Evolutionary tobacco smoke at home and at work: a population based survey

Environmental tobacco smoke (ETS) has been shown to be carcinogenic for humans and has emerged as an important public health problem in recent years. Yet, unlike for active smoking, we have little objective data about the extent of ETS exposure in the general population. This study provides an updated estimate of the prevalence of exposure to major sources of ETS and analyses some relevant related factors in a representative sample of the general population in a South European urban context.

The population frame was the non-institutionalized population of the Spanish city of Barcelona in the year 2000 (1 600 000 inhabitants). Data were collected as part of the Barcelona Health Interview Survey 2000, a cross sectional survey carried out approximately every five years since 1983. We generated a representative stratified sample of the non-institutionalized population of Barcelona residents. The sample strata were the 10 Barcelona city districts. In each stratum a random sample of residents was obtained, the sample unit being the individual. The sample size was 10 000 people, accounting for an α error of 4.5% and a maximum global error of 1%, this global error being half the width of the desired sample confidence interval. The information was collected through face-to-face interviews carried out at home, between February 2000 and March 2001. The present study was conducted on the population aged 15–64 years. People who smoked daily one or more cigarettes at the time of the survey were considered as smokers. The survey included several questions related to smoking, two of which refer specifically to passive smoking: “does some member of your family usually smoke at home?” and “at your work, how many hours a day are you with smokers?”

The results (table 1) clearly indicate that passive smoking is a major public health problem in our context, as more than two thirds of the population (69.7%) report being exposed to secondhand smoke, 22.6% being exposed at work and at home, 29.7% only at work, and 17.5% only at home. In the analysis by sex, women are more exposed at home only (23.5% vs 12.6% of men), while men are more exposed at work only (34.2% vs 24.2% women). Finally, it is of particular importance to highlight that 60% of non-smokers are exposed to some extent and that 14.2% of them are exposed both at home and at work, exposure which may have serious effects upon their health.

In comparison to other studies that have measured ETS exposure with surveys, the percentages of subjects exposed in the workplace and at home obtained in this study are lower than a decade ago in Spain (60% and 53.7%, respectively). However, the percentage of people exposed is still higher than that found in the USA as reported by the NHANES III study, where only 39.2% declared being exposed. Overall, these data are consistent with a progressive reduction of smoking and ETS exposure in Europe, which has not yet reached the levels of reduction observed in the USA. Unlike biomarkers and home markers, questionnaires reflect perceived exposure and may be mismatched, usually yielding an underestimate of exposure to ETS. However, they are valid enough to give population estimates for comparison or surveillance purposes.

The present study was carried out among a representative sample of the general population, and the response rate at first contact was 85.9%, therefore selection bias can be virtually ruled out. The question about exposure at work, however, may have overestimated the exposure because some respondents may have answered positively, wanting to be “with smokers” instead of “with people smoking”. On the other hand, main confounding factors may have been corrected for by stratifying the analysis by sex and smoking status.

Despite progress achieved in the last 15 years through progressive and continuing changes in policy and legislation, more effort must be made to change the social norm regarding acceptability of involuntary exposure to passive smoking, especially in the workplace. Complementary efforts are required to increase social awareness of the health effects of smoking to decrease the exposure at home, especially for families living with children, as well as to prompt improvements in legislation about smoke-free places and their implementation.

**Table 1** Percentage of subjects exposed to environmental tobacco smoke at home and in the workplace by sex and smoking status (Barcelona Health Interview Survey 2000)

