

Factors Related With Relapse in Male Alcohol Dependents: 12 Months Follow-up Study

Cüneyt Evren¹, Mine Durkaya²,
Ercan Dalbudak², Selime Çelik²,
Rabia Çetin², Duran Çakmak¹

¹Ass't Prof., ²Spec. Dr., Bakırköy Prof. Dr. Mazhar Osman
Research and Training Hospital for Psychiatry, Neurology
and Neurosurgery, Alcohol and Drug Abuse Treatment,
Education and Research Center (AMATEM), Istanbul

ÖZET

Erkek alkol bağımlılarında depresme ile ilişkili etkenler: 12 aylık takip çalışması

Amaç: Bu çalışmanın amacı, erkek alkol bağımlılarında yatarak tedavinin ardından, 12 aylık takipte alkol kullanımının depresmesiyle ilişkili klinik değişkenlerin saptanmasıdır.

Yöntem: Çalışmaya, ardışık olarak hastaneye yatırılmış 156 erkek alkol bağımlısı hasta katılmıştır. Yatarak tedaviden 12 ay sonra, bu hastalardan 102'sinin değerlendirilmesi mümkün olmuştur. Hastalar, başlangıçta, Belirti Tarama Listesi (SCL-90) ve Michigan Alkolizm Tarama Testi (MATT), 12 ay sonra ise PENN Alkol Aşerme Ölçeği (PAAÖ) ile değerlendirilmiştir.

Bulgular: Yatarak tedavi görmüş 102 alkol bağımlısı hastanın %61.8'i (n=63) alkol kullanımı depresmiş olarak değerlendirilmiştir. Sosyodemografik değişkenler gruplar arasında fark göstermemiştir. MATT ve SCL-90 genel şiddet puanı gruplar arasında fark göstermemiş iken, aşerme puanı depresen grupta yüksek bulunmuştur. Depresen gruptakilerin 12 aylık takip süresince daha az poliklinik kontrolüne geldikleri, Ayaktan Tedavi Programı'na (ATP) daha az katıldıkları, kendilerini korumak amaçlı daha az sosyal çevre değişikliği yaptıkları ve aşerme için daha az ilaç kullandıkları bulunmuştur. Aşerme şiddeti ve takipte ATP'ye katılmama, alkol bağımlılarında depresmeyi belirlemiştir.

Sonuç: Aşerme şiddeti ve ATP'ye katılmama depresme ile ilişkili temel etkenlerdir. Aşerme giderici ilaç kullanımı ile birlikte ATP'ye düzenli katılımın sağlanması, hastaların alkol aşermesini tanımlarına ve onunla başetmelerine yardımcı olabilir.

Anahtar kelimeler: Alkol bağımlılığı, aşerme, depresme, terapi

ABSTRACT

Factors related with relapse in male alcohol dependents: 12 months follow-up study

Objective: Aim of this study was to evaluate clinical variables related with relapse to alcohol abuse during 12 months follow-up after inpatient treatment in male alcohol dependents.

Method: Participants were 156 consecutively admitted male alcohol dependents. Among these patients, 102 were available at the evaluation that took place one year after the inpatient treatment. Patients were investigated with the Symptom Check List (SCL-90) and Michigan Alcoholism Screening Test (MAST) at baseline and with the PENN Alcohol Craving Scale (PACS) one year later, at follow-up.

Results: Among 102 alcohol dependent inpatients, 61.8% (n=63) were considered as relapsed to alcohol abuse. Sociodemographic variables did not differ between groups. Mean scores of MAST and global severity index of SCL-90 did not differ significantly between groups, whereas craving score was higher in the relapsed group. Also the relapsed group had less polyclinic control, less attendance to the Outpatient Treatment Program (OTP), less changes in social environment for self protection and less use of anti-craving medications during one year follow-up. Severity of craving and not attending OTP during follow-up period predicted relapse in alcohol dependents.

Conclusions: Severity of craving and not attending OTP seems to be the main factors related with relapse. Together with using anti-craving medications, regular attendance to OTP may help patients to recognize and manage with alcohol craving.

