

•Original research article•

An analysis of factors influencing drinking relapse among patients with alcohol-induced psychiatric and behavioral disorders

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Background: Patients with alcohol-induced psychiatric and behavioral disorders have higher drinking relapse rates after treatment when compared to those without these disorders.

Aim: To investigate factors influencing drinking relapse among patients with alcohol-induced psychiatric and behavioral disorders and provide guidance for rehabilitative intervention for those being treated for substance use disorders.

Methods: Patients were randomly assigned into either the study group or the control group. We used Chi-square test to analyze their general demographics, drinking history, and hospitalizations. Factors influencing the relapse were analyzed by logistic regression analyses.

Results: The univariate analysis showed that factors included ethnicity, level of education, occupation, marital status, duration of psychiatric symptoms and deception about alcohol use; multivariate analysis showed that marital status, duration of psychiatric symptoms, and deception about alcohol use were correlated with relapse among patients with psychiatric and behavioral disorders.

Conclusions: For patients who were single, psychiatric symptoms were more likely to occur between the first and fifth year of alcohol consumption, and those who were deceptive about their alcohol use were more likely to have a relapse than those who were not.

Keywords: alcohol-induced psychiatric and behavioral disorders; relapse; enabling factors; China

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1. Introduction

The harmful use of alcohol has become the third largest risk factor which impairs health.^[1] The treatment of patients with alcohol-induced psychiatric and behavioral disorders is related to several factors, especially a high rate of drinking relapse. Research has shown that the relapse rate of patients with alcohol dependency is close to 80%,^[2] causing severe problems related to public health, public security, family conflict, and individual health. Therefore, it is crucial for researchers to investigate the factors influencing relapse among patients with alcohol-induced psychiatric and behavioral disorders in order to provide guidance for the

rehabilitative intervention of those with alcohol related disorders and to decrease the occurrence of relapse.

2. Methods

2.1 General Information

From January to December 2014, 565 individuals with alcohol-induced psychiatric and behavioral disorders were enrolled from the Second People's Hospital of Dali in Yunnan for in the study. Of the total, 45 patients (8%) refused participation, 26 patients (5%) were excluded for not meeting study criteria, and 43 patients (8%) lost contact during the year-long follow-up visits (incomplete

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information). Thus, data of 451 patients (80%) was incorporated into the statistical analysis, as shown in Figure 1. All participants were categorized into either a study group or a control group, based on the whether or not they relapsed to consume alcohol during the one year follow-up period. Informed consent for the follow-up visit was provided by both the patients and their guardians; approval for the follow-up visits was granted by the hospital's ethics committee.

