ALCOHOL USE DISORDERS, AND AT-RISK DRINKING IN PATIENTS AFFECTED BY A MOOD DISORDER, IN CAGLIARI, ITALY: SENSITIVITY AND SPECIFICITY OF DIFFERENT QUESTIONNAIRES

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Abstract — Aims: (i) To evaluate the prevalence of alcohol use disorders, and at risk-drinking among outpatients admitted to the Division of Psychiatry, University of Cagliari, Italy, for mood disorders, and (ii) to compare the sensitivity and specificity of the questionnaires used. **Methods:** Fifty-six patients affected by mood disorders answered to the questions of (i) The NIAAA Guide for identification of at-risk drinking, (ii) AUDIT questionnaire, (iii) The CAGE questionnaire and, (iv) SCID-I application forms for mood and alcohol use disorders. **Results:** Fourteen subjects (25%) met the criteria for alcohol use disorders according to SCID-I; 17 (30.4%) achieved a score $\geqslant 1$ in CAGE questionnaire; 12 (21.4%) reached AUDIT scores of $\geqslant 8$ and 4 for men and women, respectively; 12 (21.4%) provided positive answers to NIAAA Guide. Despite these prevalence rates, no diagnosis of alcohol use disorders had previously been registered in their medical records. The CAGE questionnaire achieved the highest values of sensitivity and specificity in detecting alcohol use disorders tested against that of the SCID-I. **Conclusions:** Alcohol use disorders and at-risk drinking are frequent in patients affected by mood disorders, although often underestimated; this underestimation was virtually absolute in the sample of patients investigated. Combination of the CAGE questionnaire *plus* the first questions in the NIAAA Guide may be an effective tool for use in the identification of psychiatric patients with possible alcohol use disorders or at-risk drinking.

INTRODUCTION

Mood and alcohol use disorders are highly prevalent in the general population. In the US, the lifetime prevalence of major depression and alcohol dependence in the general population has been reported to be equal to 17.1 and 14.1%, respectively (Kessler *et al*., 1994).

Co-occurrence of mood and alcohol use disorders is also very frequent (Regier *et al*., 1990; Grant *et al*., 2004; Sullivan *et al*., 2005). Individuals with co-occurring mood and alcohol use disorders have worse clinical course and outcomes, and are at increased risk of suicide and social and occupational impairment (Sullivan *et al*., 2005; Frye and Salloum, 2006). Moreover, different types of co-occurrence exist, as mood and alcohol use disorders may occur independently—each requiring a specific treatment—or one (secondary disorder) may be induced by the other (primary disorder) (Schuckit, 2006). The primary disorder invariably requires specific treatment; as a consequence, the secondary disorder may resolve spontaneously without any specific treatment. Alternatively, when the secondary disorder has already developed and proceeds independently, it may require specific treatment (Le Fauve *et al*., 2004; Nunes and Levin, 2004; Schuckit, 2006). Finally, the diagnosis of a mood disorder in patients affected by alcohol dependence may be further complicated by symptoms of intoxication and/or withdrawal from alcohol (Grant *et al*., 2004). Therefore, the diagnosis of co-occurrence appears to be fundamental for the correct treatment of patients concomitantly affected by a mood and an alcohol use disorder (Le Fauve *et al*., 2004; Nunes and Levin, 2004; Schuckit, 2006).

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Based on these considerations, the first aim of the present study was to assess the prevalence of alcohol use disorders in a sample of outpatients admitted to the Division of Psychiatry, University of Cagliari, Italy, for a current mood disorder.

Excessive alcohol intake, or at-risk drinking, may induce negative consequences in patients affected by a mood disorder. Accordingly, the US National Institute on Alcohol Abuse and Alcoholism (NIAAA) encourages mental health physicians to screen their patients for identification of alcohol use disorders (alcohol dependence and alcohol abuse) as well as for at-risk drinking [defined as alcohol consumption of $\geqslant 5$ and $\geqslant 4$ drinks ($\sim$14 g pure alcohol) in a single day for men and women, respectively, or $\geqslant 14$ and $\geqslant 7$ drinks per week for men and women, respectively] (NIAAA, 2005). Accordingly, the second aim of the present study was to assess the prevalence of at risk-drinking among the above-mentioned patients.

