

Tobacco smoke pollution in the ‘non-smoking’ sections of selected popular restaurants in Pretoria, South Africa

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Exposure to second-hand tobacco smoke (SHS) has been associated with several adverse health effects including increased risk of lung cancer, heart disease and also asthma in children.¹ Hence, the WHO's Framework Convention on Tobacco Control (FCTC) obligates parties to the Convention, to implement measures to protect all people from the exposure to SHS.² Even prior to signing the WHO FCTC in 2005, the South African government in 2001 implemented a regulation to restrict smoking in public places, including restaurants.³ However, the current regulation in South Africa allows for a designated ‘smoking area’. It is pertinent to note that the enabling legislation provided for a ban in smoking in public places, but also gave the Minister of Health powers to permit smoking in a prescribed portion of a public place. The Minister at that time exercised these powers.

It has been suggested that currently there are no ventilation systems available to prevent smoke from drifting from designated ‘smoking areas’ into ‘non-smoking areas’;⁴ however, no research has been conducted on the extent of smoke pollution in non-smoking sections in South African restaurants. This study therefore sought to investigate the level of tobacco smoke pollution in eight selected popular restaurants in the capital city—Pretoria.

Table 1. The distribution of smoke pollution in ‘non-smoking sections’ in sampled restaurants

Site	SidePak average PM _{2.5} reading (µg/m ³)	Non-smoking section volume (m ³)	Number of smokers	Smoking density (smokers/100 m ³ room volume)
1	135	240	3	1.3
2	230	210	4	1.9
3	940	84	6	7.1
4	125	132	4	3.0
5	80	356	4	1.1
6	295	430	7	1.6
7	460	141	8	5.7
8	165	142	6	4.2

Median average PM_{2.5}=182.5 µg/m³

Adapting the assessment methods widely used, and recently used in the only such published assessment in Africa, done in Ghana,⁵ the extent of tobacco smoke pollution was assessed as the concentration of airborne particulate matter <2.5 µm (ie, PM_{2.5} concentration). Real-time PM_{2.5} concentrations in the ‘non-smoking sections’ were measured for about 45 min, using a TSI SidePak AM510 Personal Aerosol Monitor (TSI Inc, Shoreview, Minnesota, USA) with a 0.32 calibration factor, following an established protocol.⁵ Considering the well known high

levels of PM_{2.5} in designated smoking areas, it was felt that it would be unnecessary to expose data collectors to such levels of secondhand smoke. The number of smokers or actively burning cigarettes in the ‘smoking section’ observed through glass partitioning was nevertheless recorded. The dimensions of the ‘non-smoking section’ (measured using a laser ruler) were used to calculate ‘active’ smoking density that is, the average number of burning cigarettes in the smoking section per 100 m³ of non-smoking area.

Average PM_{2.5} concentrations recorded were positively correlated with active smoking density (Spearman's correlation coefficient 0.71, p=0.047), indicating that a significant source of PM_{2.5} in the ‘non-smoking sections’ was tobacco smoke generated from designated ‘smoking areas’ (table 1). The median average PM_{2.5} concentration (183 µg/m³) was at least seven times higher than the WHO standard of 25 µg/m³ set for good air quality.⁶ Furthermore, the average PM_{2.5} levels recorded in some restaurants were similar to levels recorded in some smoking sections in the recent Ghanaian study.⁵

Although limited by the small number of restaurants visited, this study's findings suggest that South Africans may unknowingly be exposed to a significant amount of tobacco smoke, even if they sit in the ‘non-smoking’ section of these restaurants. This finding is consistent with findings from a similar evaluation conducted in Chile after the introduction of partial smoking ban.⁷ This study's findings, which had been provided to the Ministry of Health in support of the recently published new draft regulations that will make public places 100% smoke-free, also highlights how useful local evidence is for policy decision-makers in Africa.

Key messages

- The guidelines for the implementation of Article 8 of the WHO framework convention recommends a 100% smoke-free policy because no ventilation system is available to prevent smoke from drifting from the so called designated ‘smoking areas’ to ‘non-smoking areas’.
- Yet the current policy in South Africa, as in many other LMICs, still allows for designated smoking areas and no local policy evaluation has been done on the effectiveness of such a policy in protecting South African non-smokers from exposure to second-hand smoke.
- This study's findings suggest high levels of smoke pollution in non-smoking section resulting from smoking in designated ‘smoking sections’ and has provided important support for the proposed amendments to the current policy.

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Footnotes

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