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Responsible Beverage Service

Effects of a Community Action Project

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List of publications

The thesis is based on the following publications, which will be referred to in the text by their Roman numerals:

- I. Wallin, E., Gripenberg, J. & Andréasson, S. (2002) Too drunk for a beer? A study of overserving in Stockholm. *Addiction*, 97, 901-907.
- II. Wallin, E. & Andréasson, S. (2004) Can I have a beer, please? A study of alcohol service to young adults on licensed premises in Stockholm. Accepted for publication in *Prevention Science*.
- III. Wallin, E. & Andréasson, S. (2004) Public opinion on alcohol service at licensed premises: a population survey in Stockholm, Sweden 1999-2000 (submitted).
- IV. Wallin, E., Norström, T. & Andréasson, S. (2003) Alcohol prevention targeting licensed premises: a study of effects on violence. *Journal of Studies on Alcohol*, 64, 270-277.
- V. Wallin, E. & Andréasson, S. (2004) Institutionalization of a community action program targeting licensed premises (submitted).

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List of figures and tables

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ABSTRACT

Alcohol consumption at licensed premises is associated with various problems, such as violence. In 1996, a community action program was initiated in Stockholm targeting licensed premises. An action group consisting of representatives of authorities and the hospitality industry developed training in responsible beverage service (RBS) for restaurant owners, servers, and doormen. Authorities also developed new routines for monitoring of alcohol service.

The objective of this thesis was to study the effects of the community action program on problems related to alcohol consumption at licensed premises.

The thesis is based on five papers. The first two papers study the refusal rate of alcohol service to intoxicated and underage patrons at licensed premises. Actors portraying intoxicated persons and adolescents visited licensed premises, ordering beer. A pre- and posttest design was used in both studies, with the northern part of central Stockholm as project area, and the southern part of central Stockholm as control area. Paper three is a study of public support for strategies to reduce intoxication and violence at licensed premises. A random sample of 1000 inhabitants (18–65 years) from Stockholm County was selected for the questionnaire study. The fourth paper analyzes police-reported violent crimes for the time period January 1994 to September 2000. A times-series quasi-experimental design was used, with the same study areas as in the first two papers. In the last paper, the level of institutionalization of the community action program is analyzed. An institutionalization scale was developed based on five key factors: adoption, sustainability, key leader support, structural changes, and compliance.

The results from the first two papers show a statistically significant increase in the refusal rate of alcohol service over time. At baseline in 1996, 5% refused alcohol service to intoxicated patrons, compared with 47% at follow-up in 1999. The refusal rate for alcohol service to underage patrons was 55% at baseline in 1996, 59% in 1998 (follow-up I), and 68% in 2001 (follow-up II). There were no statistically significant differences between the project and control area.

Public opinion in Stockholm is supportive of strategies focusing on the responsibility of the licensed premises to prevent intoxication and violence. 86% supported the notion that licensed premises should lose their license if they serve intoxicated or underage patrons. 60% supported RBS training of servers. Public opinion did not support strategies to reduce number of licensed premises, reduce opening hours, or increase the price of alcoholic beverages. Men, young people (≤ 30 years), and frequent visitors to licensed premises were less supportive of the strategies.

Time-series analyses (ARIMA modeling) of monthly changes in police-reported violence showed a reduction of 29% in the project area during the project period, when controlled for the development in the control area.

The analyses of the key factors in the last paper indicate a high degree of institutionalization (score 13 on a scale 5–15). Key leaders, authorities and organizations accept and sustain the activities. All members of the action group have signed a written agreement ensuring a permanent organization for RBS within Stockholm.

A combination of activities (community mobilization, RBS-training, policy initiatives, and efficient monitoring) has probably contributed to the decrease in alcohol-related problems at licensed premises in Stockholm. A high level of institutionalization of the program increases the likelihood of long-term effects on problem levels.

Key words: alcohol, licensed premises, responsible beverage service, community action.

INTRODUCTION

Prevention of alcohol-related problems

Problems related to alcohol consumption are of great public health concern. Health problems, such as traffic crashes, suicides, homicides, sexual assaults, drownings, and recreational injuries are all associated with alcohol use (Baker *et al.* 1992; Hayward *et al.* 1992; Roizen 1982 and 1993; Stall *et al.* 1986; Leigh 1990). The most recent report of the WHO ranks alcohol 3rd from the top among all causes of disability. In developed countries, alcohol problems account for 9% of all disability adjusted life years (DALY:s) lost (WHO 2002).

The majority of alcohol problems are caused by multiple risk and protective factors. By definition a risk factor occurs before an alcohol problem and is associated with increased probability of the problem in question. Protective factors reduce or moderate the effects of exposure to risk. These factors can be further divided into two groups: individual and interpersonal factors, and contextual (societal) factors (Hawkins 1992). Individual and interpersonal factors include biological and psychological factors such as genetics, sensation seeking personality, early problem behaviors, self-efficacy, academic failure, family management practices, school environment, attitudes favorable to drug use, and peer relations. Societal factors are laws regulating availability within a society, such as minimum drinking age, BAC levels (blood alcohol concentration) in traffic, and enforcement of extant rules. Social norms concerning alcohol use are also included in the second group. This indicates that alcohol prevention strategies benefit from a multifactor approach, addressing factors at several levels in parallel.

The most effective measures for preventing alcohol problems within a population are regulations of the physical and economic availability of alcohol (Babor *et al.* 2003; Hawks *et al.* 2003). In a recent review by Babor *et al.*, the following ten options were rated as “best practices”: minimum legal purchase age, government monopoly of retail sales, restrictions on hours or days of sale, outlet density restrictions, alcohol taxes, sobriety check-points, lowered BAC limits, administrative license suspension, graduated licensing for novice drivers and brief intervention for hazardous drinkers. Education and information measures are frequently used, but the impact on alcohol problems within a population is limited. These measures have a value in raising the awareness of

certain problems, but are not sufficient for reducing the proportion of alcohol problems within a community.

During recent years, the total consumption of alcohol in the Swedish population has increased markedly (Leifman 2002). Contributing to this development are numerous changes in the national alcohol policy over the past decade. While earlier all facets of the alcohol sector – production, distribution, wholesale and retail sales – were monopolized by the government, only the retail monopoly now remains, making alcohol more accessible.

Given a large number of reports published in the scientific literature (Babor *et al.* 2003), the increase in alcohol consumption in Sweden is expected to lead to an increase in alcohol-related problems. One strategy to prevent some of the anticipated problems is to develop alcohol prevention in the local community.

Community action as a preventive strategy

Community action programs are not new phenomena. Community action initiatives are intended to motivate and mobilize various groups of actors within a community to coordinate extant resources to prevent alcohol-related problems (Casswell 2000). Examples of early initiatives are the population-based cardiovascular programs in the US (Carlaw *et al.* 1984; Farquhar *et al.* 1990). The dominant strategy in these programs was to combine local mobilization with various types of health education. Local community action programs targeting specific alcohol problems have also been initiated and conducted in different countries. There has been large variation in the strategies used in these programs.

The strategy chosen for each program has been guided by action-theoretical assumptions (Holmila 2000). If alcohol problems within a community are defined primarily as an information problem, the strategy chosen will most likely be health education to increase knowledge and awareness within the population. The focus here is on the demand for alcohol. Experiences from such programs show that they have very limited effects on the prevalence of alcohol-related problems within the community (Moskowitz 1989).

Other community action programs emphasize the environment and focus on the supply. Experiences of these programs show a greater potential in reducing alcohol-related problems (Moskowitz 1989). Both strategies differ from programs with a medical focus, which are more orientated toward problem drinkers, with treatment (or punishment) as the solution.

