



Exposure of children to environmental tobacco smoke

FACT SHEET NO. 3.4 · MAY 2007 · CODE: RPG3_Air_Ex2

Proportion of children exposed to environmental tobacco smoke (ETS) in their homes

This summary is based on data on the proportion of children exposed to ETS (also known as exposure to second-hand tobacco smoke or passive smoking) in their homes.

KEY MESSAGE

☹ Over half of all children aged 13–15 years are exposed to ETS at home in the majority of the countries for which comparable information is available. In the Balkans and the Caucasus, exposure exceeds 90%.

There is no comparable information for western European countries but studies suggest that 30–50% of children are exposed to ETS at home (1,2). These children are at increased risk of adverse effects on their health including sudden infant death syndrome (SIDS), respiratory infections, asthma, and possibly lymphoma and brain tumours. Policies to ban or restrict smoking and limit advertising are expected to lead to a reduction in exposure of children to ETS.

RATIONALE

The indicator provides information on the extent of exposure of children to ETS in the home, thus enabling an assessment to be made of the health threat from such exposure and the effectiveness of anti-smoking initiatives across the Region.

Fig. 1. Proportion of 13–15-year-olds exposed to ETS in their homes, 2002–2005

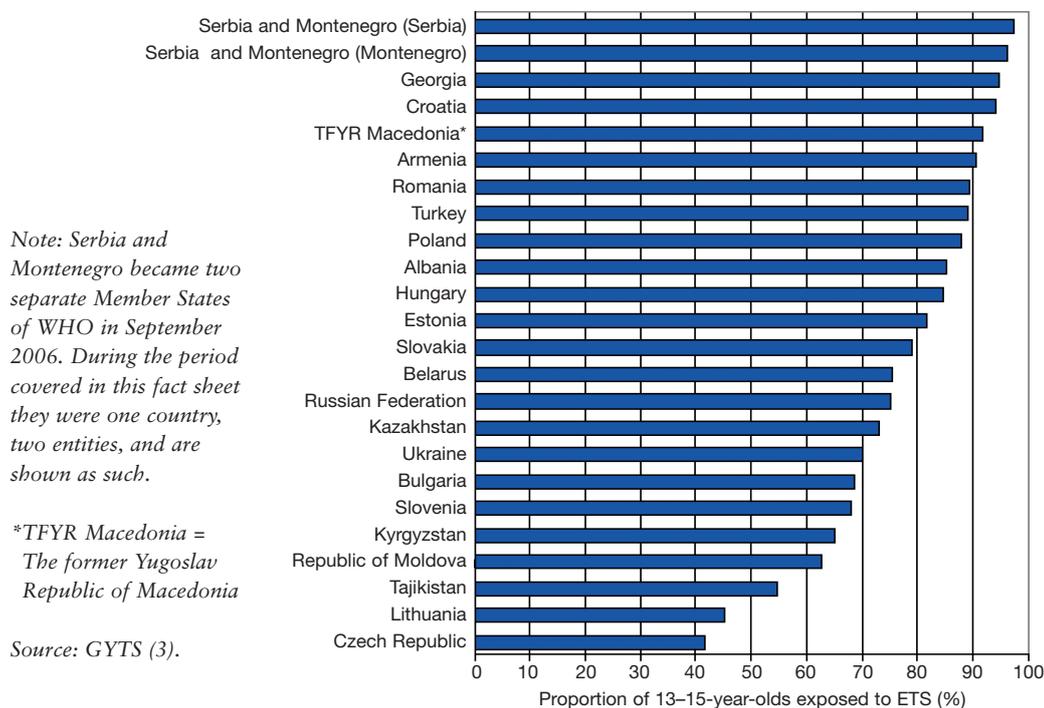
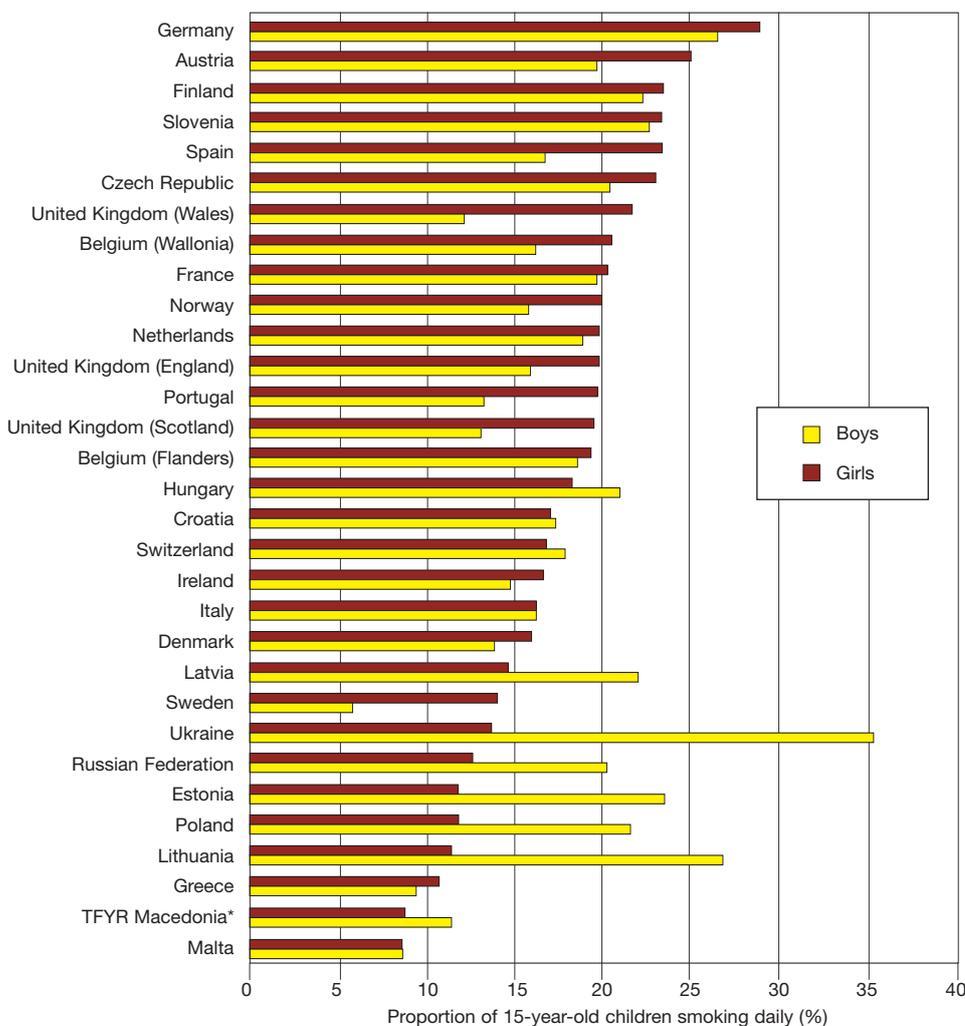


