Original article

Prevalence and routine assessment of unhealthy alcohol use in hospitalized patients ☆

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ABSTRACT

Objectives: To determine the prevalence of alcohol misuse among medical inpatients and the methods used by medical staff to evaluate alcohol consumption.
Methods: Multicenter, prospective, observational, cross-sectional study performed at 21 hospitals in Spain. All adult patients hospitalized in internal medicine wards on 12 March 2008 were eligible for study. Alcohol consumption was evaluated with the Alcohol Use Disorders Identification Test (AUDIT-C and AUDIT) and the Systematic Inventory of Alcohol Consumption questionnaire. Drinking patterns were determined according to clinical evaluation using ICD-10 criteria. Medical records were reviewed to gather information on the recording of alcohol use.
Results: We assessed 1039 inpatients, of whom 123 (12%) had unhealthy alcohol drinking patterns. Alcohol misuse was more frequent among males (odds ratio 5.20), younger patients (odds ratio, 14.17), median age patients (odds ratio, 2.99), and South Region (odds ratio, 1.77). Alcohol use during hospitalization was recorded in 603 inpatients (59%); quantitative records were performed in 28% of hazardous and harmful drinkers and in 41% of dependent patients. Lack of alcohol use recording was more frequent among females (odds ratio 1.73), median and older age groups (odds ratios 1.44 and 1.73, respectively), Northwest Regions (odds ratios 3.46). Patients from the East Region (odds ratio 0.47) had more frequently assessed the question in their medical records.
Conclusions: Prevalence of alcohol misuse was higher in hospitalized patients than in the general population. Adequate quantitative recording was infrequent. We stress the need to implement measures to increase and improve the detection and recording of alcohol use.

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1. Introduction

The World Health Organization estimates that alcohol accounts for 10–11% of all illnesses and deaths each year in Western countries [1]. Unhealthy alcohol use is common among patients admitted to hospital for reasons other than alcohol misuse: a systematic review of screening for problematic alcohol use in the hospital setting reported the prevalence of positive screens to be between 16 and 26% [2].

Significantly, other investigators have found less severe drinking patterns (at-risk and harmful drinking) to be less common than dependence in the hospital setting [3].

Reliable data on the prevalence and detection of unhealthy alcohol use in hospitalized patients are still lacking. The data available show that there is a gap between the presence of alcohol-related problems and their recognition and treatment. It is commonly accepted that detection and brief interventions in general health care, in or out of hospital, can help patients to reduce problem drinking at an early stage [4]. In addition, recognition of alcohol dependence and quantification of alcohol use is particularly important in the hospital setting, since inpatients have no access to alcohol and the identification and prevention of withdrawal may impede further complications. However, even though hospitals are particularly well suited to screening for alcohol use, patients with alcohol-related problems are often unidentified during hospitalization.

Similarly, few studies have characterized alcohol drinking patterns in hospitalized patients through systematic screening with validated tests, and even fewer have explored the adequacy of the recording of alcohol consumption history in routine hospital practice [2,5,6].

The present study aimed: 1) to determine the current prevalence of alcohol use and misuse among patients hospitalized in Internal Medicine wards; and 2) to assess the methods applied by the medical staff in Internal Medicine to evaluate alcohol consumption.

2. Methods

2.1. Setting and study design

The study was conducted at the general internal medicine wards of 21 hospitals in Spain, and was approved by the Ethics Committees of all participating centers. The participating hospitals and investigators are listed in the Acknowledgements section.

This prospective, observational, and cross-sectional study involved a 1-day survey of hospitalized patients in all participating centers. All adult patients above the age of 18 years, hospitalized at 8 a.m. on 12 March 2008, were eligible for the study. Patients who were confused, cognitively impaired or not accessible on the day of the survey were excluded. Interviews to surrogates (relatives or other caregivers) were not admitted. As shown in Fig. 1, the investigation team subsequently evaluated all patients who were able to accomplish the interview.