There is also variation among the programs in the extent to which they emphasize local mobilization or policy. During the past decade, there has been a development toward combining all strategies. Such combinations are supported by a systems approach to alcohol prevention.

A systems approach to alcohol prevention

A systems approach to alcohol prevention involves changing the environment in which a person consumes alcohol (Holder 1998). A society is built on several actors and forces that together constitute a system. Important subsystems that have an impact on the alcohol situation within a community are consumption patterns, availability, social norms, the judicial system, enforcement, sanctions, and social and medical factors. The system with its subsystems determines the prevalence of alcohol and drug problems within the community. These subsystems are connected, but are not exchangeable. A maximum effect requires a combination of efforts targeting as many important sub-systems and risk factors as possible. A systems approach is more than the summation of prevention efforts. Efforts at several levels parallel can lead to synergy effects. One example could be a media campaign that increases the support for efforts to reduce intoxication at licensed premises. Public support can motivate authorities to focus more on monitoring of licensed premises, but can also motivate restaurant owners to train their staff in responsible beverage service. The more risk factors at different levels that can be addressed within the system, the more the effect is enhanced.

A community consists of several actors, e.g. politicians, administrators, voluntary organizations, health- and medical care sector, the business community and inhabitants living in the community. Each group of actors has its own interests, which can sometimes lead to conflicts regarding priorities of action and what strategies to use, thereby reducing the potential for a systems approach. Representatives from the health sector often give priority to efforts that target population groups that have already developed alcohol problems (treatment). Other groups, such as prevention workers, are more oriented toward health promotion work.

Examples of community action projects that have been successful in reducing alcohol-related problems are given in Table 1.

Table 1: Community action projects to reduce alcohol-related problems, showing effects on the prevalence of problems.

Project	Objective	Site and time	Population size	Intervention	Effects
Three Community Trial (Holder <i>et al.</i> 2000)	To reduce alcohol-related accidental injuries and deaths	California, USA 1991 – 96	Three communities with a population of approx. 100,000. Three control sites	Five components targeting: <ul style="list-style-type: none"> • Local mobilization • Responsible beverage service • Drinking and driving • Underage drinking • Alcohol access 	<ul style="list-style-type: none"> • A reduction in night-time injury crashes by 56 per 100,000 adult population per year • A reduction in driving after drinking crashes by 67 per 100,000 adult population per year
Communities Mobilizing for Change on Alcohol (CMCA) (Wagenaar <i>et al.</i> 2000a, Wagenaar <i>et al.</i> 2000b)	To change policies and regulations in the community to reduce youth access to alcohol	Minnesota, Wisconsin USA 1993 – 95	7 communities Average population of 21 000 inhabitants 8 control sites	<ul style="list-style-type: none"> • Local coordinator • Needs assessment • Form action group • Develop action plans • Encourage public support • Implement action plans • Institutionalize activities 	<ul style="list-style-type: none"> • Reduction in DUI arrests, among 18-20-year-olds with 31/100,000 population per year • Reduced availability of alcohol for 18- to 20-year-olds • Increased age control at on- and off sale premises
The Saving Lives Program (Hingson <i>et al.</i> 1996)	To reduce alcohol-impaired driving, related driving risks, and traffic deaths and injuries	Massachusetts USA 1988-93	6 communities Total population 300 000 5 comparison sites	<ul style="list-style-type: none"> • Full-time coordinator • Task forces with inhabitants, organizations, and authorities, • Local media • Increased enforcement 	<ul style="list-style-type: none"> • A reduction in fatal crashes from 178 to 120 (5 year period¹) • A reduction in fatal crashes involving alcohol from 69 to 36 (5 year period)

¹ A comparison with the 5 project years and the 5 previous years.

Research on community action

In action-orientated research, the researcher is by definition part of the community action process. This creates both advantages and problems. A recurrent theme in the literature on this subject is how to balance the demand for a stringent research design with an intervention adapted to community needs (Room 1990; Casswell 2000; Wagenaar *et al.* 1993). Several studies emphasize the need for a respectful partnership between researchers and local actors (Holder *et al.* 1997). Researchers can contribute knowledge on effective prevention strategies and evaluation methods, while the local actors are experts on how their community functions. One way to prevent misunderstanding of this nature has been to recruit prevention coordinators from the local community.

There is an ongoing debate as to whether it is possible to use a traditional experimental research design to study community action programs. The possibility to control for confounding factors is limited with regard to comparable communities. Communities are not isolated, and there is always a risk that the control sites will become inspired by the intervention communities and initiate similar activities. An argument raised against a rigorous experimental design is its possible negative effect on the prevention activities in the community. An overly rigorous design could make local actors less motivated, feeling that their needs and ideas are not acknowledged.

However, there is no consensus on this subject. Some researchers are pro-traditional experimental design, and others suggest case studies (Casswell 2000). With a case study a community is studied from its own unique situation and context – socially, culturally as well as historically. Several researchers propose the use of various evaluation measures, both qualitative and quantitative, to study both processes and effects.

The importance of formative evaluation, by recurrently presenting results from the evaluation to improve the prevention activities, is also emphasized (Holmila 2000). Early results can provide, for example, information on whether the intervention has reached the intended target group.

Lessons learned from community action projects

Even though there is great variation among community action projects targeting alcohol problems, several lessons common to them can be observed (Graham & Chandler-Coutts 2000).

Key leader support is necessary to enable changes (Holmila 1997). One method that has been used to create support for changes and alternative preventive strategies is to present data on local problems. By presenting local data, opportunities are created for awareness raising and local mobilization. Local information can pave the way for discussions and local commitment. Another strategy is to work through local media to create public support for different prevention strategies. This is called “media advocacy,” which means systematic work with media to publish news on alcohol-related problems and prevention. Media advocacy provides an alternative to messages from the alcohol industry promoting the positive aspects of alcohol use (Wallack *et al.* 1993; Treno *et al.* 1996; Holder & Treno 1997).

Another important lesson is that prevention within a local community takes time (Giesbrecht & Rankin 2000). It is time-consuming to plan, mobilize and conduct a prevention program. Many local initiatives have failed due to far too short time limits.

Flexibility is also a requirement in community action programs (Holder & Reynolds 1999; Boots & Midford 1999). It may sometimes be necessary to include less effective strategies when these can facilitate the inclusion of other, more efficient strategies. For example, it may be wise to include alcohol education in schools as a part of a prevention program, as this could increase support for measures to reduce availability.

Prevention programs that succeed in making the local actors feel proud about the program are more likely to be successful (Moskalewicz 1999; Boots & Midford 1999). Those who participate seek to gain something for their participation. People are more willing to dedicate time and effort when they feel that they will get something in return.

Institutionalization of community action programs

Few studies have been published on the institutionalization of local alcohol prevention programs (Holder & Moore 2000; Oldenburg 1999). According to Jepperson (1991), an institution can be defined as a social pattern or order that can be reproduced or sustain itself over time, independent of the particular people in the institution at any point in time. Several programs have ceased after the initial project period (Holder & Moore 2000). Today we lack knowledge on how programs can survive. One reason for this is that few projects actually have survived beyond their project period.

In their article on institutionalization of community action projects, Holder and Moore (2000) identified some factors that seem to facilitate institutionalization.