Key words: Alcohol dependence, craving, relapse, therapy

DOI: 10.5350/DAJPN2010230203t

Address reprint requests to:
Doç. Dr. Cüneyt Evren, İcadiye Cad. Menteş
Sok. Selçuk Apt. 1/17 Kuzguncuk 34674 Üsküdar,
Istanbul - Türkiye

Phone: +90-216-341-0609

Fax: +90-212-660-0026

E-mail address:
cuneytevren@yahoo.com
cuneytevren@hotmail.com

Date of acceptance:
April 06, 2010

INTRODUCTION

In patients with alcohol abuse disorders, the short-term sobriety rates following treatment vary from 20 percent to 50 percent (1,2), depending on the severity of the disorder and remission criteria. Studies show that a stronger occurrence of frequent and intensive

use of alcohol, and of alcohol-related psychological and social problems, is linked to a low probability of remission (3,4).

Craving often results from a combination of several factors (5), including the individual characteristics of the patient and environmental factors (5,6). In treated individuals, the severity of alcohol-related problems,

depressive indicators, lack of coping skills and not being ready to change were found to be linked to relapse occurring a short time after treatment (6-9). In comparison to individuals who receive help, individuals who do not seek help have a lower probability of ensuring long-term remission and they are also under a greater risk of relapse (10). The probability of relapse after remission can be determined through a holistic investigation of these risk factors (10).

A factor that can be determined in some sober patients before relapse and which may represent a risk for relapse is the craving for alcohol (5). A high level of craving for alcohol is a risk factor for a lack of improvement in alcohol dependence (6,11,12). O'Connor et al. (13) stated that in outpatient-care alcohol dependent patients, there is a link between increasing craving during abstinence and dropout rates. The craving in patients involved in outpatient-care programs determines both the relapse during treatment and the relapse based on intensive use of alcohol during the 12 months following the treatment (5). Behavioral models try to explain the nature of craving, although one single model is insufficient to explain all the characteristics of craving. The reinforcement model suggests that alcohol may help to improve mood or lessen negative mental states like anger, trauma, or stress. In alcohol-dependent patients, the unconscious learning processes may spur alcohol use as part of an attempt to re-experience positive mental states (14).

Kushner et al. (15) reviewed laboratory and family studies, as well as clinical and future-oriented studies and concluded that anxiety disorders and alcohol abuse may trigger one another, and that anxiety disorders may cause pathologic alcohol use to continue and cause a relapse to alcohol abuse. Driessen et al. (16) stated that the high level of anxiety which continues after a three-week sobriety phase is linked to a greater risk of a relapse in comorbid anxiety disorders. Findings related to the impact of a depressive affect on the probability of a relapse are conflicting (17). For instance, Driessen et al. (16), Heinz et al., (18) and Strowing (19) state that a depressive affect increases the risk of relapse in sober alcohol-dependent individuals. On the other hand, Greenfield et al. (20) came to the conclusion that a depressive affect measured

in the Beck Depression Inventory does not have an impact on the likelihood of relapse.

Thus the question of which factors have an impact on relapse is an essential one. Awareness of these factors will make it possible to develop strategies to minimize their effects on relapse. Among the great number of factors listed as predictors of relapse in alcohol dependence are life events, mood, inability to cope with problems, and insufficient social support resources (6,8,21).

As far as we know, this is the first study carried out in Turkey that seeks to determine the factors related to relapse in male alcohol-dependent patients during the 12-month follow-up. The objective of this study is to determine the clinical variables related to relapse to alcohol abuse in male alcohol-dependent individuals during the 12-month follow-up process.

METHOD AND INSTRUMENTS

One hundred and fifty-six consecutive patients, who were admitted to and treated at the Alcohol and Drug Abuse Treatment, Education and Research Center (AMATEM) at the Bakırköy Prof. Dr. Mazhar Osman Research and Training Hospital for Psychiatry, Neurology and Neurosurgery between January 2007 and February 2008 and diagnosed with alcohol dependency, were enrolled in the study. The alcohol dependence was diagnosed based on the Turkish version of the Structured Clinical Interview (SCID-I) (22) for DSM-IV carried out by a trained interviewer (CE).

Once the patients were informed about the study, their written informed consent was obtained. Interviews with patients were carried out after a detoxification period of approximately 4-6 weeks after the last use of alcohol. Tests evaluating some clinical characteristics such as a socio-demographic questionnaire, Symptom Checklist 90-R (SCL-90-R), and the Michigan Alcoholism Screening Test (MAST) were carried out. Patients with mental retardation, loss of vision, hearing, or intellectual ability at levels that significantly impair communication, as well as patients with psychotic disorders or organic mental disorders, were excluded from the study.