2.2. Measurements

After providing oral consent, patients were asked: "Do you sometimes drink alcoholic beverages?" If the answer was NO, the screening was completed and the patient was classified as an abstainer.
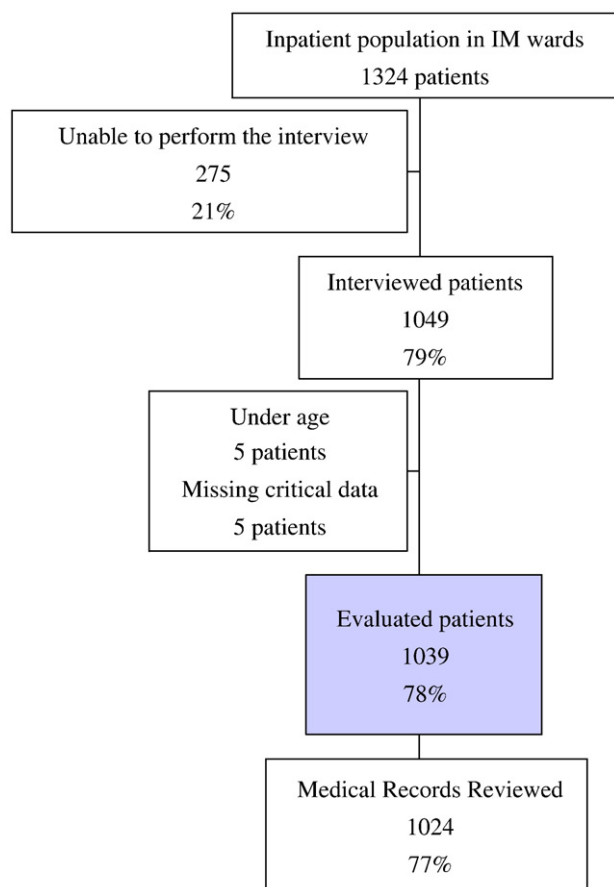
If the patient answered YES, the investigators administered the first three questions of the Alcohol Use Disorders Identification Test (AUDIT), also called AUDIT-C.

The AUDIT-C is scored on a scale of 0–12, with scores of 0 reflecting no alcohol use. Generally, the higher the AUDIT-C score, the more likely it is that the patient's drinking is affecting his/her health and safety. A positive score means the patient is at increased risk for hazardous drinking or active alcohol abuse or dependence. Scores of 4 or more are considered positive in men, and scores of 3 or more in women.

All men and women above the cut-off point were subsequently screened with the full version of the AUDIT. The AUDIT was developed by the World Health Organization in 1982 and is used to detect alcohol problems within the last year. It is one of the most accurate alcohol screening tests available, with 92% sensitivity and 94% specificity for detecting hazardous and harmful drinking [7]. The test contains 10 multiple choice questions on quantity and frequency of alcohol consumption (questions 1 to 3), drinking behavior and dependence (questions 4 to 7) and alcohol-related problems or reactions (questions 8 to 10). We applied cut-off points of 8 for men and 6 for women to perform the subsequent clinical evaluation of drinking patterns.

We administered the Systematic Inventory of Alcohol Consumption (SIAC) (see Table 1), a questionnaire which was developed in Spain in order to standardize direct questions of alcohol consumption and is currently preferred by many physicians [8]. It includes three questions on quantity and frequency for ascertaining alcohol consumption. The questionnaire works as follows: the result obtained in question 1 is entered in standard drinks in the corresponding row (working days or holidays) and in the "quantity" column. The answer to Question 2 is written in the "days" column. If the response to question 3 is *no*, the corresponding boxes can be filled in directly. If the response is *yes*, the user repeats Questions 1 and 2 and writes the responses in the corresponding row (working days and holidays) in order to complete the questionnaire. In order to obtain information on the weekly amounts drunk, the number of days that alcohol is consumed is multiplied by the amounts consumed, and the sum of the working days and holidays provide the weekly total expressed in standard drinks. Risky consumption was set at 280 g per week for men and 140 for women (28 and 14 standard drinks, respectively). We used the definition of standard drink described by the PHEPA guidelines [9].

