Archivos de Bronconeumología 57 (2021) 455–456

Sociedad Española de Neumología y Cirugía Torácica SEPAR

ARCHIVOS DE Bronconeumología

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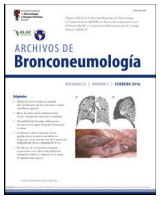

Editorial

Morbidity Attributable to Second-Hand Smoke in European Children

Morbilidad atribuible al tabaquismo pasivo en niños europeos

Exposure to SHS is a major cause of disease among children and there is no safe level of SHS exposure.[1] It is associated with asthma, lower respiratory tract infections (LRI), otitis media (OM), and sudden infant death syndrome (SIDS). Moreover, SHS exposure during pregnancy leads to preterm birth, low birth weight (LBW), being small for gestational age, and perinatal and infant mortality.[1–3] In the past 20 years, in many countries, the implementation of smoking bans in public places indirectly increased voluntary smoking bans in homes,[4–6] and this effect reduced SHS-related diseases in children and in newborns. A recent meta-analysis showed an association between the implementation of smoke-free legislation and reductions in hospitalization rates for asthma exacerbations, LRI, and LBW in children.[7] Despite these improvements, many children and pregnant women are still exposed to SHS in the EU countries, and the burden of SHS exposure in children is still considerable.

We recently published a study, conducted within the TackSHS Project (http://tackshs.eu/),[8] to quantify the burden of disease due to secondhand smoke (SHS) exposure at home and during pregnancy among children in the past 10 years in the 28 European Union (EU) countries.[9]

In our study, SHS exposure was estimated using a multiple imputation procedure based on the Eurobarometer surveys, and SHS exposure burden from asthma, LRI, OM, SIDS and LBW was estimated with the comparative risk assessment method,[10] using meta-analytical relative risks. Data on deaths and disability-adjusted life years (DALYs) were collected from National statistics and from the Global Burden of Disease Study (GBD).[11]

Results from our study showed that SHS exposure at home among EU children stalled from 10% in 2006, and 2010 to 12% in 2017; among pregnant women, from 20% in 2006, 19% in 2010, and 21% in 2017. As a consequence of the trend in SHS prevalence, the SHS burden was stable in 2006-2017. The number of deaths and DALYs attributable to SHS exposure among children in 2017 were, respectively, 335 and 35,633, and their proportions on the total number of deaths and DALYs among EU children in 2017 were, respectively, 1.4% and 0.7%. The proportions of DALYs were >1.5% in Malta, Slovakia, Bulgaria, Poland and Romania, and <0.4% in Finland, The Netherlands, Belgium, and Luxembourg. In 2017, LBW caused most part of deaths and DALYs due to prenatal SHS exposure, with a proportion of DALYs of 0.4% in the EU, reaching a maximum of 1.1% in Poland; LBW was followed by LRI, asthma, SIDS, and finally by OM, with 0.1% DALYs attributable to SHS exposure. In Eastern EU countries, such as Poland, Bulgaria, Slovakia, and also Malta, DALYs due to SHS exposure were mainly from LBW, whereas in Romania and Bulgaria a high proportion of SHS-related DALYs was also recorded from LRI.

Our study showed a stall in SHS household exposure in children and among pregnant women and, consequently, in estimates of SHS exposure impact in children and newborns. From 2006 to 2010, slightly lower values of SHS exposure were estimated, and this may be in part due to the implementation of smoking bans in 16 out of 28 EU countries (Luxembourg, Belgium, the UK, Spain, Finland, Slovenia, Lithuania, Denmark, France, Portugal, Croatia, Slovakia, Latvia, Cyprus, Greece, Germany). Other 6 EU countries implemented nation-wide smoking bans in 2004–2005 (Ireland, Sweden, Malta, Italy, Estonia, The Netherlands), whereas only 6 developed smoking bans after 2010 (Poland, Hungary, Bulgaria, Romania, Czechia, Austria). The stall in SHS prevalence estimated in 2010–2017 suggests that comprehensive smoking bans had less influence in the adoption of smoke-free homes in the long run. In this period, other tobacco control measures were implemented in EU countries with no significant impact on SHS exposure at home.

In 2017, the SHS burden was higher in Eastern countries and lower in Northern European countries, part of which implemented a smoking ban earlier. By analyzing the SHS burden distribution by disease, a not uniform pattern was estimated in EU countries, with LBW being the disease with the highest proportion of SHS attributable deaths and DALYs, suggesting a notable problem of SHS exposure in pregnancy, especially in Eastern EU countries.

We recently published a systematic review evaluating the burden of disease due to SHS exposure in children from different countries worldwide, with population attributable fractions estimates that varied considerably,[3] since they depend on country-specific SHS exposure prevalence.[10] In 2017, the GBD study estimated a total of 186 deaths and 20,870 DALYs attributable to SHS exposure in European children aged < 14 years, substantially less than our estimate of 335 deaths and 35,633 DALYs.[11] This is likely due to the exclusion from the GBD burden quantification of SIDS, asthma and LBW, the latter being one of the diseases that mainly contributed to the burden from SHS exposure in children, determined from SHS exposure in pregnancy.

In conclusion, in the past decade, despite that smoke-free homes initially increased, presumably as a result of the implementation of smoking bans,[12] our results showed that, in the long run, the SHS-related diseases in children are still not negligible. This

suggests that household SHS exposure among children and pregnant women are still high. Up to 1.6% of total DALYs could be avoided eliminating SHS exposure among children and during pregnancy. Preventing exposure of children to SHS at home and prenatal exposure to maternal SHS exposure in the EU therefore still requires great and coordinated efforts.

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