- Local factors (community relevance, community values, key leader support, indigenous staff)
- Program factors (development of local resources, leveraging prior success)
- Institutionalization as goal (policy or structural changes)

Ethical considerations regarding community action programs

Community action initiatives involve a number of ethical issues. One concerns what groups will be reached with the local mobilization. Studies have shown that these are predominantly groups that are already strong. For example, in the Swedish Kireseberg project, the majority favoring the program were people of high socioeconomic status (Hansson *et al.* 1993). There is a risk that strong alliances between researchers and certain groups will result in a lack of attention to the demands and wishes of other groups (Larsson 1990). One goal of the Kireseberg project was to mobilize the population in the prevention work. However, this requires that the population be defined as a subject and not as an object, thus enabling reciprocal communication. Groups that can easily become “objectified” are young people, socially vulnerable groups, and high consumers of alcohol and drugs (Casswell 2000). These groups are not easily reached with traditional prevention efforts. Prevention strategies, to e.g., reduce the availability of meeting places where there is alcohol (youth discotheques, parks) may have negative consequences by restricting opportunities for social contacts for certain groups without offering any alternatives.

Another ethical consideration involves how one can justify a prevention initiative when members of the community do not define the problem in the same way as those who have initiated the program, or do not see the solution/prevention strategy as effective. This kind of conflict can arise when a program is very top-down in nature, i.e., when experts from outside define the local problems and what actions should be pursued. One way to avoid this type of conflict is to attempt a more bottom-up strategy, starting with a needs assessment among relevant target groups within the community. Based on the needs assessment, the different actors can then participate both in problem

formulation as well as in creation of action plans to reduce the problems (Casswell 2000).

Yet another ethical consideration is that the expectancies and needs triggered by the process may be hard to meet. For example, if public awareness of alcohol problems is raised within the local community, the health care organizations may have to prepare for increased demand for treatment and counseling.

Licensed premises as a target for community action

Alcohol sales outlets that are licensed to serve alcohol on-premises (so-called licensed premises) include restaurants, bars/pubs, nightclubs and hotels. Licensed premises are an integrated part of modern society. Restaurants and bars provide an opportunity for people to socialize, eat and drink together. However, there are also certain risks associated with licensed premises, as they have the potential to become high-risk drinking settings. Research suggests that there are specific types of high-risk premises, such as nightclubs and bars, that contribute disproportionately to the occurrence of alcohol-related problems (Stockwell *et al.* 1993). Studies have shown that a significant proportion of drivers driving under the influence of alcohol (DUI) had been drinking at licensed outlets (O'Donnell 1985; Gruenewald *et al.* 1996). Research also suggests that particular situational determinants of relevance to licensed premises drinking have an impact on heavy or problematic drinking (Single 1993). Periods of drinking are commonly "time-off" from work (e.g., evening hours or weekends) (Orcutt & Harvey 1991). Among the strong influences on drinking rate is the presence of drinking confederates, with the highest impact from high-rate drinking companions (Caudill 1975). Studies of alcohol consumption at licensed premises show that lone drinkers consume less than do persons drinking with a group of people (Sommer 1965; Storm *et al.* 1981). A situational determinant that triggers both moderate and problematic drinking is drink specials to promote drinking (Babor *et al.* 1978). A population study from Stockholm showed that frequent visitors to licensed premises consume more alcohol in general, and when visiting bars and nightclubs, than do non-frequent visitors (see Figure 1) (Wallin 2001).

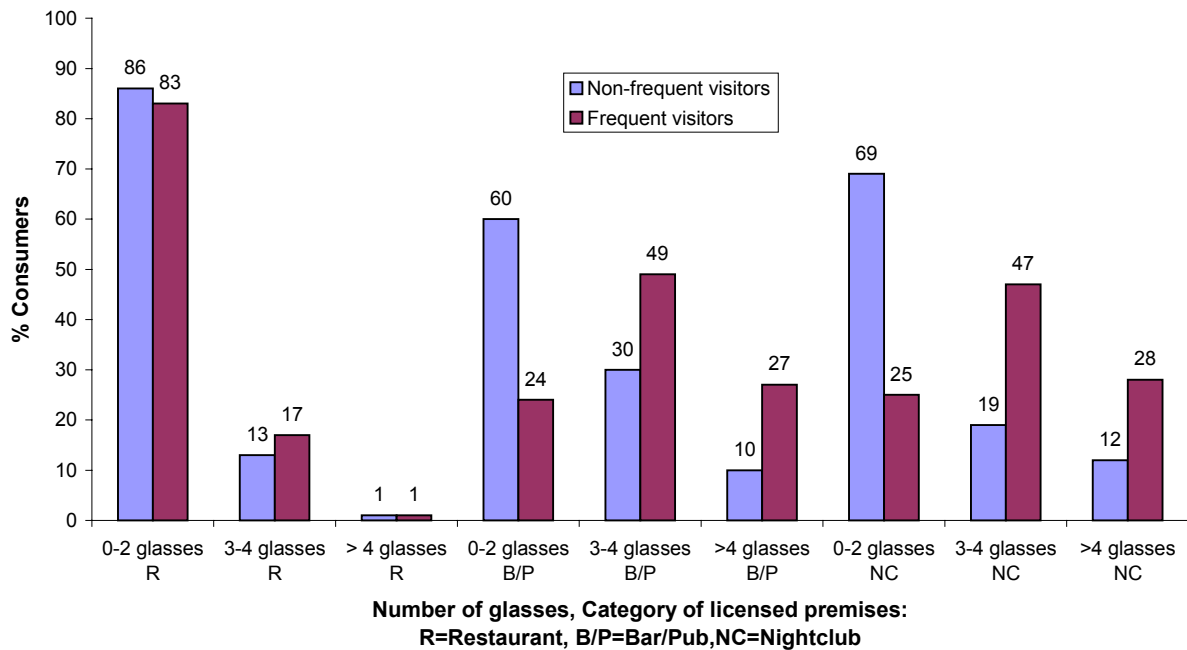


Figure 1: Number of glasses consumed at a typical visit (various categories of licensed premises), non-frequent visitors vs. frequent visitors, %.

Another problem related to alcohol consumption at licensed premises is aggressive behavior and violence. Norström (1998) has shown that there is a statistically significant association between beer/liquor consumption at licensed premises in Sweden and the assault rate. Other studies have also shown associations between public violence and the number of licensed premises (Roncek & Maier 1991; Norström 2000).

Research on alcohol-related aggression at licensed premises

Experimental studies suggest that alcohol combined with expectancies about effects plays a causal role in aggression (Bushman 1997; Gustafson 1993). According to Graham *et al.* (2000), alcohol intoxication increases the probability of aggressive behavior, but the effect is moderated by the characteristics of the drinker and the drinking environment. The drinking environment is, in turn, shaped by cultural values and expectancies of drinking-related aggression. Results from several studies also suggest that alcohol intoxication can be an important predictor of aggression severity (Graham & Wells 2001; Wells & Graham 2003).

Theories of alcohol-related aggression can be grouped into four categories of explanations.

- 1) Pharmacological effects of alcohol e.g., increased emotional lability (Graham *et al.* 2000) and reduced capacity for problem solving (Sayette *et al.* 1993)
- 2) Environment, e.g., crowding, (Graham 1980), drink specials to promote drinking (Babor 1978), general type of bar (Stockwell *et al.* 1993) aggressive bar personnel and inappropriate managing of behavior, permissiveness of staff, serving practices (Graham *et al.* 2000; Homel & Clark 1994).
- 3) Individual characteristics, personality and expectancies of the drinker. Age, sex, deviant behavior and drinking pattern are associated with increased risks of alcohol-related aggression (Rossow 1996; Room *et al.* 1995; Giesbrecht & West 1997).
- 4) Societal attitudes, expectancies and values.

There is no single factor that can explain the occurrence of alcohol-related aggression. Instead the evidence indicates that systematic changes, combining several factors, are necessary.

