tr>
<tr>
<td>30–39</td>
<td>109</td>
<td>95</td>
<td>204</td>
<td>1096</td>
<td>36</td>
<td>54</td>
<td>90</td>
<td>555</td>
<td>62</td>
<td>65</td>
<td>127</td>
<td>399</td>
</tr>
<tr>
<td>50–59</td>
<td>128</td>
<td>122</td>
<td>250</td>
<td>1151</td>
<td>40</td>
<td>55</td>
<td>95</td>
<td>541</td>
<td>55</td>
<td>74</td>
<td>129</td>
<td>326</td>
</tr>
<tr>
<td>60–69</td>
<td>76</td>
<td>95</td>
<td>171</td>
<td>1150</td>
<td>51</td>
<td>53</td>
<td>104</td>
<td>533</td>
<td>51</td>
<td>56</td>
<td>107</td>
<td>301</td>
</tr>
<tr>
<td>&gt;70</td>
<td>93</td>
<td>85</td>
<td>178</td>
<td>1136</td>
<td>53</td>
<td>56</td>
<td>109</td>
<td>597</td>
<td>66</td>
<td>54</td>
<td>120</td>
<td>430</td>
</tr>
<tr>
<td>Total</td>
<td>644</td>
<td>665</td>
<td>1309</td>
<td>8290</td>
<td>354</td>
<td>394</td>
<td>748</td>
<td>3964</td>
<td>451</td>
<td>464</td>
<td>915</td>
<td>3133</td>
</tr>
</tbody>
</table>

Fig. 1. Distribution of the three samples according to drinking frequency. Each sample village and each gender sum up to 100%.

### Alcohol intake

Figure 1 shows the distribution of abstainers, occasional drinkers, and daily drinkers in the three villages. The two communities from Tuscany showed similar trends, with \( \sim 70\% \) of males being daily drinkers vs \( 25\% \) of females. In the ORU sample, only \( 20\% \) of males and virtually no females reported daily drinking. In general, individuals >40 years of age preferred to drink wine while beer was the favourite beverage for people <30 years of age. In the FOS sample the preference for wine reached 96% in the 40–49 age group vs 77% in CAS and 31% in ORU. Almost \( 10\% \) of the individuals of the <30 age group from Tuscany preferred spirits vs 2.5% in the
Sardinian group. In ORU the maximum percentage of individuals drinking high-alcohol-content beverages was in the 50–59 age group (8% vs 2.6% and 0.1% in CAS and FOS, respectively).

Occasional drinkers (20% of the entire sample) were excluded from the computation of daily, problem and heavy intake. This was done to remove the ‘noise’ introduced by including those individuals consuming less-than-daily quantities of alcohol and only for social and recreational purposes. Overall, 1059 individuals (75% males, 25% females) declared themselves to be daily drinkers, and 49 of them (5 from CAS, 44 from FOS) did not specify the quantity consumed. Table 2 shows the alcohol intake of the daily drinkers according to age and gender.

Table 3 shows the proportion of safe, heavy and problem drinkers. Among those ingesting alcohol daily, 40% drank heavily and ~12% were problem drinkers. Females were significantly more at risk for heavy drinking compared with males ($P < 0.0001$). A total of 98 (3.3%) individuals exceeded 80 g alcohol/day, 95 males and 2 females. Drinkers with an alcohol intake $\geq 160$ g/day were 2.7% in total (1.3% ORU, 0.9% FOS, and 0.5% CAS).

**CAGE questionnaire**

All the drinkers (1803 individuals in total) completed the CAGE questionnaire. Table 4 shows the percentages of positive answers for each of the four items separately. Figure 2 shows the percentage of drinkers falling into each CAGE category, distributed by alcohol intake.

In total, the CAGE-positive subjects ($\geq 2$ positive answers) were 3.5% (113 individuals; 10 females and 103 males). Among the CAGE-positive females, four declared only an occasional consumption and the other six reported an alcohol intake ranging from 38 to 215 g/day. The 103 CAGE-positive males were 18 from CAS, 16 from FOS, and 69 from ORU. Of the ORU CAGE-positive responders, 56% declared an occasional consumption vs only one in the CAS sample and none in FOS.

