

Passive Smoking in China: Contributing Factors and Areas for Future Interventions¹

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Objective To reduce tobacco consumption and exposure to passive smoking in China. **Methods** Discussion consisting of 80 focus groups and 35 interviews were held in three rural intervention counties of Jiangxi, Henan, and Sichuan Provinces. Participants came from hospitals, schools, rural areas, and urban areas. **Results** Tobacco use and exposure to passive smoking were widely prevalent in the investigated schools, hospitals, county towns, and rural areas. Knowledge of the risks for passive smoking on health is lacking, especially in rural areas. Barriers to the control of tobacco use in public places include reluctance of administrators to implement tobacco control policies, lack of consistent policies, difficulties with regulations and enforcement, and reluctance of non-smokers to exercise their right to clean air. **Conclusion** To curb the current tobacco epidemic in China, tobacco control efforts must focus on reducing exposure to passive smoking. A strategy should be formulated to reduce the factors that contribute to tobacco use and exposure to passive smoking.

Key words: Qualitative study; Passive smoking; China

INTRODUCTION

China is the largest tobacco consumer, accounting for more than one-fourth of the world tobacco consumption annually and has the largest smoking population at approximately 350 million smokers^[1]. Passive smoking is a severe public health problem in China, and it is estimated that half of the population is exposed to passive smoking at home, their workplace, and public places^[2]. Survey data indicate that the majority of the population is exposed to passive smoking and no change has been found related to the amount of exposure from 1996 to 2002^[3]. Passive smoking in public places, such as hospitals and schools, poses serious health risks for patients, visitors, and staff. There is substantial evidence that exposure to passive smoking has deleterious effects on health^[4]. Passive smoking is a severe public health problem in China, especially in rural areas. A recent study demonstrated that among non-smoking females, exposure to tobacco smoke from their husbands is associated with increased

morbidity and mortality from cardiovascular disease^[5]. It is estimated that about 540 million Chinese suffer from the effects of passive smoking and more than 100 000 of them die annually of diseases due to passive smoking^[6]. In 2003, the Chinese government ratified the World Health Organization's Framework Convention on Tobacco Control (FCTC), which promotes evidence-based measures for curbing the epidemic of both active and passive smoking^[7]. Being a country with a non-smoking population of one billion, and with most individuals living in rural areas, China needs to develop a comprehensive intervention program on passive smoking in rural areas.

This study was partly supported by the Fogarty International Center's International Tobacco and Health Research and Capacity Building Program (No. RO1-HL-73699). One of the principal goals of the program is to establish models of comprehensive interventions to decrease non-smokers' exposure to passive smoking in China, especially in its rural areas. In implementing this project, Peking Union Medical College (PUMC) has conducted quantitative,

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qualitative, and laboratory studies to assess the complete spectrum of tobacco use and related factors to develop effective models. This paper describes the findings and attitudes towards active and passive smoking in three counties of Sichuan, Jiangxi, and Henan Provinces.

MATERIALS AND METHODS

Participants

Fieldwork was conducted from November 2004 to April 2005 at the county level in three provinces. Discussions consisting of 80 focus groups and 35 interviews were held in each of the following three counties: Mianzhu County of Sichuan Province, Anyi County of Jiangxi Province, and Xin'an County of Henan Province in the middle and southwest areas of

China. According to the 1996 and 2002 national tobacco surveys, the prevalence of tobacco use in these counties was close to the national average.

Qualitative Study Strategy

Four sets of qualitative studies, including in the county's main hospitals, secondary middle schools, town, and rural community were completed in each of the three intervention counties. The qualitative study participants included hospital board members, medical staff, hospital patients and family members, school principals, teachers, students, community leaders, and other including the chairman of the Labor Union in schools and residents of the town and rural communities. The general characteristics of the study facilities and populations are summarized in Table 1.

