



Original article

Preventing Adolescent Alcohol Use: Effects of a Two-Year Quasi-Experimental Community Intervention Intensifying Formal and Informal Control

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A B S T R A C T

Purpose: To determine the effect on adolescent alcohol use of a community intervention combining intensified formal control (restricting retail supply) and informal control (restricting social supply). Intervention effects on intermediate intervention goals were investigated. Analyses for different age groups were performed.

Methods: A longitudinal quasi-experimental design (baseline at 2008, plus two yearly post-measurements) was used, including one intervention and one matched-comparison community in The Netherlands. We assessed outcomes by observing 1,368 Dutch adolescents aged 13–15 years at baseline. Main dependent variables were weekly drinking status and progression into drunkenness among weekly drinkers. Additional dependent variables were formal control intermediate intervention goals (frequency of alcohol purchases and perceived ease of purchasing alcohol) and informal control intermediate intervention goals (frequency of alcohol-specific rules and parental alcohol supply).

Results: Survival analyses showed no significant reduction in the risk of drinking weekly for adolescents in the intervention region; however, the risk of progressing into drunkenness was reduced by 15% ($p = .04$) for adolescents drinking weekly. No intervention effects on the intermediate intervention goals were found among 14- and 15-year-olds. The intervention had a positive effect on two of four intermediate intervention goals (i.e., parental alcohol supply and alcohol-specific rules) among 13-year-olds.

Conclusions: A combined formal and informal community intervention package is associated with a reduced risk of progressing into drunkenness among drinking adolescents. Interventions focusing on discouraging drinking below a certain age might cause a greater increase in the frequency of purchasing alcohol once reaching this age.

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IMPLICATIONS AND
CONTRIBUTION

This is the first community intervention to evaluate the effectiveness of combining formal and informal control in a country with liberal alcohol norms. The risk of progressing into drunkenness among drinkers was reduced and increased informal control for 13-year-olds was achieved. Nevertheless, a higher increase in alcohol purchases was found.

Alcohol use is a major cause of mortality and morbidity among European adolescents [1]. Prevention programs focused on reducing the demand for alcohol via educational programs or

aimed at increasing adolescents' skills to resist peer pressure have shown limited or no preventative impact [2]. Such programs rarely consider the drinking environment in which alcohol is often tolerated and/or promoted. Indeed, increased alcohol availability from commercialized and social sources is associated with increased adolescent drinking and related problems [3,4]. Thus, to achieve long-term changes in drinking behavior requires prevention efforts reducing the availability of alcohol [3,5,6] by increasing formal control (e.g., alcohol law enforcement) and/or

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informal control (e.g., via parents or teachers). Although regulations of the availability of alcohol are generally determined by national or regional governments, the extent to which alcohol law enforcement is prioritized is mostly determined at the local level. Therefore, prevention efforts aimed at decreasing alcohol availability mostly take the form of community interventions. Internationally, few community interventions have focused on adolescent drinking. Furthermore, previously conducted community interventions mainly focused on efforts restricting retailers' alcohol supply to minors (formal control) and have been shown to increase compliance of retailers and/or reduce adolescent heavy drinking or related harm [7–10]. It is rare that next to intensifying formal control, community interventions also aim to mobilize informal control (e.g., via parents). However, in addition to retail outlets, parents are an important source of alcohol [11,12]. About 60% of Dutch adolescents aged 13–15 years obtain alcohol from their parents [13]. Stimulating parents to maintain strict attitudes toward adolescent drinking has been shown to effectively reduce adolescent alcohol use [14–16]. Therefore, in addition to increasing formal control, it is crucial to mobilize informal control among parents. To our knowledge, the Swedish Trelleborg Project [17] was the only community-wide trial actively involving parents in restricting social availability combined with retail supply restrictions. This resulted in a reduction of harmful drinking among youth. Nevertheless, Sweden is a Scandinavian country with relatively strict alcohol policies, whereas in The Netherlands alcohol policies and norms are liberal [18,19]. The current study is the first to validate the effectiveness of a combined formal and informal control intervention package in such a country. Also, unlike previous studies [17], ours includes intermediate intervention goals of formal and informal control to elucidate the mechanisms by which drinking behavior is influenced. We expect that combining formal and informal control will decrease adolescent drinking behavior in a country with liberal alcohol norms and policies. Nevertheless, because political support is critical for implementation of such measures [20], the process of implementation is expected to be more difficult, owing to the less supportive environment for implementing restrictive alcohol measures.

