

Impact of smokefree legislation on indoor air quality in bars in Northern Ireland

Executive summary

Environmental Tobacco smoke (ETS) has been linked to adverse health effects among adults and children, with the hospitality industry being identified as the most exposed industry sector.

Northern Ireland introduced a comprehensive smoking ban on 30 April 2007 to address this significant public health hazard. The primary aim of the study was to investigate if the restrictions imposed by the smoking ban led to consequential changes in air quality and nicotine levels in licensed premises. This was combined with a qualitative assessment of the attitudes and perceptions of bar workers.

This study is the first of its kind in Northern Ireland and indicates the effects of the smoking ban on indoor air quality. This study is, to the best of our knowledge, the largest sample size worldwide for a pre ban and post ban data analysis, comprising 82 premises across four towns and cities.

The total sample of 82 bars comprised premises from each of the four geographical areas: Ballymena – 31, Derry City – 20, Dungannon – 12 and Belfast – 19. Sampling took place on Friday, Saturday, Sunday.

Key findings

- **The improvements in air quality assessed through this work indicate that Northern Ireland currently now has indoor air quality as good as, or better than, anywhere else in the world where similar studies have taken place.**
- Collectively the venues experienced a statistically significant reduction ($r=0.032$) in mean indoor Particulate Matter (PM) 2.5 concentrations, from 1076Ug/m³ pre ban to 70 ug/m³ post ban – equating to a 93.53 percent decrease in particulates.
- All the premises sampled experienced reductions in mean PM_{2.5} concentrations ranging predominantly between 70 and 99 percent.
- Other sources of PM_{2.5} include car fumes, cooking, log fires, and smoke drifting inside from open doors/windows.

- Questionnaires of bar workers were conducted both before and after the ban questioning the same members of staff.
- Results from the questionnaires indicated a 76 percent increase in the number of respondents who regarded the air quality as "good" post ban compared to pre ban. And a 92 percent increase in the number who thought it was "good" or "moderate" (on a scale of "good", "moderate", "slightly unhealthy", "hazardous", "could cause significant harm" and "not applicable").
- Prior to the ban 3.2 percent thought the air quality "could cause significant harm" and 22.6 percent reported it as "slightly unhealthy". These figures had fallen to 0 percent post ban, reflecting the noticeable and visible improvements.
- Before the introduction of the legislation 58.1 percent of respondents reported experiencing symptoms which they felt were directly related to being exposed to (ETS). This decreased considerably after the ban with a 72 percent reduction in the number of respondents reporting symptoms or side effects attributable to ETS.
- The air quality studies conducted in Ballymena and Derry show a 85 percent reduction in air nicotine values with reductions in 48 of the 49 venues sampled.
- There was a 94 percent reduction in fine particles so that average air quality would now be categorised as good rather than hazardous in the context of the US EPA Air Quality Index which is the globally accepted marker for PM2.5.
- The evidence from this research will be analysed further by the extensive research team involved with CIEH in this work namely Health Service Executive Galway; Berkeley University USA and Roswell Park Cancer Institute USA, so that countries contemplating smoke free initiatives can benefit from the experiences of Northern Ireland which have reaped such dramatic improvements in air quality and point to tremendous improvements in life expectancy for hospitality workers