2.3. Definitions of alcohol drinking patterns

Drinking patterns were classified according to the results of the AUDIT and the clinical evaluation. We considered all patients with AUDIT-C = 0 or with negative responses to the first question as abstainers. Patients with AUDIT-C and SIAC scores below the cut-off point and with positive responses to the first question were classified as low risk drinkers. Patients with positive AUDIT-C or SIAC and full AUDIT under the cut-off were considered risky drinkers. Patients in whom dependence had been clinically excluded but who scored above the cut-off in the AUDIT or had positive SIAC tests were also classified as risky drinkers.

We used the ICD-10 criteria for the diagnosis of alcohol dependence (listed in Appendix A) [10].

Fig. 1. Study profile.

Inpatient population in IM wards
1324 patients

Unable to perform the interview
275
21%

Interviewed patients
1049
79%

Under age
5 patients
Missing critical data
5 patients

Evaluated patients
1039
78%

Medical Records Reviewed
1024
77%

Table 1
Systematic inventory of alcohol consumption.

	Number of drinks	Number of days	Total
Workdays			
Weekends			

Question 1: "If you ever drink alcoholic beverages (wine, beer, etc), how many drinks you have in a day? (written down in Standard Drinks)".
Question 2: "How often? (number of days in a week)".
Question 3: "On weekends (or workdays) do your drinking habits change?".

2.4. Evaluation of clinical records

Following the interviews, we reviewed the medical records referring to the current admission. The data collected included: 1) demographical data: age and gender; 2) reason for admission; 3) type of admission: scheduled or emergency; 4) type of evaluation of drinking pattern, classified as qualitative when there was any mention of alcohol consumption (drinker or non-drinker), semi-quantitative when alcohol use was graded as slight, moderate or severe, and quantitative when it was recorded in standard drinks or grams per day/week.

2.5. Statistical analysis

Descriptive statistics were used to summarize data. We classified hospitals according to size into large (>600 beds), medium size (200–600 beds) and small (<200), and according to region into Northwest, South, Central and East. To detect significant differences between specified groups, we used the chi-square test with continuity correction for categorical variables, and the Student's *t*-test for continuous variables. The multivariable analysis of factors potentially associated with unhealthy alcohol use and lack of evaluation of alcohol use in medical records included all significant variables in univariate analysis and all clinically important variables, whether they were significant or not. It was performed with the step-wise logistic-regression model of the SPSS software package 13.0 (SPSS, Chicago). Associations were considered statistically significant if the P value was <0.05 using a two-sided test.

3. Results

On the day of the study, 1324 patients were hospitalized in 21 Internal Medicine wards. As the figure shows, 275 patients (21%) were excluded, mainly because of communication problems such as dementia or confusion which impeded performance of the interview. The reasons for exclusion are listed in Table 2.

Overall, of the 1049 inpatients interviewed, 1039 were included in the analyses [five patients who were underage and five for whom critical data were missing were excluded]. More than half (551 patients, 53%) were male, and 488 female; mean age was 72.1 years. Most patients had been admitted via the emergency department (909 patients, 88%). One hundred and seventy-nine (17%) were in small hospitals, 374 (36%) in medium-sized and 486 (47%) in large. Distribution by regions was as follows: Northwest 324 (31%), South 149 (14%), East 340 (33%), and Central 226 (22%). Mean daily standard drink consumption was 1.2 ± 2.8 (median 0.0), and mean weekly standard drink consumption was 8.1 ± 19.6 (median 0.0). Mean AUDIT-C score for all patients was 2.2 ± 2.9.

The distribution of drinking patterns in the 1039 adult inpatients was as follows: 535 patients (51%) were classified as abstainers, 352 (33%) low risk drinkers, 84 (8%) hazardous/harmful drinkers, 39 (4%)

dependent, 25 (2%) dependent in remission and 4 (0.4%) unspecified. Therefore, 123 patients (12%) had a current unhealthy alcohol drinking pattern.

As shown in Table 3, alcohol misuse was more frequent among males: 104 (19%) compared with 19 (4%) among females. There were also gender differences in the distribution of drinking patterns: both hazardous and harmful drinking [70 patients (13%) vs. 14 (3%)] and dependence [34 patients (6%) vs. 5 (1%)] were more frequent among men than among women (P<. 001).

