



Original Article

Do causes of stress differ in their association with problem drinking by sex in Korean adolescents?

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HIGHLIGHTS

- We examine the cause of stress related to problem drinking behavior.
- Students with extremely high stress are more likely to engage in problem drinking.
- The major causes of stress associated with problem drinking differ among gender.
- Appropriate approaches that reflect sex differences are an important consideration.

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ABSTRACT

Background: Previous studies have focused mainly on whether stress causes present drinking or excessive drinking. However, few studies have been conducted on the relationship between stress and problem drinking in adolescents. The objective of this study was to examine the stress level and the cause of stress related to problem drinking behavior according to sex among Korean youth.

Method: Data for this study were pooled from cross-sectional data collected annually from 2007 through 2012 from the Korea Youth Risk Behavior Web-based Survey. A representative sample of 442,113 students from 800 randomly selected middle and high schools in Korea were included. Multiple logistic regression models were used in the analysis.

Results: Both male and female students with extremely high stress were more likely to engage in problem drinking than were students with no stress (odds ratios [OR], 1.73 in males and 1.41 in females). The major causes of stress in male students that were associated with problem drinking were conflict with a teacher, trouble with parents, and peer relationships (ORs, 2.47, 1.72, and 1.71, respectively), whereas there are no statistically significant association between causes of stress and problem drinking among female students. Considering stress level, Male students with extremely high stress level were associated with problem drinking regardless of causes of stress, while Female students who felt extremely high levels of stress were more likely to engage in problem drinking due to stress from a conflict with parents, peer relationships, appearance, and financial difficulty (ORs, 1.53, 1.53, 1.46, and 1.47, respectively).

Conclusion: Adolescents who engage in problem drinking may be affected by different causes of stress according to sex. Thus, appropriate approaches that reflect sex differences will be helpful to alleviate problem drinking in adolescents and educational authorities need to arrange more effective education program for drinking given positive associations between drinking education and problem drinking.

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1. Introduction

Excessive drinking consumption is a risk factor for cancer of the oral cavity, pharynx, oesophagus, colorectum, liver, larynx and female breast

(Bagnardi et al., 2015). In particular, binge and problem drinking cause problem behavior, such as car crashes, property damage, and domestic violence (Graham et al., 2011; Jennings, Piquero, Rocque, & Farrington, 2015). Korea has a more permissive and positive drinking culture compared with other countries. Drunken behavior in Korea is generously accepted, and people even boast of the large amount of alcohol they can drink. According to the Korea National Health and Nutrition

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Examination Survey, the proportion of drinkers aged over 19 years increased from 73.5 and 42.9% in 2012 to 75.3 and 45.7% in 2013 in men and women adults, respectively (Ministry of Health Welfare & Korea Centers for Disease Control and Prevention, 2016a). In addition, Korean alcohol consumption is not unusual in the worldwide despite government effort. In 2010, persons aged 15 years or older drank, on average, 12.3 L of pure alcohol per year in Korea, which is almost double the worldwide consumption of 6.2 L. In addition, the prevalence of alcohol use disorders (including alcohol dependence and harmful use of alcohol) was 6.2% in Korea (10.3% for men and 2.2% for women), which was higher than worldwide prevalence of 4.1% (7.2% for men and 1.3% for women) (S. Kim, Kim, & Park, 2016).

Drinking in Korea is not a problem only in adults. According to the 2015 Korea youth risk behavior web-based survey, which surveyed Korean 68,043 students (middle and high school), the risky drinking rate was 49.9 and 44.9% in 2013 to 53.6 and 48.2% in 2015 in male and female students, respectively (Ministry of Health Welfare, & Korea Centers for Disease Control and Prevention, 2016b).

There is a clear need to scrutinize the reasons for teenage drinking and to provide fundamental solutions. The causes of teenage drinking include various genetic, physiological, environmental, and social factors (Jang, 2003). Studies in other countries conducted from various perspectives have shown that factors related to teenage drinking include socio-cultural factors (Buckner & Turner, 2009), parental factors (Belles, Budde, Moesgen, & Klein, 2011; Gilligan & Kypri, 2012; Rossow, Keating, Felix, & McCambridge, 2016), peer factors (A. B. Kelly et al., 2012), risky and problem drinking (Norstrom & Pape, 2012), and genetic environmental factors (Loehlin, 2010).

