

LETTERS

Who is exposed to smoke at home? A population-based cross-sectional survey in central Vietnam

Secondhand smoke (SHS) exposure is an important global health issue.<sup>1 2</sup> The World Health Organization Framework Convention on Tobacco Control (WHO FCTC) obligates countries to protect people from SHS exposure in public places such as workplaces and public transport, whereas protection measures from SHS in the home are not addressed explicitly.<sup>3</sup> The objective of this study was to investigate the prevalence of domestic SHS exposure and sociodemographical risk factors associated with SHS among a population in central Vietnam.

A dataset from population-based cross-sectional survey conducted in Khanh Hoa Province, central Vietnam, was analysed. The original survey was carried out from June to July 2006 for the purpose of collecting information on possible risk factors of childhood diseases. Data on 353 525 residents living in 75 828 households were collected from occupants. Household members were queried about each household member's smoking habit during structured interviews. To identify participants who smoked and household members of smokers who were exposed to secondhand smoke, interviewers asked, "Does s/he smoke? (yes/no) If yes, does s/he usually smoke inside home? (yes/no)". Detailed methods and characteristics of study population have been described previously.<sup>4</sup> Residents were classified by smoking status as indoor smoking, non-indoor smoking and non-smoking. SHS exposure at home was defined as living with one or more indoor smokers. Age was categorised by decades into eight groups and household wealth levels were divided into quintiles according to the asset index (numbers of population by sex and age group are shown in the supplementary material). To assess the association between SHS exposure status and sociodemographic risk factors, simple tabulation and logistic regression analysis were performed. In order to take into account intracommune clustering, a multilevel analysis with a random intercept was applied to each model. The statistical software package R 2.8.1 (<http://www.r-project.org/>) was used for all analyses.

Among all residents in the study population, 60 608 (17.1%) were current smokers and 58 929 (97.2% of smokers) were men. Among all current smokers, 54 893 (90.6% of smokers) smoked indoors (figure 1). Among 292 917 non-smokers, 167 298 (57.1%) were exposed to smoke at home (table 1). In multiple logistic regression analysis, women (adjusted OR (AOR) 1.75, 95% CI 1.72 to 1.78) and children (for aged 0 to 9 years vs aged 40 to 49 years, AOR 2.05, 95% CI 1.99 to 2.12; for aged 10 to 19 years vs aged 40 to 49 years, AOR 2.02, 95%

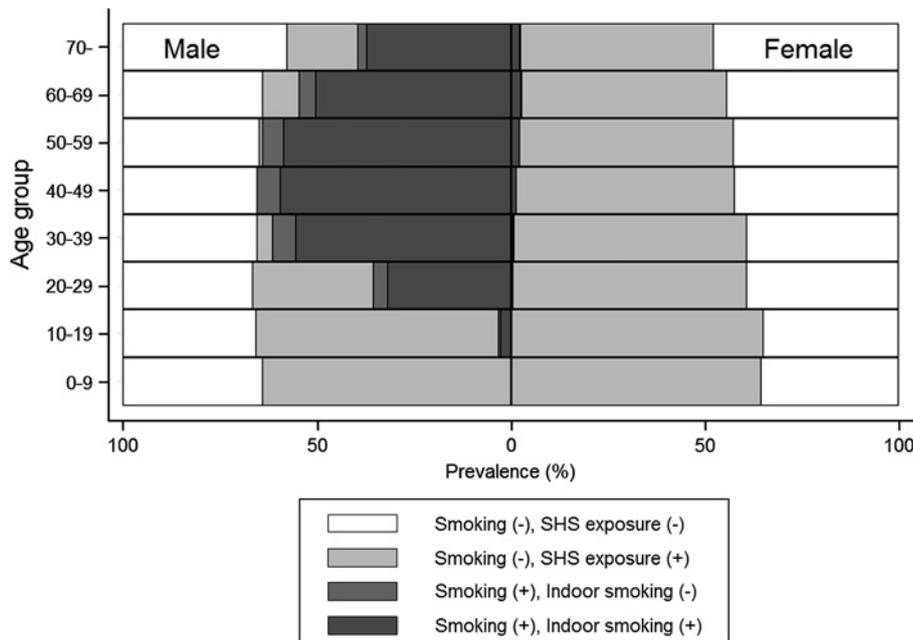


Figure 1 The prevalence of smoking and domestic secondhand smoke exposure by sex and 10-year age group in Khanh Hoa Province, Vietnam, 2006.

