Macro-level gender equality and alcohol consumption: A multi-level analysis across U.S. States

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**A R T I C L E   I N F O**

Article history:
Available online 4 April 2012

Keywords:
Alcohol consumption
Gender equality
Women’s role
United States

**A B S T R A C T**

Higher levels of women’s alcohol consumption have long been attributed to increases in gender equality. However, only limited research examines the relationship between gender equality and alcohol consumption. This study examined associations between five measures of state-level gender equality and five alcohol consumption measures in the United States. Survey data regarding men’s and women’s alcohol consumption from the 2005 Behavioral Risk Factor Surveillance System were linked to state-level indicators of gender equality. Gender equality indicators included state-level women’s socioeconomic status, gender equality in socioeconomic status, reproductive rights, policies relating to violence against women, and women’s political participation. Alcohol consumption measures included past 30-day drinker status, drinking frequency, binge drinking, volume, and risky drinking. Other than drinker status, consumption is measured for drinkers only. Multi-level linear and logistic regression models adjusted for individual demographics as well as state-level income inequality, median income, and % Evangelical Protestant/Mormon. All gender equality indicators were positively associated with both women’s and men’s drinker status in models adjusting only for individual-level covariates; associations were not significant in models adjusting for other state-level characteristics. All other associations between gender equality and alcohol consumption were either negative or non-significant for both women and men in models adjusting for other state-level factors. Findings do not support the hypothesis that higher levels of gender equality are associated with higher levels of alcohol consumption by women or by men. In fact, most significant findings suggest that higher levels of equality are associated with less alcohol consumption overall.

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**Introduction**

The relationship between gender equality and health, especially women’s health, is generally assumed to be positive, with higher levels of gender equality leading to improved health. Recent research mostly supports this assumption and improving gender equality is a current public health strategy to improve women’s health (Chen, Subramanian, Acevedo-Garcia, & Kawachi, 2005; Jun, Subramanian, Gortmaker, & Kawachi, 2004; Kawachi, Kennedy, Gupta, & Prothrow-Stith, 1999; McAlister & Baskett, 2006; Sen, Östlin, & George, 2007, p. 127; Young, 2001). However, in regards to associations between gender equality and health behaviors, such as alcohol consumption, it is generally assumed that higher levels of gender equality are associated with higher levels of consumption, especially among women. In fact, recent public discussions of women’s drinking describe increases in women’s risky drinking and blame these changes on feminism and increased gender equality (Clark-Flory, 2008; Morris, 2008; Riddoch, 2009). The assumption that higher levels of gender equality lead to increases in alcohol consumption persists despite the lack of research examining the relationship between gender equality – especially at the macro-level – and women’s alcohol consumption.

Skepticism is warranted in relation to the claim that increases in women’s drinking are attributable to increases in gender equality. First, gender equality is often positively associated with health for women (Chen et al., 2005; Jun et al., 2004; Kawachi et al., 1999; Young, 2001). Second, claims about the negative influence of gender equality on women’s alcohol consumption have been made since the early 20th century (Fillmore, 1984). These claims may partly reflect concern about women violating gender norms more than excess problems due to women’s drinking (Eriksen, 1999; Fillmore, 1984). Further, findings from studies examining gender equality and alcohol do not consistently support the claim. Individual-level studies of gender equality and alcohol...
consumption have measured gender equality (or women’s status) as social and gender roles and found mixed results (Gmel, Bloomfield, Ahlstrom, Choquet, & Lecomte, 2000; Kuntsche, Knibbe, & Gmel, 2009; Mansdotter, Backhaus, & Hallqvist, 2008; Murphy, Connelly, Evens, & Stoep, 2000; Van Gundy, Schieman, Kelley, & Rebello, 2005).

The three published studies examining the relationship between macro-level gender equality and alcohol consumption are also inconclusive (Bond et al., 2010; Kuntsche, Knibbe, Kuntsche, & Gmel, 2011; Rahav, Wilsnack, Bloomfield, Gmel, & Kuntsche, 2006). Macro-level place-based factors can be measured at any size geographic area, including neighborhood, city, county, state, or country and are used to distinguish contextual from individual-level effects. The three published macro-level studies examine the relationship across countries and are part of the multi-country Gender, Alcohol, and Culture: An International Study (GENACIS) project (Wilsnack & Wilsnack, 2006). In an ecologic study of 23 countries, Rahav et al. (2006) found that higher gender equality was associated with lower alcohol-related consequences among both women and men and not associated with alcohol dependence among women or men. In the second study, a multi-level study of 22 countries, Bond et al. (2010) found that higher gender equality was associated with smaller gender differences in frequency of drinking in public settings such as bars and restaurants, but not private settings such as homes and parties. As drinking in bars is associated with heavier drinking and numerous alcohol-related harms (Clark, 1981, 1991; Graham & Wells, 2001; Nusbaumer, Mauss, & Pearson, 1982; Perrine, Muntz, Searles, & Walter, 1997; Stall, Heurting-Roberts, McKusick, Hoff, & Lang, 1990; Wells & Graham, 1999; Wells, Graham, Speechley, & Koval, 2005), these findings suggest that higher gender equality could be associated with smaller gender differences in heavier drinking and alcohol-related harms, a topic in need of further study. However, smaller gender differences are not necessarily a proxy for higher levels of women’s drinking (Rahav et al., 2006; Roberts, in press). The third study examines a more complex relationship between macro-level gender equality and women’s drinking. In this study, Kuntsche et al., examine the relationship between mothers working for pay and usual quantity of alcohol consumption in 16 countries with varying levels of macro-level gender equality in income. In a cross-level interaction, they found that partnered mothers working for pay in countries with higher levels of gender equality had a lower usual quantity than partnered mothers not working for pay, but that partnered mothers working for pay in countries with lower equality had higher usual quantity than partnered mothers not working for pay (Kuntsche et al., 2011).