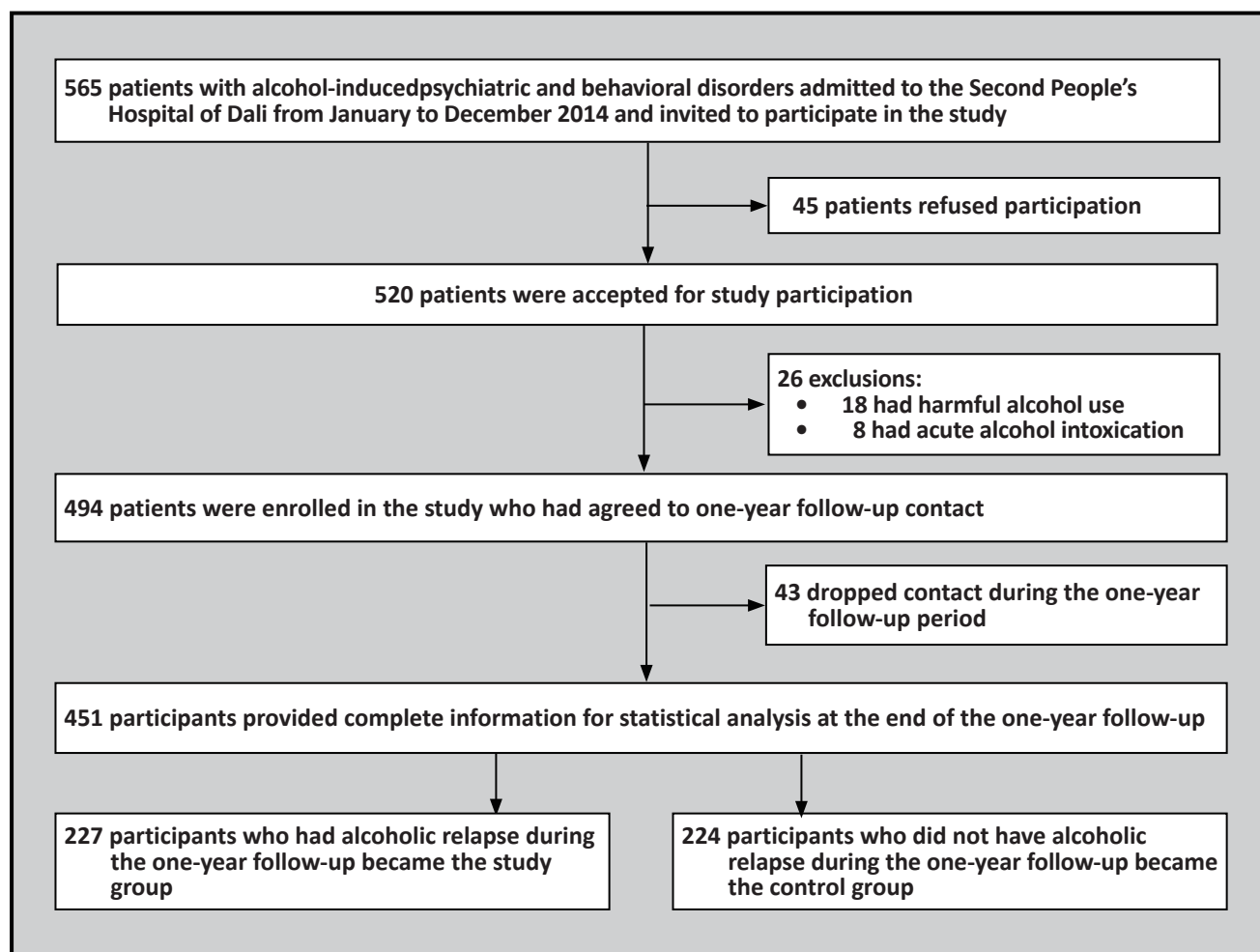
Study inclusion requirements for participants was as follows: (a) met criteria for alcohol-induced psychiatric and behavioral disorders as listed in the *International Statistical Classification of Diseases and Related Health Problems, 10th edition (ICD-10)*; (b) over 15 years of age; (c) no severe psychiatric symptoms; (d) moderate physical health status; (e) ability to comprehend and complete the questionnaire; (f) self-care ability; and (g) signed the consent form. The exclusion criteria were as follows: (a) the harmful use of alcohol and (b) acute alcoholic intoxication. The diagnosis and evaluation of the patients was carried out by the primary care physicians; in addition, a confirmation diagnosis was

provided by a senior psychiatrist. All participants in the study had an *ICD-10* code of F10. The reason for those excluded from this study is that they lacked of the second diagnosis from a senior psychiatrist because of short hospitalizations.

2.2 Methods

A self-designed questionnaire was used for data collection in this study. The following information was collected: (a) general demographics; (b) history of alcohol use (including drinking frequency, quantity consumed, the age when drinking began, duration of alcohol dependency, etc.); (c) history of hospitalizations (total days hospitalized, frequency of hospitalization, relevant signs and, etc.); (d) the record of interventions accessed during the follow-up period. The patients' primary care physicians during hospitalization were responsible for the follow-up contacts. Follow-up was done mainly via telephone calls or in-person meetings. Health education information was provided during the follow-up contacts.

Figure 1. Flow chart of the study



2.3 Statistical analysis

The software, Epidata3.2 (EpiData Association, DK5230 Odense M, Denmark), was utilized for data entry. Double entry was used to increase the accuracy of the information input. Data analysis was performed by using SPSS 21.0 (IBM SPSS statistics, New York, USA). The Chi-square test was used for analyzing demographics, alcohol consumption history, and hospitalization history. Logistic regression was used for analyzing the factors which influenced the drinking relapse among the patients.

3. Results

3.1 Comparison of the demographics

The demographics utilized for comparison included age, ethnicity, level of education, occupation, marital status, personality characteristics, family history, and social support. Using the Chi-square test, age, personality characteristics, family history, and social support were not statistically significant ($p > 0.05$); however, ethnicity, level of education, occupation, and marital status were statistically significant ($p < 0.05$), as shown in Table 1.