Fig. 2. Proportion of children aged 15 years smoking daily, 2001-2002



*TFYR Macedonia = The former Yugoslav Republic of Macedonia
 Source: HBSC survey (4).

PRESENTATION OF DATA

Figure 1 is drawn from the Global Youth Tobacco Survey (GYTS), which covered children aged 13–15 years. It is based on self-reported answers to the question as to whether they were “living in homes where others smoke in their presence”. The geographic coverage of comparable data is restricted by the fact that only countries in central and eastern Europe, central Asia, the Caucasus and the Balkans participated in the GYTS. The data suggest that across these countries the proportion of 13–15-year-olds exposed to ETS in their homes ranged from 40% to 97%. As regards western Europe, various studies indicate that the proportion of children exposed to ETS at home is 20–58% (1,2).

In Fig. 2, the data are also self-reported and reflect the proportion of 15-year-olds who smoked daily, as collected in the HBSC survey (in Germany, only selected regions were included in the survey). On average, approximately 18% of 15-year-olds reported that they

smoked every day, but there was considerable variation between countries and between girls and boys.

Children who smoke daily are a potential source of exposure to ETS for their non-smoking peers.

HEALTH – ENVIRONMENT CONTEXT

Exposure to ETS is defined as the involuntary or passive breathing of air contaminated with tobacco smoke by non-smokers. Several comprehensive reviews of the effects of ETS on health have been conducted in the last few years (5–7). Tobacco smoke is a known human carcinogen (7) and no level of exposure to ETS is free of risk. Chronic exposure to ETS among adults increases the risk of death and illness from cancer and cardiovascular and respiratory diseases. In infants and young children, exposure to ETS increases the risk of SIDS,

acute lower respiratory tract infections, chronic respiratory symptoms, middle ear disease, decreased pulmonary function and asthma. In children with asthma, ETS increases the severity and frequency of asthma attacks. Finally, there is some evidence to suggest that exposure to ETS during childhood may cause lymphoma and brain tumours.