We classified our age groups according to percentile distributions: younger [percentile 25 (<65 years)] 263 patients, median [percentile 25 to 75 (65 to 83 years)] 492 patients and older [percentile 75 (>83 years)] 225 patients. Younger patients 73 (28%) misused alcohol more frequently than median age 38 (8%) and older patients 5 (2%). Hazardous and harmful drinking was more frequent in the younger than in median and older age groups [44 patients (17%) vs. 29 patients (6%) vs. 5 patients (2%) respectively; (P<.001)]. The rate of dependent patients in the younger age group (29 patients, 11%) was significantly higher than in the median age (9 patients, 2%) and older age group (0 patients, 0%) (P<.001). Twenty-three (20%) patients with alcohol misuse were aged over 75. The overall prevalence of unhealthy alcohol use in patients over 75 years was 4% (8% for males and 1% for females).

Alcohol misuse was also more frequently found in the Southern region (17%) than in the Northwest (11%), East (13%) and Centre (8%). We found no differences in the rate of alcohol misuse according to the size of hospital (13% in large, 10% in medium size, and 13% in small hospitals).

Factors independently associated with alcohol misuse were age: younger patients and median age (odds ratio 14.17 and 2.99), male gender (odds ratio 5.20) and South Region (odds ratio 1.77).

We reviewed 1024 (99%) medical records of the 1039 patients evaluated. Alcohol use was recorded in 603 (59%) of these files. Overall, 333 (55%) were registered as non-drinkers. Qualitative records were observed in 54 patients (5%), semi-quantitative records in 98 (16%) [47 light drinkers, 26 moderate, 22 heavy], and in five cases no method of recording was specified. In 111 records (11%) alcohol consumption was quantified (68 recorded in standard drinks, and 43 in grams per day).

Data from the medical charts of the 467 current drinkers (>1 standard drink per week) identified alcohol use in 299 (64%) cases: 75 "non-drinkers" patients; 49 with qualitative records; 86 (18%) with semi-quantitative records in files; and 64 (14%) with quantitative records. Regarding patients with alcohol misuse, the amount drunk was quantified in 24 of the 84 patients (28%) with hazardous and harmful alcohol use and in 16 (41%) of the 39 patients with alcohol dependence. No reference to alcohol drinking was found in 33 (27%) charts of the patients with alcohol misuse.

Table 4 shows factors associated with the lack of recording of alcohol use in the entire population and Table 5 shows corresponding values in patients with unhealthy drinking patterns.

In our population of medical hospitalized patients, lack of recording of alcohol use was more frequent among older patients (47% in the older age group, 42% in the median age group vs. 31% in the younger age group; $P = 0.001$), these patients were less frequently active drinkers and had less severe drinking patterns. Patients from Northwest (66%) and South regions (44%) had fewer references to alcohol use in their medical charts. Overall, we found no differences in univariate analysis regarding gender although there was a tendency towards lower recording among females. However, as shown in Table 4, after adjusting, alcohol use was less frequently recorded among females (odds ratio 1.73), median and older age groups (odds ratios 1.44 and 1.73, respectively), Northwest and Regions (odds ratios 3.46). Patients from East Region (odds ratio 0.47) had more frequently the question assessed in their medical records. Drinking patterns were not independently associated with lack of recording.

In patients with current alcohol consumption, the medical charts of female patients had significantly less recording than those of male

Table 2
Causes of exclusion from the study listed by investigators.

Causes of exclusion	No. patients
Dementia or cognitive impairment	147
Aphasia or dysarthria	21
Coma	18
Confusion, delirium, encephalopathy	17
Refusal to collaborate	17
Agonic state	13
Dyspnoea or respiratory failure	5
Acute ictus	4
Unavailable	4
Uncontrolled pain	2
Other causes	7
Unknown	20
Total	275

Table 3
Clinical characteristics of interviewed patients regarding alcohol use, univariate and multivariate analyses.