TABLE 1

General Characteristics of the Study Facilities and County School Population

County Schools	County Hospitals	Local Residents
<ul style="list-style-type: none"> Anyi Secondary Middle School Mianzhu High School Xin'an Experimental Junior High School Each school having about 2000 students (with about equal proportions of males and females) and 100+ teachers (with a slightly higher number of females). 	<ul style="list-style-type: none"> Anyi County People's Hospital (300-400 staff; 200 beds). Mianzhu Municipal People's Hospital (500 staff; 400 beds). Xin'an County People's Hospital (300-400 staff; 200 beds). Females accounting for about 60%-70% of the hospital staff; patients mainly from rural areas. 	<ul style="list-style-type: none"> Study participants from Jiaoshi and Diangong villages in Anyi County, the residential district of the Eastern Automobile Factory in Mianzhu County, and Huanghe Cement Group in Xin'an County. Residents from rural areas of Huangzhou and Shajing Village in Anyi County, Denglin, and Rongfeng Village in Mianzhu County, and Yancang Village in Xin'an County.

Sampling was used to select individuals who were representative of their group and held more influential viewpoints^[8]. Participants were selected with assistance from administrators at hospitals and schools and from village and city officials in both rural and urban areas, and assigned to one of the four groups: hospital, school, urban community, or rural community. Efforts were made to ensure that personal and professional relationships between the participants would not hamper discussion (e.g., students and teachers were not included in the same group, and smokers and non-smokers were separated as well).

Discussion consisting of 80 focus groups (4-6 persons in each group) and 35 key interviews were

conducted (Table 2). Participants in the interviews included staff members from administrative departments, key leaders of hospitals and schools, and village leaders. The discussion of the focus groups and interviews were designed to elicit the attitudes of participants towards active and passive smoking, as well as behavior and perceptions on smoking restrictions at home or in key public places such as schools and hospitals. The focus Groups also discussed methods to access information, the importance of establishing health education classes in schools, the role of physicians in providing patient health education, and suggestions on how to develop China's future tobacco control programs.

TABLE 2

Qualitative Studies in Three Intervention Counties

Location	Discussion in Focus Group			Interviews		
	Anyi/Jiangxi	Mianzhu/Sichuan	Xin'an/Henan	Anyi/Jiangxi	Mianzhu/Sichuan	Xin'an/Henan
Hospital	5	6	6	6	7	8
School	8	7	10	2	4	2
Urban Community	6	8	6	1	1	1
Rural Community	6	6	6	1	1	1
Total	25	27	28	10	13	12

Data Collection

The Fogarty Project Office in Beijing designed the discussion in focus group questions and guidelines. Twenty-one moderators were selected from PUMC researchers and local public health physicians and trained by conducting discussion in focus group. Assistant moderators from county-level Centers for Disease Control and Prevention (CDCs) were responsible for monitoring tape recorders, taking notes in the discussions, and translating the transcription. Each discussion in focus group and interview took about one hour. The principle of information saturation was applied to both discussions in focus group and in interviews. Based on this principle, discussion in focus group and interview were continued until no new information from the participants was shared and there was continuous repetition of themes^[9]. Thus, recruitment of new focus groups and interviews was stopped when no additional information was obtained from the last discussion or interview. Generally, discussion from about 6-8 focus groups were needed for a particular site. Discussions from all focus groups and interviews were tape recorded and subsequently transcribed verbally following completion. During the interview, interviewers took field notes to help clarify the context and meaning of the discussion.

Questions

The questions were developed for the discussion in focus group and interviews based on social cognitive theory and the project's aim and framed in an open-ended manner to promote discussion. The discussions focused on knowledge, attitudes, and practices regarding active and passive smoking, rules and regulations of tobacco control, methods for accessing tobacco control information in the communities, the state of health education classes in schools, the extent of communication with patients and their education by physicians, and suggestions for developing future tobacco control programs. Participants offered their suggestions for tobacco prevention, which included strategies for optimal prevention and cessation programs, and general strategies to foster non-smoking environments.

