



MOTIVATIONAL ENHANCEMENT THERAPY VERSUS COGNITIVE BEHAVIORAL THERAPY IN A COHORT OF MEN AND WOMEN WITH ALCOHOL USE DISORDER

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*The clinical manifestations of alcohol dependence are not homogeneous. Many studies described both cognitive impairments and psychiatric disorders among people with Alcohol use disorder (AUD). However, AUD can be present without comorbid psychiatric disorders or severe cognitive deficits, namely, “pure alcoholics”. Until now, knowledge about effective treatments for this typology of AUD patients remains unknown. The aim of the present study was to assess two psychological methods of intervention: Cognitive-behavioral treatment (CBT) in the short format and the Motivational enhancement therapy (MET). We then opted to compare the efficacy of methods in treating AUD in both men and women pure alcoholics. We performed a controlled and randomized study consisting of 325 people affected by AUD (244 men, 81 women). 72.3% (n=235; 181 men 54 women) were excluded according to selection criteria. The major percentage of exclusion (38.7%; n=91; 63 men 28 women) regarded patients with comorbid psychiatric disorders. Only the 90 remaining test subjects (27.7% of the sample population; 63 men and 27 women) classified as pure alcoholics were eligible for this study. The test subjects were divided into two groups. One group underwent MET (n=47; 35 men and 12 women) and the other underwent CBT (n=43; 28 men and 15 women). We found a significant adherence to the treatment in the CBT group (19 men and 9 women) compared to the MET group (3 men and 1 woman). At the end of treatment, the dropout rates for the CBT and MET therapy groups were 34.9% and 91.5%, respectively. Moreover, we found no differences in the percentage of abstinent days between CBT and MET groups at three months (CBT: n=36; mean 91.40±15.34; MET: n=18; mean 93.90±11.95; $t(52)=0.605$, $p=0.550$), at six months (CBT: N=30; mean 85.00±30.71; MET: n=9; mean 87.78±33.08; $t(37)=-0.234$, $p=0.820$) and at twelve months from the beginning of treatment (CBT: n=28; mean 90.14±22.06; MET: n=4; mean 100±0; $t(30)=-0.881$, $p=0.838$). In conclusion, we disclose that CBT in the short format could be an effective treatment strategy for pure alcoholics without psychiatric disorders or severe cognitive deficits. **Biomed Rev 2019;30:125-135***

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INTRODUCTION

Alcohol use disorder (AUD) is a clinically heterogeneous syndrome (1–4) for its physiological, behavioral, cognitive–psychological and social multifactorial aspects (5–7). Alcohol use disorder can coexist with and/or contribute to several different psychiatric syndromes (8–11) and cognitive impairments (12–15). These factors may influence the clinical expression of dependence, but also treatment-seeking behaviors and treatment outcomes (16–18). However, AUD can be present without comorbid (19,20) psychiatric disorders or severe cognitive deficits, namely, *pure alcoholics* (21). Indeed, people drink to cope with stressful situations as economic problems, job issues and/or family troubles and could develop AUD also without co-occurring psychiatric disorders through DSM-5 (22–25).

To date, some studies have attempted to define the most effective treatments for dealing with AUD people low in psychopathology. In the MATCH Project Research Group (26), it was found that patients low in psychiatric severity had more abstinent days after 12-step facilitation treatment than after Cognitive Behavioral Therapy (CBT) and Motivational Enhancement Therapy (MET). This significant matching effect for psychiatric severity observed in the first year of post-treatment was not confirmed after 3 years (27). McLellan (28) found that patients with low psychiatric severity improved in every treatment program. Kadden (29) revealed that both coping skills training and interactional therapy were equally effective for patients lower in psychopathology. Moreover, patients more neuropsychologically impaired appeared to have better outcomes after interactional therapy (29). Nevertheless, treatments for AUD individuals without the confounding effects of comorbid psychopathology and cognitive deficit might be better explored.