Characteristics	Overall n (%) n = 1039*	Low risk drinkers and abstainers N = 912	Unhealthy alcohol use n(%) n = 123	Univariate analysis P value	Odds ratio	95% confidence intervals	Multivariate analysis P value	Odds ratio	95% confidence intervals
Age groups							<.001		
Younger (<65 year)	282 (27)	203 (22)	19 (64)	<.001	17.12	6.79–43.13	<.001	14.17	5.54–36.18
Median (65–83 year)	531 (51)	489 (53)	39 (71)		3.51	1.36–9.02	.024	2.99	1.52–7.78
Older (>83 year)	226 (22)	220 (24)	5 (4)		1				
Gender									
Male	551 (53)	446 (49)	104 (85)	<.001	5.72	3.45–9.48	<.001	5.20	3.08–8.78
Female	488 (47)	466 (51)	19 (15)		1				
Type of admission							.117		
Scheduled	67 (6)	53 (6)	14 (11)	.029	2.01	1.07–3.75	.335		
Emergency	909 (88)	800 (88)	105 (85)		1				
Unknown	63 (6)	59 (6)	4 (3)		0.52	0.18–1.45	.078		
Size of hospital									
Small (<200 beds)	179 (17)	155 (17)	24 (19)	NS					
Medium (200–600 beds)	374 (36)	335 (36)	36 (29)						
Large (>600 beds)	486 (47)	422 (46)	63 (51)						
Region							.165		
Northwest	324 (31)	287 (31)	37 (30)		1.56	0.82–2.85	.120		
South	149 (14)	123 (13)	26 (21)	0.036	2.56	1.34–4.91	.027	1.77	1.10–4.53
East	340 (33)	296 (32)	43 (35)		1.76	0.98–3.17	.083		
Central	226 (22)	206 (22)	17 (14)		1				

*4 patients with unknown drinking pattern are excluded from comparisons.

patients (53% vs. 69% respectively; P = .001). Lack of recording was more frequent in charts of women with unhealthy drinking patterns than in males (47% vs. 27%, respectively; P = .028), this difference remained after adjusting (Odds Ratio 3.91; 95%CI 1.19–12.83). The hospital size or type of admission did not affect the rate of recording. According to multivariate analysis median age group (odds ratio 3.05), female (odds ratio 3.9) and Northwest region (odds ratio 7.89) were identified factors independently associated with lack of recording among patients with alcohol misuse (Table 5).

4. Discussion

The present study provides a current evaluation of the prevalence of alcohol misuse and its detection by medical staff among the hospitalized population in General Internal Medicine wards in Spain.

In our study, 12% of our inpatients had current unhealthy alcohol use. This figure is lower than that found in previous studies [2], where the prevalence of positive alcohol screens varied from 16 to 26%

Table 4
Factors associated with lack of evaluation of alcohol use in medical records of 1024 medical inpatients, univariate and multivariate analyses.

Characteristics	Evaluated n = 603	Not evaluated N = 421	Univariate analysis P value	Odds ratio	95% confidence intervals	Multivariate analysis P value	Odds ratio	95% confidence intervals
Age groups						.034		
Younger (<65 year)	181 (69)	81 (31)	<.001	1			1	
Median (65–83 year)	283 (58)	205 (42)		1.63	1.20–2.21	.040	1.44	1.02–2.05
Older (>83 year)	118 (53)	103 (47)		1.84	1.28–2.65	.012	1.73	1.13–2.66
Gender								
Male	336 (62)	209 (38)	.055	1			1	
Female	267 (56)	212 (44)		1.27	0.99–1.63	.038	1.37	1.02–1.85
Type of admission								
Scheduled	41 (65)	22 (35)		0.70	0.41–1.19			
Emergency	507 (57)	391 (43)		1				
Unknown	8 (13)	55 (87)		0.19	0.09–0.40			
Size of hospital								
Small (<200 beds)	119 (66)	60 (34)	.063					
Medium (200–600 beds)	211 (58)	150 (41)						
Large (>600 beds)	273 (66)	211 (34)						
Region						.000		
Northwest	110 (34)	213 (66)		4.44	3.06–6.43	.000	3.46	2.31–5.20
South	84 (56)	65 (44)	<.001	1.77	1.15–2.74	.155		
East	206 (77)	78 (23)		0.68	0.47–1.01	.000	0.47	0.31–0.72
Central	149 (70)	65 (30)		1			1	
Drinking patterns						.100		
Abstainers	290 (55)	235 (45)		3.14	1.41–6.96	.313		
Low risk drinker	206 (60)	144 (41)	.005	2.70	1.21–6.06	.053		
Hazardous/harmful drinker	59 (70)	25 (30)		1.64	0.66–4.06	.434		
Dependence	31 (80)	8 (20)		1				
Dependence in remission	16 (66)	8 (34)		1.93	0.61–6.12	.908		

Table 5
Factors associated with lack of evaluation alcohol use in medical records of 123 medical inpatients with unhealthy alcohol use, univariate and multivariate analyses.