Gender, intoxication, and alcohol-related aggression at licensed premises

Intoxication and/or alcohol-related aggression at licensed premises are predominantly a male problem. It is young men who most often become intoxicated at bars (Stockwell *et al.* 1993). They are also over-represented in alcohol-related aggression at bars, both as perpetrators and victims (Lang *et al.* 1995; Rossow 1996; Graham *et al.* 2000). Some studies have even identified bars as culturally designated places for male violence (Homel & Clark 1994). Observational studies of barroom aggression have found that the rate of aggression was significantly associated with the overall level of male intoxication (Homel & Clark 1994). Graham has identified a macho-subculture (e.g., face-saving and male honor) as one explanation. The majority of women involved in aggressive incidents at bars are victims, e.g. of sexual harassment (Graham *et al.* 2000).

Prevention strategies to reduce alcohol-related problems at licensed premises

Different approaches to interventions to reduce alcohol-related problems at licensed premises have been elaborated (Graham 2000). Reviews of these approaches indicate various effects (see Table 2).

Table 2: Compilation of licensed premises interventions: I = Training in responsible beverage service and house policies, II = Stricter enforcement of existing alcohol laws, III = Multi-component interventions combining community mobilization, RBS training, house policies and stricter enforcement.

Project	Study design	Location	Target group	Intervention	Effects
TIPS (Training for Intervention Procedures by Servers of Alcohol) (Russ & Geller 1987) (I)	Pre/post Trained vs. untrained staff	USA	Servers at two taverns. Half the staff trained in each venue.	6 h training for servers, (discussions, videos, role-play). Written test.	Pseudopatron evaluation: ordering drinks every 20 minutes for 2 hours. Trained servers initiated more server intervention (3.24 interventions) than did untrained staff (0.75 interventions). Mean patron BAC 0.059% (trained staff) vs. 0.103 (untrained staff).
Navy Server Study (Saltz 1987) (I)	Treatment and control group	San Diego, USA	Managers and servers at one NAVY club for enlisted personnel. One control site.	18 h training + management policies.	Significant reduction in patrons over the legal limit of intoxication (0.10% BAC), from 33% to 15% in experimental bars.
(Howard & Pitney 1991) (I)	Treatment and control group	Park City, Utah, USA	Servers at 26 establishments. 14 control establishments.	1 day training.	No differences in policies or practices between the treatment and control group.
The McKnight Server Training Study (McKnight 1991) (I)	Treatment and control group	Eight states, USA	Servers and managers at 100 establishments. 135 control establishments.	6 h training for managers. 3 h for bar staff.	Significant, overall increase in observed intervention at participating establishments, not in comparison group. Increased frequency of interventions (from 14 to 27%) at trained establishments. Refusal rate of intoxicated patrons unchanged (with a rate of 5%).
(Gliksman <i>et al.</i> 1993) (I)	Treatment and control group	Thunder Bay, Ontario, Canada	Owners/managers and servers at four drinking establishments. Four control establishments.	Server intervention training 4,5 h. Development of house policy.	Trained servers responded more appropriately toward "pseudopatrons" portraying problematic scenes, than did untrained servers.
The Rhode Island Community Alcohol Abuse and Injury Prevention Project (CAAIPP) (Buka & Birdthistle 1999) (I)	Prospective study design, Randomized intervention and control group	Rhode Island, USA	Establishments in one community. Two control communities.	5 h training.	Short-term effects (15 months after training): trainees showed significantly higher levels of desired serving behavior than non-trained servers (self-reported behavior). Persistent but diminished effects 4 years posttraining.
FREO respects you, (Lang <i>et al.</i> 1998) (I)	Treatment and control group	Fremantle, Australia	7 "high risk" premises. Seven matched premises in neighboring area – controls.	Risk assessment and feedback for managers. Management policies. 3 h training for managers and staff.	No changes in service refusals to drunk patrons and ID checking for young pseudopatrons. Significant reduction of number of patrons exceeding BAC 0.08%.
(Holder & Wagenaar 1994) (I)	Time-series analyses	Oregon, USA	All licensed premises in the State of Oregon.	Mandated server training for all alcohol servers.	Reduction in traffic crashes.

Project	Study design	Location	Target group	Intervention	Effects
Project ARM: Alcohol Risk Management (Toomey <i>et al.</i> 2001) (I)	Treatment and control group	Minnesota, USA	Five bars. Nine controls.	One-on-one consultation program for owners and managers.	11.5% decrease in underage sales, 46% decrease in sales to pseudo-intoxicated patrons (not statistically significant).
The Michigan Enforcement Study (McKnight & Streff) 1994 (II)	Treatment and control group	Washtenaw County, Michigan, USA	Two counties.	Media attention. Increased enforcement of alcohol service laws by police officers in plain clothes. Positive feedback for well managed bars, warning or fines for others.	Refusal of alcohol service to pseudopatrons simulating intoxication increased from 17.5% to 54.3%. Percentage drunk drivers from bars declined from 31.7% to 23.3%.
Community Policing for English Pubs (Jeffs & Saunders 1983) (II)	Treatment and control group	England	One entertainment area. One control site.	Uniformed police officers visit pubs 2 to 3 times a week.	20% reduction in recorded public disorder offences in intervention area. No reduction in control area.
The Sydney Policing Study (Burns <i>et al.</i> 1995) (II)	Treatment and control group	Sydney, Australia	One entertainment area. One control site.	Uniformed police visited licensed premises at high risk times on more than 1200 occasions.	Significant <i>increase</i> in recorded assaults in comparison with control site. Slight <i>decrease</i> in emergency department admission for assault injuries for intervention area.
The Rhode Island Project, (Putnam <i>et al.</i> 1993) (II)	Treatment and control group	Rhode Island, USA	One community. One control site.	A strong liquor law enforcement component with mandated penalties. Increased police presence in bars.	20% <i>increase</i> in assault arrest rates in intervention area compared with control community. 25% <i>decrease</i> in emergency room visits for assault-related injuries in intervention area.
The Surfers Paradise Safety Action Project, (Hemel <i>et al.</i> 1994) (III)	Pre-/post-intervention design	Surfers Paradise, Australia	One major tourist area with 20 nightclubs.	Community mobilization. Code of practice signed by licensees. Training of security staff. No discounting.	Halving of violent incidents observed: 9.8 to 4.7 per 100 hours observation. Rose again to 8.3 two years later.
Communities Mobilizing for Change on Alcohol, (Wagenaar <i>et al.</i> 1999, 2000a, 2000b) (III)	Randomized treatment- and control, Time-series analyses	Minnesota, USA	Seven intervention communities. Eight control communities.	Community mobilization. Changes of community policies. Server training. Enforcement (e.g. compliance checks).	Reduction in alcohol sales to underage patrons on-sale (42.6% buy rate baseline, 29.0% buy rate at follow-up). Reduction in arrest and traffic crashes for adolescents 18-20 years by 31 per 100 000/year.
Three Community Trial, (Holder <i>et al.</i> 2000) (III)	Matched treatment and control group	California, USA	Three intervention communities. Three control communities.	Community mobilization. Training in responsible beverage service. Enforcement of alcohol laws. Policy changes.	Decline in nighttime injury crashes by 56 per 100 000/year. Decline in traffic crashes with driver under the influence of alcohol by 67 per 100 000/year. Decline in assault injuries by 68 per 100 000/year.

Responsible beverage service training and houses policies

One group of licensed premises interventions have focused on encouraging responsible beverage service (RBS), mainly through training of servers and implementing stricter policies. Early efficacy studies showed mixed results. Some studies indicated that it was possible to reduce alcohol-related problems by promoting responsible beverage service (Saltz 1987; Russ & Geller 1987; Gliksman *et al.* 1993). Significant effects were indicated with regard to the refusal rate of alcohol service to intoxicated patrons and, for more comprehensive programs, to reductions in patrons' BAC levels (Saltz 1987). Another group of studies could not show any effects of serving practices (McKnight 1991; Rydon *et al.* 1996). Other outcome measures for RBS programs have been alcohol-related traffic crashes or DUI arrests, as they have focused on drinking and driving. Significant effects with regard to reduction in alcohol-related traffic crashes were shown in a study of mandatory training in the State of Oregon (Holder & Wagenaar 1994).