Actually, there is a strong interest to develop and validate evidence-based approaches for psychological treatment of AUD so that they can offer the best chances of success with a low cost. At present, evidence-based approaches are mainly based on the motivational interviewing (MI) (30, 31) and CBT (29, 31–35). The UKATT Research Team compared the treatment costs, consequences for public sector resources, and health outcomes of two brief treatments: social behavior and network therapy and motivational enhancement therapy, reporting highly significant reductions in drinking and associated problems and costs indifferently by treatments (36). The data confirmed the results of Project MATCH where a less intensive and costly treatment (MET) did offer significantly

equal outcomes compared to two more intensive and expensive treatments (CBT and TSF).

CBT models are among the most extensively used interventions for the treatment of AUD. Based primarily on Marlatt and Gordon's (37,38) model of relapse prevention, these treatments usually includes strategies as: (1) identifying intrapersonal and interpersonal triggers for relapse, (2) coping-skills training, (3) drug-refusal skills training, (4) functional analysis of substance use, and (5) increasing non-use-related activities. These models have been manualized (29, 39, 40). Quite intensive and effective CBTs exist, also a briefer format tested with good results (41, 42). The intervention aimed at maintaining total or partial abstinence by teaching and fostering self-monitoring and self-management abilities with minimum use of professional time. At one year, 47% of treatment-group participants continued to attend, compared with only 17% in the control groups (41, 42).

Based on the considerations that *i*) CBT and MET are validated AUD treatments (43); *ii*) that MET is of more expensive than CBT (44, 45); *iii*) CBT exists in a short format (41, 42), the aim of the present study was to investigate and compare the efficacy of CBT in the short form and MET in a cohort of AUD men and women without comorbid psychiatric disorders or severe cognitive deficits ("pure alcoholics").

MATERIAL AND METHODS

Participants and study design

A randomized controlled clinical trial to compare the efficacy of CBT and MET in pure alcoholics within a 2-years long follow-up study was conducted on 325 alcoholics patients (244 men and 81 women) but following the exclusion criteria described later the study was carried out on 90 pure alcoholics (63 men and 27 women) (Fig. 1 and Table 1). Participants received a two weeks long detoxification and rehabilitation treatment in the "Latium Region Alcohol Referral Center" of Policlinico Umberto I, Sapienza University Hospital, in Rome, Italy. All participants received also pharmacological treatment (from 6 to 10 days of diazepam administration) to minimize withdrawal symptoms (46). This medication was progressively decreased during detox. Patient history of alcohol drinking behavior was based also on family history of alcohol dependence. Each patient's smoking history was also assessed. Participants were included if they met criteria for a diagnosis of alcohol dependence according to the Diagnostic and Statistical Manual of Mental Disorders (47) and if they had at least 7 days of alcohol abstinence. In order to recruit only pure alcoholics, participants were excluded if