The most recent estimates indicate that more than 72 000 people in the 25 EU countries die each year due to exposure to ETS at home (8).

WHO has estimated that 9–13% of all cancer cases can be attributed to exposure to ETS in a non-smoking population where 50% are exposed to ETS (9). If it is assumed that 35% of mothers smoke in the home, then 15–26% of lower respiratory illness in infants can be attributed to exposure to ETS (9). Applying these estimates to the population of the European Region suggests that 3000 to 4500 cases of cancer in adults and 300 000 and 550 000 episodes of lower respiratory illness in infants are attributable to ETS each year (9).

For additional information, see the ENHIS-2 fact sheets of May 2007 on post-neonatal mortality due to respiratory diseases and the prevalence of asthma and allergies in children.

POLICY RELEVANCE AND CONTEXT

The burden of illness related to exposure to ETS in public places could be greatly reduced by smoking bans (5,10). Other interventions, such as separating smokers from non-smokers or mechanical air exchange, are less effective (5,11). In addition to limiting exposure to ETS, a ban on smoking indoors effectively encourages people to stop smoking. As parents give up smoking, their children will be less exposed to ETS. However, information and motivating activities are needed if smoking in the home is to be reduced.

As a more comprehensive review of the policy issues is provided in the ENHIS-2 fact sheet on policies to reduce the exposure of children to tobacco smoke (12), only a brief outline is provided here.

There are two key policies related to ETS exposure in Europe.

1. The WHO Framework Convention on Tobacco Control (FCTC) (13). This came into force in 2005 and has been ratified by most European countries, with progress towards ratification being made in the others.

2. The European Strategy for Tobacco Control (14). In 2004, the Fourth Ministerial Conference on Environment and Health adopted the Children's Health and Environment Action Plan for Europe (CEHAPE), which includes four regional priority goals to reduce the burden of environment-related diseases in children. One of the goals (RPG III) aims at preventing and reducing respiratory diseases due to outdoor and indoor air pollution, thereby contributing to a reduction in the frequency of asthmatic attacks and ensuring that children can live in an environment with clean air.

ETS is the dominant form of indoor air pollution where tobacco is smoked, even in areas that are properly ventilated.

A tobacco control database has been established by the Regional Office as the first step in building a global tobacco control surveillance system (15). Ultimately, an internationally harmonized system providing surveillance of the exposure of non-smokers to ETS and monitoring the implementation of policies set out in the FCTC should be set up to allow exposure to ETS to be monitored.

ASSESSMENT

In the European Region there is a high rate of exposure of children to ETS. The 2002–2005 GYTS found that between 40% and 97% of children aged 13–15 years lived in homes where others smoked in their presence. In all the countries where the GYTS was conducted (see above), except for the Czech Republic and Lithuania, the proportion of children exposed to ETS in their homes was over 50%. In the Balkans, Armenia and Georgia, the proportion was over 90%.

Data for western Europe are available from studies conducted in the late 1990s. These found rates of exposure to ETS ranging from 20% in the Netherlands to 35% in the United Kingdom (England) for children aged up to 4 years, who are at particular risk of illness related to ETS (1). In France, 47% of the children aged 4–10 years were exposed to ETS, while a similar proportion was found among 13–14-year-olds in Ireland (1). Other studies found that the proportion of children aged 6–12 years living with a current smoker in the household was around 50%: 46% in Germany, 48% in Switzerland and 58% in Italy and the Netherlands (2).

ETS causes a number of fatal (for example, SIDS) and non-fatal (for example, asthma episodes) effects on health. The number of cases attributable to ETS varies between countries and regions, depending on the levels of smoking in those regions.

In an evaluation of the impact of ETS on SIDS, exposure–response functions developed by Anderson et al (16) were applied to the 4.6 million children under 1 year of age in countries covered by the Environment and Health Information System (ENHIS).¹

Where exposure is lowest (20%), between 110 and 250 SIDS cases may be attributed to ETS (10–22% of all SIDS cases). Where it is highest (50%), between 250 and 480 cases (22–42% of all SIDS cases) may be so attributed. Taking into account the estimated current smoking prevalence in ENHIS countries (15), around one quarter of all SIDS cases could be attributable to exposure to ETS in the home.

