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Internet addiction in college students and its relationship with cigarette smoking and alcohol use in Northeast China

Songli Mei, PhD¹, Tingting Gao, MM¹, Jiaomeng Li, MM², Ying Zhang, PhD¹, Jingxin Chai, PhD¹, Lingyan Wang, MM¹, Zhao Zhang, MM¹, and Huiping Zhang, PhD³

¹Department of Children and Adolescents Health, School of Public Health, Jilin University, Changchun, Jilin, China

²Department of Discipline Construction, the Second Hospital of Jilin University, Changchun, Jilin, China

³Department of Psychiatry, Yale University School of Medicine, New Haven, CT, USA

Dear Editor

Internet addiction is an impulse control disorder impairing real life relationships, particularly in young people. Internet addiction and substance abuse may share common features (Black & Monrouxe, 2014; Dietz et al., 2013; Machowicz, Ciechanska, Zycinska, et al., 2013). Substance abuse means excessive use of cigarette, alcohol, or other drugs of abuse, resulting in negative effects on both physical and mental health (Mitrovic, Hadzi-Pesic, Stojanovic, & Milicevic, 2014). This study aimed to investigate the prevalence of Internet addiction in college students and the association of Internet addiction with cigarette smoking or alcohol use.

In a cross-sectional study, 1,092 college students from Northeast of China were assessed for Internet addiction. The proportions of cigarette (or alcohol) users with and without internet addiction were compared using chi-square (χ^2) tests. Among the above students, 91 (8.3%) were Internet addicts, 376 (34.2%) were alcohol users (36 or 9.6% of them were Internet addicts), and 112 (10.3%) were cigarette smokers (21 or 18.8% of them were Internet addicts). A significantly higher proportion of Internet-addicted students were cigarette smokers ($\chi^2 = 17.73$, $P < .010$) but not alcohol users ($\chi^2 = 1.24$, $P > .050$). Multivariate regression analysis was performed with individual and family characteristics as covariates. Table 1 summarizes logistic regression analysis results regarding the influence of gender, cigarette smoking, alcohol use, family location, or other covariates (e. g., degree of education and self-esteem) on Internet addiction. Three models showed positive results (model 1, $P < .001$; model 2, $P < .001$; model 3, $P < .001$). Our findings suggest that the risk for Internet addiction in Chinese college students could be influenced by cigarette smoking,

Correspondence: Huiping Zhang, Department of Psychiatry, Yale University School of Medicine, VA Medical Center/116A2, 950 Campbell Avenue, West Haven, Connecticut 06516, USA. huiping.zhang@yale.edu.

ORCID

Songli Mei, <http://orcid.org/0000-0003-1815-8255>

but not by alcohol drinking. This observation was similar to that from a study of 73,238 participants by Lee, Han, Kim, and Renshaw (2013).

The present study suggests that Internet addiction is an upcoming problem in the world, and our findings may help developing prevention and intervention approaches for Internet addiction.

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TABLE 1
Logistic regression models for predicting Internet addiction behaviors in college students

	<i>a</i> Model 1			<i>b</i> Model 2			<i>c</i> Model 3		
	%	OR	95%CI	OR	95%CI	OR	95%CI		
Risk factors									
Gender ^d									
Female	61.3%	1.00		1.00		1.00			
Male	38.7%	1.90 *	(1.16–3.11)	1.89 *	(1.12–3.22)	1.73 *	(1.01–2.96)		
Cigarette use ^d									
No	89.7%	1.00		1.00		1.00			
Yes	10.3%	2.46 **	(1.36–4.46)	2.08 *	(1.10–3.95)	2.02 *	(1.06–3.85)		
Alcohol use ^d									
No	65.8%	1.00		1.00		1.00			
Yes	34.2%	0.78	(0.47–1.30)	0.87	(0.52–1.47)	0.88	(0.52–1.48)		
Individual characteristics									
Degree of education ^d									
Undergraduate	47.8%			1.00		1.00			
Graduate	52.2%			0.46 **	(0.27–0.79)	0.51 *	(0.29–0.89)		
Personality ^d									
Introverted	57.4%			1.00		1.00			
Extroverted	42.6%			1.27	(0.78–2.08)	1.26	(0.76–2.07)		

	^a Model 1		^b Model 2		^c Model 3	
	OR	95%CI	OR	95%CI	OR	95%CI
Self-esteem			0.85***	(0.79–0.91)	0.86***	(0.80–0.93)
Family influence						
Location ^d						
Rural	56.0%				1.00	
Urban	44.0%				0.86	(0.50–1.46)
Only child (ref = no) ^d						
No	54.5%				1.00	
Yes	45.5%				1.73*	(1.03–2.91)
Family care					0.90*	(0.82–1.00)

Abbreviations: CI, confidence interval; OR, odds ratio.

^aModel 1 showed that both cigarette smoking and gender were associated with Internet addiction.

^bModel 2 showed the influence of cigarette use on Internet addiction after adjusting for individual characteristics (including degree of education, personality, and self-esteem).

^cModel 3 showed the effect of cigarette use on Internet addiction after adjusting for individual characteristics and family influence (including location, only child, and family care).

^dVariables were converted into 2 dichotomous dummy coded variables.

* $P < .05$.

** $P < .01$.

*** $P < .001$.