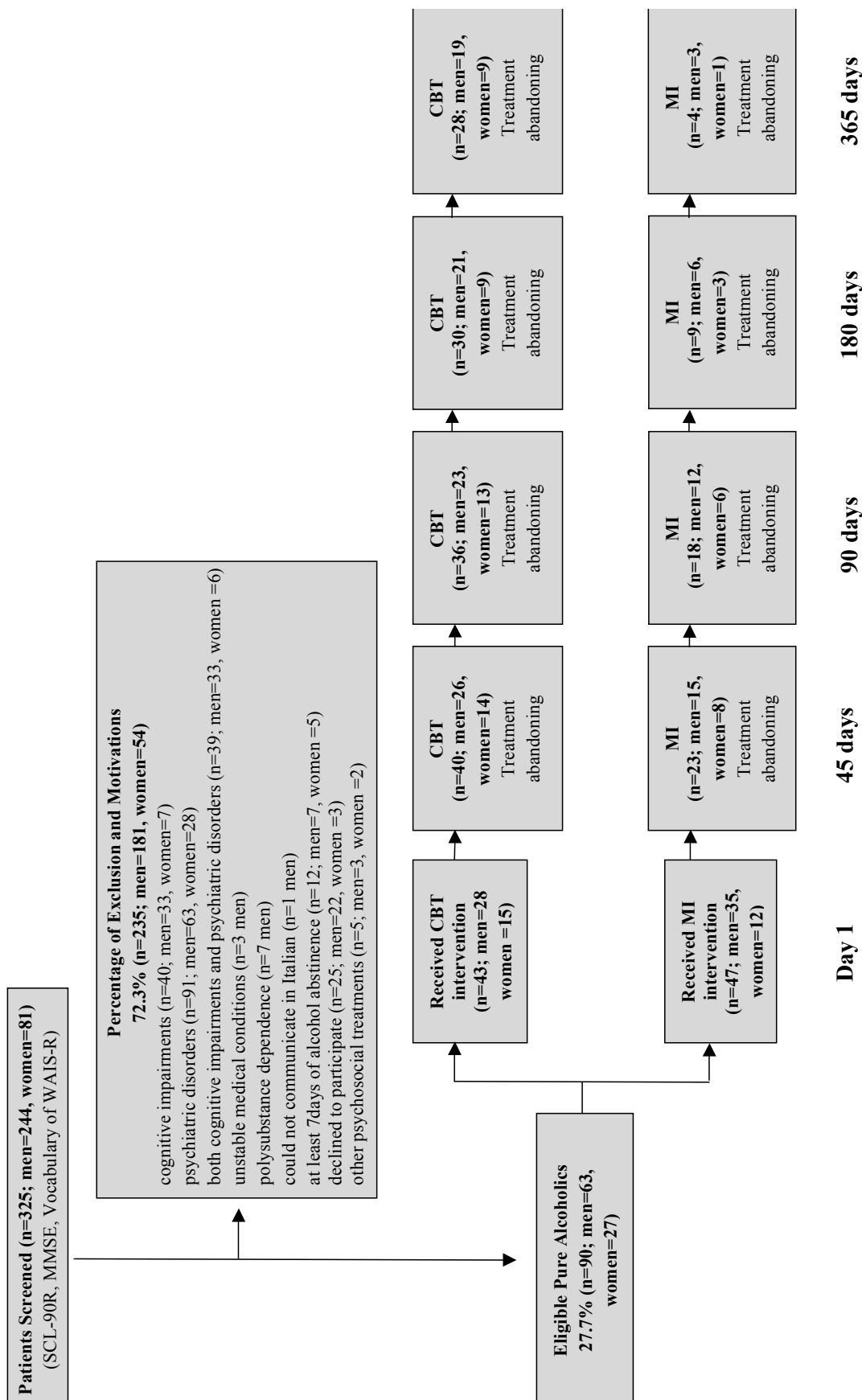


Figure 1. The figure shows a schematic representation of AUD patients' recruitment and treatment.

Variables	CBT		MI	
	Men (n=28)	Women (n=15)	Men (n=35)	Women (n=12)
Age	46.82 (2.06)	50.40 (2.10)	46.26 (1.69)	46.17 (2.52)
Educational Level (1 Low 4 Top)	2.75 (.15)	2.93 (.15)	2.51 (.10)	3.08 (.23)
Age of onset alcohol problems	30.93 (2.05)	33.33 (3.26)	27.09 (1.66)	31.33 (4.23)
Years of consumption	13.81 (1.75)	15.67 (2.65)	18.34 (1.69)	11.33 (3.37)
Alcohol Preference (%):				
Wine	52.6%	42.5%	46.4%	52.1%
Beer	31.5%	32.3%	26.5%	29.1%
Spirit	14.5%	26%	25.6%	13.6%
Abstinence days before the test (CAD)	5.39 (.68)	5.07 (.71)	6.01 (.50)	4.75 (.65)
Alcohol units per day (last 3 months)	12.51 (1.45)	12.21 (1.92)	14.72 (2.26)	9.40 (1.63)
Previous use of psychoactive substances (%)	14.3%	33.3%	22.9%	16.7%
Smoking (daily number of cigarettes)	17.89 (2.39)	11.33 (3.34)	21.37 (2.49)	15.02 (3.74)
Drug use for alcohol treatment:				
Naltrexone	35.9	23.3	33.50	25.14
Nalmefene	22.9	18.6	20.40	22.45
Acamprosate	41.2	58.1	46.10	52.51
MMSE (raw score)	16.18 (.25)	16.27 (.23)	15.77 (.24)	15.92 (.50)
WAIS Vocabulary (raw score)	44.11 (2.60)	42.56 (3.11)	40.14 (2.49)	39.00 (4.25)
SCL-90:				
Somatization	.37 (.06)	.61 (.15)	.49 (.06)	.68 (.14)
Obsessive-Compulsive	.68 (.09)	.74 (.10)	.74 (.07)	.55 (.10)
Interpersonal Sensitivity	.36 (.07)	.46 (.10)	.47 (.08)	.68 (.16)
Depression	.59 (.08)	.67 (.10)	.61 (.08)	.82 (.12)
Anxiety	.42 (.06)	.63 (.10)	.55 (.07)	.62 (.10)
Hostility	.24 (.04)	.37 (.08)	.43 (.07)	.32 (.08)
Phobic Anxiety	.11 (.04)	.20 (.10)	.12 (.03)	.19 (.08)
Paranoid Ideation	.49 (.08)	.61 (.17)	.56 (.07)	.74 (.17)
Psychoticism	.26 (.05)	.37 (.07)	.43 (.07)	.51 (.12)
Global Severity Index	.44 (.05)	.55 (.08)	.53 (.05)	.61 (.08)

