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Gender balance and its impact on male and female smoking rates in Chinese cities

Tingzhong Yang [a, *], Ross Barnett [b], Shuhan Jiang [a], Lingwei Yu [a], Hong Xian [c], Jun Ying [d], Weijun Zheng [e]

[a] Center for Tobacco Control Research, Zhejiang University School of Medicine, Hangzhou 310058, China
[b] Department of Geography, University of Canterbury, Christchurch 8140, New Zealand
[c] Department of Biostatistics, Saint Louis University, St. Louis, MO 63104-1314, USA
[d] Department of Environmental Health, University of Cincinnati, Cincinnati, OH 45221, USA
[e] Department of Preventive Medicine, Zhejiang Chinese Medical University, Hangzhou 310053, China

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ABSTRACT

Objective: Although gender differences in smoking have received much attention, few studies have explored the importance of contextual effects on male and female smoking rates. The aim of this study is to examine the association between variations in city-level sex ratios and gender differences in smoking in China.

Methods: Participants included 16,866 urban residents, who were identified through multi-stage sampling conducted in 21 Chinese cities.

Results: The study found that, independent of personal characteristics, cities with more males had higher male smoking rates and lower female rates.

Conclusions: Our research underscores the importance of city-level contextual effects in understanding gender differences in smoking in China.

1. Introduction

Gender differences in smoking are present in variety of cultures, but the ratios of male–female smoking prevalence vary dramatically across countries (Lillard and Christopoulou, 2015). In most high-income countries, male and female smoking rates are very similar. However, in many low and middle-income countries gender differences are more pronounced, with men smoking far more than women (World Health Organization, 2008). This is true whether one looks at the average age of smoking initiation, peak smoking prevalence or the average number of cigarettes smoked per day (Lillard and Christopoulou, 2015). These differences are very prominent in Asia (eg Morrow et al., 2002), and in China in particular, where in 2010 the estimated male smoking prevalence rate of 52.9% was 22 times that of women (2.4%) (Li et al., 2010). Other estimates, for example by Yang et al., (2015a) for 27 cities (56.7% male vs 6.7% female), report similar trends. Although there are also variations by age cohort, with gender differences generally being less among older people (Liu, 2015), the gap overall between male and female smoking prevalence nevertheless remains substantial.

Socio-ecological models have emphasized that gender differences in smoking are influenced by both individual and environmental factors. From an individual perspective, gender identity, norms and roles influence attitudes and behaviours in many areas, such as relationships, parenting, schooling, work, health practices, as well as smoking (Mao et al., 2014; Johnson et al., 2009; Bottorff et al., 2012). Research has shown that men's smoking is related to their masculine ideologies of independence, physical resilience to harmful substances and capacity to endure risk-taking (Bottorff et al., 2006; Haines et al., 2010). Much of the literature on gender differences in smoking thus has stressed differences in traditional sex roles, and social norms which, for women, have emphasised a strong disapproval of smoking (Pathania, 2011). This was not always so and during the early twentieth century in China and some other Asian countries, most notably Japan and the Republic of Korea, where female smoking rates were much higher than they are now (Hermalin and Lowry, 2012). In China, for example, the social

* Corresponding author. Center for Tobacco Control Research, Zhejiang University School of Medicine, China.
E-mail address: tingzhongyang@zju.edu.cn (T. Yang).

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reaction against female smokers during the 1930s, and later during the Cultural Revolution (Benedict, 2011), when smoking was seen as a sign of western decadence and promiscuity, resulted in a reversal in smoking prevalence to produce the low rates we see today. However, the social norms that initially slowed the diffusion of smoking among women are clearly diminishing in many parts of the developing world. As Pathania (2011) has suggested this is one of the unwelcome consequences of the otherwise very welcome processes of gender empowerment and economic growth that have provided increased freedom to women, including their right to smoke.

Gender differences in smoking feature strongly in models of the smoking epidemic (Thun et al., 2012). Smoking adoption and cessation is commonly viewed from a historical perspective with higher income males and then higher income females being the first to smoke, with similar trends occurring later in terms of cessation. In western countries gender and class differences have tended to be high at early stages in the epidemic only to narrow later on when smoking has diffused to other social groups (Pampel, 2001, 2005, 2006). In later stages of the epidemic socio-economic, rather than gender differences, become more pronounced as higher levels of smoking cessation occur amongst more affluent groups. While such models have provided an important conceptual framework to understand the smoking transition in western countries, and stimulated interest in the relevance of such trends to non-western contexts, there has been little attention to geographical differences in the pace of change. Countries, and regions within them, can vary widely in terms of the smoking epidemic and hence differences in rates of male and female smoking. Thus, it is important to understand the extent to which different local place or contextual factors may influence smoking rates among men and women and the relative differences between them. The objective of this study, therefore, is to explore the extent to which city-level factors influence male and female smoking rates in China. Particular attention is focused upon urban differences in the male proportion of the total population and how these are related to variations in male and female smoking rates.