**DISCUSSION**

Our data are in agreement with the limited number of epidemiological studies carried out on Italian populations (Raimondi et al., 1987; Allamani et al., 1988; Cipriani and Innocenti, 1993; Modonutti, 1993; Quartini et al., 1997; Scafato, 2004), adding details at a regional level.

As previously reported by Cipriani and Innocenti (1993) and by Moiraghi Ruggenini (1996), we found daily alcohol...
consumption more common in males than in females. In addition to that, our data show a remarkably higher ratio of male drinkers/female drinkers in the Sardinia sample than in the two Tuscany populations (46:1 vs 3:1). Also for the Sardinia sample the ratio between drinkers vs abstainers was 1:2, basically the reverse of the situation for the two Tuscany samples (3:1 and 2:1) but quite similar with the results published in previous studies (Pasquazzi, 1985; Cipriani and Innocenti, 1993).

Considering the alcohol intake estimated for the overall population, the consumption rate of the Sardinia sample was lower compared with the consumption rates of CAS and FOS (7 vs 21 and 30 alcohol g/die). These figures are at first glance in agreement with the official 1989, alcohol-purchasing-based Italian national statistic data (ISTAT), where Sardinia was depicted as one of the Italian regions with the lowest per capita alcohol consumption, 15 g/die compared with 23.6 in Tuscany (Cipriani and Innocenti, 1993). However, in contrast with the ISTAT data, the ORU drinkers consumed more per capita alcohol than the drinkers in CAS and FOS, if only daily alcohol consumption is considered (64 vs 27 and 32 g/die). This finding raises questions on the efficacy of indirect indices in quantifying the real distribution of alcohol consumption in general populations.

Furthermore, despite the lower proportion of drinkers among ORU respondents, local males seemed to feel annoyed by criticism or guilt at a considerably higher frequency than in Tuscany. The ORU females declared moderate alcohol consumption, and 20% felt annoyed by criticism. Such a difference could be a consequence of a possible stronger cultural pressure against alcohol consumption in the Sardinian community than in the Tuscany villages.

In the CAS sample the rate of problem drinkers calculated on per capita consumption was lower than in the other two samples, a result consistent with the fact that in a wine-producing-area alcohol drinking is a common habit, homogeneously diffused in the overall population. Conversely, in the ORU sample there was a low percentage of people drinking alcohol beverages but the rate of problem drinkers was higher than in the other two.

As Edwards (1973) has well elucidated, epidemiological studies show some methodological limitations, as sample surveys are very expensive and time consuming. The self-reporting alcohol consumption does not show a real picture of the diffusion of alcohol consumption because of the well-documented under-reporting of problem drinking (Edwards, 1973; King, 1986; Plant et al., 1990). King (1986) pointed out that people under-report their alcohol consumption in face-to-face interviews and under-reporting seems to be greatest among heavy drinkers, even if several studies used the self-reporting methodology as the only method for evaluating alcohol intake (Crawford et al., 1985; Halldin, 1985; Hilton, 1987; Plant et al., 1990; Webb et al., 1990). For this purpose other indices or rating scales were proposed in order to increase the power of better detecting problem drinkers (Chick, 1982; Cyr and Wartman, 1988). Many researchers have suggested since that the CAGE questionnaire effectively detects subjects at risk levels of consumption with a predictive value of 50% compared with 20–40% of the laboratory indicators (King, 1986; Bush et al., 1987). In fact, in our study the CAGE questionnaire and the self-reported alcohol intake seemingly pointed to different groups of alcohol drinkers. Only a small proportion of drinkers (30%) are both CAGE-positive and problem drinkers according to self-reported intake.

In any case, taking into account the limitations detailed above, our data indicate that alcohol drinking is widely diffused in all the three communities analysed. A large layer of the population seems to be at risk of alcohol-related disorders and the incidence of at-risk drinking seems to have significant regional differences that are important to consider when planning effective prevention programmes.

REFERENCES