Based on experiences from previous research studies, minimum requirements for RBS programs have been identified. According to Mosher *et al.*, (2002) the following five requirements can influence the effectiveness of RBS training programs:

- 1) *Coverage of all basic information to servers.* Relevant information includes physiological effects of alcohol and social problems associated with alcohol use. Another relevant component is the legal requirements of relevance to alcohol service.
- 2) *Use behavioral change/communication techniques.* By simply providing information, the chances of promoting behavior change or increasing the skills level are limited (Bandura 1977, Glanz *et al.* 1997). As is it important that servers are taught specific skills to manage responsible service techniques (e.g., refusing alcohol sales to an intoxicated patron), role-playing or other skill-building techniques need to be used.
- 3) *Focus both on managers and servers.* Managers must also be targeted, as they are responsible for supervising the servers and therefore need to be familiar with the servers' responsibilities and skills.
- 4) *Include policy development for managers.* Encouraging managers to develop written house policies increases the chances of implementing RBS at the establishment. A policy signals that the establishment expects and supports the use of responsible service practices.

- 5) *Minimum length – 4 hours.* The most effective RBS programs last at least four hours.

To conclude, experiences from RBS training programs indicate some positive direct effects on alcohol problems, especially when such programs are mandatory (Graham 2000).

Strict enforcement of extant alcohol regulations

Another strategy to be tested is increased enforcement of extant alcohol laws. A study by McKnight and Streff (1994) on stricter enforcement at licensed premises showed significant effects in terms of reduced alcohol service to intoxicated pseudopatrons and reduced drunk driving.

Multi-component interventions

Licensed premises interventions with a multi-component approach, combining training, house policies and enforcement, show a promising potential for reducing alcohol-related problems, primarily alcohol-related traffic crashes (Holder *et al.* 2000; Wagenaar *et al.* 2000b).

Overall, reviews of licensed premises interventions suggest an increased potential for multi-component interventions combining training of bar staff, written house policies, and stricter enforcement of extant regulations for decreasing alcohol problems at licensed premises (Graham 2000; Homel *et al.* 2001).

Methods of evaluating intervention at licensed premises

Evaluations of licensed premises interventions have reported findings on processes as well as outcomes. The majority of evaluations have been quantitative. Few report results from qualitative studies, for example, how managers and servers reason regarding responsible beverage service.

Various types of outcome measures have been used (Saltz 1997). One focus has been on intermediate factors such as knowledge, attitudes and self-reported behavior for servers. The most common design in these evaluations is pre- and post-intervention measures. As the value of intermediate factors is of limited importance for predicting behavioral change, other methods have been elaborated and tested to study serving practices.

- a) One method is to make observations in a natural setting of how servers react, e.g. if a patron is intoxicated. A problem with this method is difficulties in observing whether the server uses the technique “delayed service”, taught at many RBS trainings. The method is also inefficient considering the expected frequency of events.
- b) Another method is to use pseudopatrons enacting scenes of intoxication and observe whether they are served alcohol (Gliksman *et al.* 1993; Rydon *et al.* 1996; Toomey *et al.* 1999). An advantage with this technique is increased efficiency. A disadvantage is that you can only observe how the server reacts to an already intoxicated patron (intervention), and not how he or she would have prevented intoxication. To study more preventive serving practices, pseudopatrons have visited licensed premises and asked to be served several drinks at a time, or a drink every 20 minutes (Russ & Geller 1987). The incidents are rated on a scale or tape-recorded. Another technique is to interview patrons leaving an establishment about their alcohol consumption during the evening, sometimes combined with BAC levels (Rydon *et al.* 1993; Stockwell *et al.* 1992).
- c) To study how licensed premises manage alcohol service to underage patrons, a variant of the pseudopatron method has been used. Young people have visited bars and tried to be served alcohol without providing any ID (Forster *et al.* 1995; Wagenaar *et al.* 2000a). Some of these evaluations have used young people that were objectively underage (Willner *et al.* 2000; Vaucher *et al.* 1996). Others have used young people who have reached the legal age limit, but who look younger (Forster *et al.* 1995; Lang *et al.* 1996).

Traffic crashes and violence have also been studied as outcome measures of licensed premises interventions (Holder & Wagenaar 1994; Homel *et al.* 1994). Other outcome measures have concerned policy, i.e. the content of written house policies both at establishments and at the municipal level.

Theoretical model

In Figure 2, a theoretical model of alcohol consumption at licensed premises and alcohol-related problems is displayed. The model has been developed based on the systems approach suggested by Holder (1998). In the model, the boxes represent subsystems and the arrows how these are connected.

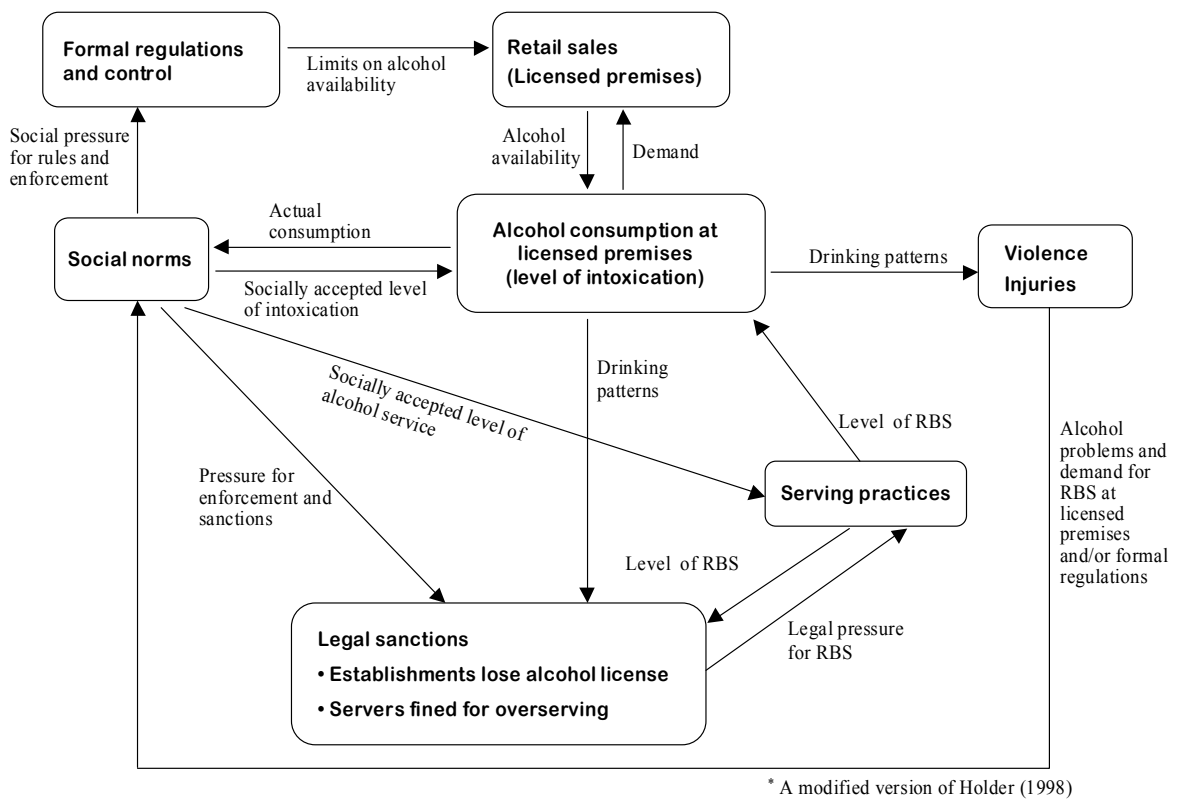


Figure 2: Theoretical model for alcohol intoxication at licensed premises and alcohol problems*.