Data Analysis

Analysis was performed based on review of transcribed tapes and field notes. Three trained researchers from PUMC developed predetermined codes and categories based on questions and themes from the discussion guides. Raw text was carefully analyzed and coded for relevant themes. While coding transcripts, working definitions for each code

were developed. Researchers developed overarching categories and grouping individual codes. Similar concepts were clustered to form a conceptual map of the content from the transcripts. Using the principle of constant comparison, the researchers compared the categories and codes of new transcripts with existing categories and codes to fully develop the properties of the overarching categories for the individual codes^[10].

Reports summarizing key findings from the discussion in focus group and interviews were developed at two levels: by group (i.e., hospital, school, urban, and rural community) and, by county (i.e., Anyi, Mianzhu, and Xin'an Counties). The four resulting reports from each county were analyzed. Finally, a comprehensive report was prepared comparing the four sub-reports across the three counties after analysis.

RESULTS

Tobacco Use in Different Settings

Schools Male teachers comprised the main population of smokers in schools, and older male teachers tended to be more addicted to tobacco than young teachers were. Since the implementation of a "Tobacco-free School" policy in 2003 requesting teachers not to smoke in public places, the prevalence of smoking among teachers at the Xin'an Experimental Junior High School has decreased. However, a number of teachers who smoke heavily still smoke inside their offices.

In the other two schools (Anyi Secondary Middle School and Mianzhu High School), teachers often smoked in school offices. In discussions conducted in focus group at the two schools, most of the participants emphasized that "*Smokers can smoke whenever they liked*" or "*some of the smokers even smoke in front of pregnant teachers*". "*The schoolmasters demand that no smoking is permitted in meeting rooms. However, some heavy smokers continue to smoke there*". "*Generally speaking, teachers do not smoke inside classrooms, yet some heavy smokers have been seen with cigarettes in their mouths while walking along the corridors*". Teachers do not "*begin to teach their class, until they have finished smoking*", or "*they smoke in the corridor during the class breaks*," or "*some of the teachers smoke in evening independent learning classes or while monitoring exams in classrooms*".

Hospitals The subjective assessment of smoking prevalence rates in male health professionals by chief doctors, administrators, and department heads was over 50%, 40%, and 30%, respectively in Mianzhu Municipal People's Hospital, Anyi County

People's Hospital and, Xin'an County People's Hospital. At the Anyi County Hospital, the overwhelming majority of medium-level managers were smokers.

A large number of medical staff at the Surgical Departments had serious problems related to smoking. Doctors consistently smoked in offices, at meetings and in clinics. Most of the doctors did not smoke while working in hospital wards or in patient discussion rooms. A few doctors, however, did smoke while talking with patients.

Smoking was quite common among patients, their family members and friends, especially inside the surgery wards. A few patients were also noted to be smoking in the obstetrics and gynecology wards and the pediatric wards.

County Towns and Rural Areas Smokers in towns and rural areas consisted comprised of males and female ethnic minority. Some recent self-imposed smoking behavior change is evident. For example, some smokers consumed less tobacco when restricted by time (e.g., they did not smoke when watching TV with non-smokers). Some smokers changed their locations when they smoked (e.g., they moved away from non-smokers and smoked in lounge rooms or in the bathroom). Smokers did not smoke in front of family members, particularly their children. These self-imposed restrictions were more common in county town households. In many households, however, there were no restrictions on smoking. This was particularly true among rural households. Many rural women commented on this concern: "Some smoke at home regardless of the location, they can smoke whenever they like. So they often smoke when getting out of bed in the morning, feeling bored, watching TV, eating or before sleeping at night" and "they smoke in front of pregnant women and children".

Smokers almost always smoked when playing Mahjong and cards, participating in meetings, chatting and drinking. These leisure activities and social encounters almost always occurred in closed facilities, making the concentration of smoke particularly high.

