Conflicts of interest

The authors have no conflicts of interest to declare.

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3 November 2020
Available online 14 January 2021

https://doi.org/10.1016/j.pulmoe.2020.12.007

Assessment of compliance with the smoking ban in children's playgrounds in Portugal: a case study

The smoking behavior of friends, peers and family members is an important predictor of tobacco use by adolescents.[1] Concomitantly, it is widely acknowledged that tobacco consumption by parents is a risk factor for childrenś later smoking behavior. In Portugal, Law no. 63/2017 entered into force on January 1st 2018 and extended the smoking ban to outdoor locations attended by children (e.g., children's playgrounds).[2] This law is relevant not only to protect children from secondhand smoke exposure, but also to decrease tobacco normalization. This study aimed to describe tobacco-related variables (e.g., persons smoking, smell of tobacco smoke, cigarette butts) in children's playgrounds before and after the implementation of this new Law, considering the socioeconomic status (SES) of the neighborhood surrounding the playground.

An observational study was developed in children's playgrounds in the municipality of Braga (Portugal), between May and June 2017 (before the law entered into force), followed by two follow-ups carried out in the same months in 2018 and 2019 (after the law entered into force). This study followed the methodology of the TackSHS Project Consortium, whose aims included the assessment of SHS exposure in children's playgrounds in European countries.[3,4] A convenience sample of 20 playgrounds was assembled. Playgrounds were selected according to the neighborhoods' SES: 9 were located in the most deprived urban areas (low SES) and 11 located in the most affluent ones (high SES). Neighborhood SES was established based on a deprivation index for Portugal.[5] The number of playgrounds observed varied in each year due to temporary closures for maintenance. Playgrounds were observed in similar weather conditions and each playground was observed for a period of 30 min. The inclusion criterion was that a minimum of five people, including children, were inside the playground at the beginning of the observation, regardless of the time or day of the week. Most playgrounds were observed during weekends (41 out of 57) and in the afternoon (51 out of 57). On average each playground had a total of 9.77 (SD = 5.60) people inside, of which 5.55 (SD = 4.73) were children.

The researchers recorded the data on a grid developed based on the variables collected on the TackSHS project[4]: existence of persons smoking (cigarettes and e-cigarettes/heated tobacco products) inside and around the playground (<1 meter); presence of the smell of tobacco smoke; presence of non-smoking signs; and existence of cigarette butts on the floor inside and outside the playground.

The associations between tobacco-related variables and the year of the observations or the neighborhoods' SES were calculated using a Chi-squared test for the categorial variables (Fisher's Exact test when the expected count in cells was lower than five). The median differences were compared through a Kruskall–Wallis or Mann–Whitney Test, as appropriate. All analyses were performed with the IBM Statistical Package for the Social Sciences (SPSS) Statistics for Windows, version 26.0, Armonk, NY, USA.

The main results are presented in Table 1. There was a statistically significant decrease in the number of playgrounds with cigarette butts outside, reducing from 20 in 2017 to 15 in 2018 ($p = 0.028$). However, in 2019 this number increased to 19 playgrounds. In 2017, almost all the play-

Table 1 Tobacco-related variables in children's playgrounds in the municipality of Braga, Portugal, by year.

Variables	2017 N = 20[a]	2018 N = 18[a]	2019 N = 19[a]	*p*-value*
		n (%)		
Smell of smoke	3 (15.0)	1 (5.6)	1 (5.6)	0.603[c]
Smoking sign	0 (0.0)	0 (0.0)	0 (0.0)	n.a.
Smoking inside	2 (10.0)	0 (0.0)	1 (5.3)	0.643[c]
Smoking outside[b]	3 (15.0)	0 (0.0)	2 (10.0)	0.310[c]
e-cigarette/heated tobacco users	0 (0.0)	0 (0.0)	0 (0.0)	n.a.
Butts inside	19 (95.0)	17 (94.4)	15 (78.9)	0.298[c]
Butts outside[b]	20 (100.0)	15 (83.3)	19 (100.0)	**0.028**[c]
	Median (P25-P75)			
Butts inside, *number*	14.00 (4.00–20.00)	5.00 (3.00–12.75)	5.00 (1.00–9.00)	0.083[d]
Butts outside, *number*	20.00 (12.50–20.00)	20.00 (6.50-20.00)	20.00 (12.00–20.00)	0.701[d]

Note: SD, standard deviation; n.a., not applicable.
[a] The number of playgrounds observed varied in each year due to temporary closure for works of some of them.
[b] Just around the playground area at a maximum distance of 1 meter.
[c] Fisher's Exact Test.
[d] Kruskal–Wallis Test.
* $p < 0.05$.