Different questionnaires have been validated for identification of excessive alcohol consumption (Saunders *et al*., 1993; Isaacson and Schorling, 1999; Saitz, 2005). Several are recommended for use in identification of excessive alcohol use and severe disorders, while others are more appropriate for identification of less severe alcohol drinking-related problems. The time required for completion of these questionnaires also varies. The latter feature is of some importance when selecting the questionnaire, as the lack of physician's time is often thought to be a major barrier in the identification of patients with excessive alcohol consumption (Ferguson *et al*., 2003). Therefore, the third aim of the present study was to compare the sensitivity of three different tools (all requiring different times for administration) for identification of possible alcohol use disorders and/or at-risk drinking in the above-mentioned patients.

METHODS

A non-stratified sample of 200 medical records was randomly selected (every third record) from among those of outpatients admitted to the Division of Psychiatry, University of Cagliari, for mood disorders from May to November 2006. Each patient was invited by phone to take part in the study; it was explained that participation in the study entailed an interview to assess risk factors for mental disorders, including alcohol consumption. On the day of the interview, patients were informed of the study aims, assured that their answers would be kept strictly confidential, and requested to sign a consent form.

Patients agreeing to participate were first informed about the size of a standard drink. They were requested to answer the questions of the first step of the NIAAA Guide (see below), the Alcohol Use Disorders Identification Test (AUDIT) and the 'Cut down', 'Annoyed', 'Guilty', 'Eye opener' (CAGE) questionnaires (see below), as well as the Structured Clinical Interview for DSM-IV, Axes I Disorders (SCID-I) application forms for mood and alcohol use disorders (see below) were also administered. Each interview lasted approximately one hour.

The first step of the NIAAA Guide is focused on the identification of at-risk drinking and consists of two questions: 'Do you sometimes drink alcoholic beverages?'; 'How many times in the past year have you had five or more drinks in a day (for men) or four or more drinks in a day (for women)?' (NIAAA, 2005). These questions were translated into Italian (Agabio and Gessa, 2006) and presented to patients. According to the NIAAA Guide, the cut-off for screening at-risk drinking used in the present study was one or more heavy drinking days.

Four questions consisting of the keywords 'Cut down', 'Annoyed', 'Guilty', (and) 'Eye opener', with the acronym CAGE, is probably the most widely used screening questionnaire for alcohol use disorders (Isaacson and Schorling, 1999; Fiellin *et al*., 2000). The CAGE is considered positive when two or more answers are affirmative (Fiellin *et al*., 2000). However, a cut-off of one is often recommended (Bradley *et al*., 1998; Ogborne, 2000; McGarry and Cyr, 2005). In the present study, the selected cut-off score of 1 was chosen in order to provide for recognition of subjects affected by a current mood disorder with a possible alcohol use disorder. However, considering that this low cut-off value may increase the risk of false-positive cases (Allen *et al*., 1995), data were also evaluated according to a cut-off score of 2.

The AUDIT is particularly sensitive in identifying less severe drinking problems (Saunders *et al*., 1993; Reinert and Allen, 2007). The test was developed by the World Health Organization and consists of ten questions regarding alcohol consumption, drinking behaviour, adverse reactions, and alcohol-related problems (Saunders *et al*., 1993). Each question is scored according to a 5-point scale (0–4). According to the NIAAA Guide (NIAAA, 2005), the selected cut-off scores used in the present study were equal to 8 and 4 in men and women, respectively. However, it has been reported that a score 5 for AUDIT questionnaire provides a good trade-off between sensitivity and specificity (Piccinelli *et al*., 1997) and may be appropriate for women (Reinert and Allen, 2007).

Accordingly, data were also evaluated according to a cut-off score of 5 for both men and women.

The SCID-I was used to confirm diagnosis of a current mood disorder. Mood disorders included major depression, dysthymia, bipolar disorders, and cyclothymia. Bipolar disorders and cyclothymia were included in the bipolar spectrum, and major depression and dysthymia in the unipolar. The SCID-I interview was also used for the diagnosis of current or lifetime alcohol use disorders (i.e., alcohol dependence and/or abuse).