China provides an interesting context for exploring the impact of urban differences in sex ratios on smoking especially since the (male/female) sex ratio at birth has increased in recent years (Loh and Remick, 2015). While sex ratio imbalances are generally lower in urban compared to rural areas (Bhattacharya, 2012), urban differences are still substantial. These city-level variations most likely reflect different urban cultural norms relating to traditional patriarchal roles and differences in economic development and labour market conditions which, in turn, will have affected the gender balance of internal migration streams (Chang, 2008). However, while much attention has been paid to the gender imbalance in China, the influence of differences in city-level sex ratios on smoking is unknown. It is likely that cities where males constitute a larger proportion of the population will have higher smoking rates for a number of reasons. First, cities with more males are likely to have more entrenched cultural norms with respect to smoking, which traditionally has been seen as a male domain. Thus men are more likely, and women less likely, to smoke in such places. Second, since the economic reforms of the 1970s the relative position of women in the labour market has deteriorated. As a result of increased competition for jobs and gender based discrimination in the labour market many women have become less, rather than more, empowered (Attané, 2014). Such trends are likely to have been accentuated in cities with more males and to have brought many women back into the household and into more traditional gender roles that mitigate against smoking.

We argue that there are three reasons why a focus on urban differences in sex ratios is important. First, while much attention has been devoted to contextual or place effects on smoking, especially in richer countries, most of this literature has focused on the independent effects of area socio-economic conditions on smoking rates and not on gender balance (Pearce et al., 2012). Second, where contextual studies of gender differences in smoking have occurred these have generally focused on urban neighbourhood effects and not considered the importance of contextual influences at the city-scale which are also likely to be important. Third, no work on contextual influences on smoking has attempted to conceptualise what types of area effects are important for countries at different stages in the smoking epidemic. In richer countries the effects of concentrated urban poverty, a legacy of globalization and deindustrialization, have received much attention, but such factors are less relevant in middle income and poorer countries where cultural factors may be more important. This is particularly true in China where the one child policy and a preference for male children has contributed to unbalanced sex ratios. Investigating the importance of such factors at the city level and how they may influence individual patterns of smoking is a high priority.

To achieve the above objective, the paper is organized as follows. First, we provide a brief overview of work on gender differences in smoking and the role of area or contextual effects, particularly in Asia. Second we outline the methods of our study. This is followed by our results and a discussion of our key findings and their theoretical and policy implications.

2. Gender differences in smoking and the role of area effects

Studies of gender differences in smoking rates have mainly tended to focus on the changing importance of socio-economic factors. In one of the few cross-national studies of gender differences in smoking rates, Lillard and Christopoulou (2015) found that women were more likely to smoke at a similar rate to men in countries that had experienced a growth in political freedoms and where fertility rates were higher. On the other hand, women were less likely to smoke as much as men when a greater proportion of men worked relative to women, where levels of urbanisation were lower, and where gender differences in educational attainment were greatest. These patterns strongly support the earlier views of Waldron (1991) regarding patterns of societal change that helped to alter traditional social norms and hence increase smoking rates among women.

However, while the a number of studies have investigated societal correlates of gender differences in smoking, few studies have paid attention to the significance of urban context effects independent of individual characteristics. Those that have done so suggest that such effects are important in helping to explain gender differences in smoking rates both in high and middle income countries. In high income countries, such as the United States, or New Zealand, a number of studies have suggested that the socio-economic context, net of individual factors, has an important influence on smoking rates, particularly for women (eg Kim and Clark, 2006; Daponte-Codina et al., 2009; Barnett et al., 2009). It is suggested that higher female smoking rates in more disadvantaged neighbourhoods may reflect greater local attachments amongst women, the effects of urban inequality, or more acute perceptions of local disadvantage.

The importance of considering gender differences in the impact of area effects is also illustrated by a small number of studies which have examined non-western contexts at different stages in the smoking epidemic. Chuang et al. (2007), for instance, note that few studies of neighbourhood influences on health have occurred in Asia. Using data from the Taiwan Social Change Survey, they found that the relationship between area deprivation and smoking was different from that found in western countries. While lower SES