At the end of six months after treatment, all patients were contacted by telephone and requested to come for an interview. In the study carried out with 107 patients who came for the interview, the severity of craving (especially a general craving evaluation based on one question), an unchanged social environment, and negative life events in the past 6 months were found to be linked to relapse after inpatient treatment in alcohol-dependent individuals. Detailed information about the evaluations in the sixth month can be found in our previous study (24).

After a year, the patients were contacted by telephone and requested to come for an interview again. Of the 136 patients who could be reached by telephone, 66.2% (n=90) had relapsed within the 12-month follow-up process. They were informed that if they wished, they would be provided with inpatient treatment. One hundred and two of these patients both accepted the interview invitation and were able to come. Of the 34 (25%) patients who did not accept to come or were unable to come, 7 stated that they had not used alcohol during the last 12 months while 27 stated that they used alcohol regularly. Thirteen of the patients stated that they were unable to come because they were busy at work or out of town, or due to financial reasons. Ten patients stated that they used alcohol and were not willing to undertake treatment. Eleven patients, on the other hand, did not show up although they had made an interview appointment. At the end of the 12-month period, 102 patients who showed up were interviewed face to face and were tested using a new socio-demographic questionnaire developed specifically for this study, and the Penn Alcohol Craving Scale (PACS). The socio-demographic questionnaire employed in the 12th month assessed whether or not any socio-demographic changes had occurred in the 12-month period and whether or not the patients were able to respond to check-ups at the polyclinic, OTP, and medication treatment. Where possible, the outpatient clinic data of the patient was examined and his family was interviewed. This was done in an effort to improve the reliability of data received from the patients and in particular the history of alcohol use within the last 12 months.

Symptom Checklist 90-R (SCL-90-R): The Symptom Checklist 90-R is a psychiatric symptom checking tool for self-report. With 90 topics encompassing psychiatric symptoms and complaints, the scale was structured in such a way as to allow evaluation on nine different symptom dimensions.

Furthermore, a sub-scale of the global severity index used to determine the severity of psychiatric symptoms is included. The effect of general severity of the psychopathology on remission is investigated in this present study, and thus this sub-scale score was evaluated. The Turkish validity and reliability of this scale, developed by Derogatis (25), was carried out by Dağ (26). In this study, Cronbach's Alpha value was 0.98.

Michigan Alcoholism Screening Test (MAST): This test is used to measure if a person is facing an alcohol abuse problem and the severity of the problem. It can be applied to individuals who are seeking primary health care or believe that they have an alcohol abuse-related problem. The patients are requested to mark the option that best describes them. The Turkish validity and reliability of this test, developed by Gibbs (27), was carried out by Coşkunol (27) et al. In this study, Cronbach's Alpha value was 0.73.

Penn Alcohol Craving Scale (PACS): The craving in patients who participated in the study was investigated with the Penn Alcohol Craving Scale, or PACS (29). PACS is a self-report questionnaire consisting of five topics that investigate the severity of craving for alcohol (frequency, severity, duration, resistance, and general craving). Every topic has an investigation scale of 0-6 points. Thus the maximum total craving score is 30. It was shown that the reliability of PACS is excellent and its validity is good. The Turkish version of the scale was found valid and reliable in male alcohol-dependent patients who receive inpatient treatment (30). In this study, Cronbach's Alpha value was 0.96.

Statistical methods

The data was evaluated using the SPSS 15.0 for Windows program. In the statistical evaluations, the chi-square test was applied in order to evaluate relations between the categorical variables, and the Student's

t-test was applied to evaluate the difference between the constant variables pertaining to the two groups and the averages. In the future-oriented logistic regression analysis, the relapse was taken as a fixed variable. In this procedure, the age at which regular use of alcohol started, the severity of craving, the global severity index of SCL-90, the Michigan Alcoholism Screening Test, attendance at therapy during inpatient treatment, attendance at outpatient therapy program during follow-up, and

undertaking the necessary social changes were taken as independent variables. In all statistical procedures, the significance level was taken as $p < 0.05$.