The lack of research supporting the assumption that gender equality is positively associated with women’s alcohol consumption is not surprising, as conceptualizations suggest that macro-level gender equality could be associated with either higher or lower alcohol consumption. A recent paper drawing on research relating to macro-level gender equality and violence against women to identify lessons for research related to gender equality and alcohol identifies two relevant conceptually-driven hypotheses: amelioration and backlash (Roberts, 2011). In the literature on violence against women, amelioration suggests that increases in gender equality decrease violence against women and backlash suggests that increases in gender equality increase violence against women. In relation to alcohol, amelioration would mean that increased gender equality would be associated with decreased alcohol consumption, especially risky or harmful consumption. If, for example, in places that are more gender equal in economic participation, women are more fulfilled by having multiple roles (Mansdotter et al., 2008) and have more control over their own lives, they may drink less or less often to cope with stress. Amelioration is in line with the larger literature relating higher gender equality to higher levels of women’s health. Backlash would mean that increased gender equality would be associated with increased alcohol consumption, especially risky or harmful consumption. If, for example, increased economic participation by women exposes women to workplace cultures that involve regular and heavy alcohol consumption and women have more resources to spend on alcohol, they may increase their drinking. Backlash is in line with the claims made in the popular press about the relationship between gender equality and women’s alcohol consumption. Amelioration and backlash could also apply to men’s drinking. For example, increased gender equality could also lead men to perform multiple roles. Like women, men’s performance of multiple roles could increase satisfaction with their lives and thereby decrease drinking from stress. It could also decrease the time that men have available to drink, as time they would otherwise spend drinking would be spent performing additional roles (amelioration). On the other hand, if gender equality leads women to drink more, women might reduce their “nagging” of men about alcohol use (Eriksen, 1999). This could result in men drinking more (backlash). Further research, including at different levels of aggregation such as states within a single country, can help disentangle this relationship.

This study uses data from the Behavioral Risk Factor Surveillance System (BRFSS) to examine the relationship between state-level gender equality and women’s and men’s alcohol consumption in the U.S., where both gender equality and alcohol consumption vary across states (Kerr, 2010; Werschkul & Williams, 2004). Specifically, it seeks to determine whether state-level gender equality is associated with higher or lower levels of alcohol consumption by women and men. It also examines cross-level interactions to assess whether state-level gender equality influences the relationship between individual-level status of women (i.e. college graduation and employment) and alcohol consumption. Based on findings from Kuntsche et al. (2011), the hypothesis is that women with higher individual status drink less in states with higher gender equality than states with lower gender equality and women with lower status drink more in states with higher gender equality than in states with lower gender equality.

Methods

This study was determined to be exempt by the University of California, Berkeley Committee on the Protection of Human Subjects.

Data sources

Data on state-level gender equality and state-level control variables come from the Institute for Women’s Policy Research (IWPR), the National Women’s Law Center and Oregon Health Sciences University Women’s Health Report Card (Women’s Health Report Card), the U.S. Census, the Pew Forum on Religion and Public Life (Pew Forum on Religion and Public Life, 2008) and Center for Budget & Policy Priorities and Economic Policy Institute (Bernstein, McNichol, & Nicholas, 2008). IWPR compiles data from each U.S. state regarding gender equality and women’s status and uses these data to create and publish five indices: Employment and Earnings; Social and Economic Autonomy; Political Participation, Reproductive Rights; and Health and Well-being (Werschkul & Williams, 2004). IWPR indices have been used in other U.S. studies of gender equality and health (Chen et al., 2005; Jun et al., 2004; Kawachi et al., 1999; Koenen, Lincoln, & Appleton, 2006), although the domains differ from those used in multi-country gender equality and alcohol research (Bond et al., 2010). The Women's
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