Family, Social Factor, and Impulsiveness Influences on College Student Alcohol Consumption Rates

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ABSTRACT

Background: Excessive alcohol consumption produces adverse physical and mental health consequences generally, including college and university students. A variety of risk factors the alcohol consumption have been addressed for college students generally, however only a few studies have focused specifically on Chinese college students. This article reports on a study which investigated factors influencing the current situation of Chinese college student alcohol consumption.

Methods: A stratified, random-cluster sampling approach was used on 907 students from a Changsha, Hunan university. All participants completed a general information questionnaire, an Alcohol Use Disorders Identification Test scale, a drinking expectations questionnaire, and a Barratt Impulsiveness Scale-11 questionnaire.

Results: It found that 65.2 % students reported consuming alcohol in the prior calendar year that 11.2 % reported hazardous and harmful drinking behaviors. Univariate analysis showed the following significantly associated with the incidence of hazardous and harmful drinking behavior: 1) male older than 20; 2) having monthly living expenses [do you mean an expense allowance as in “income or expenses, outgo?] of more 1,000 Y (OR = 2.855); 3) smoking (OR = 3.490); 4) A mother's neutral attitude to toward child’s alcohol consumption (OR = 1.439); 5) positive peer attitude towards alcohol consumption at college; 6) neutral peer attitude towards alcohol consumption at college; 7) peer rate of alcohol consumption; and, 8) high impulsivity levels.

Conclusion: A variety of factors including family, peers, and impulsive personality traits affect college student drinking behavior. Education efforts regarding alcohol-related health and targeted interventions may reduce the college student drinking behavior.

Key Words: Hazardous drinking; Harmful drinking; College students; Risk factor

1 INTRODUCTION

Alcohol consumption is a lifestyle and social custom that has become an important public health problem worldwide. Public interest in alcohol consumption among college students is increasing due to potentially negative impact [1]. Ralph et al. [2] analyzed alcohol consumption trends in 18-24 year old US college students and found that the incidence of college students consuming alcohol over 5 standard cups within the past month of being surveyed increased from 41.7 % to 44.7 % in the period 1998-2005. The incidence of drinking and driving increased from 26.5 % to 28.9 %, and the incidence of alcohol-related accidental death has increased from 1/100,000 to 3 %. Recently, college student drinking rate,in China, has reached 60 % [3, 4]. It is commonly accepted that alcohol consumption leads to a variety of physical health, learning, and psychological problems as well as dangerous social behaviors which lead to adverse consequences for individuals, families and society [5].

"Hazardous drinking" is defined as a quantity, or pattern, of alcohol consumption that endangers health, but not causing significant physical, or mental, damage [6]. "Harmful drinking" is defined as alcohol consumption that results in physical, or mental, damage [7]. A survey of pharmacy students at nine pharmacy schools in the U.S. demonstrated that over one-fourth of the students surveyed exhibited signs of harmful drinking [1]. Wallenstein et al. reported that nearly 34 % of the college students surveyed participated in harmful, or hazardous, drinking [8]. Pedrelli et al. reported that worsened college student depressive symptoms associated with increased daily alcohol use and with greater risk of compulsive drinking [9]. Problematic drinking situations and associated factors have also been studied in Chinese college students [3, 4, 10-12]. A search of literature published in English journals revealed only a few merged reports on alcohol Chinese college student alcohol consumption. No study investigated associations between impulsivity levels and risk factors with hazardous, or harmful, Chinese college student alcohol consumption. In this study, hazardous, and harmful alcohol, consumption and risk factors were investigated in college students in Changsha, Hunan using a sample survey to provide information upon which to design interventions directed at college student hazardous, and harmful, alcohol consumption.

2 SUBJECTS AND STUDY METHODS

2.1 Subjects

Subjects were recruited from a college in in Changsha, Hunan province using a stratified, random-cluster sampling. The subjects were stratified by grade. A total of 1015 students were recruited for survey from 12 classes containing freshman, sophomore, junior, and senior students. A total of 907 valid questionnaires were obtained. This included 317 males, 590 females, 219 freshmen, 182 sophomores, 374 juniors, and 132 seniors.

