

PREVALENCE AND MORTALITY OF HEAVY DRINKERS IN A GENERAL MEDICAL HOSPITAL UNIT

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Abstract — This study was performed in order to analyse the prevalence, clinical characteristics and mortality of heavy drinkers among hospitalized patients during a 2-year period. Chronic excessive alcohol consumption (daily intake >80 g of ethanol for males and >40 g for females) was found in 278 of 2913 hospital admissions and was strongly associated with the male sex (90.69%). Heavy drinkers were significantly younger than other admissions (15 and 10 years for men and women, respectively), but showed similar mortality rates to other admissions, despite a much earlier age at death (19.5 years for men and 22 years for women). There was a trend towards higher mortality rates among severe alcoholic women than severe alcoholic men and non-alcoholic women. Liver cirrhosis was the entity most frequently observed in the heavy drinkers, and was significantly more prevalent in alcoholic women.

INTRODUCTION

Chronic excessive alcohol consumption is common in the Canary Islands, particularly in rural areas, where consumption of self-produced wine is widespread. In previous, population-based studies, we found that alcohol consumption affects 65% (Santolaria *et al.*, 1997) and 81% (Tejera *et al.*, 1991) of the population of two small rural communities. Importantly, nearly 33% of the men of one of these communities consumed very high daily amounts of ethanol (more than 80 g). Ethanol is indeed the cause of severe medical problems, such as liver cirrhosis, withdrawal syndrome, acute pancreatitis etc, which account for a significant proportion of hospital admissions, with considerable economic and social cost, and a high mortality/morbidity. Therefore, it is of paramount importance to know precisely the prevalence of alcohol-related problems in a hospital population. In a survey performed 11 years ago, we found that 24.4% of admissions to our hospital unit for internal medicine were due to alcohol-related problems; the mortality among hospitalized alcoholic women reaching 23.81% (Rodríguez-Hernández *et al.*, 1990). Despite this fact, wine production — and probably alcohol consumption — have increased in the last 10 years in our island. In this study, we analysed the prevalence, clinical characteristics and mortality of alcoholic patients admitted to our hospital unit, which is a general medical unit of a tertiary hospital in which unselected patients with any medical problems attend.

PATIENTS AND METHODS

We recorded all admissions to the Internal Medicine Unit of our hospital during 1998 and 1999 and the proportion of patients consuming high amounts of alcohol. A patient was considered to belong to this group if, by direct inquiry ('do you drink alcoholic beverages?'; 'how much and which kind of beverage do you consume daily?'; 'how long have you been drinking?') he or she admitted to drinking alcoholic beverages

in excess of 80 g for males and 40 g for females. This inquiry was performed several times — at admission in the emergency room, and by the attending physician and resident, with both the patients and their families. All patients underwent a physical examination and laboratory evaluation within the first 48 h after hospital admission. The presence of physical signs such as facial erythema, telangiectasia, parotid enlargement, hepatomegaly, or laboratory abnormalities, such as raised gamma glutamyltranspeptidase or mean corpuscular volume, an aspartate aminotransferase/alanine aminotransferase ratio >2, unexplained thrombopenia or hyperuricaemia, prompted us to persist with the inquiry. We also recorded the duration and mean daily ethanol consumption, tobacco consumption, clinical problems suffered by the patients and their mortality. The results in men and women were analysed using Student's *t*-test to compare quantitative variables (e.g. daily amount consumed in men and women) and the χ^2 test to compare qualitative variables (e.g. smokers/non-smoker vs men/women).

RESULTS

A total of 2913 admissions were recorded. In 278 cases, heavy alcohol consumption was present; 18 of these patients (three of whom were female) were admitted twice, five were admitted three times (two of whom were female), and one was admitted four times during this period. A total of 224 men (90.69%) and 23 (9.31%) women were heavy drinkers, whereas 53.9% of the non-heavy drinkers were men and 46.1% were women. Thus, heavy alcohol consumption at admission was strongly associated with the male sex ($P < 0.0001$). Mean age, mean daily alcohol consumption and years of heavy drinking are shown in Table 1. With respect to age, highly significant differences were observed between heavy consumers and non-heavy consumers, both in men (mean age of non-alcoholics \pm SD = 68.0 \pm 18.5 years) and in women (mean age of non-alcoholics, 68.0 \pm 18.4 years; $P < 0.001$ in both cases).