One theoretical assumption is that the prevalence of certain problems, such as violence and injuries at licensed premises, is associated with the level of intoxication. Alcohol consumption patterns at licensed premises are affected by several factors and subsystems, for example the availability of alcohol in a community. Availability is influenced by the formal regulations and control system, for example outlet density and opening hours. The retail sales subsystem is, in turn, affected by the demand for alcohol drinking at licensed premises.

Social norms are affected by extant drinking patterns at licensed premises, but these patterns are also affected by the socially accepted level for intoxication.

Serving practices influence the level of intoxication at establishments. The extent to which a licensed premises is responsible is affected by the social expectancies/pressures for servers to cut off alcohol service, and the level of monitoring by the legal sanctions system.

The level of monitoring is influenced by the extant intoxication pattern at licensed premises, the level of RBS present at establishments, and the social pressure to conduct controls. Public opinion is also affected by the prevalence of extant problems. If the number of assaults at licensed premises increases and the

public is made aware of such problems (for example via media), this can result in increased social pressure for more efficient monitoring of alcohol service and/or formal regulations of retail sales.

Licensed premises in Stockholm – a new target for prevention

In the middle of the 1990s, changes in the Swedish national alcohol policy and the anticipated negative consequences that could potentially follow caused concern among leading officials in the Stockholm County Council. This resulted in the initiation of a 10-year alcohol prevention project. The project entitled “Stockholm Prevents Alcohol and Drug Problems (STAD)” aimed to develop, implement and evaluate promising alcohol prevention methods in the local community (Andréasson *et al.* 1999). Stockholm City was chosen as the project area. A review of extant research literature on community alcohol prevention guided the choice of three main areas to develop for prevention; prevention targeting youth (including family programs), brief intervention in primary health care, and prevention targeting licensed premises.

There were several arguments for including intervention at licensed premises as one of the prevention strategies. As mentioned earlier, the experiences from other countries were promising.

Another argument was that the number of licensed premises in Sweden, and especially Stockholm, had increased markedly during the previous decade (see Figure 3), causing anticipation of an increase in intoxication and violence. Outlet density also increases the potential for alcohol-related accidents (Gruenewald *et al.* 2002). Moreover, opening hours had been extended. Since 1997 it has been possible for nightclubs in Stockholm to stay open until 05.00 AM. According to an Australian study, extended opening hours resulted in a significant increase in monthly arrests for these establishments (Chikritzhs & Stockwell 2002). A study from Iceland showed that extended opening hours was associated with an increase in police work assignments, suspected drunk driving and admissions to emergency wards (Ragnarsdottir *et al.* 2002).

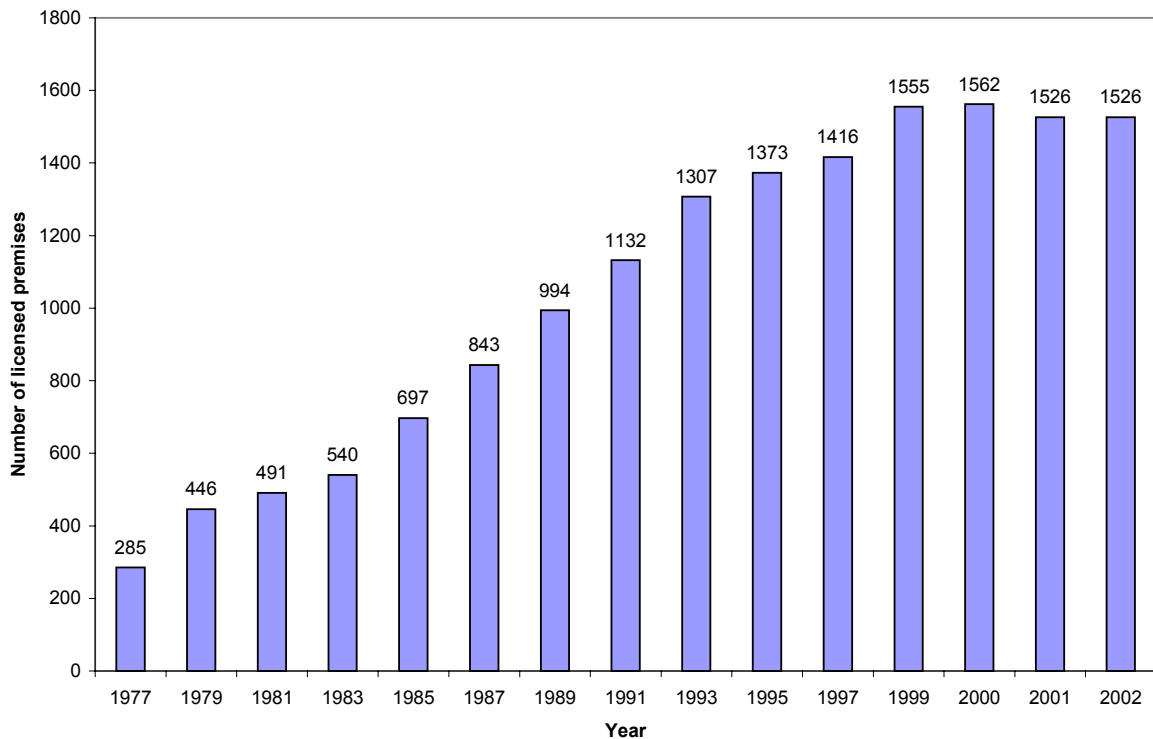


Figure 3: Number of licensed premises in Stockholm, 1977–2002.

During this period there were also other changes of relevance to the initiation of a community action project. In 1995, a new Swedish Alcohol Law was launched. Before 1995 the County Administration had been responsible for the licensing of premises. With the new law this responsibility was decentralized to the municipalities. Since 1995, the municipal License Board has been in charge of licensing of new premises and (together with the Police) monitoring of establishments, providing a new opportunity for prevention at the municipal level.

According to the Swedish Alcohol Law, it is illegal to serve alcohol to patrons markedly intoxicated by alcohol or to underage persons (the legal drinking age is 18 years). The server risks fines and a prison sentence of a maximum of 6 months. The establishment also risks losing its license to serve alcohol.

Another requirement in the Swedish regulations is that restaurant owners must have sufficient knowledge of the alcohol law. At the time this project was started, training was offered to restaurant owners by private organizations, but there was no available training in responsible beverage service for servers.

Intervention targeting licensed premises in Stockholm

The community action project targeting licensed premises was initiated in 1996. A project coordinator was employed, and it was this person's duty to inspire and mobilize important target groups in preventing problems related to alcohol consumption at licensed premises. The northern part of central Stockholm was chosen as the project area, with approximately 550 licensed premises. Inspired by other community action projects, a prevention strategy was chosen that included the following components: needs assessment, problem analyses, formation of action group, developing and implementing an action plan, creating support from key leaders, and evaluation (Holder *et al.* 2000; Wagenaar *et al.* 2000a). Each component will be described in detail below:

Needs assessment: At the project start, interviews were conducted with a sample of 50 restaurant owners from the project area. They represented different categories of licensed premises – bars/pubs, nightclubs, restaurants and hotels. Covered in the interview guide were questions on prevalence of problems with overserving, alcohol service to underage persons and violence, as well as the restaurant owners' interest in training in responsible beverage service. Contacts were also taken with authorities and organizations representing the hospitality industry. Based on these interviews and contacts, key persons were identified (e.g., restaurant owners with high credibility among colleagues) and invited to participate in an action group.