RESULTS

Of the 156 patients (65.4%) who were evaluated during their outpatient care, 102 were able to be interviewed at the end of the 12 months. It was

Table 1: Socio-demographic variables

	Remission		Relapse		χ^2	sd	p
	n=39	%	n=63	%			
Marital status					0.25	2	0.89
Married	25	64.1	41	65.1			
Divorced, widowed, separated	4	10.3	8	12.7			
Single	10	25.6	14	22.2			
Professional status					5.65	3	0.13
Unemployed	10	25.6	24	38.1			
Employed	20	51.3	18	28.6			
Employed on part-time basis	2	5.1	7	11.1			
Retired	7	17.9	14	22.2			
Age (average \pm ss)	46.44	9.94	43.51	8.20	t=1.54		0.13
Years of education (average \pm ss)	9.95	4.07	9.48	3.85	t=0.59		0.56
Start of regular alcohol use							
Age (average \pm ss)	27.03	9.39	25.97	8.54	t=0.59		0.56

Table 2: Scale scores in male-alcohol dependents according to relapse condition

Scale scores	Remission (n=39)		Relapse (n=63)		t	p
	Aver.	ss	Aver.	ss		
Global Severity Index of SCL-90	1.31	0.91	1.52	0.83	-1.19	0.24
Michigan Alcoholism Screening Test	26.18	9.68	28.84	10.46	-1.29	0.20
PENN Alcohol Craving Test	2.26	3.34	14.24	9.24	-9.34	<0.001

Table 3: Variables related to treatment in the 12-month follow-up

	Remission		Relapse		χ^2	sd	p
	n=39	%	n=63	%			
Inpatient therapy program					14.31	2	0.001
Not attended	3	7.7	18	28.6			
Dropped out	7	17.9	22	34.9			
Completed	29	74.4	23	36.5			
Check up at polyclinic					14.76	2	0.001
No treatment	11	28.2	34	54.0			
Irregular	11	28.2	22	34.9			
Regular	17	43.6	7	11.1			
Outpatient treatment program*	25	64.1	12	19.0	21.15	1	<0.001
Change in social environment**	31	79.5	30	47.6	10.18	1	0.001
Positive reaction to medication treatment					14.69	3	0.002
Negative reaction	10	25.6	7	11.1			
Partially positive reaction	9	23.0	39	61.9			
Positive reaction	20	51.3	17	27.0			

Probability Rate (95% Reliability range): *0.13 (0.5-0.33), **0.24 (0.09-0.59)

Table 4: Predictors of relapse in male alcohol-dependent patients in the future-oriented logistic regression model

Relapse	B	S.H.	Wald	sd	p	Probability Rate	95.0% Reliability Range
Model 1							
PENN Alcohol Craving Scale	0.285	0.059	23.340	1	<0.001	1.330	1.185-1.493
Model 2							
PENN Alcohol Craving Scale	0.267	0.060	19.760	1	<0.001	1.307	1.161-1.470
Outpatient Therapy Program	1.387	0.584	5.643	1	0.018	4.003	1.275-12.57

The age at which regular use of alcohol started, the severity of craving, the global severity index of SCL-90, the Michigan Alcoholism Screening Test, attendance at therapy during inpatient treatment, attendance at the outpatient therapy program during follow-up, and undertaking the necessary social changes were taken as independent variables.

determined that in 63 of these 102 patients (61.8%), alcohol use had relapsed during the 12-month period. Average age, marital status, and professional status did not differ between the relapsed and unrelapsed groups (Table 1).

In the initial investigation, the severity of psychiatric symptoms and the severity of problems related to alcohol use did not differ, whereas the severity of craving investigated at the end of 12 months for the relapsed group was high (Table 2).

Our results showed that the relapsed group had fewer regular visits to the outpatient clinic, attended the Outpatient Treatment Program on an irregular basis or not at all, made fewer social changes to protect themselves from a relapse or were not able to make any changes at all, and used the anti-craving medication irregularly or not at all (Table 3). The Future-Oriented Logistic Regression Model was applied in which the following were taken as independent variables: the age at which the regular use of alcohol started, the severity of craving, the global severity index of SCL-90, the Michigan Alcoholism Screening Test, attendance at therapy during inpatient treatment, attendance at the outpatient therapy program during follow-up, and undertaking the necessary social changes. In this analysis, the severity of craving was the sole variable among the independent variables in the first model, but in the second model, the severity of craving and not attending OTP were the variables predicting a relapse to alcohol abuse during the 12-month follow-up (Table 4).

