

The status of tobacco use and knowledge, and attitudes relating to smoking among female students in a Bengbu medical school

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Abstract

Objective: To learn the status of tobacco use, and the knowledge, attitudes, and behaviors among female students in Bengbu Medical College. **Methods:** In a cross-sectional survey, questionnaires were completed by 634 female students in the medical college in 2007, including the prevalence of current smoking, their knowledge of the effects of tobacco use on health, and attitudes towards the smoking behaviors of young women. **Results:** Only 6.9% of female medical students were former smokers, and 4.9% of them were current smokers. There was no significant difference in the current smoking rate among the students from each department surveyed. Female students from urban areas were more likely to be current or attempted smokers than those from rural areas. The proportion of the students who were aware of the health risks of smoking was less than 45%. The students from the Department of Nursing had more knowledge regarding the harmful health effects of smoking than those from the other departments. There was no significant difference in attitudes towards the smoking behaviors of young women among the students from each department. Compared with female students from rural areas, the female students from urban areas were significantly more likely to think that a young woman who smoked was cool, mature and charming. **Conclusion:** The smoking prevalence of the female students in Bengbu Medical College is high. They are not aware of the smoking related risks and have erroneous beliefs and perceptions about female smoking behaviors.

Keywords: tobacco use; knowledge; attitude; female medical students

INTRODUCTION

Tobacco use is one of the major preventable causes of death or diseases in the world^[1]. The largest population of smokers in the world may be in China, where approximately 350 million people are smokers^[2]. However, the prevalence of smoking among women in China is still low compared with men (66.0% for men and 3.1% for women)^[3], therefore multinational tobacco companies are paying special attention to Chinese women. As the economy in China develops rapidly and more extensive global trade occurs between China and other countries, it is apparent that Chinese women are treated as a target group for market expansion by transnational tobacco corporations (TTCs)^[4]. Meanwhile, Western customs are accepted by more and

more Chinese women, and smoking is among the strongest fashionable behaviors promoted by the TTCs^[5].

Many tobacco advertisements in Asia promote the idea that smoking is the symbol of independence and prestige for women. At the same time, the average age when Chinese women start to smoke has dropped from 22 years of age in 1984 to 19 years of age in 1996, and it is likely to decrease in the future^[6]. Studies have shown that it is much easier for women to start smoking and harder for them to stop smoking than men^[7,8]. This suggests that measures to prevent women from smoking will be better than measures to help women who have already smoked to quit. Recently the number of young women smoking has increased in China, making urgent intervention necessary. As the low smoking prevalence among Chinese women is similar to that in other developing countries, where women are more likely to be restricted by the social norms than men, it is impor-

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tant to use behavioral research to determine the factors that are related to smoking in women. This information may be helpful for targeting interventions using the media, smoking cessation programs, and community-based programs.

In November 2003, China was the 77th country to approve the Framework Convention on Tobacco Control (FCTC), the first healthy treaty negotiated by the World Health Organization. This indicated the decision of the government to control tobacco, especially in the areas of tobacco advertisements restrictions and young smokers prevention programs. In the tobacco control program, health workers can play a critical role: even brief and simple advice from health workers can substantially increase smoking cessation rates^[9-11]. Unfortunately, a study of medical students showed that the majority of smokers in this population initiated smoking after their medical education^[12]. As there are few data on the knowledge, attitudes and behaviors related to smoking for female medical students, the present study was undertaken to collect the data necessary for specific interventions to prevent the new vulnerable group from smoking, namely future female health workers.

MATERIALS AND METHODS

Sample selection

A cross-sectional investigation was conducted in a medical college in Bengbu in 2007. To obtain a representative sample, a two-stage cluster proportional sampling technique was used. The sample size was determined by a statistical power analysis and modulated by an anticipated response rate to ensure an adequate number of participants. In the first stage, the number of the female students enrolled in each department was decided upon which was proportional to the number of female students in the college, $N = Z_{1-\alpha/2}^2 \frac{P(1-P)}{\epsilon^2} \times K^{[13]}$. (N:total sample size; α :significance level; P:expected

prevalence; ϵ : absolute permitted difference between population rate and sample rate. K:design efficiency.) At the second stage, classes within the selected department were randomly selected. On the day the survey was administered, all the enrolled students in selected classes were eligible to participate, and all participation was voluntary and anonymous.

Questionnaire and data collection

In the questionnaire, there were 8 questions concerning demographic characteristics (e.g., age, gender, major, grade), 8 questions on smoking behavior, 14 items regarding knowledge about the adverse effects of smoking and passive smoking, and 6 questions on attitudes and beliefs about tobacco advertisements and anticipated clinical behavior. The questionnaire was finished with self-administered data collection procedures.