Attitudes and Behaviors Towards Smoking and Exposure to Passive Smoking

Whether at school, hospital, or home, many individuals smoked in public areas despite the fact that non-smokers were present. Most non-smokers in the study areas had limited knowledge about the harmful effects of passive smoking on their health. In rural areas, some people thought that as they became used to the smell of tobacco, the effects of tobacco smoke became less harmful. Some people working in

the hospital believed that "In the winter, especially while using the air conditioner/heater with the windows and doors shut, the harm of tobacco smoke to passive smoker is greater. If you are in a large room with few smokers, you are relatively safe." These statements and others indicate that many inaccurate perceptions regarding the adverse impact of passive smoking on health existed in China.

Generally speaking, few smokers felt uneasy while smoking in front of non-smokers. Correspondingly, most non-smokers felt that it was impolite to ask smokers not smoking. In schools, people often freely smoked in offices; in hospitals, smoking of higher authoritative individuals was unlikely to be interrupted. Non-smoking people at perceived lower positions generally did not feel comfortable expressing their attitudes about smoking. For example, most students were reluctant to discourage their teachers from not smoking; and similarly, many wives in rural areas did not try to stop the smoking of their husbands.

The differences in social acceptability of smoking were more pronounced between urban and rural areas. In urban areas, many smokers tended to go outside when they wanted to smoke and some non-smokers would ask smokers not to smoke in front of them or to smoke outside. Most people in rural areas, however, did not subscribe to these practices. However, in both urban and rural areas, when smokers got together with non-smokers for social occasions such as chatting, dining, or playing cards, non-smokers most often chose not to oppose to smoking for fear of creating quarrels, or being perceived as disrespectful.

Social Norms Involving Tobacco Use

Offering cigarettes in China is regarded as social courtesy and traditional custom, as the Chinese saying goes that "a cigarette builds a bridge, while wine builds a road." Thus, offering cigarettes is regarded as showing respect towards other people and functions as a form of social communication or as a mean to draw people closer together. When you ask someone to do you a favor or follow your advice, you need to show them respect. Patients and their family members frequently offer cigarettes to doctors as a means of showing respect. Correspondingly, doctors usually accept the offer, thinking that refusing would be impolite to their patients.

Offering cigarettes as a gesture of friendship has also extended into the home and is perceived as part of being a good host. It is typical for a guest to be offered cigarettes when visiting someone else's home. Despite the fact that some individuals are aware of the health risks of active and passive smoking,

offering cigarettes remains a deeply rooted social norm. In the face of this norm, non-smokers have great difficulty in exercising their right to clean the air.

Establishing Smoke-Free Schools and Smoke-Free Hospitals

Some attempts have been made at the local level to establish smoke-free environments. Xin'an high school has attempted to become a smoke-free school since August 2003. When Mianzhu municipality began implementing a new policy to build a clean city and Anyi County was establishing a "secondary hospital", officials included tobacco control as one of the key issues. As a result, several rules were established. For example, health care workers were not allowed to smoke while treating patients, making rounds, or talking to patients. If individuals violated the rule, they would be subjected to a 5 RMB fine. There was concern, however, about the efficacy and sincerity of these efforts. While the new policies at Xin'an High School slightly improved the smoking environment, no substantial effect was seen, causing some to conclude that "*all the efforts are in vain*".

One of reasons for the lack of practical effects is that people who run the schools and hospitals are under considerable workloads and pressures from issues such as complying with regulations for college entrance examinations, responding to government efforts to improve school standards, accommodating new students entering the school, maintaining doctors' morale, and generating more income for the hospital. As a result, many administrators do not think that tobacco control is a significant aspect of their responsibility.

Second, the smoking population is relatively large and there are few, generally accepted tobacco free environments in the society at large. Thus, it is difficult to motivate and control the behavior of a large number of staff members and visitors entering the hospitals.

Third, banning smoking in public places is difficult to monitor and regulate. The influence of social acceptability of smoking again plays a large role in people's reluctance to be impolite by asking others not to smoke. This societal norm more powerfully extends into the workplace, as employees do not want to cause conflict with supervisors by asserting preferences to a smoke-free working environment.