CI 1.96 to 2.08) were at increased risk of domestic SHS exposure (table 1).

The prevalence of smoking was extremely high among adult men whereas the majority of domestic SHS victims were women and children in central Vietnam. Two factors may explain this finding. First, the preva-

lence of indoor smoking among smokers is high (90.6%). In Vietnam, smoking in public spaces is not banned except in healthcare facilities and indoor office buildings.<sup>5</sup> Many smokers may not appreciate the health benefits of a smoke-free indoor environment. Second, the average household size in our

Table 1 The prevalence and sociodemographical risk factors for domestic secondhand smoke exposure among non-smokers in Khanh Hoa Province, Vietnam, 2006

Characteristic	Total (%), n=292917	SHS* exposed (%), n=167298	UOR† (95% CI)	p Value	AOR‡ (95% CI)	p Value
<b>Sex</b>						
Female	177702 (60.7)	107732 (60.6)	1.43 (1.41 to 1.45)	<0.0001	1.75 (1.72 to 1.78)	<0.0001
Male	115215 (39.3)	59566 (51.7)	1		1	
<b>Age, years</b>						
0-9	53669 (18.3)	34511 (64.3)	1.97 (1.91 to 2.03)	<0.0001	2.05 (1.99 to 2.12)	<0.0001
10-19	75332 (25.7)	49024 (65.1)	1.98 (1.92 to 2.03)	<0.0001	2.02 (1.96 to 2.08)	<0.0001
20-29	48876 (16.7)	28199 (57.7)	1.54 (1.49 to 1.58)	<0.0001	1.48 (1.43 to 1.53)	<0.0001
30-39	42777 (14.6)	21837 (51.1)	1.20 (1.17 to 1.24)	<0.0001	1.16 (1.13 to 1.20)	<0.0001
40-49	32161 (11.0)	14719 (45.8)	1		1	
50-59	16905 (5.8)	7994 (47.3)	1.01 (0.97 to 1.05)	0.62	1.02 (0.98 to 1.06)	0.35
60-69	11066 (3.8)	5355 (48.4)	0.99 (0.95 to 1.04)	0.70	1.02 (0.97 to 1.07)	0.44
≥70	12131 (4.1)	5659 (46.7)	0.91 (0.87 to 0.96)	0.0001	0.98 (0.93 to 1.02)	0.33
<b>Number of household members</b>						
<4	39760 (13.6)	12027 (30.3)	1		1	
4-5	129650 (44.3)	71782 (55.4)	2.97 (2.90 to 3.05)	<0.0001	2.81 (2.74 to 2.89)	<0.0001
6-8	90658 (31.0)	60971 (67.3)	4.77 (4.64 to 4.90)	<0.0001	4.57 (4.44 to 4.69)	<0.0001
>8	32849 (11.2)	22518 (68.6)	6.18 (5.97 to 6.39)	<0.0001	5.91 (5.71 to 6.12)	<0.0001
<b>Wealth level</b>						
Lowest fifth	72108 (24.6)	46052 (63.9)	1.53 (1.49 to 1.57)	<0.0001	1.64 (1.59 to 1.68)	<0.0001
Second fifth	55961 (19.1)	38514 (68.8)	2.07 (2.01 to 2.12)	<0.0001	2.03 (1.97 to 2.09)	<0.0001
Middle fifth	43159 (14.7)	25760 (59.7)	1.61 (1.57 to 1.65)	<0.0001	1.60 (1.55 to 1.65)	<0.0001
Fourth fifth	60368 (20.6)	32287 (53.5)	1.37 (1.34 to 1.40)	<0.0001	1.36 (1.32 to 1.39)	<0.0001
Highest fifth	61321 (20.9)	24685 (40.3)	1		1	

\*Secondhand smoke.

†Unadjusted OR.

