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. 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. 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 a 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. Householders 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. 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 used to account for intracommune clustering.


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 prevalence 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. 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

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Total (%)</th>
<th>SHS* exposed (%)</th>
<th>UOR† (95% CI)</th>
<th>p Value</th>
<th>AOR‡ (95% CI)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>1,777,02</td>
<td>1,077,32</td>
<td>1.43 (1.41 to 1.45)</td>
<td>&lt;0.0001</td>
<td>1.75 (1.72 to 1.78)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Male</td>
<td>115,215</td>
<td>59,566</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age, years</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0–9</td>
<td>53,669</td>
<td>34,511</td>
<td>1.97 (1.91 to 2.03)</td>
<td>&lt;0.0001</td>
<td>2.05 (1.99 to 2.12)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>10–19</td>
<td>75,332</td>
<td>49,024</td>
<td>1.98 (1.92 to 2.03)</td>
<td>&lt;0.0001</td>
<td>2.02 (1.96 to 2.08)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>20–29</td>
<td>48,876</td>
<td>28,199</td>
<td>1.54 (1.49 to 1.58)</td>
<td>&lt;0.0001</td>
<td>1.48 (1.43 to 1.53)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>30–39</td>
<td>42,777</td>
<td>21,837</td>
<td>1.20 (1.17 to 1.24)</td>
<td>&lt;0.0001</td>
<td>1.16 (1.13 to 1.20)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>40–49</td>
<td>32,161</td>
<td>14,719</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50–59</td>
<td>16,805</td>
<td>7,994</td>
<td>1.01 (0.97 to 1.05)</td>
<td>0.02</td>
<td>1.02 (0.98 to 1.06)</td>
<td>0.35</td>
</tr>
<tr>
<td>60–69</td>
<td>11,066</td>
<td>5,355</td>
<td>0.99 (0.95 to 1.04)</td>
<td>0.70</td>
<td>1.02 (0.97 to 1.07)</td>
<td>0.44</td>
</tr>
<tr>
<td>≥70</td>
<td>12,131</td>
<td>5,659</td>
<td>0.91 (0.87 to 0.96)</td>
<td>0.0001</td>
<td>0.98 (0.93 to 1.02)</td>
<td>0.33</td>
</tr>
<tr>
<td><strong>Number of household members</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;4</td>
<td>39,760</td>
<td>12,027</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4–5</td>
<td>129,650</td>
<td>71,782</td>
<td>2.97 (2.90 to 3.05)</td>
<td>&lt;0.0001</td>
<td>2.81 (2.74 to 2.89)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>6–8</td>
<td>90,658</td>
<td>60,971</td>
<td>4.77 (4.64 to 4.90)</td>
<td>&lt;0.0001</td>
<td>4.57 (4.44 to 4.69)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>≥8</td>
<td>32,849</td>
<td>22,518</td>
<td>6.18 (5.97 to 6.39)</td>
<td>&lt;0.0001</td>
<td>5.91 (5.71 to 6.12)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td><strong>Wealth level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lowest fifth</td>
<td>72,108</td>
<td>46,052</td>
<td>1.53 (1.49 to 1.57)</td>
<td>&lt;0.0001</td>
<td>1.64 (1.59 to 1.68)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Second fifth</td>
<td>55,961</td>
<td>38,514</td>
<td>2.07 (2.01 to 2.12)</td>
<td>&lt;0.0001</td>
<td>2.03 (1.97 to 2.09)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Middle fourth</td>
<td>43,159</td>
<td>25,760</td>
<td>1.61 (1.57 to 1.65)</td>
<td>&lt;0.0001</td>
<td>1.60 (1.55 to 1.65)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Fourth fifth</td>
<td>60,368</td>
<td>32,287</td>
<td>1.37 (1.34 to 1.40)</td>
<td>&lt;0.0001</td>
<td>1.36 (1.32 to 1.39)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Highest fifth</td>
<td>61,321</td>
<td>24,685</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*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. 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. Public educational campaigns for smoke-free homes are warranted in Southeast Asian countries, to protect women and children who remain exposed to SHS at home.

Acknowledgements We thank all of the project members (Hideki Yana, Tonu Matsubayashi, Konsosuke Morimoto, Le Huo Thu and Truong Tan Minh) for contribution to the original study.

Motoi Suzuki,1 Yu Dinh Thiem,2 Lay-Myint Yoshida,1 Dang Duc Anh,2 Paul E Kilgore,3 Koya Ariyoshi1

1Department of Clinical Medicine, Institute of Tropical Medicine, Nagasaki University, Nagasaki, Japan; 2National Institute of Hygiene and Epidemiology, Hanoi, Vietnam; 3International Vaccine Institute, Seoul, Republic of Korea, Seoul, Vietnam

Correspondence to Dr Koya Ariyoshi, Department of Clinical Medicine, Institute of Tropical Medicine, Nagasaki University, Sakamoto 1-12-4, Nagasaki, Japan; kari@nagasaki-u.ac.jp

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

Funding This study was funded by the Program of Founding Research Centers for Emerging and Reemerging Infectious Diseases, Ministry of Education, Culture, Sports, Science and Technology, Japan. The funding source did not have any role in the study design, execution, analysis, writing of the manuscript or conclusions.

Competing interests None.

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.

Provenance and peer review Not commissioned; externally peer reviewed.

Accepted 17 December 2009
Published Online First 27 June 2010

This paper is freely available online under the BMJ Journals unlocked scheme, see http://tobaccocontrol.bmj.com/site/about/unlocked.xhtml

REFERENCES

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. Generating news coverage of tobacco control-related issues is a low cost activity that can generate extensive and ongoing coverage to which 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. 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. 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”, “禁烟”, and “戒烟” in English: smoking, “戒烟” or “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 stones were also noted.

We tested whether the number of articles in each year was the same using the Poisson heterogeneity test.
Who is exposed to smoke at home? A population-based cross-sectional survey in central Vietnam
Motoi Suzuki, Vu Dinh Thiem, Lay-Myint Yoshida, Dang Duc Anh, Paul E Kilgore and Koya Ariyoshi

Tob Control 2010 19: 344-345 originally published online June 27, 2010
doi: 10.1136/tc.2009.032227

Updated information and services can be found at:
http://tobaccocontrol.bmj.com/content/19/4/344

These include:

References
This article cites 3 articles, 2 of which you can access for free at:
http://tobaccocontrol.bmj.com/content/19/4/344#BIBL

Open Access
This is an open-access article distributed under the terms of the Creative Commons Attribution Non-commercial License, which permits use, distribution, and reproduction in any medium, provided the original work is properly cited, the use is non commercial and is otherwise in compliance with the license. See: http://creativecommons.org/licenses/by-nc/2.0/ and http://creativecommons.org/licenses/by-nc/2.0/legalcode.

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/