Table 1. Comparison of demographic characteristics of patients with alcohol-induced psychiatric or behavioral symptoms who had or had not relapsed during the one-year follow-up period

characteristics	total	relapsed group	no-relapse group	χ^2	p-value
	n (%)	n (%)	n (%)		
Age				0.47	0.792
≤40 years	145(32.2)	76(33.5)	69(30.8)		
40-50 years	198(43.9)	99(43.6)	99(44.2)		
≥50 years	108(23.9)	52(22.9)	56(25.0)		
Ethnicity				12.39	0.002
Bai	140(31.0)	83(36.6)	57(25.4)		
Han	235(52.1)	118(52.0)	117(52.2)		
others	76(16.9)	26(11.4)	50(22.3)		
Years of education				13.98	0.003
illiteracy/elementary school	185(41.0)	74(32.6)	111(49.6)		
junior/senior high school	218(48.3)	123(54.2)	95(42.4)		
secondary vocational school /college	35(7.8)	22(9.7)	13(5.8)		
university or above	13(2.9)	8(3.5)	5(2.2)		
Occupation				14.05	0.003
peasant	357(79.2)	165(72.7)	192(85.7)		
enterprises/institutions	37(8.2)	22(9.7)	15(6.7)		
worker	31(6.9)	24(10.6)	7(3.1)		
unemployed	26(5.8)	16(7.0)	10(4.5)		
Marital Status				7.66	0.006
married	379(84.0)	180(79.3)	199(88.8)		
unmarried	72(16.0)	47(20.7)	25(11.2)		
Personality characteristics				0.17	0.680
introvert	205(45.5)	101(44.5)	104(46.4)		
extrovert	246(54.5)	126(55.5)	120(53.6)		
Family alcohol history				1.71	0.191
positive	144(31.9)	66(29.1)	78(34.8)		
negative	307(68.1)	161(70.9)	146(65.2)		
Social support				0.52	0.472
strong	209(46.3)	109(48.0)	100(44.6)		
weak	242(53.7)	118(52.0)	124(55.4)		

3.2 Comparison of the history of alcohol consumption between the two groups

The comparison of the history of alcohol consumption between the study group and the control group included the amount of alcohol consumed, the age when drinking began, the duration of alcohol dependency occurred, and the duration of psychiatric symptoms, as shown in Table 2. Using the Chi-square test, differences of the amount of alcohol consumption, the age began drinking, and duration of the alcohol dependency were not statistically significant; however, the duration of psychiatric symptoms was significantly different between the two groups.

3.3 Comparison of the hospitalization history between the two groups

The hospitalization history of the patients comprised the number of hospitalizations, deception about alcohol use, depressive symptoms, delirium with convulsions, visual hallucinations, auditory hallucinations, and tactile hallucinations, as shown in Table 3. Using the Chi-square test, differences of the number of hospitalizations, depressive symptoms, delirium with convulsions, visual hallucinations, auditory hallucinations, and tactile hallucinations were not statistically significant; however, deception about alcohol use was significantly different between the two groups.

3.4 Logistic regression between the two groups

The factors (ethnicity, level of years of education, occupation, marital status, the onset of psychiatric symptoms, and deception about alcohol use) with statistical significance in the univariate analysis were used for the multivariate analysis. Logistic regression was used as the multivariate analysis for testing whether or not there was alcohol consumption relapse among the patients. The classification of variables for univariate analysis aligned with the multivariate analysis (see the analysis results of univariate analysis), as shown in Table 4.

The logistic regression testing the alcohol consumption relapse among the patients with the alcohol induced psychiatric and behavioral disorders showed that marital status, the duration of psychiatric symptoms, and deception about alcohol use were statistically significant. Being single was found to be a risk factor for alcohol consumption relapse when compared to married patients (OR=1.959). Having psychiatric symptoms within the first 5 years of alcohol consumption was also a risk factor (OR=5.555). Not being deceptive (honest) about alcohol use was a protective factor among patients (OR=0.427) when compared to those who were deceptive about alcohol use.