The impact of ETS on asthma episodes in children aged under 14 years was estimated using a recent meta-analysis (5) and current estimates of smoking prevalence in ENHIS countries (15).¹ The results suggested that exposure to ETS increases the number of asthma episodes by 6%–10%, depending on the underlying smoking prevalence. The average increase in the countries evaluated is 7.5%.

Such estimates must be considered in the light of difficulties encountered when attempting to estimate a quantified measure of exposure to ETS, in particular the scarcity in international databases of data required to conduct a health impact assessment of ETS at the European level.

Although exposure to ETS among children is strongly associated with patterns of smoking among parents, children may also be exposed to ETS outside the home by other people who smoke actively, including their peers. The HBSC survey found that, on average, around 18% of boys and girls aged 15 years in Europe smoked cigarettes daily in 2001/2002 (4). Although this figure had not changed from 1997/1998, it masked national trends, including increases in some countries (Czech Republic, Estonia and Lithuania) and stable figures or slight decreases in western European countries. In the majority of the countries surveyed, 15-year-old girls were as likely, if not more so, to smoke daily as boys. This varied within the European Region, with more boys than girls smoking in the east and more girls than boys smoking in the north

and west. The pattern of gender differences in smoking is similar to changes observed in the adult population and may be associated with broader changes in the status of women in industrialized countries (4).

In view of the considerable health impact of ETS, particularly on children, measures to restrict smoking in indoor environments should be a major public health objective. In particular, efforts to reduce the exposure of children to ETS should focus on promoting smoke-free homes and cars.

DATA UNDERLYING THE INDICATOR

Source

1. GYTS (3).
2. HBSC (4).

Description

Self-reported data on exposure to ETS in the home among children aged 13–15 years from a school-based survey. The question asked if the children lived in homes “where others smoke in their presence.”

Method of calculating the indicator

Percentage of respondents in nationally representative survey sample.

Geographical coverage

Albania, Armenia, Belarus, Bulgaria, Croatia, the Czech Republic, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Lithuania, Poland, Republic of Moldova, Romania, the Russian Federation, Serbia and Montenegro (Montenegro), Serbia and Montenegro (Serbia), Slovakia, Slovenia, Tajikistan, The former Yugoslav Republic of Macedonia, Turkey, Ukraine.

Period of coverage

2002–2005.

Frequency of update

Not determined.

Quality

Data from the GYTS participant countries are considered uniform and comparable using a common methodology and core questionnaire. Other than the GYTS, there is no comparable information. This assessment suggests that there is a strong need for a harmonized mechanism for collecting information over a broader geographical area and period of time in Europe.

¹ The study area included the following European countries: Austria, Bulgaria, Czech Republic, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, United Kingdom.