In Table 1, we also show the main diseases responsible for admission in heavy consumers by gender. It becomes evident that liver cirrhosis was significantly more frequent in women than

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Table 1. Differences between men and women (heavy consumers)

	Men	Women	P
Age at admission	52.65 ± 13.23	57.73 ± 13.49	NS
Mean daily ethanol consumption (g)	153 ± 88	129 ± 78	NS
Years drinking	25.26 ± 9.85	25.21 ± 14.76	NS
Liver cirrhosis	73/224	14/23	$\chi^2 = 7.15, P = 0.008$
Upper gastrointestinal bleeding	41/224	8/23	$\chi^2 = 3.09, P = 0.079$
Acute pancreatitis	25/224	5/23	NS
Delirium tremens	87/224	0/23	$\chi^2 = 12.68, P = <0.001$
Polyneuritis	12/224	1/23	NS
COPD	37/224	4/23	NS
Diabetes	25/224	3/23	NS
Hypertension	25/224	3/23	NS
Heart failure	37/224	1/23	NS
Tobacco	127/224	8/23	$\chi^2 = 3.21, P = 0.073$

COPD, chronic obstructive pulmonary disease.

NS, not significant.

men, whereas a major withdrawal syndrome was more common in men. In 63 of 87 cases cirrhotic patients' serology against viral hepatitis was recorded; in six cases there were antibodies against the hepatitis C virus, and in eight cases there were antibodies against the core antigen of the hepatitis B virus.

Twenty-three heavy drinkers (9.31%) died during hospitalisation, six of them women (i.e. 26.1% of all women; 7.6% of alcoholic men). Nine patients died from complications of liver cirrhosis, three more with superimposed hepatocarcinoma, six because of septic shock (in one case with alcoholic cardiomyopathy, and in a second case with severe chronic pancreatitis), one due to acute necrotizing pancreatitis, four with neoplasia other than hepatocarcinoma (lung, two cases; oesophagus, one case, unknown origin). A similar mortality (10.2%) was observed among the non-alcoholic patients during the same period: 144 non-alcoholic men (10.1%) and 124 (10.2%) non-alcoholic women died. The mean age of the non-alcoholic men who died was 76.3 ± 14.1 years, whereas that of the women was 80.9 ± 11.6 years. The mean age of men with heavy alcohol consumption who died was 56.9 ± 13.7 years. In 12 cases, the age at death was less than 65 years, with a total loss of 168 (14 ± 11, mean ± SD) productive years of life. The mean age of the heavy alcohol-consuming women who died was 58.8 ± 10.4 years; in four cases, the age at death was less than 65 years, with a loss of 39 (9.75 ± 7.7) productive years of life. In both men and women, the age at death was highly significantly lower than that of non-alcoholic men and women ($P < 0.0001$ in both cases). Crude mortality and mortality rates in the different age groups are given in Table 2, whereas Table 3 shows the differences between heavy consumers who died and those who survived.

DISCUSSION

Nearly 10% of the hospital admissions during the 2-year period studied were due to organic complications as a result of excessive alcohol intake. This percentage was less than that obtained in a survey performed by ourselves 11 years ago, which yielded 24.4% of alcoholics among the population studied, and 20 years ago, in which the proportion of alcoholic patients was 15.97% (Rodríguez-Hernández *et al.*, 1990), when heavy drinking was assessed by direct inquiry. It could be argued that the direct inquiry about alcohol consumption may lack sensitivity in diagnosing alcoholism. Although this may be true in some instances, it is important to bear in mind that the question of drinking habits was always included in a wide-ranging questionnaire about family, housing, eating habits, drug use, work, health symptoms, and other questions raised during history-taking. As stated, physical signs and laboratory alterations related to alcohol consumption prompted us to persist with our inquiry about drinking habits. Therefore, although our results should reflect the minimum estimate of the number of heavy drinkers, they may in fact accurately estimate the true prevalence of heavy drinkers attending our unit. Our results, although lower than those obtained decades ago, are in accordance with others reported, although, overall, it is important to keep in mind that inclusion criteria and thus, definitions of alcoholism and heavy consumption vary considerably in the different studies. Baldwin *et al.* (1993) and Marik and Mohedin (1996) found that 9 and 21%, respectively, of all adults admitted to intensive care units had alcohol-related problems. Similar results were reported by Gerke *et al.* (1997) in medical and surgical patients aged 18–64 years,