Table 2. Comparison of the alcohol consumption history of patients with alcohol-induced psychiatric or behavioral symptoms who had or had not relapsed during the one-year follow-up period

characteristic	total	Relapsed group	No-relapse group	X ²	p-value
	n(%)	n(%)	n(%)		
Amount of alcohol consumed (gm)				1.80	0.406
≤500	244(54.1)	117(51.5)	127(56.7)		
500-1000	166(36.8)	86(37.9)	80(35.7)		
≥1000	41(9.1)	24(10.6)	17(7.6)		
Age started drinking				1.23	0.542
≤20 years	201(44.6)	107(47.1)	94(42.0)		
20-30 years	215(47.3)	103(45.4)	112(50.0)		
≥30 years	35(7.8)	17(7.5)	18(8.0)		
Duration of alcohol dependency				0.65	0.722
≤10 years	217(48.1)	107(47.1)	110(49.1)		
10-20 years	189(41.9)	99(43.6)	90(40.2)		
≥20 years	45(10.0)	21(9.3)	24(10.7)		
Duration of psychiatric symptoms(years)				51.38	<0.001
≤1 year	243(53.9)	85(37.4)	158(70.5)		
1-5years	139(30.8)	95(41.9)	44(19.6)		
≥5years	69(15.3)	47(20.7)	22(9.8)		

Table 3. Comparison of the hospitalization history of patients with alcohol-induced psychiatric or behavioral symptoms who had or had not relapsed during the one-year follow-up period

characteristic	total	relapsed group	no-relapse group	χ^2	p-value
	n(%)	n(%)	n(%)		
Number of days hospitalized				4.37	0.113
≤30	176(39.0)	88(38.8)	88(39.3)		
30-60	203(45.0)	95(41.9)	108(48.2)		
≥60	72(16.0)	44(19.4)	28(12.5)		
Deceptive about alcohol use				4.38	0.036
present	270(59.9)	125(55.1)	145(64.7)		
absent	181(40.1)	102(44.9)	79(35.3)		
Depressive symptoms				0.70	0.401
present	35(7.8)	20(8.8)	15(6.7)		
absent	416(92.2)	207(91.2)	209(93.3)		
Delirium with convulsions				0.30	0.586
present	88(19.5)	42(18.5)	46(20.5)		
absent	363(80.5)	185(81.5)	178(79.5)		
Visual hallucination				0.80	0.372
present	158(35.0)	75(33.0)	83(37.1)		
absent	293(65.0)	152(67.0)	141(62.9)		
Auditory hallucination				0.36	0.546
present	209(46.3)	102(44.9)	107(47.8)		
absent	242(53.7)	125(55.1)	117(52.2)		
Tactile hallucination				0.26	0.611
present	58(12.9)	31(13.7)	27(12.1)		
absent	393(87.1)	196(86.3)	197(87.9)		

Table 4. Multivariate analysis of patients with alcohol-induced psychiatric or behavioral symptoms who had or had not relapsed during the one-year follow-up period (logistic regression)

variable	<i>b</i>	<i>S_b</i>	Wald	<i>p</i>	<i>OR</i>	<i>OR</i>	(95%CI)
marriage status	0.672	0.308	4.773	0.029	1.959	1.072	3.581
duration of psychiatric symptoms	---	---	55.829	<0.001	---	---	---
duration of psychiatric symptoms 2	1.715	0.323	28.187	<0.001	5.555	2.950	10.461
deceptive about alcohol use	-0.851	0.239	12.681	<0.001	0.427	0.267	0.682

4. Discussion

4.1 Main findings

In this study, univariate analysis showed that factors such as ethnicity, level of education, occupation, marital status, duration of having psychiatric symptoms, and the presence of deception about alcohol use influenced the relapse of drinking among patients with alcohol-induced psychiatric and behavioral disorders. The

level of education of the patients that relapsed was mainly at or below the junior or middle school level (86.8%). Information has shown that a higher level of education was beneficial for patients to realize that alcohol dependency may be both physiologically and psychologically harmful and they would be more likely to accept cognitive behavioral therapy and education, which, thus, might be a protective factor.^[3] Having a relatively low level of education, a shorter duration of

education, limited and incorrect knowledge of alcohol, especially regarding the mental and behavioral harm caused by alcohol consumption, would lead to relapse. These results were in line with current findings.^[4] Being a countryside laborer (peasant) was the major occupation associated with relapse (72.7%). Compared with other occupations, peasants mainly engage in manual labor intensive work without sufficient leisure activities. When faced with stressful events, peasants usually drink alcohol to alleviate anxious and depressive emotions, thus they are more likely to relapse. Likewise, peasants bear considerable psychological stress for daily living, economic backgrounds, and family burdens when compared with those engaged in other occupations. Research has shown that that high levels of psychological stress increase the risk of alcohol relapse.^[5]

