

Review

Family interventions and their effect on adolescent alcohol use in general populations; a meta-analysis of randomized controlled trials

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Abstract

Aims: In order to quantify the effectiveness of family interventions in reducing adolescent drinking, we conducted a meta-analysis of randomized controlled trials.

Methods: We searched the Cochrane Database of Systematic Reviews, ERIC (Educational Research Information Center), Medline and PsycInfo for studies published between 1995 and September 2006. Summary estimates (OR and Cohen's *d*) were derived from the difference in changed alcohol consumption between family intervention and control group. Random effect models were used to estimate the overall effect and heterogeneity among studies. Eighteen papers describing nine independent trials were eligible for inclusion in this meta-analysis.

Results: The overall effect of family interventions in reducing alcohol initiation (OR: 0.71; 95% CI: 0.54, 0.94) and frequency of alcohol use (*d*: −0.25; 95% CI: −0.37, −0.12) show the success of these programs. There was heterogeneity between studies reporting on alcohol initiation (*p*-heterogeneity: <0.001; *I*²: 78.6%). Yet, the most successful interventions continued to be effective in reducing alcohol initiation even at 48 months follow-up (pooled estimate (OR): 0.53; 95% CI: 0.38, 0.75).

Conclusion: The results from this meta-analysis suggest that the overall effect of family interventions on adolescent alcohol use is small, yet consistent and effective even at 48 months.

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Keywords: Meta-analysis; Randomized controlled trial; Alcohol consumption; Adolescent; Family intervention

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1. Introduction

Underage drinking is a major public health problem in Western Society. In 2003 18% of the 12–14 year old students in the US reported binge drinking, where ‘binge drinking’ is defined as taking at least five drinks (each of 10 mg pure ethanol) on a single occasion (Miller et al., 2007). In 2006, 73% of 16 year old US students reported any alcohol use and 56% reported having been drunk at some point in their lives (Johnston et al., 2007). In Northern Europe these numbers are even higher; nearly all 15–16 year old students (>90%) have drunk alcohol at some point in their lives, on average beginning at age 12, and getting drunk at age 14 (Anderson and Baumberg, 2006).

Several studies indicate that alcohol use and misuse among children under 16 is associated with elevated risks of a physical and a social nature (Bonomo et al., 2001; Hingson et al., 2000; Verdurmen et al., 2005). Moreover, in young people it may permanently disturb the development of the brain (Hiller-Sturmhöfel and Swartzwelder, 2004; Tapert et al., 2002) and create alcohol-related problems later in life (DeWit et al., 2000; Grant et al., 2006; Hawkins et al., 1997). Therefore, delaying the onset of drinking is an important goal for preventative efforts (Pitkänen et al., 2005).

Parents play an important part in the initiation of alcohol use. The example set by parents with their own drinking has been shown to affect their children’s alcohol use (White et al., 2000). Adolescents model their behavior after their parents’ patterns, contexts, attitudes and expectancies of consumption. The family’s structure and aspects of the parent–child relationship (parenting style, attachment, nurturance, abuse, conflict, discipline and monitoring) have also been linked to young people’s alcohol use (Andrews et al., 1993; Ary et al., 1993; Kandel, 1980; White et al., 2000). In addition, alcohol specific parenting, such as setting clear rules on drinking, prevented adolescents from starting to consume alcohol heavily and frequently (Van der Vorst et al., 2005).

Several interventions have been developed for parents and families in order to prevent or reduce substance use and abuse in children. Most studies targeted high-risk families (Paglia and Room, 1999). A recent review of both experimental and naturalistic follow-up studies concludes that most studies demonstrated positive effects of family-based interventions in reducing youth substance use and other high-risk behaviors (Thompson et al., 2005). Kumpfer et al. (2003) reviewed family-based intervention studies and found evidence of effectiveness for outcome types like bonding, communication, aggression and substance use in high-risk families. These authors stated that family-based interventions have effect sizes 2–9 times greater than approaches that are solely child focused. Bolier and Cuijpers (2000) conducted a systematic literature review of controlled studies, describing seven family-based substance use prevention programs. The

authors reported some evidence that family-based prevention programs may reduce alcohol use, in general populations.

In conclusion, earlier reviews describe a number of family interventions that are effective in reducing alcohol use among adolescents, yet, to our knowledge, a meta-analytic evaluation of the association between adolescent alcohol use and family interventions in general populations has never been conducted. We carried out a meta-analysis, restricted to randomized controlled trials, as naturalistic follow-up studies are more prone to confounding, thus introducing uncertainty about causality. As alcohol is used by the majority of the adolescent population (at age 15–16), we are interested in the effectiveness of a ‘whole group’ approach of prevention, therefore including only family programs in general populations. The aim of this meta-analysis is to quantify the overall effect of family interventions in reducing adolescent drinking (i.e., initiation, alcohol use in the last month, and frequency of drinking in the last month). In addition we performed stratified analyses for ethnicity, intervention type, randomization level (i.e., individual versus group) and publication year to get a clearer understanding of the different interventions and their respective effectiveness.

2. Methods

2.1. Identification of studies

A search strategy was designed to identify studies reporting on a family intervention aimed at reducing alcohol use in adolescents aged under 16. We identified studies from four electronic databases: the Cochrane Database of Systematic Reviews, Educational Research Information Center (ERIC), Medline and PsycInfo (including Dissertation Abstracts). We included studies published between 1995 and September 2006. Subsequently, references of included articles and earlier reviews and meta-analyses were used to search for additional studies.

Alcohol-related search terms included ‘alcohol’, ‘alcohol use’, ‘drink’, ‘drinking’, ‘alcohol drinking patterns’ and ‘alcohol drinking attitudes’. The intervention-related search terms included ‘mother’, ‘father’, ‘maternal’, ‘paternal’, ‘family’, ‘parent’, ‘parenting’, ‘parental characteristics’, ‘parent child relations’, ‘mother child relations’, ‘parental attitudes’, ‘parenting style’ and ‘parenting skills’. Pertinent (mesh) terms were adapted for use in the different databases by an information specialist. All Dutch and English full-text articles of randomized controlled trials that reported on adolescents or school age children were included in the search strategy.

Published articles as well as (possibly unpublished) dissertations were included when, (1) targeting parents with children <16 years of age, (2) describing a family intervention (at least half of the program had to be targeting parents directly), (3) all types of learning media were included e.g. group sessions, skills training, booklets and CD-Rom programs, (4) the intervention was carried out in a general population and (5) reporting on the effectiveness of the study. Articles were excluded when, (1) the intervention was designed to manage at-risk groups, like juvenile offenders or children of alcoholics, (2) interventions were part of a multi-component intervention and no separate analyses were performed for family interventions, (3) the outcome was not actual alcohol use, e.g. intention to drink and (4) the subjects were not randomly assigned to the intervention or control condition.

All possibly relevant papers were selected by one reviewer according to a two-step procedure: where possible, the decision to exclude studies was based

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