Statistical analysis

Data referring to the age of subjects were statistically analysed using the unpaired, two-tailed Mann–Whitney test. Data on frequency of school graduation, civil status, and mood disorders were analysed using a χ^2 test and odds ratios with 95% confidence intervals.

RESULTS

One out of the 200 patients admitted was excluded from the study, having been hospitalized prior to the interview. The sample was constituted by a higher rate of women (60.3%). Women were also older and more frequently married; they more frequently met criteria for unipolar disorders.

From a total of 199 patients, 56 individuals (28.1%) accepted to take part in the study. Sociodemographic characteristics of these patients are shown in Table 1. Interviewed patients did not significantly differ from non-interviewed subjects, except for the civil status in women. Further, interviewed men and women did not differ in age.

In the interviewed patient group, 14 subjects (25%) met the criteria for alcohol use disorders according to the SCID-I (defined as SCID+ patients; subjects who did not meet the above criteria were defined as SCID− patients). Sociodemographic characteristics of SCID+ and SCID− patients are shown in Table 2. In comparison to SCID− patients, SCID+ patients included a higher number of men and non-married individuals, were younger, and had a lower school education. No difference was recorded between SCID+ and SCID− patients in the distribution of mood disorder diagnosis. In the SCID+ group, 5 (35.7%) and 9 (64.3%) patients met the criteria for alcohol dependence and alcohol abuse, respectively (Table 3). In the SCID+ group, five patients (35.7%) met the criteria for current alcohol use disorder. Notably, no diagnosis of alcohol use disorder was ever registered in the medical records of these patients.

Table 4 shows the prevalence of alcohol use disorders between the unipolar and bipolar spectra. There was no difference in the frequency of alcohol use disorder between unipolar and bipolar spectrum patients. Two out of fourteen and 1/42 SCID+ and SCID− patients, respectively, were forcedly hospitalized in the last 12 months ($P = 0.0867$, χ^2 test).

Among the 56 interviewed patients, 17 (30.4%) achieved a score $\geqslant 1$ in the CAGE questionnaire and were defined as CAGE+, 12 (21.4%) reached a score $\geqslant 8$ and 4 (men and women, respectively) in the AUDIT questionnaire and

Table 1. Sociodemographic characteristics and mood disorders of interviewed and non-interviewed patients

	Interviewed patients $n = 56$		Non-interviewed patients $n = 143$	
	Men	Women	Men	Women
n (%)	25 (44.6)	31 (55.4)	54 (37.8)	89 (62.2)
Age (years)	48.9 ± 2.8*	50.8 ± 2.8	46.6 ± 1.8	52.8 ± 1.4[a]
School graduation				
Elementary school (%)	4 (16.0)	5 (16.1)	4 (7.4)	22 (24.7)
Secondary school (%)	14 (56.0)	10 (32.3)	27 (50.0)	29 (32.6)
High school (%)	7 (28.0)	13 (41.9)	18 (33.3)	26 (29.2)
Graduate (%)	0 (0)	3 (9.7)	0 (0)	12 (13.5)
Civil status				
Single (%)	13 (52.0)	8 (25.8)	27 (50.0)	31 (34.8)[b]
Married (%)	7 (28.0)	17 (54.8)	25 (46.3)	43 (48.3)
Separated (%)	5 (20.0)	2 (6.5)	1 (1.9)	8 (9.0)
Widowed (%)	0 (0)	4 (12.9)	1 (1.9)	7 (7.9)
Mood disorders				
—Bipolar disorders (%)	11 (44.0)	12 (38.7)	30 (55.6)	25 (28.1)
—Unipolar disorders (%)	14 (56.0)	19 (61.3)	24 (44.4)	64 (71.9)

[a] $P < 0.05$ (χ^2 test) with respect to non-interviewed men;
[b] $P < 0.05$ (χ^2 test) with respect to interviewed women;
* $P < 0.05$ (Mann-Whitney test).