Table 1. General characteristics of AUD people under treatment with Cognitive-Behavioural Treatment (CBT) and Motivational Interview (MI). Data are expressed as mean \pm SEM. CAD: Cumulative Abstinence Duration; MMSE: Mini-Mental State Evaluation; WAIS-R: revised Wechsler Adult Intelligence Scale.

they scored above 1 on the Symptom Checklist-90 (SCL-90) test (48) referring a psychiatric disorder or met the criteria of a cognitive impairment assessed by using Mini-Mental State Examination (MMSE) (49) and Vocabulary Wechsler Adult Intelligence Scale (WAIS IV) tests (50). Patients were also excluded if they: *i*) had evident psychopathological conditions at the psychiatrist evaluation; *ii*) had history of other substance abuse (as cocaine, opioids, amphetamine, other recreational drugs, anxiolytics, euphorants, antipsychotics, barbiturates, benzodiazepines, antidepressants, hallucinogens – data based on patients urine toxicology), except than nicotine or cannabis, according to DSM-5 criteria in the last 90 days (6 months for opiate abuse) or based on urine drug screening; *iii*) had unstable medical conditions (eg, serum liver enzyme levels 3 times the limits of normal or hypertension); *iv*) had history of head injury, loss of consciousness, history of organic mental disorder, seizure disorder or central nervous system diseases and no sign of hypertension at the time of recruitment; *v*) could not communicate in Italian; *vi*) zero blood alcohol levels during testing. Participants were asked to complete the screening and assessment tests after the disappearing of the withdrawal symptoms (according to a set of specified withdrawal symptoms, such as elevated blood pressure, tachycardia, tremor, sweating, etc.), and after the end of the pharmacological treatment. 235 participants (181 men and 54 women) were excluded according to exclusion/inclusion criteria just described. Other participants (n=42, 34 men, 8 women) potentially eligible for the inclusion in the study were excluded because they declined to participate or for other psychosocial treatments or for the impossibility to attend the sessions. Following participants selection, the number of eligible pure alcoholics were 90 (63 men and 27 women). One group received MET (n=47; 35 men and 12 women) and the other group received CBT (n= 43; 28 men 15 women). Both treatments were followed by well-trained alcoholism treatment specialists. The study was approved by the hospital's IRB committee and an informed consent was signed by each participant. Blood alcohol levels were measured in all participants by using Alcoscan AL7000.

PROCEDURE

MET and CBT Description

Motivational Enhancement Therapy consists of a 3-sessions client-centered intervention, designed to enhance patient motivation for behavioral change in addictive behavior. It focuses on exploring and resolving ambivalence by increasing intrinsic mo-

tivation to change (26,31). The objectives of the clinical sessions were respectively: 1) to enhance internal motivation to change; 2) to reinforce this motivation; 3) to develop a plan to achieve the change. Motivational Enhancement Therapy has been shown to be effective in improving substance abuse recovery outcomes by itself, as well as in combination with other treatments (43). It has been particularly effective in pre-treatment work to engage and motivate clients for other treatment modalities (43). The duration of each session was about 60 minutes.