Finally, rewards and punishments to control smoking are simply not practical. For example, in hospitals, it is not legal in China to impose fines or economic penalties on patients and their family members for smoking.

DISCUSSION

This Fogarty-supported research project helped lay a foundation of planning a comprehensive intervention program to decrease non-smokers' exposure to passive smoking. China has currently been found that it is in the early stage of a tobacco epidemic and related disease burden. Exposure to passive smoking that imposes unnecessary health risks and a significant disease burden on the vast majority of the non-smoking Chinese people is a critical component of China's tobacco crisis and must be dealt with as a matter of priority.

The main findings of the present study that are relevant in defining the critical elements of a strategic framework for affecting behavior change to reduce tobacco consumption and exposure to passive smoking are listed as follow: Exposure to passive smoking is a pervasive and severe health problem affecting the vast majority of Chinese people; inaccurate perceptions exist regarding the dangers of active and passive smoking persist in China; most non-smokers exposed to passive smoking feel that it is impolite to ask smokers to not smoke in indoor places, offering cigarettes as a gift is a deeply entrenched social norm in Chinese culture; most hospital managers and school officials do not consider tobacco control as one of their chief responsibilities; and implementation of a tobacco control policy in establishing smoke-free settings is ineffective if only utilizes penalty or disciplinary sanctions are utilized.

These results indicate that a strategic framework is needed to change behaviors by reducing tobacco consumption and exposure to passive smoking. This framework must provide a step-by-step approach to tobacco control that seeks to change the *status quo*. The initial priorities in this step-by-step approach should include the following as listed below: a strategic communication encouraging non-smokers in China to exercise their right to enjoy smoke-free air by politely asking smokers not to smoke in public places; a communication and advocacy strategy changing the social norm related to offering cigarettes as gifts by supporting healthy alternatives; a governmental initiative encouraging hospital managers, chief doctors, other health professionals, and school leaders to incorporate tobacco control as one of the priorities of their responsibilities; a sustained and comprehensive effort enhancing the understanding the danger of passive smoking and the importance of establishing and maintaining smoke-free settings among health care and education professionals and the general public in China, especially in rural areas.

Possible limitations of this study include incomplete data about all of China, as these three counties are not representative of all of rural China. However, the results as a whole can to some extent accurately reflect the current situation in China, especially the attitudes of rural people towards tobacco control.

REFERENCES

1. Sung H Y, Wang L, Jin S, *et al.* (2006). Economic burden of smoking in China, 2000. *Tob Control* **15**, 5-11.
2. Yang G H, Fan L X, Samet J, *et al.* (1999). Smoking in China: findings of the 1996 National Prevalence Survey. *JAMA* **282**(13), 1247-1253.
3. Yang G H, Ma J M, Liu N, *et al.* (2005). Smoking and passive smoking in Chinese, 2002. *Zhonghua Liu Xing Bing Xue Za Zhi* **26**(2), 77-83.
4. US Department of Health Services (2006). *The health consequences of involuntary exposure to tobacco smoke: a report of the surgeon general-executive summary*. US Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, Atlanta, GA, pp. 2-13.
5. Wen W, Shu X O, Gao Y T, *et al.* (2006). Environmental tobacco smoke and mortality in Chinese women who have never smoked: prospective cohort study. *BMJ* **333**, 376-380.
6. MOH, P. R. China. (2007). *2007 China Tobacco Control Report*, Beijing, pp. 3-6.
7. World Health Organization (2003). *Framework Convention on Tobacco Control*. Geneva.
8. Patton M (1990). *Qualitative evaluation and research methods*. Beverly Hills, CA, Sage, pp.169-186.
9. Crabtree B, Miller W (1999). *Doing Qualitative Research (2nd ed.)*. London, Sage, pp. 42-43.
10. Crabtree B, Miller W (1999). *Doing Qualitative Research (2nd ed.)*. London, Sage, pp.163-177.

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