2.2 Study Procedure

Investigators explained the purpose of the student and questionnaire content to the classes as a whole. To maintain confidentiality, communication between peers was prohibited during the survey. Approximately 30 min were given to complete the written survey. The survey was conducted between February 30, 2013 - March 10, 2013.

2.3 Study Tools

Social demographic characteristics, including gender, age, grade in school, major, ethnicity, family residence, status as only-child, the average monthly living expenses, smoking, family income, and parental education levels were collected using a general questionnaire.

Family, peer, and school environment attitudes including parental attitudes towards to alcohol consumption, parental alcohol consumption, peer alcohol consumption, and peer (i.e. friends, associates and classmates) attitudes towards alcohol consumption were collected in a questionnaire designed for the study.

Alcohol Use Disorders Identification Test (AUDIT) [8] is a scale for screening alcohol use

disorders recommended by WHO. This scale is highly accurate in identifying early risk of drinking and harmful drinking. The scale contains 10 items. Items 1-3 measure the amount of drinking and frequency. Items 4-6 measure alcohol dependency. Items 7-10 measure various alcohol-caused problems. Total scores were calculated and a limitation score was designed to define “hazardous” and “harmful” drinking. A prior study suggested a limitation score of 7.00 for hazardous drinking in a Chinese population with a sensitivity and specificity of 99.17 % and 90 %, respectively [10]. In this study, an AUDIT score ≥ 7 was deemed “hazardous and harmful” alcohol consumption, < 7 was deemed “normal drinking”, and 0 was deemed “non-drinking”[9].

The Barratt Impulsiveness Scale, Chinese version (BIS-11) [10] contains 26 items using a 1 to 4 scoring system (almost no/never, occasionally, often, and almost always/always) and three dimensions: attentional, motor, and non-planning impulsiveness.

2.4 Quality Control

Investigators were trained in the basic language requirements for guiding field surveys prior to the survey. A survey process simulation was conducted between two investigators. The survey was conducted in a classroom, questionnaires were completed by the students at the time, and collected from them. Data were entered into Epidata by two investigators independently and proofed. After exporting the data to SPSS, a logic correction was performed for each variable error to detect outliers.

2.5 Data Analysis

Data were analyzed using SPSS17.0. Descriptive analysis, Student’s t test, χ^2 test, and unconditional logistic regression analysis were used. All tests in this study were two-sided at $\alpha = 0.05$ level unless otherwise stated.

3 RESULTS

3.1 Survey Completion

This study examined 1,015 college students in 12 classes that contained freshman, sophomore, junior, and senior students. One hundred and eight students refused to participate in, or did not complete, the survey. Nine hundred and seven valid questionnaires were obtained with a valid response rate of 88.49 % (907/1015). No significant differences in gender and grade structure were observed between excluded subjects and study samples ($p > 0.05$) (Table 1).

Table 1. Comparison of general information between lost subjects and study subjects

Variables	Study Subjects	Excluded Subjects	X^2	*p*
Sex			0.184	0.668
Male	317	40		
Female	590	68		
Grade			0.734	0.865
Freshman	219	24		
Sophomore	182	21		
Junior	374	49		
Senior	132	14		

3.2 General Information of Participants

In the 907 valid surveys, 317 were male (35.0 %) and 590 were female (65.0 %) with a mean age of 20.55 ± 1.422. This population contained 813 Han (89.6 %) and 94 (10.4 %) non-Han ethnic minorities. Of the 907, 219 (24.1 %) were freshmen, 182 (20.1 %) were sophomores, 374 (41.2 %) were juniors, and 132 (14.6 %) were seniors. There were 45 (5.0 %) from a single-parent family, 587 (64 %) from a core family (two generations with parents and child/children), and 275 (30.3 %) from an expanded family (more than two generations). Most fathers (42.0 %) had received middle school education followed by high school (29.9 %), college and above (16.0 %), and elementary and below (12.1 %) education. Most mothers (46.3 %) had received [same question] middle school education followed by elementary and below (24.9 %), high school (20.3 %), and college and above (8.5 %) education (Table 2).