Cognitive Behavioral Therapy consists of a 5-sessions intervention focused on changing of addictive behavior through the application of combined cognitive and behavioral interventions (29, 41, 42). The goals of the clinical sessions were respectively: 1) identifying specific high-risk situations in the past and in the present; 2) enhancing the patients' skills for coping with those situations and increasing the patients' self-efficacy; 3) eliminating myths regarding alcohol's effects; 4) managing lapses and restructuring the patients' perceptions of the relapse process; 5) strengthening the ability of recognizing and coping with the situations at high risk of drinking. Compared to treatment program used in previous studies (41, 42), strategies for the management of relapses were added (33). Global strategies were used included balancing the patients' lifestyle and helping him or her to develop positive addictions, using stimulus control techniques and urge-management techniques, and developing relapse road maps. The duration of each session is about 60 minutes. Medical follow up every month till one year were conducted including blood alcohol checking. Participants received the psychosocial intervention in the first three months. Psychological follow up at third, sixth and twelfth months after the end of the treatment was conducted.

Both CBT and MET groups were led by well-trained therapists who participated in several alcohol treatments (CBT or MET) trainings and with at least 3 years of experience.

DATA ANALYSIS

Preliminary analyses were carried out comparing (by chi-square or ANOVA) enrolled patients assigned to the two groups at the baseline assessment to evaluate the randomization success with gender as covariate factor. To evaluate the adherence to the treatment Kaplan Meyer survival curves were used adjusted for gender. Independent sample T-test was used to compare the effect of the CBT on alcoholic variables at baseline, three, six months and one year. All statistical analyses were performed by using SPSS software (version 23; IBM SPSS Statistics, Chicago, IL).

RESULTS

Sample characteristics and baseline differences

Patients enrolled in the study were 325, of these 72.3% (n=235) were excluded according to exclusion/inclusion criteria. The major percentage of exclusion (38.72%; n=91) regarded patients with comorbid psychiatric disorders, 17.02% (n=40) had cognitive impairments and 16.60% (n=39) had both cognitive impairments and psychiatric disorders. Low percentage of exclusion regarding patients with organic problems (1.28%; n=3), polysubstance abuse (2.98%; n=7), patients who did not speak Italian very well to follow the clinical sessions (0.43%; n=1) and patients that did not reached 7 continuous days of abstinence (15.11%; n=12). Moreover, some patients were excluded because they were enrolled in other psychosocial treatment(s), for the impossibility to attend sessions or because they declined to participate (17.87%; n=42). The final number of eligible patients was 90 (27.7%). They were assigned to the CBT or to the MET group. The final sample was composed of 43 patients included into the CBT group (men=28, women=15) and 47 into the MET group (men=35, women=12). The Figure 1 shows the flow diagram of this study.

Approximately 70% (n=63) of the patients were men (CBT: n=28 - 65.1%; MET: n=35 - 74.5%), and their mean age was 47.11±9.8 years. The mean age at the onset of alcohol problems was 29.88±11.33 years (men: 28.76±10.27; women: 32.44±13.32). The patient group reported an average of 15.59±10.12 years of problem drinking (men: 16.41±9.74; women: 13.74±10.90) and an average of 13.69±10.28 drinks (men: 14.89±11.33; women: 10.96±6.73) per day during three months prior to admission to the treatment unit. Randomization successfully matched participants since there were no differences in baseline socio-demographic characteristics included gender, alcohol variables, and psychological variables between the two groups. Means and standard deviations of the demographic, alcoholic variables and screening measures divided for gender are reported in Table 1. Moreover, the patients were compared for gender on all measures described above.

CBT versus MET: Efficacy of the Treatment on Adherence

Kaplan-Meier survival curves were conducted to assess the differences in adherence to the treatment between the two groups and stratified for gender.

Results indicate a significant globally difference in the

adherence to the treatment adjusted for gender (Log-rank score: 23.50₍₁₎, p<0.001; Breslow: 14.32₍₁₎, p<0.001; Tarone Ware: 18.80₍₁₎, p<0.001), as shown in Figure. 2.

