Controlling deaths from volatile substance abuse in under 18s: the effects of legislation

A Esmail, H R Anderson, J D Ramsey, J Taylor, A Pottier

Department of Public Health Sciences, St George's Hospital Medical School, London SW17 0RE

A Esmail, senior registrar, honorary lecturer
H R Anderson, head of department
J Taylor, research organiser
A Pottier, statistical assistant
J D Ramsey, head of toxicology unit

Correspondence to: Dr Esmail.

BMJ 1992;305:692

Between 1981 and 1989 in the United Kingdom about 856 people died from volatile substance abuse.¹ Attempts at prevention have included health education campaigns and the introduction of legislation in 1985.² This paper examines the possible effects of these measures on trends in the numbers of deaths and in the types of substance abused.

Methods and results

Data for the period 1981-9 were obtained from the national register of volatile substance abuse deaths maintained by the department of public health sciences at St George's Hospital Medical School. The methods of data acquisition have been described elsewhere³ and include systematic screening of local and national press, death certificates (through the Office of Population Censuses and Surveys), and notification of deaths by coroners.

For this analysis abused products were categorised according to whether the inhalant was liquid or gaseous at room temperature since it is likely that this characteristic affects case fatality.⁴ Gaseous substances include the contents of butane gas cigarette lighter refills, pressurised aerosols (for example, deodorants), and Halon containing fire extinguishers. Inhalants which are liquid at room temperature include contact

adhesives containing toluene and solvents such as dry cleaning agents and typewriter correction fluids. As a group the gaseous substances are probably more freely available at retail outlets (newsagents, tobacconists, wine merchants, and supermarkets) and in the home than the liquid inhalants (usually hardware, "do it yourself" stores).

Differences in mortality between people under and over 18 years were analysed by fitting a log linear Poisson regression model using generalised linear interactive modelling.⁵

The figure shows that in 1986 (the year after the introduction of legislation) there was a decrease in deaths associated with the use of solvents in both age groups. This fall was significantly greater in the under 18s than among adults ($\chi^2=14$, $df=1$). There was no perceptible immediate effect on butane/aerosol deaths in under 18s ($\chi^2=0.09$, $df=1$), which continued to increase throughout the decade (χ^2 for linear trend=110, $df=1$).

Comment

Part of the increase in numbers of deaths from volatile substance abuse between 1981 and 1989 could be due to an increase in the ascertainment of deaths resulting from an increase in awareness and reporting. However, this analysis was not dependent on the overall trend but on relative trends between substances, and therefore any conclusions relating to the effects of legislation are still likely to be valid.

These results are consistent with the hypothesis that, against a background of voluntary action by retailers and widespread publicity, the introduction of legislation in 1985 had an immediate and sustained effect on deaths associated with solvents in the target under 18 age group. A similar effect was not observed in the mortality from gaseous inhalants, which continued to rise in all age groups. This may be because such products are available through a wide range of retail outlets. It is also possible that the sustained publicity concerning "glue sniffing" and "solvent abuse" together with restriction of supply has shifted practice towards the riskier practice of "gas sniffing."

The wide availability of butane gas lighter refills and the ease with which they may be abused, combined with the fact that this single product is responsible for nearly 34% of deaths from volatile substance abuse in under 18s, suggest that there is a strong case for withdrawing this product from the market. Safer alternatives exist (for example, disposable cigarette lighters) and, although it is possible that withdrawing it from the market will force young people into abusing other gaseous products, there are fewer substances available which are as easy to abuse and as widely available as butane gas cigarette lighter refills.

We thank Derek Cook and David Strachan for statistical advice. The register of volatile substance abuse deaths receives financial support from the Department of Health.

Deaths from volatile substance abuse during 1981-9 by substance and age group (log scale). (Total deaths=856; substances causing death known in 808 cases)

- Wright S, Pottier A, Taylor J, Norman CL, Anderson HR, Ramsey JD. Trends in deaths associated with abuse of volatile substances. London: St George's Hospital Medical School, 1991.
- Liss BI. Government, trade and industry and other preventative responses to volatile substance abuse. *Hum Toxicol* 1989;8:327-30.
- Anderson HR, Macnair RS, Ramsey JD. Deaths from abuse of volatile substances: a national epidemiological study. *BMJ* 1985;290:304-7.
- Flanagan RJ, Ruprah M, Meredith TJ, Ramsey JD. An introduction to the clinical toxicology of volatile substances. *Drug Saf* 1990;5:359-83.
- Numerical Algorithms Group. Generalised linear interactive modelling system. Ver 3.77 manual. Oxford: NAG, 1986.

(Accepted 23 July 1992)