Table 2. Drinking Situation in College Students with Different Characteristics (n = 907)

Variables	Groups	Audit=0 n (%)	Audit<7 n(%)	Audit ≧ 7 n(%)	X^2	*p*
Sex	M	60(18.9)	184(58.0)	73(23.1)	98.663	0.000**
	F	256(43.4)	306(51.9)	28(4.7)		
	F	256(43.4)	306(51.9)	28(4.7)		
Race	Han	289(35.5)	436(53.6)	88(10.9)	2.035	0.362
	Minorities	27(28.8)	54(57.4)	13(13.8)		
Age(year)	≤20	168(38.4)	233(53.2)	37(8.4)	8.6	0.014*
	>20	148(31.6)	257(54.8)	64(13.6)		
Grade	freshman	72(32.9)	129(58.9)	18(8.2)	4.091	0.129
	sophomore	73(40.1)	91(50.0)	18(9.9)		
	junior	130(34.8)	198(52.9)	46(12.3)		
	senior	41(31.1)	72(54.5)	19(14.4)		
Family residence	city	55(30.9)	94(52.8)	29(16.3)	8.843	0.012*
	town	90(35.4)	132(52.0)	32(12.6)		
	countryside	171(36.0)	264(55.6)	40(8.4)		
Only child	yes	88(29.9)	159(54.1)	47(16.0)	12.186	0.002*
	no	228(37.2)	331(54.0)	54(8.8)		
Average monthly living expenses (yuan)	≤800	168(39.2)	232(54.1)	29(6.8)	29.753	0.000**
	801-1000	123(33.0)	207(55.5)	43(11.5)		
	>1000	25(23.8)	51(48.6)	29(27.6)		
Smoking	yes	8(11.4)	29(41.4)	33(47.1)	102.365	0.000**
	no	308(36.8)	461(55.1)	68(8.1)		

Family structure	one-parent family	16(35.6)	20(44.4)	9(20.0)	2.272	0.321
	core family	206(35.1)	316(53.8)	65(11.1)		
	extended family	94(34.2)	154(56.0)	27(9.8)		
Father's education	elementary and below	38(34.5)	60(54.5)	12(10.9)	18.293	0.000**
	middle school	122(32.0)	234(61.4)	25(6.6)		
	high school	111(41.0)	128(47.2)	32(11.8)		
	college and above	45(31.0)	68(46.9)	32(22.1)		
Mother's education	elementary and below	73(32.3)	129(57.1)	24(10.6)	2.919	0.232
	middle school	155(36.9)	225(53.6)	40(9.5)		
	high school	65(35.3)	98(53.3)	21(11.4)		
	college and above	23(29.9)	38(49.4)	16(20.8)		
Father's attitude to drinking	agree	20(23.5)	45(52.9)	20(23.5)	41.293	0.000**
	neutral	168(29.3)	345(60.2)	60(10.5)		
	disagree	128(51.4)	100(40.2)	21(8.4)		
Mother's attitude to drinking	agree	5(14.3)	25(71.4)	5(14.3)	40.324	0.000**
	neutral	137(27.6)	293(59.1)	66(13.3)		
	disagree	174(46.3)	172(45.7)	30(8.0)		
Father drinking	yes	211(32.2)	370(56.4)	75(11.4)	7.532	0.023*
	no	105(41.8)	120(47.8)	26(10.4)		
Mother drinking	yes	57(27.4)	128(61.5)	23(11.1)	7.098	0.029*
	no	259(37.1)	362(51.8)	78(11.2)		
Peers attitude to drinking	agree	28(20.9)	79(59.0)	27(20.1)	49.151	0.000**
	neutral	235(33.8)	388(55.7)	73(10.5)		
	disagree	53(68.8)	23(29.9)	1(1.3)		
Peers drinking	never	27(60.0)	12(26.7)	6(13.3)	61.345	0.000**
	few	179(42.8)	212(50.7)	27(6.5)		
	some	93(29.5)	188(59.7)	34(10.8)		
	much	17(13.2)	78(60.5)	34(26.4)		

3.3 Family, Peers and School Environmental Conditions

Fathers' attitudes, towards their child's alcohol consumption, were reported by the child as: 9.4 % of agreed with; 27.5 % disagreed with; and 63.2 % expressed a neutral attitude.The mothers' reported attitudes were: 3.9 % agreed; 41.5 % disagreed; and 54.7 % expressed a neutral attitude.