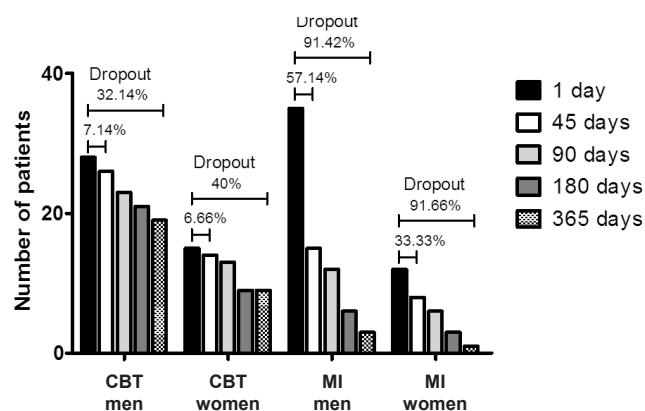


Figure 2. Dropout expressed as % of AUD people under treatment with Cognitive-Behavioral Treatment(CBT) and Motivational Interview (MI).

The Kaplan–Meier proportion of patients remaining in treatment during the years was greater for the CBT group, than the MET group, as well as at 45 days, three, six, and twelve months. By the end of the year, 65.1% (n=28) of CBT patients remained in treatment compared to 8.5% (n=4) of MET patients. At 45 days, three, six and twelve months, the dropout rates in MET was 49% (n=24); 61.7% (n=29), 80.9% (n=38) and 91.5% (n=43) and in CBT it was 7% (n=3), 16.3% (n=7), 30.2% (n=13), and 34.9% (n=15), respectively. The highest percentage of dropout happened in the first 45 days of treatment, with a greater tendency in MET group.

In particular, in the CBT group, men dropping out after 45 days were 7.14% and after 1 year 32.14%; while women dropping out after 45 days were 6.67% and after 1 year 40%.

In the MET group, men dropping out after 45 days were 57.14% and after 1 year 91.43%; while women dropping out after 45 days were 33.3% and after 1 year 91.7%.

CBT versus MET: Efficacy of the treatment on abstinence

Independent sample T-test considering the CBT and the MET groups as factors and the dependent variables were carried out on the percentage of abstinence days in the treatment period and the mean of alcoholic unit per day drunk in the treatment period. The differences on alcoholic variables were considered at the baseline (after the detoxification), at the first follow up (after three months), at the second follow up (after six months)

and at the last follow up (after one year). Patients enrolled in both the CBT and in the MET did not refer differences at the baseline in the percentage of abstinence days (CBT: $n=43$; mean 96.83 ± 7.75 ; MET: $n=47$; mean 92.23 ± 15.72 ; $t(68)=1.787$, $p=0.080$) and total alcohol consumption per day (CBT: $n=43$; mean 3.63 ± 9.02 ; MET: $n=47$; mean 11.83 ± 23.75 ; $t(68)=-1.606$, $p=0.120$). Moreover, no differences between the two groups were found in the other alcoholic variables. Particularly, at three months the percentage of abstinent day (CBT: $n=36$; mean 91.40 ± 15.34 ; MET: $n=18$; mean 93.90 ± 11.95 ; $t(52)=-0.605$, $p=0.550$) and total alcohol consumption per day (CBT: $n=36$; mean 25.67 ± 49.52 ; MET: $n=18$; mean 32.83 ± 64.04 ; $t(52)=-0.454$, $p=0.650$) did not differ between groups at six months (the percentage of abstinent day (CBT: $N=30$; mean 85.00 ± 30.71 ; MET: $n=9$; mean 87.78 ± 33.08 ; $t(37)=-0.234$, $p=0.820$) and total alcohol consumption per day (CBT: $n=30$; mean 53.07 ± 113.73 ; MET: $n=9$; mean 105.22 ± 245.49 ; $t(37)=-0.891$, $p=0.380$) were unaffected as well. After one year no differences were found in the two groups in the percentage of abstinence days (CBT: $n=28$; mean 90.14 ± 22.06 ; MET: $n=4$; mean 100 ± 0 ; $t(30)=-0.881$, $p=0.838$) and total alcohol consumption per day (CBT: $n=28$; mean 40.90 ± 93.25 ; MET: $n=4$; mean 0 ± 0 ; $t(30)=0.865$, $p=0.380$) but only four patients of the control group were totally abstinent. A linear regression was conducted to assess if the abstinence was predicted by the number of sessions attended in the different stages of the studies. Results showed that the abstinence was not predicted by the number of sessions at three months ($F_{(1,52)}=1.481$; $p=0.229$), six months ($F_{(1,30)}=3.069$; $p=0.090$) and one year ($F_{(1,28)}=0.034$; $p=0.855$).