Table 2. Sociodemographic characteristics and mood disorders of subjects who met the criteria for alcohol use disorders according to the SCID-I (SCID+ patients) and of subjects who did not meet the above criteria (SCID− patients)

	SCID+ $n = 14$		SCID− $n = 42$	
	Men	Women	Men	Women
n (%)	10 (71.4)[a]	4 (28.6)[b]	15 (35.7)	27 (64.3)
Age (years)	40.7 ± 2.3*	40, 2 ± 9.7	54.4 ± 3.8	52.3 ± 2.8
School graduation				
Elementary school (%)	1 (10.0)	0 (0)	3 (20.0)	5 (18.5)
Secondary school (%)	8 (80.0)[a]	2 (50.0)	6 (40.0)	8 (29.6)
High school (%)	1 (10.0)	1 (25.0)	6 (40.0)	12 (44.4)
Graduate (%)	0 (0)	1 (25.0)	0 (0)	2 (7.4)
Civil status				
Single (%)	7 (70.0)[a]	3 (75.0)	6 (40.0)	5 (18.5)
Married (%)	0 (0)[a]	0 (0)[b]	7 (46.7)	17 (63.0)
Separated (%)	3 (30.0)	0 (0)	2 (13.3)	2 (7.4)
Widowed (%)	0 (0)	1 (25.0)	0 (0)	3 (11.1)
Mood disorders				
Bipolar disorders (%)	5 (50.0)	2 (50.0)	6 (40.0)	10 (37.0)
Unipolar disorders (%)	5 (50.0)	2 (50.0)	9 (60.0)	17 (63.0)

[a] $P < 0.05$ (χ^2 test) respect to SCID− men.
[b] $P < 0.05$ (χ^2 test) respect to SCID− women.
* $P < 0.05$ (Mann-Whitney test) respect to SCID− men.

were defined as AUDIT+, and 12 (21.4%) provided positive answers to the questions of the first step of the NIAAA Guide. Moreover, ten subjects (17.9%) achieved a score ⩾2 in the CAGE questionnaire, and 13 (23.2%) a score ⩾5 (both men and women) in the AUDIT questionnaire. The sensitivity (patients whose excessive alcohol consumption was identified among those meeting criteria for alcohol use disorders according to the SCID-I) and specificity (recognition of non-excessive alcohol consumption among patients who did not meet criteria for alcohol use disorders according to the SCID-I) of different questionnaires were tested against the SCID-I (Table 5). The CAGE questionnaire at cut-off value 1 displayed the highest values of sensitivity (0.86) in detecting alcohol use disorders against the SCID-I. The sensitivity and specificity of combinations of the questionnaires were also tested against the SCID-I (Table 6). The CAGE plus the AUDIT questionnaires with cut-off values 1 and 5, respectively, displayed the highest values of sensitivity (1.00)

Table 3. Prevalence of current and lifetime alcohol use disorders (abuse and dependence) among subjects who met the criteria for these disorders according to the SCID-I (SCID+ patients)

	Men $n = 10$		Women $n = 4$		Total $n = 14$	
	12-month $n = 3$	Lifetime $n = 7$	12-month $n = 2$	Lifetime $n = 2$	12-month $n = 5$	Lifetime $n = 9$
Abuse $n = 9$ (%)	2 (25.0)	6 (75.0)	1 (100.0)	0 (0.0)	3 (33.3)	6 (66.7)
Dependence $n = 5$ (%)	1 (50.0)	1 (50.0)	1 (33.3)	2 (66.7)	2 (40.0)	3 (60.0)
Abuse or Dependence $n = 14$ (%)	3 (30.0)	7 (70.0)	2 (50.0)	2 (50.0)	5 (35.7)	9 (64.3)

Table 4. Prevalence of alcohol use disorders between the unipolar and bipolar spectra. SCID+: subjects who met the criteria for alcohol use disorders according to the SCID-I. SCID−: subjects who did not meet the above criteria

	Bipolar disorders $n = 23$ (%)			Unipolar disorders $n = 33$ (%)		
	Men $n = 11$	Women $n = 12$	Total $n = 23$	Men $n = 14$	Women $n = 19$	Total $n = 33$
SCID+ ($n = 14$)	5 (45.5)	2 (16.7)	7 (30.4)	5 (35.7)	2 (10.5)	7 (21.2)
SCID− ($n = 42$)	6 (54.5)	10 (83.3)	16 (69.6)	9 (64.3)	17 (89.5)	26 (78.8)

Table 5. Sensitivity and specificity of each questionnaire used in the study tested against SCID-I