DISCUSSION

At the end of 12 months, 63 (61.8%) of patients who were interviewed face to face (102, 65.4%) were

considered as having relapsed during the 12-month follow-up process. This rate is similar to the 57 percent relapse rate determined in previous studies for relapse in a 12-month period (31). The main finding of this study is that a high level of craving and not attending OTP were factors predicting relapse within the 12-month period following treatment. Indeed, it is assumed that these two variables might be linked to one another. The main objective of OTP is to prevent relapse and thus to make sure that the patients recognize the craving and are able to cope with it, as craving for alcohol is a key factor in relapse. Different mechanisms may underlie the cravings for alcohol among different patient sub-types (32). Verheul et al., for instance, defined three craving types in the three-pathway psychobiologic model: "reward craving", "relief craving", and "obsessive craving". They stated that different personal characteristics and different neurotransmitter systems play a role in these types of cravings (33). Therefore, different risk factors may cause craving, as a common result. Patients experiencing a high level of craving during the treatment phase are more likely to drop out of treatment (31). The severity of craving reported at the end of the treatment in previous studies was used to predict a relapse to alcohol abuse for a three-month follow-up (34), six-month follow-up (5,24), and 12-month follow-up periods (5). Moreover, a higher level of craving was determined in relapsed patients compared to sober patients. In conclusion, additional methods for preventing relapse are employed to treat patients more intensively, ensure that they identify the stimulants which lead to drinking, and protect themselves from these stimulants (5). Previous studies show that the craving is linked to the severity of the psychopathology, especially the negative affect (such

as depression and anxiety) (35,36). With the help of OTP, patients can learn and use coping mechanisms in high-risk situations such as negative affect and interpersonal conflicts (37).

Another study finding is that PACS is a time-saving scale that is easy to apply and provides valuable information regarding the development of craving by determining the severity of craving. Not making any changes in the social environment and experiencing a negative life event within 6 months of treatment, along with the severity of craving (especially the general alcohol craving evaluation, which is the 5th topic of PACS) were the predictors of relapse after inpatient treatment in alcohol-dependent patients in the evaluation conducted in the sixth month after discharge of patients who participated in the present study (24). The effects of changing the social environment and life events within 12 months after treatment were not evaluated in the present study, so it is not possible to compare the findings of previous study (24) and this study. The severity of craving, however, is a common relapse predictor in both studies.

The findings from previous studies show that a lack of the personal and social resources that could enable long-term remission causes a risk of relapse (10). These findings show the importance of intellectual and behavioral attempts to bring improvements in the psychosocial environment (8). Regular attendance at OTP after hospital discharge and making social changes to lessen the risk of relapse are seen as factors preventing relapse. In accordance with these findings, it was reported that reducing the number of stimulants which may cause craving and regulating the response to stress can help prevent relapse (38).

Among the patients treated in the sample, women and elderly people, as well as married and well-educated individuals show better short-term development (3, 39, and 40). But the varying effects of a combination of factors cause relapse, and there is likely not a single factor (5). The fact that the socio-demographic variables do not differ among the groups leads to the assumption that the variables found to be linked to relapse are more important in our sample. Our sample includes only male patients. For this reason, it must

be considered that socio-demographic characteristics or other risk factors may differ between the genders. In the first phases following treatment, for instance, women experience relapse due to negative affect while men experience relapse due to social pressure (41).

Studies show that frequent and intensive alcohol use is linked to a low probability of remission of the more psychological and social problems related to drinking (3,4,42). In our study, however, the severity of alcohol use-related problems evaluated with MAST did not differ among the groups.

The fact that the participants in the study are patients with a long history of alcoholism, which entails a high level of dependency and inpatient treatment, may be the reason for the high level of problems related to alcohol use in this segment. Since MAST is a self-report scale, it appears more appropriate to evaluate how these problems are perceived by individuals rather than to evaluate the severity of problems related to alcohol abuse.