Characteristics	Evaluated N = 90	Not evaluated N = 33	Univariate analysis P value	Odds ratio	95% confidence intervals	P value	Odds ratio	95% confidence intervals
Age groups						.062		
Younger (<65 year)	61 (84)	12 (17)	.017	1			1	
Median (65–83 year)	22 (58)	16 (42)		3.29	1.41–7.69	.028	3.05	1.13–8.25
Older (>83 year)	4 (80)	1 (20)		1.06	0.11–10.24	.741		
Gender			.028			.024		
Male	80 (77)	24 (23)		1			1	
Female	10 (53)	9 (47)		3.00	1.09–8.23		3.91	1.19–12.83
Type of admission			.206					
Scheduled	13 (93)	1 (7)						
Emergency	74 (71)	31 (29)						
Unknown	3 (75)	1 (25)						
Size of hospital								
Small (<200 beds)	18 (75)	6 (25)	.835					
Medium (200–600 beds)	25 (69)	11 (31)						
Large (>600 beds)	47 (75)	16 (25)						
Region						.003		
Northwest	17 (46)	20 (54)	<.001	8.82	1.76–44.18	.016	7.89	1.46–42.62
South	22 (85)	4 (15)		1.36	0.22–8.4	.347		
East	36 (84)	7 (16)			0.27–7.84	.735		
Central	15 (88)	2 (12)		1			1	
Drinking patterns								
Hazardous/harmful drinker	59 (70)	25 (30)	.281			.675		
Dependence	31 (79)	8 (21)						

according to hospital location, patient characteristics and the tests used [2]. Most of these studies were performed in countries with higher prevalence of alcohol misuse in the general population than in Spain (4.6% of adults 18–65 years according to the Household Survey on Alcohol and Drugs, 2007), and many did not include the elderly [11]. In our survey, the prevalence of unhealthy drinking was almost three times as high in our hospitalized patients as in the Spanish general population. In this regard, a limitation of our study is that diagnoses of less severe drinking patterns were established basically by the test results. In fact, clinical evaluation was performed only for dependence and harmful drinking diagnoses in patients who screened positive for SIAC and/or AUDIT-C. Although both tests have shown high sensitivity and specificity [12,13], patients with hidden dependence syndromes and some occasional drinkers may have been misclassified as abstainers. In addition, the exclusion of patients with confusion and delirium may have excluded patients with delirium tremens and alcoholic dementia. Consequently, the real prevalence of unhealthy drinking could be even higher than that found.

Another limitation of our study is the restriction to a one-day measure. It is likely that repeated measures over time may have given more accurate results. Nevertheless, specifically regarding alcohol use, it is worth noting that point-prevalence studies reproduced with 20 years' difference in the same setting have produced similar results for prevalence as well as for in-hospital detection [14,15]. What is more, seasonal variations in alcohol could have affected the results; however, when performed properly the AUDIT explores drinking patterns over the last 12 months and thus avoids this risk.

In our study, medical staff in less than 60% of inpatients assessed during hospitalization alcohol use. Alcohol consumption was more frequently addressed in patients with unhealthy drinking patterns than in those with less severe patterns. Even in the more severe cases, adequate quantitative recording of alcohol history was rarely performed.

Our data show that the opportunity to intervene in alcohol problems was missed in a substantial number of cases, since alcohol use was improperly addressed during hospitalization in most patients. Since the study was designed to detect the rate of quantification of alcohol use, a major limitation is the lack of evaluation of the use of formal screening tests and the lack of data regarding further referral to treatment of the

dependent patients detected. However, due to the low level of recognition of unhealthy drinking levels among medical inpatients, the lack of assessment of these data does not significantly affect the conclusions.

