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Prevention of harms associated with volatile substance abuse

*Prevention research
summaries*

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Centre for Youth Drug Studies



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Prevention of harms associated with volatile substance abuse

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The following summaries provide an overview of published research relevant to the prevention of harms associated with volatile substance use. In what follows, literature reviews are first presented followed by empirical investigations relevant to prevalence, risk factors and interventions. The available research is not extensive and is generally not of a sophisticated standard. Basic problems are evident in many studies, including a failure to describe the questions and procedures used to define volatile substance use.

Literature reviews

Drugs and Crime Prevention Committee 2002
Inquiry into the Inhalation of Volatile Substances, Final Report, Melbourne: Drugs and Crime Prevention Committee, Parliament of Victoria

Key findings An important and comprehensive report written in Victoria. The report covered definitions, patterns of use, epidemiology, harms, risk and protective factors, interventions and recommendations. Empirical findings from sources such as the Victorian Coroner's records and ambulance data were supplemented with comments and insights from a range of presentations made to the Committee.

Study quality was high Selection and inclusion criteria were explicit, findings from a range of materials were carefully appraised and integrated, and the report and recommendations appeared to have been carefully considered. The report reads at times as an argument for a thesis, and hence it can be a difficult source from which to extract specific content.

Chalmers EM 1991 "Volatile substance abuse"
Medical Journal of Australia, 154:4, pp. 269–74

Key findings This paper presented a comprehensive review of Australian literature available at the time of publication. The paper was written from a medical perspective and addressed the range of types of volatile substance use, and presented an extensive

consideration of harms. Interventions were also briefly explored.

Study quality was moderate to low The review was not systematic. Inclusion criteria were described but there was little critical appraisal. This paper remains one of few publishing data on deaths in Australia.

Flanagan RJ & Ives RJ 1994 "Volatile substance abuse", *Bulletin on Narcotics*, XLVI:2, pp. 49–78

Key findings This literature review examined volatile substance abuse from a British perspective. A breakdown of annual deaths from 1971 through to 1991 was presented, demonstrating a steady increase through the 1980s. The paper described types of volatile substances, different methods of administration, and epidemiology. Diagnosis, treatment and prevention strategies were also briefly addressed.

Study quality was moderate to low The review was not systematic, but rather qualitatively overviewed the available literature. Inclusion criteria were not presented, although some critical appraisal was evident.

Dinwiddie SE 1994 "Abuse of inhalants: A review", *Addiction*, 89, pp. 925–39

Key findings This paper presented a literature review focusing on the United States and from medical and psychiatric perspectives. The paper addressed pharmacology and toxicology, harms, epidemiology, sociocultural and behavioural correlates

and treatment. A feature of this paper was its presentation of literature demonstrating associations between volatile substance use and other form of substance abuse.

Study quality was moderate to low The review was not systematic. Neither inclusion nor appraisal criteria was clarified. Some critical appraisal was evident.

Prevalence and classification

May PA & Del Vecchio AM 1997 "The three common behavioural patterns of inhalants/solvent abuse: Selected findings and research issues", *Drugs & Society*, 10:1-2, pp. 3-37

Key findings This paper reported an empirical examination using United States data to explore the hypothesis that there are three major types of volatile substance use. These three types were characterised as different stages across the life course of users: young experimental users were most common, followed by mid-adolescent poly drug users. Adults with histories of chronic use were also identifiable, but rare.

Study quality was moderate to low Data from the Monitoring The Future youth survey and the National Household Survey were examined together with findings from a New Mexico youth study and survey of adults. An effort was made to develop an integrated picture of patterns of behaviour in different populations. However, key information was missing that would be required to evaluate the New Mexico studies. The potential role that different questions play in identifying volatile substance use was not explored.

Behavioural correlates

Whitehead PC 1974 "Multidrug use: Supplementary perspectives", *International Journal of the Addictions*, 9:2, pp. 185-204

Key findings This paper presented one of the earliest demonstrations of the considerable co-occurrence between different types of youth substance use. Solvent use among students in Nova Scotia was shown to overlap quite significantly with other forms of substance use.

Study quality was low Associations were cross sectional. A sample of 1606 students were recruited from 26 schools in Halifax, Nova Scotia. The item used to define solvent use was not reported. Although this was the main theme of the paper there was little attempt to accurately estimate population prevalence, adjusting for sample bias.