The greatest limitation to our study was that the biologic markers (carbohydrate-deficient transferrin or gama glutamile transferase) were not considered during the evaluation of relapse. Some studies state that self-reported data derived from patients with alcohol dependency is more valid and reliable than toxicological analysis (43,44). Accordingly, in our study it was considered insufficient to investigate relapse with telephone interviews. Therefore all patients who showed up for an interview at the end of 12 months were interviewed face to face by the doctor (M.D.) who knew them from their inpatient treatment. In addition, data reliability was evaluated using the patient registration form and data provided by family members.

Craving is considered to be the main factor related to relapse. The conclusions from our study show that evaluating craving with PACS can provide valuable information in terms of determining the risk of relapse during both inpatient and outpatient treatments. Individuals who are considered at risk due to high craving scores can benefit during follow-up care from a more intensive therapy program and the additional use of anti-craving medication such as naltrexone or acamprosate (45,46). For sober alcohol-dependent

patients, not attending OTP is a risk factor. OTP helps patients identify craving and cope with it, and thus regular attendance at OTP can help reduce the severity of craving. Our study emphasizes the importance of intellectual and behavioral attempts to bring improvement in the psychological environment in alcohol-dependent patients (8). Therefore, regular attendance at OTP along with the use of anti-craving medication can prevent patients from relapsing by helping them to manage the relapse, make changes in their lives, and deal with events in their lives. The results from a previously conducted meta-analysis also support these findings (47).

In conclusion, our study shows that the severity of alcohol-related problems and the severity of the psychopathology do not predict the relapse to alcohol abuse after 12 months of inpatient treatment in alcohol-dependent patients. The crucial factor in relapse is the severity of craving. This leads to the assumption that a simultaneous practice of pharmacotherapy and psychotherapy can affect the craving and thereby protect patients from relapse. To ensure that patients use their medication regularly after inpatient treatment and attend OTP on a regular basis, to ultimately help the patients remain sober, adaptation to therapy should be evaluated and interviews should be held to boost motivation.