‡Adjusted OR.

study area (5.6) is much greater than that in developed countries such as USA (2.6 in 2006, US Census Bureau) and Japan (2.6 in 2005, Ministry of Internal Affairs and Communications). Thus, many non-smoking household members may share indoor environments with smokers.

The WHO FCTC is the first global public health treaty that the 166 WHO member states have already ratified.<sup>3</sup> Article 8 of the WHO FCTC addresses the issue of protection from exposure to tobacco smoke in public places, however, there's no statement on protection from domestic SHS. Despite the lack of biological data, our results clearly indicate that SHS exposure occurs in public places and also in households. For women and children in particular, the household likely represents the primary location of exposure.<sup>6</sup> Public educational campaigns for smoke-free homes<sup>7-8</sup> are warranted in Southeast Asian countries, to protect women and children who remain exposed to SHS at home.

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► Supplementary material (supplementary table) is available online only. To view this files please visit the journal online (<http://tobaccocontrol.bmj.com>).

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**Ethics approval** This study was approved by the Institutional Review Board (IRB) of the National Institute of Hygiene and Epidemiology, Vietnam and the IRB of the Institute of Tropical Medicine, Nagasaki University, Japan.

**Contributors** KA initiated the study. KA, PEK, DDA and LY were responsible for study conception and design. VDT and DDA collected the baseline data. MS analysed and interpreted the data. MS, LY and KA drafted the manuscript and PEK revised it. All authors had full access to all of the data in the study.

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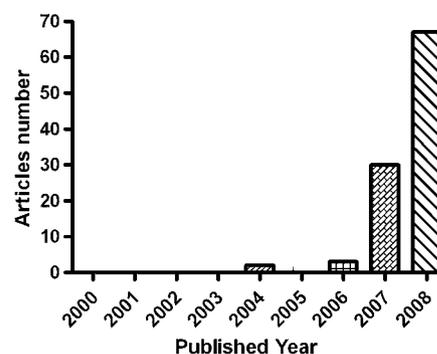
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## Newspaper coverage about smoking in leading Chinese newspapers in past nine years

Recent research has clearly identified the importance of media advocacy in advancing tobacco control objectives.<sup>1–4</sup> Generating news coverage of tobacco control-related issues is a low cost activity that can generate extensive and ongoing coverage to which



**Figure 1** The number of articles focused on passive smoking, secondhand smoking or adolescent smoking in important Chinese newspapers from 2000 to 2008.



**Figure 2** The number of articles about the Olympics among smoking-related articles in important Chinese newspapers from 2000 to 2008.

millions of citizens, including politicians and decision makers, are exposed. Media advocacy has thus become an important component of comprehensive tobacco control programs.

China has the world's largest population, with 52.4% of adult men and 3.4% of adult women smoking.<sup>5-6</sup> In China, news coverage of health issues has increased dramatically in recent years. In our previous study of cancer coverage in Chinese newspapers, there was a sharp increase in cancer-related reports from 578 articles in 2000 to 1403 articles in 2006.<sup>7</sup> However, there has been little analysis or evaluation of news coverage on smoking in China.

In this study we aim to provide a systematic overview of all tobacco news coverage in a database of major Chinese newspapers over 9 years from 2000 to 2008.

## METHODS

Reports about smoking-related matters were obtained from the Database of Important Chinese Newspapers (<http://www.cnki.net>) from 2000 to 2008. As of 18 June 2008, the database included 152 national and 362 local newspapers. The search keywords were fixed as “吸烟”, “抽烟” (吸烟, 抽烟 in English: smoking), “戒烟”, “控烟” or “禁烟” (戒烟, 控烟, 禁烟 in English: smoking cessation, or smoking restriction) in the title to calculate the number of smoking-related articles.

Every smoking-related article obtained from the database was carefully read to ensure that tobacco was central to each article, and articles without smoking-related content were excluded. Articles were allocated to a primary topic classification, which included government law/policy/regulation, health consequences, prevention/cessation programs, affiliated organisation/business news, negative social effects or other. Stories about secondhand smoking, adolescent smoking and smoking-related Olympic Games stories were also noted.

We tested whether the number of articles in each year was the same using the Poisson heterogeneity test.<sup>8</sup>