	Men		Women		Total	
	Sensitivity[a]	Specificity[b]	Sensitivity[a]	Specificity[b]	Sensitivity[a]	Specificity[b]
CAGE ≥ 1	0.80	0.73	1.00	0.96	0.86	0.88
CAGE ≥ 2	0.60	0.93	0.75	1.00	0.64	0.98
AUDIT ≥ 8 men ≥ 4 women	0.40	0.87	1.00	0.93	0.57	0.90
AUDIT ≥ 5	0.60	0.80	1.00	1.00	0.71	0.93
NIAAA Guide	0.50	0.80	0.50	0.93	0.50	0.88

[a] Patients whose excessive alcohol consumption was identified by the questionnaire undergoing evaluation among those meeting criteria for alcohol use disorders according to SCID-I.

[b] Recognition of non-excessive alcohol consumption by the questionnaire undergoing evaluation among patients not meeting criteria for alcohol use disorders according to SCID-I.

in detecting alcohol use disorders when tested against the SCID-I.

The preferable combination of questionnaires to identify the highest number of subjects with a possible alcohol use disorder or at-risk drinking was then evaluated. Specifically, among the 56 interviewed patients, 22 (39.3%) achieved a score equal to or higher than the cut-off values in at least one questionnaire. These patients constituted the sample for testing the sensitivity of each possible questionnaire combination (Table 7). All specificities were equal to 1.00. The CAGE plus the AUDIT questionnaires with cut-off values of 1 and 5, respectively, displayed the highest values of sensitivity (0.95) when tested against subjects with a possible alcohol use disorder or at-risk drinking.

DISCUSSION

The present study evaluated a sample of patients affected by a mood disorder, according to the SCID-I diagnostic interview, and currently under therapy at the Division of Psychiatry, University of Cagliari, Italy. It revealed that 25.0 and 8.9%

patients had a lifetime or current prevalence, respectively, of alcohol use disorders. These results are in line with those of several other studies on the frequent co-occurrence of mood and alcohol use disorders (e.g. Grant *et al*., 2004; Sullivan *et al*., 2005). Namely, lifetime prevalence of alcohol use disorders is similar to the value (approximately 30%) found in a recent meta-analysis evaluating the prevalence of alcohol-related problems in psychiatric inpatients (Sullivan *et al*., 2005). However, the rate of current alcohol use disorders of the present study is lower than that (approximately 16%) found in the meta-analysis (Sullivan *et al*., 2005) as well as that (approximately 17%) reported by the National Epidemiological Survey on Alcohol and Related Conditions (Grant *et al*., 2004).

Different reasons may explain the lower rate of current alcohol use disorders observed in the present study. First, it has been reported that integration of alcohol in society's cultural norms may influence the evaluation of alcohol use disorders through a change in the respondents' threshold to the diagnostic criteria (Rehm *et al*., 2005). Thus, the lower value of current prevalence of alcohol use disorders observed in the present study may be due, at least partially, to the high integration of alcohol in the cultural norms of Italian society.

Table 6. Sensitivity and specificity of combinations of questionnaires used in the study tested against SCID-I

	Men		Women		Total	
	Sensitivity[a]	Specificity[b]	Sensitivity[a]	Specificity[b]	Sensitivity[a]	Specificity[b]
CAGE ≥ 1 and/or AUDIT ≥ 8/4	0.80	0.67	1.00	0.93	0.86	0.83
CAGE ≥ 1 and/or AUDIT ≥ 5	1.00	0.67	1.00	0.96	1.00	0.86
CAGE ≥ 1 and/or NIAAA Guide	0.80	0.67	1.00	0.93	0.86	0.83
CAGE ≥ 2 and/or AUDIT ≥ 8/4	0.70	0.87	0.75	0.93	0.71	0.90
CAGE ≥ 2 and/or AUDIT ≥ 5	0.80	0.80	1.00	1.00	0.86	0.93
CAGE ≥ 2 and/or NIAAA Guide	0.80	0.73	0.75	0.93	0.79	0.86
AUDIT ≥ 8/4 and/or NIAAA Guide	0.50	0.73	1.00	0.89	0.64	0.83
AUDIT ≥ 5 and/or NIAAA Guide	0.70	0.73	1.00	0.93	0.79	0.86

[a] Patients whose excessive alcohol consumption was identified by the questionnaire undergoing evaluation among those meeting criteria for alcohol use disorders according to SCID-I.
[b] Recognition of non-excessive alcohol consumption by the questionnaire undergoing evaluation among patients not meeting criteria for alcohol use disorders according to SCID-I.