Table 2 Tobacco-related variables in children's playgrounds in the municipality of Braga, Portugal, according to SES.

	N	Smell of smoke *n* (%)	Smoking inside	Smoking outside	Butts inside	Butts outside	Number butts inside *Median* (P25-P75)	Number butts outside
SES								
High	32	4 (12.5)	1 (3.1)	1 (7.0)	28 (87.5)	29 (90.6)	5.00 (5.00—10.50)	20.00 (9.75—20.00)
Low	25	1 (4.0)	2 (8.0)	0	23 (92.0)	25 (100.0)	11.00 (3.50—19.50)	20.00(16.50—20.00)
p-value		0.372[a]	0.576[a]	0.123[a]	0.686[a]	0.248[a]	0.067[b]	0.177[b]

Note: SES, socioeconomic status.
[a] Fisher's Exact Test.
[b] Mann–Whitney Test.

grounds had cigarette butts inside (19/20). Although not statistically significant, this number reduced to 15/20 playgrounds in 2019, and the median number of butts inside the playground reduced from 14.00 (P25-P75: 4.00—20.00) to 5.00 (P25-P75: 1.00—9.00). None of the playgrounds presented non-smoking signs and e-cigarette users were never observed.

No statistically significant differences were found in the tobacco-related variables according to the playgroundsńeighbourhood SES (Table 2). Notwithstanding, the presence and the number of cigarette butts within the playgrounds were higher in deprived neighbourhoods.

This was the first study developed in Portugal collecting tobacco-related variables in children's playgrounds and analyzing its change over a two-year period during the enforcement of a new smoking ban law. This study showed that there is evidence of smoking in playgrounds in the municipality of Braga, which indicates that children continue to be exposed to smoking behavior and secondhand smoking in these places. Although some reduction was found in the number of butts outside the playgrounds, this study revealed a generalized non-compliance with the smoking ban, shown in the number of butts found both inside and outside the playgrounds, as well as in the total absence of signs informing about the smoking prohibition.

The low number of cases in our sample may have hindered the statistical power needed to find statistically significant results, being relevant the development of studies with larger samples and in different regions of the country.

In summary, better enforcement of the new law is required. Town Halls should take the necessary actions to promote health education in communities and protect children from the exposure to smoking behavior.

Authors' contributions

The study was designed by J. Precioso, M.J. López, X. Continente and E. Fernandez. Data was collected by C. Samorinha and V.H. Oliveira. J. Precioso and C. Samorinha designed and carried out statistical analysis and wrote the first draft of the letter. All authors gave a substantial contribution to the interpretation of data, critical discussion and revision of the manuscript, and approved its final version.

Funding

The data from 2017 presented in this letter has received funding from the European Union's Horizon 2020 research and innovation program under grant agreement No 681040. It was also supported by the Ministry of Universities and Research of Catalonia (AGAUR) under grant 2017 SGR 1526 (MJL, XC) and 2017SGR319 (EF).

Protection of human and animal subjects

The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data

The authors declare that the procedures followed were in accordance with the regulations established by the Commission for Clinical and Ethical Research and in accordance with the Helsinki Declaration of the World Medical Association.

Right to privacy and informed consent

No individual data was retrieved from participants.

Conflict of interest

The authors declare they have no conflicts of interest.

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16 July 2020
Available online 31 January 2021

https://doi.org/10.1016/j.pulmoe.2020.12.009

Screening of inhalation technique and treatment adherence in asthma, COPD and ACO patients

Inhaled medication is essential for the treatment of chronic lung disease.[1–3] Inhaler misuse is quite common, and it reduces medication effectiveness.[4] This problem leads to poor clinical outcomes.

The aim of this study was to assess the inhalation technique of patients with asthma, chronic obstructive pulmonary disease (COPD) and asthma/COPD overlap (ACO), and to evaluate the impact of constant technique learning in every appointment.

A quasi-experimental study was conducted in the outpatient Pulmonary clinic of Faro Hospital, from September 2017 to September 2018. Patients with asthma, COPD and ACO, who were already on inhaled therapy, were included along the first six months of the study. A questionnaire was designed to evaluate patients' demographic and clinical data, pulmonary function and inhalation technique (using pre-defined checklists). These questionnaires were filled in at three stages: at baseline, one month later and after six months. When errors were detected the correct technique was explained verbally by a physician following each assessment and a visual explanation also given.

Ninety-seven patients were included: 41.2% had asthma, 41.2% COPD and 17.5% had ACO. Table 1 describes patients'