Statistical analysis

Questionnaire data were double-entered and compared with EpiData software. The data were analyzed with SPSS. In the data analyses, the differences were compared with the chi-square test. A two-sided P-value of 0.05 or less was considered to be statistically significant.

RESULTS

Six hundred and thirty-four female students in the college were selected. Among them 236 were from urban areas and 398 from rural areas (**Table 1**). The average age was 20.9 ± 1.3 years old. Only 6.9% (44/634) of the female students were former smokers, and 4.9% (31/634) of them were current smokers. There was no significant difference in the current smoking rate among the students from each department. The female students from urban areas were more likely to be current smokers or have attempted smoking than those from rural areas (**Table 1**).

Table 1 Demographic characteristics and smoking status

	n(%)	Current smokers			Attempted Smokers		
		n(%)	χ^2	P	n(%)	χ^2	P
Departments							
Clinical medicine	222(35.0)	11(5.0)			38(17.1)		
Nursing	184(29.0)	9(4.9)	0.02	0.999	32(17.4)	0.01	0.999
Preventive medicine	99(15.7)	5(5.1)			17(17.2)		
Others§	129(20.3)	6(4.7)			22(17.1)		
Regions							
Urban areas	236(37.2)	24(10.2)	22.54	< 0.001	55(23.3)	9.87	0.002
Rural areas	398(62.8)	7(1.8)			54(13.6)		
Total	634(100.0)						

§Including Detection Medicine, Iconography, Pharmacy, etc.

The results summarized in **Table 2** indicate the knowledge of tobacco use and its relationships to the risk of lung cancer, chronic obstructive pulmonary

diseases(COPD), spontaneous abortion, heart disease and multiple health risks of the female students. Nearly all of them(>90%) knew that smoking would increase the

risk of lung cancer and COPD. Less than half of them (< 45%) knew smoking could increase the risk of spontaneous abortion, heart disease and multiple health risks. The students from the Department of Nursing had significantly greater knowledge than those from the

other departments. There was no significant difference in the knowledge regarding the harmful health effects of smoking among former smokers, current smokers and nonsmokers, nor was there a difference between the urban and rural students.

Table 2 Knowledge of the adverse effects of tobacco use

	N	Lung cancer n(%)	COPD n(%)	Heart disease n(%)	Spontaneous abortion n(%)	Multiple health n(%)
<i>Medical Career Path</i>						
Clinical Medicine	222	205(92.4)	208(93.7)	88(39.7)	65(29.3)	76(34.3)
Nursing	184	178(96.8)	179(97.4)	81(44.1)*	68(37.0)*	79(43.0)*
Preventive Medicine	99	92(92.9)	93(93.9)	38(38.4)	26(26.3)	30(30.3)
Others§	129	116(90.1)	118(91.7)	34(26.4)	22(17.1)	31(24.1)
<i>Region</i>						
Urban areas	236	215(91.2)	221(93.7)	84(35.6)	72(30.5)	85(36.0)
Rural areas	398	376(94.4)	377(94.7)	157(39.4)	109(27.4)	131(32.9)
<i>Smoking Status</i>						
Former smoker	44	38(86.4)	40(90.9)	18(40.9)	11(25.0)	16(36.4)
Current smoker	31	28(90.3)	28(90.3)	11(35.5)	9(29.0)	11(35.5)
Nonsmoker	559	525(93.9)	530(94.8)	212(37.9)	161(28.8)	189(33.8)

*a significantly ($P < 0.05$) higher level of knowledge about the adverse effects of tobacco use of the students from the Department of Nursing versus the students from the other departments; §Including Detection Medicine, Iconography, Pharmacy, etc.

Although some students considered a young woman's smoking behavior as cool(10.9%), or a sign of maturity(19.5%), being charming(11.2%) or being independent(24.3%), many of the students thought that a young woman who smoked seemed to lack self confidence(39.3%) or lack a good upbringing(52.2%). There was no significant difference in attitudes towards the smoking behaviors of young women among the

students from the departments surveyed.

Compared with female students from rural areas, the female students from urban areas were significantly more likely to think that a young woman who smoked was cool, mature or charming. Former smokers and nonsmokers had significantly less favorable attitudes towards smoking compared with the current smokers (**Table 3**).