Problem analyses: Two base-line studies were conducted, one on alcohol service to underage patrons, one on alcohol service to intoxicated patrons. The results from these studies indicated low utilization of responsible service practices, with a 5% refusal rate to intoxicated patrons and 55% refusal rate to underage patrons (Andréasson *et al.* 2000; Rehnman *et al.* 1996).

Action group: In 1996, the action group was initiated. The group consisted of representatives from the County Council, the Licensing Board, police officers from the task force for restaurant-related crimes, local police officers, the County Administration, the National Institute of Public Health, the organization for restaurant owners, the union for restaurant employees and specially selected owners of popular nightclubs.

Developing and implementing the action plan: Based on the needs assessment and problem analyses, the action group formulated a mutual goal: to decrease problems related to alcohol service at licensed premises. The task for the action group was defined as developing strategies to prevent intoxication and alcohol service to underage persons at licensed premises. As there was no available training in responsible beverage service for servers, the first task was to develop

such a training program. Working together, the action group developed a two-day training in RBS primarily for restaurant owners, servers, and doormen. Key elements in the training are medical and behavioral effects, as well as social consequences of alcohol, the Swedish alcohol law, restaurant-related crimes, other drugs and conflict management. An actor using role-play led the part of the training on conflict management. Started on a small scale in 1997, the number of participants has increased markedly during the demonstration phase and in continuation. In December 2002, more than 2000 persons had attended the training. Another component of the intervention has been to encourage stricter enforcement of extant alcohol laws. As of June 2001, all partners in the action group had signed a written agreement specifying each partner's responsibility in a permanent organization for RBS (see Table 3).

Table 3: Responsibilities for each member in the action group regulated by written agreement signed by high-ranking officials.

Organization	Responsibility
The County Administration	<ul style="list-style-type: none"> – Provide lecturers for the training – Examination
The National Institute of Public Health	<ul style="list-style-type: none"> – Quality control of training – Develop questions for the written test
The organization for restaurant owners	<ul style="list-style-type: none"> – Course administration, including marketing – Producing course material – Diploma for participants – Financial accounts – Encourage licensed premises to develop written alcohol, and drug policies
The union for restaurant employees	<ul style="list-style-type: none"> – Disseminate information about STAD to members – Encourage members to actively encourage their workplaces to develop written alcohol, and drug policies.
The Licensing Board	<ul style="list-style-type: none"> – Monitor licensed premises – Provide lecturers for the training – Encourage licensed premises to develop written alcohol, and drug policies – Actively encourage licensed premises to consider responsible beverage service as positive and to see the value in a well-trained and motivated staff.
The Police	<ul style="list-style-type: none"> – Monitor licensed premises – Encourage licensed premises to develop written alcohol, and drug policies – Provide lecturers for the training
The County Council	<ul style="list-style-type: none"> – Provide a coordinator – Provide lecturers for the training – Evaluation

Obtaining support from key leaders, organizations, and the population: Support from key leaders is identified as crucial for an intervention to be successful and sustainable. Several members of the action group have been active in lobbying for RBS, for example by presenting the project to local politicians. This has contributed to a new municipal alcohol policy (January 2000) that strongly recommends licensed premises with late opening hours (01.00 AM or later) to train all servers in RBS, with the two-day training as a norm. Results from the evaluations have also been systematically presented to the media, through the prevention strategy “media advocacy” for increased awareness and public support. A media campaign during fall 2001 resulted in 7 newspaper articles, 4 articles in trade press, 4 TV reports, and 4 radio reports.

Evaluation: Measures of alcohol service to underage patrons and intoxicated patrons have been conducted recurrently during the project period, as have analyses of the development of violence in the project area. A formative evaluation strategy has been used, entailing presentation of data to the action group during the project period.

AIMS OF THE THESIS

The main objective of this thesis is to study the effects of a community action program on problems related to alcohol consumption at licensed premises.

Key research questions are:

- Does the community action program lead to policy changes on different levels?
- To what extent is public opinion in Stockholm supportive of strategies to reduce problems related to alcohol service at licensed premises?
- Does alcohol service to intoxicated patrons at licensed premises in Stockholm decrease?
- Does alcohol service to underage patrons at licensed premises in Stockholm decrease?
- Does the community action program lead to a reduction in violent crimes?
- Is it possible to institutionalize the community action program?

MATERIALS AND METHODS

Study design and material

In Papers I and II a pretest – posttest design was used. The setting was licensed premises in Stockholm. Two geographical areas were selected: the northern part of central Stockholm (project area) with approximately 550 licensed premises, and the southern part of central Stockholm (control area) with approximately 270 licensed premises. An argument for the choice of control area was its similarities to the project area in outlet density and profile as an entertainment district.

In the first paper, the licensed premises for the study were chosen to represent different categories: regular restaurants, bar/pubs, nightclubs and hotels. Criteria for selection of licensed premises for the second paper were: having a young clientele and having a license to serve all kinds of alcohol (i.e., beer, wine and spirits). They represented the same categories as in Paper I, with the exception of hotels.

The studies in Paper I were conducted in 1996 (pretest) and 1999 (posttest). In Paper II the baseline was conducted in 1996 and the two follow-ups in 1998 and 2001. As we used a repeated measures design, all licensed premises from the baseline studies still in business were included at the follow-up studies. Numbers of licensed premises selected for the studies are displayed in Table 4.

The target group for Paper III was the adult population in Stockholm County belonging to the age group 18–65 years. A sample of 1000 people was randomly selected from the County population register. All residents living in Stockholm County are included in the registry, each identified by a unique personal number.

In Paper IV we used a time-series quasi-experimental design, with the same project and control areas as in the first two papers.

Table 4: Number of licensed premises selected for Papers I and II (participants and dropouts), baseline and follow-ups.

PAPER I (overserving)						
<i>Baseline 1996</i>		<i>Follow-up 1999</i>				
	Project area	Control area	Project area	Control area		
Participants	47	45	61 ¹	42		
Dropouts	3	5	2	1		

PAPER II (adolescents)						
<i>Baseline 1996</i>		<i>Follow-up 1998</i>		<i>Follow-up 2001</i>		
	Project area	Control area	Project area	Control area	Project area	Control area
Participants	80	76	60	53	54 ²	59
Dropouts		8	8	11	2	1

¹ 19 licensed premises that had received RBS training were included. They were situated in the project area, but not included at baseline.

² A main reason for the smaller number at follow-ups is that many premises had closed or changed profile since baseline.

Data collection

To study overserving, i.e. alcohol service to markedly intoxicated patrons, a technique with pseudopatrons (actors) was used. This evaluation technique has been used by other researchers (Gliksman *et al.* 1993; Rydon *et al.* 1996; Toomey *et al.* 1999). Male actors (25–35 years) were hired to enact a scene of severe intoxication and order beer, while visiting the licensed premises selected for the study. To ensure credibility, this scene was developed together with an expert panel consisting of police officers, professional bartenders, restaurant managers, senior officers from the Licensing Board and representatives of the hospitality industry.

The actors did not know which licensed premises belonged to the intervention or the control group. Observers were present at every visit. As the focus of this study was the servers' serving practices, the actors did not act drunk when entering the establishment. One requirement was that the actors ensure that the server had ample time to notice their level of intoxication before ordering. Once inside the premises, one of the actors portrayed a severely intoxicated person (e.g., leaning over the bar, falling asleep and slurring speech)

and the other acted as a sober friend. The “drunk” actor ordered a beer and the sober friend a soft drink. If served, the couple would discreetly dispose of the beer before leaving the establishment.