Intermediate intervention goals

Most community-based prevention studies that focused on adolescent alcohol consumption used multiple cross-sectional measurements to assess outcomes, providing limited insight into intermediate processes. However, the current study used a longitudinal design, which enabled us to gain insight into intermediate factors explaining possible intervention effects. Four factors may contribute to explaining the effectiveness of formal or informal control. First, increased alcohol law enforcement reduces the sale of alcohol to minors [8,10,21], which is assumed to reduce adolescent drinking [22]. Second, whenever formal control is increased, adolescents might find it harder to purchase alcohol. A lower perceived ease of purchasing alcohol is associated with reductions in adolescent alcohol use [23–25]. Third, parents can be stimulated to remain strict in their alcohol-specific rule setting [26]. A strict alcohol-specific rule setting has shown to reduce the odds for adolescents to initiate drinking [19,27]. Fourth, although parental alcohol supply is associated with adolescent risky drinking [28], the possibility of changing this source of supply has not yet been investigated. However, since parental alcohol-specific rule setting can be changed [26], it

is plausible that a change in parental alcohol supply also can be achieved.

Dutch context

In The Netherlands, it is illegal to sell soft alcoholic beverages (<15% alcohol) to persons younger than 16 years of age and strong alcohol beverages ($\geq 15\%$ alcohol) to persons younger than 18 years of age. Despite this law, it is easy for underage Dutch adolescents to purchase alcohol for themselves [29]. Also, Dutch parents often drink with their adolescent children on special occasions [30], which indicates that alcohol is highly embedded in Dutch culture.

Current study

In an earlier study, we found that increased formal control reduced the risk for drinking adolescents to get drunk [31]. The current study aimed to determine the preventive effect on adolescent alcohol use of a combined formal and informal control intervention package (Figure 1). The intervention was expected to reduce the risk of starting to drink weekly and the risk for weekly drinkers to progress into drunkenness.

To gain more insight into the intermediate processes of the intervention, we investigated whether the intervention and the comparison community differed over time regarding changes in intermediate intervention goals. It was expected that the intervention would (1) impede the increase in frequency of alcohol purchases; (2) impede the increase in perceived ease of purchasing alcohol; (3) impede the decrease in frequency of alcohol-specific rules (parents remaining stricter); and (4) impede the increase in frequency of parental alcohol supply. Moreover, some of the adolescents participating in this study turned 16 years (the Dutch legal purchase age) during the intervention period. Therefore, we performed separate analyses for different age groups, investigating whether a stronger intervention effect was present for the age group that did not turn 16 years old during the intervention period.

Methods

Study design

A quasi-experimental comparison group design was used including one intervention and one comparison community. We observed a cohort of 1,368 adolescents aged 13–15 years for 2 years, using one baseline measurement in November 2008 (T0), and two post-measurements in November 2009 (T1) and November 2010 (T2). The intervention community was selected based on the cooperation of local politicians, civil servants, and professionals. Other a priori selection criteria were that both communities had a central area for drinking venues, a small chance that adolescents would go to another municipality to buy alcoholic beverages (because of the distance involved), and a similar retail density. Furthermore, the communities were matched on indicators for urbanization and socioeconomic stratification (Table 1), which have shown strong associations with alcohol consumption [5,32]. Personal communication with stakeholders in the comparison community indicated that no activities aimed at reducing retail or social alcohol availability for adolescents were undertaken in this community before or during the intervention period.

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