The logistic regression analyses showed that only marital status, the duration of having psychiatric symptoms, and the presence of alcohol hallucinosis fit into the model. Marital status was an important factor for relapse, as being single was an enabling factor for relapse. These results were in line with current findings.^[6] On the one hand, single patients may have negative emotions. Several research studies have shown that negative emotions would lead to relapse.^[7-10] On the other hand, single patients lack effective monitoring and management and may have incomplete or weaker family roles and connections, thus they are more likely to relapse. Factors including family environment and family roles influence whether or not patients with psychiatric symptoms could carry out scientific and effective family intervention strategies.^[4,11] Ethnicity was not included in the formula. There were relatively many ethnic groups included in the present study such as Bai, Lisu, Yi, Hui, Zang, and so on. Those in the Han majority group live together with other minorities, and their cultures, customs and habits are mutually influenced and permeated. There are not sufficient observable differences in their lifestyles and customs; so the ethnicity variable had no statistical significance in the present study. The research findings have also shown that having psychiatric symptoms within the first to fifth year of drinking was an enabling factor for relapse. Research has already shown that the duration of drinking was longer in the relapse group than in the non relapse group.^[3] The drinking duration of patients having psychiatric symptoms after the first and up to the fifth year was longer than those having psychiatric symptoms within the first year. The alcohol consumption of patients having psychiatric symptoms after the first and up to the fifth year was bigger than those having psychiatric symptoms more than five years. The accumulative effect of alcohol leads to increasingly greater and more severe impact on patients' health, especially in brain and cognitive functions, thus leading to relapse. Patients who had alcoholic hallucinosis were more likely to relapse, which was in line with the research conducted by Dong and colleagues.^[12] Research has shown that patients who relapse had more severe cognitive impairments than patients who were at the

onset of alcohol dependence disorders.^[13-14] The severe impairment of cognitive functions lead an impaired judgment of whether or not to use psychoactive substances and the amount, thus aggravating their usage of psychoactive substance regardless of harmful outcomes, and finally, being more likely to relapse. The results were consistent with the finding by Gao.^[15]

4.2 Limitations

The study has several limitations. First, although the research indirectly measured the duration of alcohol-induced psychiatric symptoms (within the first year; after the first year and up to the fifth year; or over 5 years) and whether or not patients had alcoholic hallucinosis, objective measures to assess the degree of alcohol dependence and the severity of psychiatric symptoms among the study participants was lacking. Second, the intervention method provided in the follow-up contacts was relatively simple; for several reasons, the researchers mainly provided health education regarding alcohol abstinence and the harmful impact of drinking, without any provision for psychological evaluation and measurement.

4.3 Significance

The present results implied that there were correlations between marital status (single), duration of psychiatric symptoms (having psychiatric symptoms after the first and up to the fifth year), the presence of alcoholic hallucinosis, and relapse among patients with alcohol-induced psychiatric and behavioral disorders. This information can promote the reduction of alcoholic relapse and assist in guiding rehabilitative interventions for patients with alcohol dependence disorders by targeting the high risk factors.

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None.

Conflict of interest

The authors declare no conflict of interest related to this manuscript.

Informed consent

All participants and their legal guardians provided signed informed consent to participate this study.

Ethics approval

The study was approved by the Ethics Committee of The Second People's Hospital of Dali.

Authors' contributions

ZRB was in charge of data collection, data processing, and conducting the follow-up visits; WLL was in charge of the statistical analyses and draft amendments; and XYH was in charge of the staffing organization and coordination.

酒精所致的精神和行为障碍患者复饮影响因素分析

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背景: 酒精所致精神行为障碍患者与不伴有精神行为障碍者相比, 接受治疗后复饮率较高。

目标: 探讨酒精所致精神和行为障碍患者出现复饮的影响因素, 为因物质使用障碍而接受治疗的患者提供康复干预的依据。

方法: 患者被分为研究组或对照组。采用卡方检验分析一般人口学资料、饮酒史和住院情况。患者复饮的影响因素采用 logistic 回归分析。

结果: 单因素分析显示酒精所致精神和行为障碍患者复饮的影响因素有民族、文化程度、职业、婚姻、出

现精神症状的时限以及隐瞒酒精使用等; 多因素分析显示上述患者复饮行为与其婚姻、出现精神症状时限以及是否有隐瞒酒精使用有关。

结论: 对单身患者而言, 更容易在饮酒后 5 年内出现精神症状。隐瞒酒精使用情况者比不隐瞒者更容易复发。

关键词: 酒精所致的精神行为障碍; 复发; 促成因素; 中国

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