We do not know how far the results of this study are generalizable to other hospitals or countries. Similar rates of alcohol history taking performed in other hospitals and in primary care services show low levels of detection [14,16,17]. In fact, when asked, most clinicians report interviewing their new outpatients regularly about alcohol consumption, but actual screening rates are low and only few clinicians report using formal alcohol screening [17,18].

Despite these limitations, our study has several notable strengths and our findings have implications for the management of these patients. First, we included all hospitalized patients in general internal medicine wards, particularly female and older patients. All patients were evaluated both with validated screening instruments and with clinical assessment. All diagnostic categories of alcohol use, and not only dependence, were assessed; this included hazardous and harmful drinkers, who have been disregarded in many previous studies [2,14]. Thus, for future studies regarding the prevalence of unhealthy alcohol drinking in other hospital settings, our research shows the feasibility of using validated diagnostic instruments and also highlights the importance of including older patients.

Our data suggest that the typical patient with unhealthy drinking pattern hospitalized in a medical ward is a male below the age of 75. Alcohol consumption and drinking problems show a decline in older age [19]; however, in the UK 5% of men and 2.5% of women aged 75 and older were found to drink risky amounts [20]. In our study, 4% of the interviewees over 75 years also presented unhealthy drinking patterns, and accounted for one fifth of alcohol misusers. Contrasting, alcohol use recording was particularly disregarded in older patients.

In our study, male patients (20%) misused alcohol much more frequently than females (3%) and alcohol use was less frequently recorded in women. Recent reports show a gender convergence in drinking behavior over the past few decades, with average consumption in young women in the UK nearly doubling over four years [21] and young females in the US being as likely as males to present alcohol dependence or abuse (6.0 and 5.5% respectively) [22]. Thus, in our opinion, the opportunity to adequately address alcohol use among females should not be missed, since gender differences may effectively disappear in the near future.

Our results emphasize the need to prompt for improvement, and control the evolution in the quality of the medical records regarding alcohol use, particularly among females and elderly patients. These findings should prompt clinicians and medical educators to introduce changes aimed to increasing and improving the detection and recording of alcohol. Several studies have shown that these measures lead to better diagnosis and more appropriate management of alcohol-related problems in primary care and in the hospital setting [23,24].

In summary, in our inpatient population there was a high prevalence of alcohol misuse and a low index of detection, particularly among females and older patients. Further actions are warranted to raise awareness of the importance of detecting alcohol consumption among general internists.

Learning points

- The prevalence of unhealthy drinking is higher in hospitalized patients than in the general population.
- Many patients are not properly assessed for alcohol use during hospitalization, particularly female and older patients.
- We stress the importance of properly assessing alcohol use and intervening in alcohol problems during hospitalization.

Appendix A. Diagnostic criteria of alcohol dependence

These criteria comprehend that three or more of the following manifestations should have occurred together for at least one month or, if persisting for periods of less than one month, should have occurred together repeatedly within a 12-month period:

1) A strong desire or sense of compulsion to consume alcohol;
2) Impaired capacity to control drinking in terms of its onset, termination, or levels of use, as evidenced by: alcohol being often taken in larger amounts or over a longer period than intended; or by a persistent desire to or unsuccessful efforts to reduce or control alcohol use;
3) A physiological withdrawal state when alcohol is reduced or ceased, as evidenced by the characteristic withdrawal syndrome for alcohol, or by use of the same (or closely related) substance with the intention of relieving or avoiding withdrawal symptoms;
4) Evidence of tolerance to the effects of alcohol, such that: there is a need for significantly increased amounts of alcohol to achieve intoxication or the desired effect, or a markedly diminished effect with continued use of the same amount of alcohol;
5) Preoccupation with alcohol, as manifested by: important alternative pleasures or interests being given up or reduced because of drinking; or a great deal of time being spent in activities necessary to obtain, take, or recover from the effects of alcohol;
6) Persistent alcohol use despite clear evidence of harmful consequences, as evidenced by continued use when the individual is actually aware, or may be expected to be aware, of the nature and extent of harm.

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