Table 3 Attitudes toward young women's smoking behaviors (n, %)

Attitudes	Region				Smoking Status			χ^2	P
	Urban areas (N=236)	Rural areas (N=236)	χ^2	P	Former smoker (N=44)	Current smoker (N=31)	Non- smoker (N=559)		
Look so cool	34(14.4)	35(8.8)	4.81	0.028	3(6.8)	11(35.5)	55(9.8)	20.72	<0.001
Look very mature	58(24.6)	66(16.6)	6.02	0.014	8(18.2)	13(41.9)	103(18.4)	10.38	0.006
Look very charming	38(16.1)	33(8.3)	9.09	0.003	5(11.4)	10(32.3)	56(10.0)	14.61	<0.001
Look very independent	55(23.3)	99(24.9)	0.20	0.656	10(22.7)	14(45.2)	130(23.3)	7.73	0.021
Seem to lack self confidence	101(42.8)	148(37.2)	1.96	0.162	17(38.6)	5(16.1)	227(40.6)	7.39	0.025
Seem to lack a good upbringing	126(53.4)	205(51.5)	0.21	0.647	20(45.5)	6(19.4)	305(54.6)	15.46	<0.001

As for future clinical behavior, the students who performed physical examinations on patients who smoked were more likely to be from the Department of Clinical Medicine(72.3%) than from the other departments. They were also more likely to ask the patients about their smoking habits(76.7% versus 34.8%, $\chi^2=101.17$, $P < 0.001$).

DISCUSSION

The results of this study indicate that although the prevalence of current smoking among female students in a medical college was low, the students from urban areas were more likely to be attempted smokers or current

smokers than those from rural areas. This may be consistent with the results of previous studies in many developed countries that more girls smoke than boys, while in many developing countries, few girls and women smoke. Furthermore, compared with the students from rural areas, students from urban areas were significantly more likely to think young women who smoked were cool, mature and charming^[14-17]. Two related reasons should be considered. First, for decades females have been the target of the tobacco industry to expand its market^[18,19]. The industry has used advertisements to promote the idea that smoking is related to weight

control, sophistication, being fashionable, independent and powerful^[20]. In addition, sex-neutral brands such as Marlboro are recommended to women by using independent and fun-loving images. Secondly, although smoking rates among adult females are lower than those of adult males, millions of women smoke. This might be contributing to a change in cultural traditions and social influences, making smoking more acceptable among women and young girls^[21,22].

In this study we found that students from the Department of Clinical Medicine believed that physicians were capable of detecting and examining the majority of their patients who smoked. In contrast, only a few students in other departments thought that physicians could detect and ask a majority of their patients who smoked.. The results indicated that most students were not sure they could provide appropriate consultations on smoking cessation to their patients. Therefore students need to receive the appropriate behavioral training during their clinical education. In their future medical practice, this will enable them to provide patients with appropriate support and counseling

To make the interventions for tobacco control, it is useful to apply the KABP model (knowledge-attitude-belief-practice). One critical factor for KABP may be students' attitude towards the smoking behaviors of young women. If they are not aware of the health risks associated with smoking, they will not refuse to start smoking themselves, nor will they persuade their patients to quit smoking. As found in other studies, without a better understanding of the benefits of effective smoking cessation, physicians will remain less active in the smoking cessation of the patients^[23-25]. The deficiencies in the knowledge of medical students on the adverse effects of smoking indicate an urgent problem. This is especially true in the present study which found that less than 50% of female students knew smoking was a risk factor for spontaneous abortion, heart disease, and multiple other health problems.

Consultation with a healthcare worker, no matter what he or she has majored in, is one of the effective inter-ventions^[26]. Since students in medical schools are future health promoters, their erroneous beliefs about smoking will probably become a major professional problem. Obviously, it is important for medical schools to increase the knowledge of smoking-related issues. Furthermore, effective training on tobacco cessation interventions for the medical school students will provide them with the skills and confidence to help their future patients to effectively quit smoking. Thus smoking cessation training programs should be introduced into medical school curricula in all departments.