REFERENCES

1. Miller WR, Walters ST, Bennett ME. How effective is alcoholism treatment in the United States? *J Stud Alcohol* 2001; 62:211–220.
2. Monahan S, Finney J. [Explaining abstinence rates following treatment for alcohol abuse. A quantitative synthesis of patient, research design, and treatment effects.](#) *Addiction* 1996; 91:787–805.
3. McLellan AT, Alterman AI, Metzger DS, Grissom G, Woody GE, Luborsky L, O'Brien CP. [Similarity of outcome predictors across opiate, cocaine, and alcohol treatments: Role of treatment services.](#) *J Consult Clin Psychol* 1994; 62:1141–1158.
4. Booth BM, Curran GM, Han X. Predictors of short-term course of drinking in untreated rural and urban at-risk drinkers: effects of gender, illegal drug use, and psychiatric comorbidity. *J Stud Alcohol* 2004; 65:63–73.
5. Bottlender M, Soyka M. [Impact of craving on alcohol relapse during, and 12 months following, outpatient treatment.](#) *Alcohol Alcohol* 2004; 39:357–361.
6. Miller WR, Westerberg VS, Harris RJ, Tonigan JS. [What predicts relapse? Prospective testing of antecedent models.](#) *Addiction* 1996; 91:155–172.
7. Yates WR, Booth BM, Reed DA, Brown K, Masterson BJ. Descriptive and predictive validity of a high-risk alcoholism relapse model. *J Stud Alcohol* 1993;54: 645–651.
8. Brown SA, Vik PW, Patterson TL, Grant I, Schuckit MA. Stress, vulnerability, and alcohol relapse. *J Stud Alcohol* 1995; 56:538–545.
9. Connors GJ, Maisto SA, Zywiak WH. [Understanding relapse in the broader context of post-treatment functioning.](#) *Addiction* 1996; 91:173–189.
10. Moss RH, Moss BS. [Rates and predictors of relapse after natural and treated remission from alcohol use disorders.](#) *Addiction* 2006; 101:212–222.
11. Monti PM, Abrams DB, Binkoff JA, Zwick WR., Liepman MR, Nirenberg TD, Rohsenow DJ. Communication skills training, communication skills training with family, and cognitive behavioral mood management training for alcoholics. *J Stud Alcohol* 1990; 51:263–270.
12. Cooney NL, Litt MD, Morse PA, Bauer LO, Gaupp L. [Alcohol cue reactivity, negative-mood reactivity, and relapse in treated alcoholic men.](#) *J Abnorm Psychol* 1997; 106:243–250.
13. O'Connor PG, Gottlieb LD, Kraus ML, Segal SR, Horwitz RI. [Social and clinical features as predictors of outcome in outpatient alcohol withdrawal.](#) *J Gen Intern Med* 1991; 6:312–316.
14. Singleton EG, Gorelick DA. Mechanisms of alcohol craving and their clinical implications. In: Galanter M (editor). *Recent Developments in Alcoholism, Vol. 14: The consequences of alcoholism..* New York, NY: Plenum Press, 1998, 177–195.
15. Kushner MG, Abrams K, Borchardt C. [The relationship between anxiety disorders and alcohol use disorders: a review of major perspectives and findings.](#) *Clin Psychol Rev* 2000; 20:149–171.
16. Driessen M, Meier S, Hill A, Wetterling T, Lange W, Junghanns K. [The course of anxiety, depression and drinking behaviours after completed detoxification in alcoholics with and without comorbid anxiety and depressive disorders.](#) *Alcohol Alcohol* 2001; 36:249–255.
17. Swendsen JD, Merikangas KR. [The comorbidity of depression and substance use disorders.](#) *Clin Psychol Rev* 2000; 20:173–189.
18. Heinz A, Weingartner H, George D, Hommer D, Wolkowitz OM, Linnoila M. [Severity of depression in abstinent alcoholics is associated with monoamine metabolites and dehydroepiandrosterone-sulfate concentrations.](#) *Psychiatry Res* 1999; 89:97–106.
19. Strowing AB. [Relapse determinants reported by men treated for alcohol addiction: the prominence of depressed mood.](#) *J Subst Abuse Treat* 2000; 19:469–474.
20. Greenfield SF, Weiss RD, Muenz LR, Vagge LM, Kelly JF, Bello JR, Michael J. [The effect of depression on return to drinking: a prospective study.](#) *Arch Gen Psychiatry* 1998; 55:259–265.
21. Janowsky DS, Boone A, Morter S, Howe L. [Personality and alcohol/substance-use disorder patient relapse and attendance at self-help group meetings.](#) *Alcohol Alcohol* 1999; 34:359–369.