<table>
<thead>
<tr>
<th>Smoking status†</th>
<th>Place of exposure</th>
<th>Home and work</th>
<th>Only home</th>
<th>Only work</th>
<th>None</th>
<th>n (1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokers</td>
<td>Men</td>
<td>38.1 (380)</td>
<td>13.2 (132)</td>
<td>32.9 (328)</td>
<td>15.8 (158)</td>
<td>998</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>29.7 (208)</td>
<td>26.2 (184)</td>
<td>25.6 (180)</td>
<td>18.5 (130)</td>
<td>703</td>
</tr>
<tr>
<td></td>
<td>Total*</td>
<td>34.6 (588)</td>
<td>21.6 (316)</td>
<td>29.9 (308)</td>
<td>16.9 (288)</td>
<td>1701</td>
</tr>
<tr>
<td>Non-smokers</td>
<td>Men</td>
<td>14.1 (179)</td>
<td>12.1 (154)</td>
<td>35.0 (447)</td>
<td>38.9 (496)</td>
<td>1276</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>14.3 (163)</td>
<td>21.8 (248)</td>
<td>23.3 (266)</td>
<td>40.6 (463)</td>
<td>1140</td>
</tr>
<tr>
<td></td>
<td>Total*</td>
<td>14.2 (342)</td>
<td>16.6 (402)</td>
<td>29.5 (713)</td>
<td>39.7 (959)</td>
<td>2416</td>
</tr>
<tr>
<td>Total</td>
<td>Men</td>
<td>24.6 (559)</td>
<td>12.6 (286)</td>
<td>34.1 (775)</td>
<td>28.7 (598)</td>
<td>2274</td>
</tr>
<tr>
<td></td>
<td>Women</td>
<td>20.1 (371)</td>
<td>23.5 (432)</td>
<td>24.2 (446)</td>
<td>32.2 (593)</td>
<td>1843</td>
</tr>
<tr>
<td></td>
<td>Total*</td>
<td>22.6 (930)</td>
<td>17.5 (719)</td>
<td>29.7 (1221)</td>
<td>30.3 (1247)</td>
<td>4117</td>
</tr>
</tbody>
</table>

*Significantly (p<0.05) different by place of exposure. †Significantly (p<0.05) different by smoking habit. ‡Significantly (p<0.05) different by sex.
Support for protection from secondhand smoke: California 2002

California banned smoking in most indoor workplaces in 1995, and the ban was extended to bars and gaming rooms in January 1998. This letter summarises new data from the 2002 California Tobacco Survey (CTS) about California adults’ attitudes regarding where smoking should not be allowed in venues not already smoke-free by law.

As with previous administrations of the CTS, this large, population based, random-digit dialled survey used a screener interview with a household adult to enumerate residents with respect to demographics and smoking status. Adults were randomly selected for an extended 25 minute interview based on age and smoking status. The response rate among those selected for interview was 63%. To compute population estimates (and 95% confidence intervals), base weights were determined from the census totals.1

The 20,525 adult respondents to the 2002 CTS were asked to state whether smoking should be allowed or not allowed in: (1) outdoor work places such as loading docks, constructions sites; (2) outdoor public places such as parks, beaches, golf courses, zoos, or sports stadiums; (3) children’s play yards or sports fields; (4) outdoor restaurant dining patios; (5) outdoor bar/club patron patios; (6) just outside entrances to buildings; (7) common areas of apartments or condo complexes, such as hallways, recreation rooms, laundry rooms, pool areas, etc; (8) common areas of hotels or motels, such as hallways, exercise rooms, pool areas, etc; (9) hotel rooms; (10) Native American casinos; and (11) on-campus student housing at public colleges or universities.

Figure 1 summarises the population percentages supporting a ban for each venue. Those with the highest support to be smoke-free were kids’ play areas/sports fields (90.5%), common areas of hotels/motels (88.8%), common areas of apartments/condos (87.1%), and on-campus student housing at public colleges and universities (79.2%). Venues garnering the least support for smoke-free status were outdoor workplacese (42.7%) and outdoor areas of bars/clubs (39.7%). Overall support for smoke-free status for all other venues queried exceeded 50%. Not surprisingly, support for smoke-free venues differed somewhat by smoking status. However, support for the top three venues was high among current smokers (>75%).

An important theme of the California Tobacco Control Program is protecting non-smokers from secondhand smoke, which is linked to poor health outcomes in both adults and children.2-4 Extensive media and local level efforts have educated the public about the dangers of secondhand smoke to non-smokers, including children. California’s progress in protecting the population from secondhand smoke has been documented in detail previously.5

The high levels of support for the three top venues suggest that further legislative action might be appropriate. Other states should consider monitoring population attitudes about where smoking should not be allowed over a broad range of settings. Such attitudes are likely to be much more supportive of smoking restrictions than legislators may think. Monitoring these attitudes also provides an indication of population social norms regarding smoking in general. Results can be used both to assess tobacco control progress and to assess population readiness for legislative action.

E A Gilpin, L Lee, J P Pierce Cancer Prevention and Control Program, University of California San Diego, Cancer Center, La Jolla, California, USA

H Tang, J Lloyd California Department of Health Services, Tobacco Control Section, Sacramento, California, USA

Correspondence to: J P Pierce, PhD; jppierce@ucsd.edu

References
6. Gilpin EA, Lee L, Pierce JP. Changes in population attitudes about where smoking should not be allowed: California versus the rest of the USA. Tobacco Control 2004;13:38–44.

Figure 1  Population response about where smoking should not be allowed.