References

- [1] Jha P, Chaloupka FJ. Tobacco control in developing countries. Oxford, UK:Oxford University Press 2000:1-40.
- [2] Sung HY, Wang L, Jin S, Hu TW, Jiang Y. Economic burden of smoking in China, 2000. *Tobacco Control* 2006; 15 (Supplement 1):i5-i11.
- [3] Yang gonghuan, Ma jiemin, Liu na, Zhou lingni. Smoking and passive smoking in Chinese, 2002. *Chin J Epidemiol* (in Chinese) 2005; 26(2): 77-83.
- [4] Novotny TE. The "Ultimate Prize" for Big Tobacco: Opening the Chinese cigarette market by cigarette smuggling. *PLoS Medicine* 2006;3(7):e279.
- [5] Novotny TE, Carlin D. Ethical and legal aspects of global tobacco control. *Tob Control* 2005; 14(Supplement 2):i26-i30.
- [6] Samet JM, Yang G. Passive smoking, women and children. In: Samet JM, Yoon S-Y, editors. Women and the tobacco epidemic. Challenges for the 21st century. Geneva:World Health Organization, 2001:49-69.
- [7] Ward KD, Klesges RC, Zbikowski SM, Bliss RE, Garvey AJ. Gender differences in the outcome of an unaided smoking cessation attempt. *Addict Behav* 1997; 22:521-33.
- [8] Anha RF, Williamson DF, Escobedo LG, Mast EE, Giovino GA, Remington PL. Depression and the dynamics of smoking: a national perspective. *JAMA* 1990;264:1541-5.
- [9] US Department of Health and Human Services. Reducing tobacco use:a report of the Surgeon General. Atlanta, GA:US Department of Health and Human Services, CDC 2000:33-43.
- [10] US Department of Health and Human Services Treating tobacco use and dependence:2008 update. Washington, D.C:US Department of Health and Human Services, 2008:37-60.
- [11] Lancaster T, Stead L, Silagy C, Sowden A. Effectiveness of interventions to help people stop smoking: findings from the Cochrane Library. *BMJ* 2000;321(7257):355-8.
- [12] Mubeen SM, Morrow M, Barraclough S. Smoking among future doctors in a "no-smoking" university campus in Karachi, Pakistan:issues of tobacco control. *J Pak Med Assoc* 2008;58(5):248-53.
- [13] Yang G, Hu J, Rao KQ, Ma J, Rao C, Lopez AD. Mortality registration surveillance in China:History, current situation and challenges. *Popul Health Metr* 2005;3:3.
- [14] Morrow M, Barraclough S. Tobacco control and gender in Southeast Asia. Part I:Malaysia and the Philippines. *Health Promotion International* 2003;18(3):255-64.
- [15] Morrow M, Barraclough S. Tobacco control and gender in Southeast Asia. Part II:Singapore and Vietnam. *Health Promotion International* 2003;18(4):373-80.
- [16] Yang G, Ma J, Chen AP, Brown S, Taylor CE, Samet JM. Smoking among adolescents in China:1998 survey findings. *Int J Epidemiol* 2004;33(5):1103-10.
- [17] Ma H, Unger JB, Chou CP, Sun P, Palmer PH, Zhou Y, et al. Risk factors for adolescent smoking in urban and rural China: findings from the China seven cities study. *Addict Behav* 2008; 33(8):1081-5.
- [18] Pierce JP, Choi WS, Gilpin EA, Farkas AJ, Berry CC. Tobacco industry promotion of cigarettes and adolescent smoking. *JAMA* 1998;279(7):511-5.
- [19] Hochberg A. Critics fume over marketing of "Camel No.

- 9". United States:National Public Radio, 2007. Available at <http://www.npr.org/templates/story/story.php?storyId=8909745>.
- [20] Campaign for Tobacco-Free Kids. Tobacco Industry Targeting of Women and girls. CTFK Factsheet, 2007. Available at <http://www.tobaccofreekids.org/research/Factsheets/pdf/0138.pdf>.
- [21] Waldron I, Bratelli G, Carriker L, Sung WC, Vogeli C, Waldman E. Gender differences in tobacco use in Africa, Asia, the Pacific and Latin America. *Soc Sci Med* 1988;27(11):1269-5.
- [22] Chou CP, Li Y, Unger JB, Xia J, Sun P, Guo Q, et al. A randomized intervention of smoking for adolescents in urban Wuhan, China. *Prev Med* 2006; 42(4):280-5.
- [23] Spangler JG, George G, Foley KL, Crandall SJ. Tobacco intervention training:current efforts and gaps in U.S. medical schools. *JAMA* 2002; 288(9):1102-9.
- [24] Ferry LH, Grissino LM, Runfola PS. Tobacco dependence curricula in US undergraduate medical education. *JAMA* 1999; 282(9):825-9.
- [25] Ellerbeck EF, Choi WS, McCarter K, Jolicoeur DG, Greiner A, Ahluwalia JS. Impact of patient characteristics on physician's smoking cessation strategies. *Prev Med* 2003; 36(4):464-70.
- [26] Glynn TJ, Manley MW. How to help your patients stop smoking. A National Cancer Institute manual for physicians. Washington, D.C.:U.S. Department of Health and Human Services 1989: 143-257.