22. First MB, Spitzer RL, Gibbon M, Williams JBW. Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I), Clinical Version. Washington D.C. and London: American Psychiatric Press, Inc, 1997.
23. Çorapçıoğlu A, Aydemir Ö, Yıldız M, Koroğlu E. DSM-IV Eksen I Bozuklukları (SCID-I) için Yapılandırılmış Klinik Görüşme, Klinik Versiyon. Ankara. Hekimler Yayın Birliği, 1999.
24. Evren C, Cetin R, Durkaya M, Dalbudak E. Clinical Variables Related with Relapse during 6 Month Follow-up in Male Alcohol Dependents. *Clinical Psychopharmacology Bulletin* 2010; 20:14-22.
25. Derogatis LR. SCL-90: Administration, Scoring and Procedure Manual-II for the revised version, Tawson, Clinical Psychometric Research, 1983.
26. Dag I. Belirti tarama listesinin (SCL-90-R) üniversite öğrencileri için güvenilirliği ve geçerliliği. *Türk Psikiyatri Dergisi* 1991; 2:5-12.
27. [Gibbs LE. Validity and reliability of the Michigan Alcoholism Screening Test: A review. *Drug Alcohol Depend* 1985; 12:279-285.](#)
28. Coskunol H, Bagdiken I, Sorias S, Saygili R. Michigan Alkolizm Tarama Testinin Geçerliliği. *Ege Tıp Dergisi* 1995; 34:15-18.
29. [Flannery BA, Volpicelli JR, Pettinati HM. Psychometric properties of the Penn Alcohol Craving Scale. *Alcohol Clin Exp Res* 1999; 23:1289-1295.](#)
30. Evren C, Flannery B, Çelik R, Durkaya M, Dalbudak E. Penn Alkol Aşerme Ölçeği (PAAÖ) Türkçe Şeklinin Yatarak Tedavi Gören Erkek Alkol Bağımlısı Hastalarda Geçerliliği ve Güvenirliği. *Bağımlılık Dergisi* 2008; 9:128-134.
31. [Soyka M, Hasemann S, Scharfenberg CD, Löhnert B, Bottlender M. New possibilities in treatment and rehabilitation of alcohol-dependent patients — a catamnestic study on the efficiency of outpatient treatment programmes demonstrated by a model procedure. *Nervenarzt* 2003; 74:226–234.](#)
32. [Addolorato G, Leggio L, Abenavoli L, Gasbarrini G. Alcoholism Treatment Study Group. Alcoholism Treatment Study Group. Neurobiochemical and clinical aspects of craving in alcohol addiction: a review. *Addict Behav* 2005; 30:1209-1224.](#)
33. [Verheul R, Van Den Brink W, Geerlings P. A three-pathway psychobiological model of craving for alcohol. *Alcohol Alcohol* 1999; 34:197–222.](#)
34. [Gordon SM, Sterling R, Siatkowski C, Raively K, Weinstein S, Hill PC. Inpatient desire to drink as a predictor of relapse to alcohol use following treatment. *Am J Addict* 2006; 15:242-245.](#)
35. Evren C, Durkaya M, Çelik R, Dalbudak E, Çakmak D, Flannery B. Yatarak tedavi gören erkek alkol bağımlısı hastalarda alkol aşermesinin aleksitimi ve disosiyasyon ile ilişkisi. *Anadolu Psikiyatri Dergisi* 2009; 10:165-173
36. Evren C, Çetin R, Durkaya M, Dalbudak E, Çakmak D. Yatarak Tedavi Gören Erkek Alkol Bağımlısı Hastalarda Alkol Aşermesinin Şiddeti ile İlişkisi. *Nöropsikiyatri Arşivi* 2009; 46:3-7
37. Larimer ME, Palmer RS, Marlatt GA. Relapse prevention. An overview of Marlatt's cognitive-behavioral model. *Alcohol Res Health* 1999; 23:151-160.
38. [Sinha R, Fox HC, Hong KA, Bergquist K, Bhagwagar Z, Siedlarz KM. Enhanced negative emotion and alcohol craving, and altered physiological responses following stress and cue exposure in alcohol dependent individuals. *Neuropsychopharmacology* 2009; 34:1198-1208.](#)
39. Ornstein P, Cherepon JA. Demographic variables as predictors of alcoholism treatment outcome. *J Stud Alcohol* 1985; 46:425–432.
40. [Jarvis TJ. Implications of gender for alcohol treatment research: a quantitative and qualitative review. *Br J Addict* 1992; 87:1249–1261.](#)
41. [Zywiak WH, Stout RL, Trefry WB, Glasser I, Connors GJ, Maisto SA, Westerberg VS. Alcohol relapse repetition, gender, and predictive validity. *J Subst Abuse Treat* 2006; 30:349-353.](#)
42. Armor DJ, Meshkoff JE. Remission among treated and untreated alcoholics. *Adv Subst Abuse* 1983; 3:239–269.
43. [Mundle G, Ackermann K, Günthner A, Munkes J, Mann K. Treatment outcome in alcoholism - a comparison of self-report and the biological markers carbohydrate-deficient transferrin and gamma-glutamyl transferase. *Eur Addict Res* 1999; 5:91-96.](#)
44. Babor TF, Steinberg K, Anton R, Del Boca F. Talk is cheap: measuring drinking outcomes in clinical trials. *J Stud Alcohol* 2000; 61:55-63.
45. [Boening JAL, Lesch OM, Spanagl R, Wolfgramm J, Narita M, Sinclair D, Mason BJ, Wiesbeck GA. Pharmacological relapse prevention in alcohol dependence: From animal models to clinical trials. *Alcohol Clin Exp Res* 2001;25 \(Suppl. 5\):127–131.](#)
46. [Soyka M, Chick J. Use of acamprosate and opioid antagonists in the treatment of alcohol dependence: a European perspective. *Am J Addict* 2003; 12 \(Suppl. 1\):69-80.](#)
47. [Irvin JE, Bowers CA, Dunn ME, Wang MC. Efficacy of relapse prevention: a meta-analytic review. *J Consult Clin Psychol* 1999; 67:563-570.](#)