

Environmental Tobacco Smoke and Children's Health

Cemile Dede,¹ and Nursan Cinar^{2,*}

¹Vocational School of Health Sciences, Sakarya University, Turkey

²School of Health Sciences, Sakarya University, Turkey

*Corresponding author: Nursan Cinar, Vocational School of Health Sciences, School of Health Sciences, Sakarya University, Turkey. Tel: +26-42956621, Fax: +26-42956602, E-mail: ndede@sakarya.edu.tr

Received 2016 March 09; Accepted 2016 April 02.

Keywords: Child health, Secondhand Smoke, Thirdhand Smoke

Dear Editor,

Environmental tobacco smoke (ETS) exposure, or passive smoking, is a preventable cause of disease and disability, and a very important public health problem (1). ETS is an inclusive term describing any tobacco smoke exposure outside of active smoking, comprising secondhand smoke (SHS) and thirdhand smoke (THS) (2).

SHS is a mixture of smoke from the burning end of cigarettes or other tobacco products, such as pipes and cigars, and the smoke exhaled by the smoker (3, 4). SHS, the third leading cause of preventable death worldwide, includes more than 4,000 chemicals, many of which are known or suspected threats to human health (4, 5).

Children are the most ETS-sensitive population due to their smaller bronchial tubes and less-developed immune systems; they also breathe faster and take in more harmful chemicals per kg of body weight than do adults (1, 6). In addition, children spend more time in indoor environments, and have more contact with surfaces, such as carpet or upholstery, that are exposed to ETS. ETS begins to threaten a child's health before birth. Smoking during pregnancy increases the risk of pregnancy complications, premature delivery, and low birth weight, which are leading causes of infant death and stillbirth. ETS-exposed infants are also approximately three times more likely to die from sudden infant death syndrome (SIDS) (7). Children exposed to ETS are more frequently affected by middle ear infections, reduced lung function, respiratory diseases such as pneumonia and bronchitis, and more severe asthma (5). In addition, SHS exposure threatens the mental health of children. In particular, exposure during pregnancy is related to more behavioral problems, especially hyperactivity/inattention and conduct problems (8). According to data from 192 countries in 2004, it was estimated that 40% of children worldwide were exposed to SHS and 28% of pediatric deaths were attributable to this exposure (9).

Although some of the pollutants in SHS can be removed by ventilation, a significant fraction adheres to the clothing and hair of smokers, and to surfaces, furnishings, and dust in indoor environments, persisting for a longer time; this is considered THS (10). THS constituents are re-emitted into the gas phase, or react with oxidants and other compounds in the environment to form secondary pollutants (10). General cleaning methods, such as vacuuming and wiping, are not effective at removing the nicotine that is adsorbed into indoor surfaces, furniture, clothes, and dust (10). THS exposure occurs via inhalation, ingestion, and dermal routes (2).

Thirdhand smoke is a new concept in the field of tobacco control, and there are insufficient data on its greater effects on children compared to adults. Attention must be drawn to this situation and further scientific research is needed, as well as improved awareness by families and the general public.

Footnote

Authors' Contribution: Cemile Dede and Nursan Cinar designed the topic and wrote the paper.

References

1. Cinar ND, Dede C. Effects of environmental tobacco smoke on the respiratory health of children. *Pak J Med Sci*. 2010;26:223-8.
2. Protano C, Vitali M. The new danger of thirdhand smoke: Why passive smoking does not stop at secondhand smoke. *Environmental Health Perspectives*. 2011;119(10):a422. doi: 10.1289/ehp.1103956.
3. World Health Organization . Protection from exposure to second-hand tobacco smoke: policy recommendations. World Health Organization; 2007.
4. US Department of Health and Human Services . The health consequences of involuntary exposure to tobacco smoke: A report of the surgeon general 2006. Available from: <http://www.surgeongeneral.gov/library/secondhandsmoke/report/index.html>.

5. de Carvalho Ribeiro FA, de Moraes MK, de Morais Caixeta JC, da Silva JN, Lima AS, Parreira SL, et al. Perception of parents about second hand smoke on the health of their children: an ethnographic study. *Rev Paul Pediatr.* 2015;**33**(4):394-9. doi: [10.1016/j.rpped.2015.02.003](https://doi.org/10.1016/j.rpped.2015.02.003). [PubMed: [26298662](https://pubmed.ncbi.nlm.nih.gov/26298662/)].
6. Jenabian N, Pouramir M, Motallebnejad M, Bamdadian J, Rahimi-Rad M. Evaluation of the effect of passive smoking on lactoferrin and ast on 12 - 15 years old children and adolescents. *IJP.* 2015;**25**(5) doi: [10.5812/ijp.2996](https://doi.org/10.5812/ijp.2996).
7. Office on Smoking and Health . A report of the surgeon general: How tobacco smoke causes disease: What it means to you. Us department of health and human services, centers for disease control and prevention,. 2010.
8. Leung C, Leung GM, Schooling CM. Early second-hand smoke exposure and child and adolescent mental health: evidence from Hong Kong's 'Children of 1997' birth cohort. *Addiction.* 2015;**110**(11):1811-24. doi: [10.1111/add.13033](https://doi.org/10.1111/add.13033).
9. Oberg M, Jaakkola MS, Woodward A, Peruga A, Pruss-Ustun A. World-wide burden of disease from exposure to second-hand smoke: a retrospective analysis of data from 192 countries. *The Lancet.* 2011;**377**(9760):139-46.
10. Matt GE, Quintana PJ, Destailats H, Gundel LA, Sleiman M, Singer BC, et al. Thirdhand tobacco smoke: emerging evidence and arguments for a multidisciplinary research agenda. *Environ Health Perspect.* 2011;**119**(9):1218-26. doi: [10.1289/ehp.1103500](https://doi.org/10.1289/ehp.1103500). [PubMed: [21628107](https://pubmed.ncbi.nlm.nih.gov/21628107/)].