Dinwiddie SH, Reich T & Cloninger CR 1991a "The relationship of solvent use to other substance use", *American Journal of Drug and Alcohol Abuse*, 17:2, pp. 173-86

Key findings A United States sample of volatile substance users was surveyed and associations between solvent use and different types of substance use examined. The possibility that solvent use may act as a gateway to involvement in illicit drug use was examined and rejected. This study found a considerable association between solvent use and other forms of drug abuse; however, the age of initiation for different drugs varied considerably. In some cases volatile substance use started before other types of illicit drug use, while in other cases such use followed the initiation of other forms of illicit drug use. The conclusion was that solvent use could be used as a marker of risk for other forms of substance abuse, but would have been inadequate as a warning sign for early age intervention.

Study quality was low The method of data collection is described in the summary below (Dinwiddie, Reich & Cloninger 1991b). A major problem with this study was that the retrospective interviews were conducted at different ages. Previous studies have argued that older people may be more likely to fail to report solvent use. In the present study the solvent user sample was younger than the non-users sample, and this may have led to recall biases in reports of the age of first drug use. Although multi-variate analyses controlled for the effects of age at interview, major conclusions regarding the relative ages of initiation of different forms of drug use should be further investigated.

Dinwiddie SH, Reich T & Cloninger CR 1991b "Solvent use as a precursor to intravenous drug abuse", *Comprehensive Psychiatry*, 32:2, pp. 133-40

Key findings This paper used the same data source as described above (Dinwiddie *et al.* 1991a) to examine the association between solvent use and injecting drug use. Those involved in solvent use were over three times as likely to also report injecting drug use.

Study quality was moderate to low Data from a study investigating family links to behaviour were re-analysed for this investigation. Two “high-risk” samples were recruited that included 286 patients who had been admitted to four St Louis hospitals for the treatment of alcoholism and 157 offenders convicted through the local office of probation and parole. These were contrasted with 60 patients admitted to the general medical or surgical service at Washington University. The samples were supplemented through extensive sampling of biological and non-biological family members (n=1670). A standardised retrospective psychiatric interview protocol guided data collection. As age at interview varied, retrospective recall bias could have underestimated solvent use for the older subjects. Although this problem may have influenced findings, its effect on estimates may have been less serious relative to the impact on Dinwiddie *et al.* (1991a) where the focus was more specifically on the estimation of the age of onset for different drug types.

Risk and protective factors

Tapia-Conyer R, Cravioto P, De La Rosa B & Velez C 1995 “Risk factors for inhalant abuse in juvenile offenders: The case of Mexico”, *Addiction*, 90:1, pp. 43–49

Key findings Risk factors were examined by comparing samples of Mexican youth offenders entering juvenile detention who did versus did not report volatile substance abuse. Cross-sectional analyses contrasted youth self-reporting volatile substance abuse with those who did not. Those reporting volatile substance abuse were reported to differ on a number of risk factors related to low socio-economic status.

Study quality was low The study was cross-sectional (N=626) with the two groups formed on the basis of a response to one item on an omnibus

survey. However, the question used to define volatile substance abuse was not reported. Inadequate justification was given for why it was important to examine factors differentiating volatile substance use in this specific sub group made up of youth offenders.

Intervention

Griffin KW, Botvin GJ, Nichols TR, Doyle MM 2003 “Effectiveness of a universal drug abuse prevention approach for youth at high risk for substance use initiation”, *Preventative Medicine*, 36: 1, pp. 1–7

Key findings This paper reported an implementation of the Life-Skills Training (LST) curriculum in “high-risk” middle schools in New York. Although the curriculum was delivered to all students, this paper was concerned with the potential to impact the highest risk students within the school. Students were followed one year later and, despite equivalent initial risk, those exposed to the intervention were found to have lower levels of substance use relative to controls. The intervention appeared to have a small but significant impact in reducing volatile substance use.

Study quality was moderate Generally, this was a well-conducted study. However, the question used to define volatile substance use was not described. Prior to randomisation, 29 inner-city middle schools in New York were surveyed and divided into low, moderate and high risk, based on the prevalence of youth smoking. Randomisation of schools to intervention (delivery of LST) or control (usual practice) was performed from within these risk strata. Students were surveyed at baseline (the initial response rate was not reported in this paper) and then followed-up one-year later. This paper analyses effects for the 20 per cent of students who were at the highest risk based on indexes of poor academic progress and exposure to peer drug use (n=758). Retention at one-year follow-up was similarly low for the intervention versus the control samples, with 63 per cent re-interviewed. Analyses explored the effects of attrition, and concluded that fewer high-risk students had been retained, but this had not substantially biased the intervention analyses.

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