Table 7. Sensitivity of combinations of questionnaires in identifying patients achieving a score ≥ cut-off values in at least one questionnaire, defined as patients with possible alcohol use disorders or at risk-drinking

	Men	Women	Total
CAGE ≥ 1 and/or AUDIT ≥ 8/4	0.93	0.86	0.91
CAGE ≥ 1 and/or AUDIT ≥ 5	1.00	0.86	0.95
CAGE ≥ 1 and/or NIAAA Guide	0.93	0.86	0.91
CAGE ≥ 2 and/or AUDIT ≥ 8/4	0.60	0.86	0.68
CAGE ≥ 2 and/or AUDIT ≥ 5	0.73	0.57	0.68
CAGE ≥ 2 and/or NIAAA Guide	0.80	0.71	0.77
AUDIT ≥ 8/4 and/or NIAAA Guide	0.53	1.00	0.68
AUDIT ≥ 5 and/or NIAAA Guide	0.73	0.86	0.77

Sensitivity: patients whose excessive alcohol consumption was identified by the combination of questionnaires undergoing evaluation among subjects with possible alcohol use disorders or at-risk drinking. All specificities were equal to 1.00.

Accordingly, a recent study conducted in Italy reported a lower value of lifetime prevalence of alcohol dependence in the general population [1.3% (de Girolamo *et al*., 2006)] with respect to the values estimated in Europe [5.2% (Alonso *et al*., 2004)] and in the US [14.1% (Kessler *et al*., 1994)]. Second, methodological limitations may have contributed to this outcome. It is well known that alcohol-dependent subjects often tend to deny their alcohol-related habits (Morse and Flavin, 1992). In the present study, all patients were informed at the first phone call on the study objectives, and only a small proportion of them accepted to participate in the study; thus, it is likely that several alcohol-dependent patients refused to take part in the study in order to avoid undesired questions on their alcohol use. Together, these factors may have resulted in an underestimation of the real number of alcohol-dependent patients.

The results of the present study also suggest that at-risk drinking is very frequent among patients affected by a current mood disorder. Specifically, more than one-fifth of all interviewed patients were AUDIT+, or gave positive answers to the questions of the first step of the NIAAA Guide, confirming the need for an adequate screening of mental health patients not only for alcohol use disorders but also for at-risk drinking (NIAAA, 2005).

Finally, the results of the present study also showed that none of the patients affected by alcohol use disorders—even those with a current alcohol use disorder—had this diagnosis registered in their medical records, confirming that these disorders are frequently not recognized, and therefore, untreated. In the US, only 6% of patients affected by alcoholism receive specific medical treatment, and less than 1% receive a medication (Pouletty, 2002). In Italy, it has been reported that, among 3.5 million alcohol abusers and one million alcoholics, only 30 000 individuals (approximately 3% of patients with alcoholism) are under treatment in the public health services (Scafato *et al*., 2006). There are different possible explanations for this impressive discrepancy. First, it has been observed that only a low rate of patients affected by alcohol use disorders seek and receive a treatment (Grant, 1997). Among the reasons for not seeking treatment, patients reported the feeling of being strong enough to solve their drinking problem by themselves, and the belief that treatment would certainly not be effective (Grant, 1997). Additionally, physicians often find alcohol abuse and alcohol dependence as difficult issues, and they frequently lack the skills to properly screen and treat alcohol use disorders (Anderson *et al*., 2003). It has been observed that less than 20%, in a sample of US psychiatrists, reported the use of formal alcohol screening tools (Friedmann *et al*., 2000), and that medications to treat alcohol dependence are rarely prescribed (Mark *et al*., 2003). Main barriers reported by physicians to screen