The students reported that: 72.3 % of fathers consumed alcohol; and, 27.7 % did not; that 22.9 % mothers consumed alcohol, and 77.1 % did not. The students reported that of their peers, 14.8 % agreed with, 8.5 % disagreed with, and 76.7 % expressed a neutral attitude towards alcohol consumption in college. Students reported that, of their peers, 5.0 % never consumed alcohol, 46.1 % consumed a little, 34.7 % consumed some, and 14.2 % consumed a lot (Table 2).

3.4 Alcohol Consumption in College Students

The subjects reported that 591 had consumed alcohol, while 316 had not consumed alcohol during the past year. This is an alcohol consumption rate of 65.2 %. AUDIT scores ranged from 0 to 31. Of the 591 consumers, 101 (11.1 %) had an AUDIT score ≥7 points while 490 (54.0 %) had an AUDIT score < 7 points. Table 2 presents the alcohol consumption situation in college students with different characteristics.

3.5 Impulsivity Level

BIS-11 scores ranged from 30 to 94 with a mean score of 59 ± 8.320, a median score of 57, and a QR of 10 (P25 = 54, P75 = 64). Participant BIS scores with various characteristics appear in Table 3.

Table 3 Comparison of Impulsivity Scores between Students with Different

Variables	AUDTT = 0 Score Average	AUDTT < 7 Score Average	AUDTT ≥ 7 Score Average	X^2	*p*
Impulsiveness	437.3	443.4	557.8	13.443	0.001

3.6 Analysis of Risk Factors and Harmful Drinking

Univariate analysis showed that hazardous, and harmful, alcohol consumption was higher in men than women (χ^2 = 98.663, p < 0.000). The incidence of hazardous and harmful alcohol consumption showed significant differences between participants by age; family residence; only-child status; monthly living expense; smoking; father's educational levels; parental attitudes towards their alcohol consumption; parental alcohol consumption; peer attitudes towards alcohol consumption in college; and peer alcohol consumption (Table 2). Impulsivity scores were statistically different in participants with different alcohol consumption situations (Table 3).

A logistic regression analysis was conducted using a backward stepwise method, setting α = 0.05 in, α = 0.10 out and using hazardous and harmful alcohol consumption as the dependent variable (AUDIT = 0 point = 0, AUDIT < 7 points = 1, AUDIT ≥ 7 points = 2), and sex (X1), age (X2), family residence (X3), only-child (X4), the average monthly living expenses (X5), smoking (X6), father's education level (X7), father's alcohol consumption situation (X8), father's attitude towards children's alcohol consumption (X9), mother's alcohol consumption situation (X10), mother's attitude towards children's alcohol consumption (X11), peers' alcohol consumption situation (X12), peers' attitude to alcohol consumption in college (X13), and impulsivity score (X14) as independent variables (Table 4).

Table 4. Ordinal regression analysis of hazardous and harmful drinking in college students (n = 907)