Table 2. Crude mortality and mortality rates in different ages

Age (years)	Men		Women		Total		Rate (%)
	Dead	Alive	Dead	Alive	Dead	Alive	
Less than 40	2	31	0	2	2	33	5.71
40–49	2	66	1	3	3	69	4.17
50–59	5	38	3	4	8	42	16.00
60–69	5	44	1	3	6	47	11.32
70 or more	3	28	1	5	4	33	10.81

Table 3. Differences between dead and alive heavy consumers

	Dead	Alive	
Men	17	207	
Women	6	17	
Years drinking	24.69 ± 8.67	25.47 ± 10.14	NS
Daily drinking (g)	186 ± 75	150 ± 86	NS
Age	57.36 ± 12.8	52.74 ± 13.25	NS

NS, not significant.

whereas Arolt *et al.* (1995) found that 14.5% of their in-patients suffered from alcoholism, and Seppa and Makela (1993) reported that 25% of males and 11% of females were heavy drinkers. Earlier studies yielded figures ranging from 15.6 to 23.2% (Barrison *et al.*, 1982). Other studies analysed the prevalence of alcohol disorders in the hospitals of one geographical area on a single day, yielding results of 18% in Clermont-Ferrand (Reynaud *et al.*, 1997), 32.8% in Naples (Rambaldi *et al.*, 1995), 28.6% in Copenhagen (Nielsen *et al.*, 1994) and 25% in Goteborg (Wallerstedt *et al.*, 1995).

In Spain, chronic alcohol consumption is associated with enormous health costs (Portella *et al.*, 1998). In Spanish hospitals, the prevalence of alcoholism is higher than 20% (Palazón-Azorín *et al.*, 1988) or even 30% (Cirera-Costa *et al.*, 1985; Humbert *et al.*, 1987), although some have reported higher values (Rodríguez and Cami, 1988).

As in most studies, there is a higher prevalence of heavy consumption in hospitalized men than in women. It is noteworthy that cirrhosis has a higher prevalence among women. Perhaps this result relates to the enhanced susceptibility of the female liver to alcohol-induced damage (Morgan and Sherlock, 1977), but it may also be true that women do not see themselves as heavy drinkers until the clinical evidence is overwhelming. It is important to consider our results regarding mortality. In our study, mortality of the alcoholic group was only slightly lower than that of the non-alcoholic group, despite an enormous difference in age at death. The results were more striking among women, in whom mortality was higher in the alcoholic group, despite a 22-year difference in age. Other authors have also pointed out the impact of alcoholism on mortality. Alcohol intake exceeding 30 g/day was associated with a mortality 3.4 times greater for women and 3 times greater for men (Andreasson and Brandt, 1997) and the life span of alcoholic women is shortened by more than 15 years (Smith *et al.*, 1983), a result which emphasizes the increased susceptibility of women to alcohol-induced damage. However, other authors (Wallerstedt *et al.*, 1995; Saitz *et al.*, 1997) have failed to find an association between alcoholism and excess mortality, although it increases morbidity and hospital admissions (Andreasson *et al.*, 1990; Piette *et al.*, 1998). These observations are fully in accord with the fact that the alcoholics in this study were 11–15 years younger than the non-alcoholics, and with the findings of a higher rate of complications in orthopaedic alcoholic in-patients (Tonnesen *et al.*, 1991) and a greater difficulty in nursing patients (Poon *et al.*, 1994). Also, chronic alcohol misuse — but not acute — is associated with greater morbidity after trauma (Jukovich *et al.*, 1993) and increased peri-operative complications are also observed in neurosurgery (Sonne and

Tonnesen, 1992) and colorectal surgery (Tonnesen *et al.*, 1992).

Thus, in our geographical location, heavy alcohol consumption is responsible for approximately 10% of hospital admissions to a general medical unit of a tertiary hospital. These admissions occur about 10–15 years earlier than in the non-alcoholic population, and the mortality rate attributable to heavy drinking is similar to that of the non-alcoholic population who are 20 years older. Some preventive measures could drastically reduce these figures. Indeed, it has been shown that alcohol-related admissions to a hospital are related to the density of alcohol outlets (Tatlow *et al.*, 2000) and that alcohol sales affect the rate of cirrhosis and mortality (Leifman and Romelsjo, 1997). Thus, social and political measures are urgently needed to limit production and marketing of alcoholic beverages.

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