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EDITORIAL

Thirdhand smoke and other challenges of tobacco control in the pediatric population☆

Humo de tercera mano y otros retos del control del tabaquismo en población pediátrica

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In Spain, tobacco control policies have advanced considerably in the XXI century. In fact, indoor smoking has decreased in public spaces and work settings, reducing exposure to environmental or second-hand smoke (SHS) in Spain, thus improving the health of the entire population.[1]

However, passive exposure to smoke is not limited to SHS, but also includes third-hand smoke (THS). Third hand smoke is defined as the combination of gases and particles that stay after smoking on surfaces (pillows, carpet), in dust and even on the hair, skin and clothing of individuals.[2,3] In addition, the components of THS can be inhaled, ingested or even absorbed through the skin.[2]

Exposure to THS is particularly hazardous to the paediatric population for different reasons. First of all, when they are not in school or a childcare facility, children spend most of their time in private environments (such as homes or cars) where they cannot avoid exposure. There are also specific behaviours characteristic of certain stages of development, such as crawling and bringing objects to the mouth in infancy or early childhood, that could intensify exposure to THS. Lastly, compared to adults, the immune system is still developing in children, the heart rate is higher and the skin is thinner, all of which increase risk.[2]

Since the concept of exposure to THS is still relatively new, its long-term consequences are still being investigated. However, there is evidence that exposure to THS increases the risk of developing respiratory symptoms and cancer and even the associated mortality.[2] When it comes to the paediatric population, there is growing evidence on the harmful effects of THS in relation to asthma exacerbations and other respiratory illnesses.[2]

Thus, with the aim of reducing exposure to THS, educational campaigns are needed to increase the awareness of the population of the health effects of THS. The lack of information on THS is a barrier to the protection of the paediatric population, composed mainly of non-smokers, as tobacco control policies and regulations do not include private spaces such as the home and personal vehicles, where exposure to THS is high. This means that the decision to establish rules on tobacco use in private spaces rests with the individual. On this point, data from 2017 show that in Spain, only 27% of parents of children aged less than 3 years had ever heard about THS, but, after briefly informing these parents on the subject, as many as 86% agreed that THS was harmful to their children.[4] Therefore, the prevention of THS exposure must be based on increasing awareness of the risks associated to exposure through educational campaigns.

Several factors need to be taken into account when it comes to the prevention of exposure to THS, especially in the paediatric population. First, the most effective strat-

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egy at the population level is to create smoke-free spaces, a measure that some countries have promoted with policies that offer incentives for smoke-free buildings or the prohibition of smoking in vehicles with underage passengers. In this sense, quitting smoking is the best possible measure to prevent exposure to tobacco smoke in all its forms (SHS and THS). Second, the population needs to be made aware of THS, since its components can remain in exposed surfaces for months. Third, smokers are advised to wash hands and face with acidic soaps[5] and even change clothes after smoking. These hygiene rules are particularly important before interacting with children, especially infants and toddlers, for instance, in the staff of childcare centres, as in being held by a smoker these children would be exposed to the components of THS trapped in the clothing (mainly cotton and wool materials), hair and skin of that person. In addition, these recommendations also apply to non-smokers exposed to SHS. On the other hand, we recommend not smoking inside homes, cars or any other space where the family spends substantial amounts of time, especially indoor spaces. This must always be taken into account to avoid the components of tobacco smoke that remain on exposed surfaces. Lastly, in case exposure to THS cannot be avoided in indoor spaces, we recommend attempting to clean the exposed surfaces, for which the use of acidic products, such as vinegar, is most effective.[5] However, this would be useful in materials such as marble, but not in textiles such as carpet, for which a method has not been found to completely eliminate residues, and therefore, these materials will continue accumulating THS.[5]

The role of health providers at the primary care (PC) level is essential in increasing awareness in the general population and sharing knowledge with the aim of reducing exposure to THS. During the followup of paediatric patients, providers work on the prevention of exposure to SHS and can provide recommendations to prevent exposure to THS as well. Table 1 and the brochure provided in this article (Appendix) present our recommendations to reduce exposure to THS in the paediatric population.

At present, there are other challenges to tobacco control in the paediatric population, such as the e-cigarette, rolling tobacco or marihuana.[6] The increase in vaping (consumption of e-cigarettes) among adolescents is alarming, and calls for a detailed history-taking, mainly in adolescents with acute pulmonary disease of unknown aetiology, as well as a structured interview in PC clinics regarding their consumption and associated risks.[7] When it comes to rolling tobacco, there is a false belief in the population that its consumption and exposure to its smoke is less harmful to health, when previous studies have proven this to not be the case, a fact that must be emphasised from the PC setting.[7]

In conclusion, paediatricians play a key role in raising awareness in the population of issues related to tobacco control, such as THS, e-cigarettes and rolling tobacco. In addition, we present a table with the main recommended preventive measures to reduce exposure to THS, along with an educational trifold brochure (Appendix) to increase the knowledge of parents on this important public health problem. Our aim is to reduce exposure to environmental smoke in the paediatric population, especially in homes and private vehicles, by providing an educational tool.

Table 1 Main recommendations for reducing exposure to third-hand smoke.

- Quitting smoking is the best preventive measure to avoid exposure to tobacco in all its forms (second- and third-hand smoke).
- Full protection is achieved by keeping homes and cars smoke-free.
- Avoid smoking in homes, cars or any other space where the family spends considerable time, especially indoor spaces.

If it is not possible to keep the space smoke-free in the home or the car, the recommendations are:

- Ventilate frequently.
- Regularly clean exposed surfaces with acidic products, such as diluted white vinegar solutions (especially useful on materials like marble).
- Vacuum weekly with a HEPA filter (High Efficiency Particulate Air). These filters trap particles of up to 0.3 microns.
- Replace rugs/carpets, sofas and bed linens exposed to smoke, since THS cannot be fully eliminated from these textiles

The recommendations for smokers or individuals exposed to smoke before interacting with children are the following:

- Wash hands and face with acidic soap.
- Change clothes (especially if made of wool or cotton).

Appendix. Supplementary data

The following is Supplementary data to this article can be found, in the online version, at doi:https://dx.doi.org/10.1016/j.anpede.2020.05.006.

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