Variables	Groups	b	Sb	Wald χ^2	*p*	AOR	OR 95 %	CI
Sex	F	0				1		
	M	1.049	0.163	41.201	0	2.855	2.073	3.934
Age (year)	≤20	0				1		
	>20	0.308	0.14	4.835	0.028	1.361	1.034	1.792
Average monthly living expenses (yuan)	>1000	0.927	0.244	14.414	0	2.527	1.566	4.078
	801-1000	0.245	0.153	2.553	0.11	1.278	0.946	1.726
	≤800	0				1		
Smoking	No	0				1		
	Yes	1.25	0.287	19.004	0	3.49	1.99	6.123
Mother's attitude to drinking	Agree	0.571	0.424	1.818	0.178	1.77	0.772	4.061
	Neutral	0.364	0.172	4.482	0.034	1.439	1.027	2.015
	Disagree	0				1		
Peers attitude to drinking	Agree	1.051	0.35	8.999	0.003	2.861	1.44	5.686
	Neutral	1.005	0.294	11.729	0.001	2.732	1.537	4.858
	Disagree	0				1		
Peers drinking	Most	1.024	0.387	7.005	0.008	2.784	1.304	5.939
	Some	0.47	0.352	1.788	0.181	1.6	0.803	3.19
	Few	0.169	0.344	0.241	0.623	1.184	0.603	2.327
	Never	0				1		
Impulsivity level	BIS score	0.022	0.009	6.208	0.013	1.022	1.005	1.039

Multivariate analysis ($p < 0.05$) showed the risk factors of hazardous and harmful drinking as male, age older than 20 years, average monthly living expenses higher than 1000 yuan, smoking, neutral maternal attitude toward child's alcohol consumption, neutral peer attitude toward alcohol consumption in college, most peers consuming alcohol, and high impulsivity level. Controlling all other factors, college students with higher impulsive levels are more likely to exhibit hazardous and harmful drinking behaviors (OR = 1.022,95 % CI: 1.005-1.039).

4 DISCUSSION

The hazardous, and harmful, consumption of alcohol has long been recognized as a danger to the college student physical and mental health with potential negative consequences for society. The recent rise in alcohol consumption rates among college students has increased societal concern.

This study demonstrated that 65.2 % of college students self-report alcohol consumption in the past year with 11 % of those who had consumed alcohol having an AUDIT score ≥ 7 points, suggesting hazardous or harmful drinking of alcohol.

The reported rate of hazardous, and harmful, drinking among Chinese college students is lower than that reported among college students in some western countries (25 % to 34 %) [7, 8]. The reported incidence of hazardous and harmful drinking among Chinese college students is similar to that of rural Hunanese (11.5 %) [13].

This study also found that gender, age, average monthly living expenses, smoking, maternal and peer attitudes towards alcohol consumption, and high impulsivity scores are risk factors for hazardous and harmful drinking.

Consistent with prior studies, this study showed that the incidence of hazardous and harmful alcohol consumption in males is much higher than that females [14, 15]. Family environment is widely recognized as an important factor that affects the children growth and their adult behaviors. This study showed that family residence, paternal education, parental attitudes to alcohol consumption by childrend, and parental alcohol consumption affects the incidence of hazardous and harmful alcohol consumption in college students. This suggests that family environmental factors played an important role in the college student alcohol consumption. Being an "only-child" is also a factor for a high rate of hazardous and harmful drinking in college. This is because this special growing environment leads to poor psychological endurance, which is prone to drinking behavior [10]. The finding that students with high monthly living expenses are also prone to hazardous and harmful drinking behavior may just reflect that they can afford to drink. [11]. This study showed that peer attitudes towards alcohol consumption in college and peer alcohol consumption behavior affects the incidence of hazardous and harmful drinking behavior. In students with hazardous and harmful drinking behaviors, peers tend to provide a supportive or neutral attitude, and a high rate of alcohol consumption follows. This suggests that alcohol consumption is peer-accepted in Chinese colleges [12, 16].

Besides the findings that external factors affected hazardous and harmful drinking behaviors in college students, this study also found that the student impulsivity levels significantly associate with the incidence of hazardous and harmful drinking behaviors. After controlling for other factors, a higher impulsivity level is an independent risk factor for hazardous and harmful drinking behavior. High impulsivity levels promote student excessive drinking behaviors, but excessive drinking can in turn increase the impulsivity level of college students [17].

In conclusion, a variety of factors affect college student drinking behavior. Family, school, and society appear to play roles in decreasing the incidence of hazardous and harmful drinking behavior in college students. Education on alcohol-related health and development of targeted interventions may reduce the harm of alcohol use on college students.

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

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