DISCUSSION

We tested the effectiveness of the CBT *versus* MET in patients without concomitant psychiatric disorders and/or cognitive impairments. Patients attending CBT remained in treatment significantly more than the MET group. Cessation of therapy has often been mentioned as a problem closely related to relapse (51). Although relapsing rate may have various rates, the relapse may range from 80% to 90%, with 50-60% of alcohol-dependent individuals relapsing within the first three months of treatment (37, 52–54). Therefore, we considered the adherence to the treatment to evaluate its efficacy. Results demonstrated a significant retention in treatment in the group undergoing CBT more than the MET group. The survival curves of the two groups are significantly different. The CBT group lost few patients within the first three critical months of

treatment ($n=7$; 16.3%), and after six months of treatment the course become stable. The MET group lost immediately many patients ($n=29$; 61.7%) and gradually so many others in the course of treatment. At the end of treatment, 65.1% ($n=28$) of the CBT group remained in treatment (dropout rates=34.9%) and only 8.5% ($n=4$) of the MET group (dropout rates=91.5%). The CBT seems to have a stronger power to maintain patients in treatment mainly during the first three months when dropout is known to occur much more frequently (37). In fact, in our study it was observed that a considerable number of patients in the MET group left before the first follow up if compared to the CBT group drop out. These results are consistent with a previous study conducted with alcoholic patients admitted to the program of the Sapienza University of Rome in which it was found that after one year 47% of the patients treated with CBT continued to attend compared with only 17% of the MET group which received standard medical treatment (42). Moreover, we found no differences between CBT and MET groups on percentage of abstinent days and on the daily consumption at three, six, twelve months from the beginning of treatment but only few patients remaining in the MET treatment. In conclusion, our results showed a strong impact of CBT on patient retention in treatment confirming its effectiveness in the treatment of alcohol use disorders (43,55) also with AUD patients without psychiatric disorders and cognitive deficits.

Although many social, environmental, physiological, genetic and neurobiological factors have been demonstrated to contribute to the sex difference in response to alcohol intake, as well as the development of alcoholic complications (56, 57), our research did not reveal any gender differences in MET and/or CBT responses. Only few studies have examined gender differences in the effectiveness of alcohol treatment without showing clear gender differences in treatment responses (58, 59) and the results of our study seem to confirm this trend. However, the issue of drinking abuse in women is quite important since women are more sensitive compared to men to the damage induced by alcohol (60, 61) and because women who drink during pregnancy may elicit a variety of negative effects to the fetus named Fetal Alcohol Spectrum Disorders (FASD) (62–73) as also shown in animal model (65, 70, 73–75). The present study also discloses the limits of self-reporting on alcohol consumption to evaluate change in drinking because the amount of alcohol consumption reported may be under or overestimated (76). Further, the considerations on gender differences on the effectiveness of treatment should be taken

with care since men and women were not well balanced for two treatment groups. Considering the strengths, a firm point of the design of this study is the possibility to compare two interventions that in literature were considered both effective in AUD treatment. Indeed, CBT was not compared to a waiting list or a pharmacological treatment. It can be argued that CBT may have a stronger effect in retaining patients in treatment and in enhancing the ability to manage critical situations related to alcohol abuse. Therefore, as the samples were homogeneous and without psychiatric conditions, we can assert that CBT is responsible for the effects on alcohol consumption improvement in coping and management skills. CBT allows achieving significant results (adherence to treatment and abstinence from alcohol) by using a relative few sessions in one year of treatment and with minimum use of professional time. The present study is consistent also with a recent meta-analysis showing that a higher number of CBT/MET sessions was associated negatively with alcohol outcome (77).

CONCLUSIONS

In conclusion, pure alcoholics having only dependence from alcohol but without other mental disorders or severe cognitive deficits are supposed to possess sufficient resources to deal with alcohol addiction without psychosocial treatment. However, the results of our study show that without the suitable clinical treatment, it is very difficult to quit drinking and coping with the alcohol-related problems. An early and short cognitive-behavioral intervention is strongly suggested to prevent physical and/or mental health complications due to a chronic alcohol abuse (78–84).

CONFLICT OF INTEREST

None.

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