Socio-psychological approaches are the most frequently utilized to assess drinking behavior (Lee, 1998). Conger proposed a theory that people tend to drink alcohol under stress because alcohol allegedly has effects on alleviating tension (Conger, 1956). Subsequent studies confirmed that stressful situations trigger drinking (Cooper, Frone, Russell, & Mudar, 1995; Cox & Klinger, 1988). Previous studies on drinking and stress have focused mainly on whether stress causes present drinking or excessive drinking (Litt & Cooney, 1999). Although most studies on alcohol consumption have demonstrated a positive correlation between stress and drinking, little association has been paid to the association between stress and problem drinking among Asian youth (Chung & Lee, 2012; Y. B. Kim, 2007). Problem Behavior Theory suggests that problem behaviors, defined as socially problematic, concerning, or undesirable behaviors usually with negative consequences, typically result from: 1) the perceived-environment system (e.g., college setting, culture as influenced by race/ethnicity); 2) the personality system (e.g., stress, depression, life satisfaction); and 3) the behavior system. Informed by this framework, the current study aims to examine the stress in personality dimension that impact problem drinking behavior (Tran, Nehl, Sales, & Berg, 2014). Some studies have considered the relationship between problem drinking and stress, but the participants were limited to adults (Colell, Sanchez-Niubo, Benavides, Delclos, & Domingo-Salvany, 2014; Jeong, 2003; Jo, 2010; Mulia, Schmidt, Bond, Jacobs, & Korcha, 2008). We wonder whether problem drinking is affected by stress among Asian adolescents. If so, we must question what stress caused the problem drinking. Further studies to clarify the association between stress and drinking by youth using large-scale and nationally representative data are needed. In addition, psychological factors such as depression and stress have been shown to differ by gender during adolescence and gender differences remain one of the most reliable determinants of alcohol consumption; males drink and are drunk more frequently than females (Holmila & Raitasalo, 2005; Kuntsche, Rehm, & Gmel, 2004; Kuntsche et al., 2015; Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Holm, & Gmel, 2009). Given differences in the ratio of body water to body weight and alcohol metabolism, women are more susceptible to alcohol effects than men (Holmila & Raitasalo, 2005). Interestingly, gender differences in problem drinking are almost nonexistent in early adolescence. An

association between stress and problem drinking has been shown to vary by sex in adult research (Ayer, Harder, Rose, & Helzer, 2011; Colell et al., 2014; Tran et al., 2014). However, whether stress affects problem drinking in adolescents by sex has not been determined. The objective of this study was to examine whether stress affects problem drinking in adolescents. We investigated which causes of stress relate to problem-drinking behavior by sex among Korean adolescents.

2. Methods

2.1. Data sources

Data for this study were obtained from the Korea Youth Risk Behavior Web-based Survey (KYRBWS) conducted annually from 2007 through 2012. The KYRBWS is a nationwide web-based survey of Korean adolescents conducted by the Korea Centers for Disease Control and Prevention (KCDCP). The survey design involved multistage sampling, stratification and clustering to achieve national representativeness and included students from 400 middle schools and 400 high schools. The reliability and validity of these survey data have been assessed (Bae et al., 2010a; Bae et al., 2010b). The response rate was 96.4%. Of 448,069 students, 5956 subjects were excluded due to missing information on relevant covariates, leaving 442,113 participants in the statistical analysis. The current study was approved of by the Institutional Review Board (RB) of Yonsei University Graduate School of Public Health.

2.2. Dependent variable

The primary endpoint variable in this study was problem drinking using CRAFFT tool. CRAFFT is a behavioral health screening tool for use with children < 21 years and is recommended by the American Academy of Pediatrics Committee on Substance Abuse for use with adolescents. The CRAFFT screening tool is widely utilized in research on alcohol (T. M. Kelly, Donovan, Chung, Bukstein, & Cornelius, 2009), and the validity of the questionnaire was verified by comparison with other screening tools (Knight, Sherritt, Harris, Gates, & Chang, 2003). The CRAFFT consists of six questions developed to screen adolescents for high risk alcohol and other drug use disorders simultaneously. It is a short, effective screening tool to assess whether a longer conversation about use, frequency, and other risks and consequences of alcohol and other drug use is warranted. The questions were asked exactly as written: Over the past 12 months, have you ever: 1) ridden in a car driven by someone (including yourself) who was “high” or had been using alcohol or drugs? 2) used alcohol or drugs to relax, feel better about yourself, or fit in; 3) used alcohol/drugs while you were by yourself; 4) forgot things you did while using alcohol or drugs; 5) heard that you should cut down on your drinking or drug use from your family or friends; and 6) gotten into trouble while you were using alcohol or drugs? Problem drinking was defined to be present if the student answered “yes” to two or more of the above questions.

2.3. Independent variables

Self-reported perceived stress was assessed for each adolescent by asking, “How much stress do you have on an average day?” and the possible answers were: 1) not at all; 2) a little bit; 3) moderately; 4) quite a bit; 5) extremely high. The primary cause of stress was determined among the following possible answers: 1) conflict with parents; 2) financial difficulty; 3) conflict with teachers; 4) peer relationships; 5) burden on grade and career; 6) health problems; and 7) appearance.

2.4. Covariate variables

The literature indicates that diverse factors (e.g., demographic, socioeconomic, parents- and school-related characteristics) influence problem drinking behavior (J. Kim & Park, 2015; Tran et al., 2014). To

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