References

1. WHO European Centre for Environment and Health. *Exposure to environmental tobacco smoke in Europe, a review*. Copenhagen, WHO Regional Office for Europe, 2003 (technical report).
2. Pattenden S. et al. Parental smoking and children's respiratory health: independent effects of prenatal and postnatal exposure. *Tobacco Control*, 2006, 15:294–301.
3. The Global Youth Tobacco Survey (GYTS), fact sheets, Tobacco Free Initiative [web site]. Geneva, World Health Organization, 2007 (<http://www.who.int/tobacco/surveillance/gyts/en/index.html>, accessed 4 March 2007).
4. Currie C et al, eds. *Young people's health in context. Health Behaviour in School Children (HBSC) study: international report from the HBSC 2001/02 survey*. Copenhagen, WHO Regional Office for Europe, 2004 (Health Policy for Children and Adolescents, No. 4) (<http://www.hbsc.org/downloads/IntReport04>, accessed 2 March 2007).
5. U.S. Department of Health and Human Services, Public Health Service. *The health consequences of involuntary exposure to tobacco smoke: a report of the Surgeon General*. Rockville, MD, Office of the Surgeon General, 2006 (<http://www.surgeongeneral.gov/library/secondhandsmoke/>, accessed 2 March 2007).
6. Courage CM, Tamburlini G, von Ehrenstein OS. Environmental tobacco smoke. In: Tamburlini G, von Ehrenstein OS, Bertollini R, eds. *Children's health and environment: a review of evidence*. Copenhagen, European Environment Agency and the WHO Regional Office for Europe, 2002 (Environmental Issue Report No. 29) (<http://www.euro.who.int/document/e75518.pdf>, accessed 2 March 2007).
7. Tobacco smoke and involuntary smoking. Lyons, World Health Organization, International Agency for Research on Cancer, 2004 (IARC monographs on the evaluation of carcinogenic risks to humans. Vol. 83) (<http://monographs.iarc.fr/ENG/Monographs/index.php>, accessed 4 March 2007).
8. Green Paper. *Towards a Europe free from tobacco smoke: policy options at EU level*. Brussels, Commission of the European Communities, 2007 (Com2007 27 final) (http://ec.europa.eu/health/ph_determinants/life_style/Tobacco/Documents/gp_smoke_en.pdf, accessed 2 March 2007).
9. *Air quality guidelines for Europe, 2nd ed.* Copenhagen, WHO Regional Office for Europe, 2000 (WHO Regional Publications, European Series, No. 91; http://www.euro.who.int/air/activities/20050223_3, accessed 2 March 2007).
10. Spencer N et al. Parent reported home smoking bans and toddler (18–30 month) smoke exposure: a cross-sectional survey. *Archives of Disease in Childhood*, 2005, 90:670–674 (<http://adc.bmj.com/cgi/content/full/90/7/670>, accessed 2 March 2007).
11. Graham H. *When life's a drag*. London, HM Stationery Office, 1993.
12. WHO European Centre for Environment and Health. *Policies to reduce the exposure of children to environmental tobacco smoke*. Copenhagen, WHO Regional Office for Europe, 2007 (ENHIS-2 fact sheet No. 3.7).
13. WHO Framework Convention on Tobacco Control (WHO FCTC). Geneva, World Health Organization, 2003 (<http://www.who.int/tobacco/framework/en/>, accessed 2 March 2007).
14. *European strategy on tobacco control*. Copenhagen, WHO Regional Office for Europe, 2002 (<http://www.euro.who.int/Document/E77976.pdf>, accessed 2 March 2007).
15. *Tobacco control database [online database]*. Copenhagen, WHO Regional Office for Europe, 2006 (<http://data.euro.who.int/tobacco/>, accessed 2 March 2007).
16. Anderson HR, Cook DG. *Passive smoking and sudden infant death syndrome: review of the epidemiological evidence*. *Thorax*, 1997, 52:1003–1009.

Further information

Children's Environment and Health Action Plan for Europe. Fourth Ministerial Conference on Environment and Health, Budapest, 23–25 June 2004 (EUR/04/5046267/7) (<http://www.euro.who.int/document/e83338.pdf>, accessed 2 March 2007).

Council of the European Union. *Council recommendation of 2 December 2002 on the prevention of smoking and on initiatives to improve tobacco control*, 2003/54/EC. Brussels, Publications Office, 2007 (http://eur-lex.europa.eu/smartapi/cgi/sga_doc?smartapi!celexapi!prod!CELEXnumdoc&lg=en&numdoc=32003H0054&model=guichett, accessed 2 March 2007).

Health-EU. *The public health portal of the European Union*. Brussels, European Union, 2007 (http://ec.europa.eu/health-eu/my_lifestyle/tobacco/index_en.htm, accessed 2 March 2007).

Tobacco Free Initiative [web site]. Geneva, World Health Organization, 2007 (<http://www.who.int/tobacco/en/>, accessed 2 March 2007).

National Center for Chronic Disease Prevention and Health Promotion [web site]. Atlanta, GA, Centers for Disease Control and Prevention, 2007 (<http://www.cdc.gov/tobacco> and http://www.cdc.gov/tobacco/data_statistics/Factsheets/index.htm, accessed 4 March 2007).

Smoke-free Homes Program [web site]. Washington, DC, U.S. Environmental Protection Agency, 2007 (<http://www.epa.gov/smokefree/>, accessed 2 March 2007).

Tobacco control in the WHO European Region: current status and developments. Copenhagen, WHO Regional Office for Europe, 2002 (Fact sheet 06/02) (<http://www.euro.who.int/document/CMA/rc52fstob0602e.pdf>, accessed 2 March 2007).

Authors:

Vladimira Puklova, National Institute of Public Health, Prague, Czech Republic;
Jennifer Grad, WHO European Centre for Environment and Health, Bonn, Germany;
Sylvia Medina, Institute of Environmental Health Surveillance, Saint Maurice, France;
Elena Boldo Pascua, Instituto de Salud Carlos III (CISATER), Madrid, Spain.