and treat alcohol use disorders include the lack of formal substance abuse education and the belief that interventions have poor outcomes (Ferguson *et al*., 2003; Mark *et al*., 2003; Thomas and Miller, 2007). Accordingly, in the US, it has been reported that education in the alcohol field is still lacking (Frost-Pineda *et al*., 2004) and, in Italy, knowledge and practice in the alcohol field are lower than in several other medical disciplines (Scafato *et al*., 2006). Still, too many physicians believe that alcohol dependence is not a medical disorder, and therefore, it is not amenable to pharmacological treatment (Kranzler, 2000). Changing this widely held view needs education. It would also be important to improve the knowledge that both psychological and pharmacological treatments can be effective in reducing alcohol consumption (Kranzler *et al*., 2006). The results of seven longitudinal studies conducted in the US using psychological or pharmacological treatments showed that during the first year after treatment, one-fourth of alcoholic patients remain abstinent, one-tenth use alcohol moderately, and all others reduce their overall alcohol consumption by 87% (Miller *et al*., 2001). The perception that efficacious treatments are available may encourage patients to seek treatment, and physicians to screen and intervene for alcohol use disorders (Kranzler *et al*., 2006).

In the present study, score 1 for the CAGE questionnaire was chosen, preferring to run the risk of including a false-positive case rather than fail to recognize a subject with excessive alcohol consumption. Accordingly, the sensitivity and specificity of the CAGE questionnaire with a score of 2 were respectively lower and higher than those obtained with a score of 1. The highest value of sensitivity in identifying patients when tested against the SCID-I was achieved by the combination of the CAGE and AUDIT questionnaires with cut-off scores of 1 and 5, respectively. Interestingly enough, the same combination also achieved the highest value of sensitivity in identifying patients with a possible alcohol use disorder or at-risk drinking (0.95). According to this combination, 20 out of 56 patients (35.7%) in the present study, and 15.6% of patients registered with primary care physicians in a previous study (Agabio *et al*., 2006), were identified as subjects with possible alcohol use disorders. In other words, using this questionnaire combination, the prevalence of possible alcohol use disorders appears to be more than two-fold higher in patients affected by mood disorders than in patients registered with primary care physicians.

However, lack of physician's time is also reported as one of the barriers to the identification of alcohol-related problems (Ferguson *et al*., 2003). Therefore, it would be of help if psychiatrists could have, at their disposal, an effective and time-saving tool, made—for example—by a short list of questions, for identification of those patients with alcohol use disorder or at-risk drinking. This tool might precede the use of major psychiatric diagnostic interviews. To this aim, it is noteworthy that the combination of the CAGE questionnaire with a cut-off of 1, *plus* the NIAAA Guide, that results in a total number of questions equal to 6, displayed a sensitivity value as high as that reached by the combination of the CAGE with a cut-off o 1, *plus* the AUDIT questionnaires with a cut-off of 8 and 4 for men and women, respectively (18 questions). The short time that administration of the former combination requires, together with the time saved by the physician who administers these two questionnaires, might

constitute a valuable criterion for preferring this diagnostic tool over others.

In summary, co-occurrence of mood and alcohol use disorders is very frequent, and the recognition of both disorders has important treatment implications (Schuckit, 2006). However, alcohol use disorders are underestimated worldwide, especially in those countries where the large social diffusion of alcohol consumption makes collection of data on alcohol habits particularly difficult (Scafato *et al*., 2006). Underestimation of alcohol use disorders may have serious consequences on mental health setting. The observation made in the present study (no diagnosis of alcohol use disorders had ever been done in those patients subsequently found to be affected by an alcohol use disorder) is a striking example of this underestimation. It has been observed that patients affected by mood and alcohol use disorders have (i) higher levels of suicidal tendencies, (ii) more frequent use of hospital infrastructure, and (iii) more frequent development of disabilities than patients affected only by a mood disorder (Sullivan *et al*., 2005; Frye and Salloum, 2006). These patients may also suffer on account of the possible interactions between psychoactive drugs and alcohol (Linnoila *et al*., 1979; Hollister, 1990). Thus, each patient affected by a mental disorder should be informed on the possible consequences induced by alcohol consumption. Physicians should improve their abilities and tools for an early identification of patients with possible alcohol problems. The results of the present study suggest that combination of the CAGE questionnaire with a cut-off of 1, *plus* the first questions of the NIAAA Guide may be an effective and least time-consuming tool for the identification of psychiatric patients with possible alcohol use disorders or at-risk drinking.

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