Both the actors and the observers filled out a study protocol after each visit. The main focus of the actors’ protocol was on the outcome of ordering alcohol (served or not served), and information relevant to the outcome, such as server’s gender and estimated age. Also covered were the types of server intervention techniques used, such as delaying alcohol service or suggesting food or a soft drink as an alternative. Included in the observers’ protocol were lighting of the establishment, level of music, average age of guests, crowdedness, the overall order and number of intoxicated guests in the premises.

An evaluation technique with pseudopatrons was also used to study alcohol service to underage persons. Adolescents 18 years of age, but younger looking, were selected by an expert panel consisting of a doorman, a policeman, a bartender and a school nurse. This measurement technique has proven to be effective in similar studies (Forster *et al.* 1995; Wagenaar *et al.* 2000a). The young research confederates visited the licensed premises in pairs, each ordering a beer. They were blind as to which of the licensed premises they visited had previously received RBS training. If asked for their ID-card, they responded that they did not have one and volunteered their actual age (18 years). As they were not allowed to drink any alcohol, they discreetly disposed of the beer if served, and left the establishment. In this study we included the response from the doorman in the outcome. If the adolescents were refused entrance, this was categorized as a refusal of alcohol service. A protocol was completed after every visit (one each), which included information on time of visit, whether or not they were allowed entrance, the reasons for refused admission, whether or not they were served beer, the gender and estimated age of the staff member who served them and the approximate number and average age of guests on the premises.

In Paper III, data were collected using a questionnaire during the period November 1999 to February 2000. The following themes were included in the questionnaire: background (gender, age, marital status), alcohol consumption (short version of the Alcohol Disorders Identification test (AUDIT) (Saunders *et al.* 1993), including illustrations of standard units), frequency of visits to licensed premises, and support for different strategies to reduce intoxication or to prevent violence at licensed premises. Three reminders (one full questionnaire and two reminder postcards) were used. An extended dropout analysis was conducted with telephone interviews based on a shortened version of the questionnaire. Two hundred persons were randomly selected from the group of non-responders (200/405).

The data used in Paper IV concern police-reported violence. We restricted the violence indicator to the following offences: assaults, illegal threats and harassment, and violence and threats targeted at officials (including policemen and doormen). All such reported crimes conducted both indoors and outdoors, between 10 PM and 6 AM, are covered by the indicator. The study period is from January 1994 to September 2000. January 1998 was chosen as the starting point for the intervention. Therefore the preintervention period comprises 48 months and the postintervention period 33 months.

For Paper V the following key factors and indicators for each factor were identified for estimating level of institutionalization:

Adoption:	Indicated by level of acceptance for and participation in key intervention components by action group members.
Sustainability:	Indicated by number of participants in RBS training and number of meetings in the action group for the demonstration phase and in continuation.
Key leader support:	Indicated by level of priority for the program given by local politicians and key members of relevant organizations and authorities (e.g., high attendance rate at meetings, written agreement to ensure continuation of program activities and/or contributing resources (funds or staff)).
Structural change:	Indicated by written policies and regulations of relevance to the program activities at the municipal or organizational level.
Compliance:	Indicated by routines for monitoring of alcohol service and recurrent evaluations of alcohol sales to underage and intoxicated patrons.

The time periods studied are January 1996 – June 2001 (demonstration phase) and July 2001 – December 2002 (post-demonstration phase).

The following data were collected:

- Meeting minutes from the action group during 1996 – 2002
- Regular reports from the project coordinator, 1997 – 2002

- Minutes from meetings with the Licensing Board and the Police, 1999 – 2002
- Yearly reports, 1996 – 2002
- Municipal policy documents
- Written house policies at licensed premises, 1996 – 2002

Statistics on RBS participants and monitoring activities conducted by the Licensing Board and the Police were compiled for the period 1997 – 2002.

Qualitative interviews were conducted with key persons from the action group in 2000 and 2002, representing all participating organizations and authorities with the exception of the County Council (n=11). The following themes of relevance to this study were covered in the interview guide: participation (how they participate), sense of participation, possibilities to influence the action plan, and cooperation between the members of the action group.

Participation and dropouts

In Table 4, the numbers of participants and dropouts in Papers I and II are displayed. The main reasons for dropouts were that the establishment had closed that evening or only served guests who had dinner. Table 5 illustrates number of purchase attempts. The number of attempts is much higher in Paper II, as the young people made one purchase attempt each.

Table 5: Number of attempts to order in Papers I and II (project area and control area combined), baseline and follow-ups.

	1996 (Baseline)	1998	1999	2001
PAPER I (overserving)	92		103	
PAPER II (adolescents)	600 ¹	252		238

¹ In 1996 measures were conducted both in the spring and autumn to study possible seasonal differences. As no such differences were found, the follow-ups were conducted in one season each. Therefore, the purchase attempts at follow-ups are about half the size as at baseline.

The response rate in Paper III was 59%. As 14 of the 1000 randomly selected persons had to be excluded for various reasons (illness, dementia, moved), the total number filling out the questionnaire was 578 of 986 persons. The response rate in the dropout study was 46% (92/200). There was a higher proportion of women, 57%, among responders in the questionnaire study compared to 43% in the telephone interview with dropouts. In Table 6 we display the age distribution for responders and dropouts.

Table 6. Age distribution of responders and dropouts in paper III, %.

	Age			n
	18-35	36-50	51-65	
Responders	39	33	28	578
Dropouts	43	29	27	92

Ethical considerations

In the two studies on alcohol service to patrons (Papers I and II), we did not use pseudopatrons who had been drinking alcohol to intoxication or underage subjects. The main reason for this was that we did not wish to provoke the server to commit a crime. Both studies had been presented, discussed and accepted by the action group (including the organization for restaurant owners) before they were conducted. No information regarding identification of licensed premises included in the studies or any individual results have been given to members of the action group or to the media.

Participation in the population survey was voluntary and anonymous. This was clearly stated in the letter sent out to all persons selected, as was the purpose of the study.

Prior to the interview study, the potential participants were informed in a letter that their participation was voluntary. Everyone agreed to participate.

Analyses

Logistic regression

In Papers I and II, a logistic regression analysis was used by comparing the overall successful buy rate for the intervention and the control area. Each secondary factor (e.g., estimated age and gender of server, time of visit, and number and estimated age of guests) was studied separately using dummy variables. The software program SAS (version 8.2) was used in Paper I and the software program Log Exact in Paper II. Those factors that had no impact on the exposure were removed from the analyses.

Data in Paper III were analyzed using logistic regression to study the impact of various background factors on the statements concerning support for strategies to reduce problems at licensed premises. The indicators tested for impact on public support were sex, age (young, ≤ 30 yrs, versus old, > 30 yrs), marital status (married/cohabitant versus single), alcohol consumption (< 3 standard units per typical drinking day versus ≥ 3 standard units per typical drinking day), and frequency of visits to bars/pubs/nightclubs ($< \text{once a month}$ versus $\geq \text{once a month}$). All two-way and three-way interactions were tested in the analyses. SAS, Procedure logistic (version 8.2) was used for the logistic regressions analyses.

Time series analyses

In the fourth paper, the basis for the analyses is time series data. Time series data most often show seasonal variations, with temporal autocorrelation. The successive observations are not statistically independent, and therefore one of the prerequisites of regression analysis is not fulfilled. According to Yaffe *et al.* (2000), the estimate of the effect parameter is not affected by this, but the estimate of the variance of the effect parameter will be biased downwards. To avoid the risk of overestimating the statistical significance of the intervention effect, we had to use a method that takes the error structure in account. The data on police-reported violence were analyzed using the ARIMA modeling technique, suggested by Box and Jenkins (1976). The following double logarithmic model was used to estimate the intervention effect:

$$\text{Ln}E_t = a + b_1 \text{ln}C_t + b_2 I_t + N_t$$

where E and C denote the violence indicator in the intervention and control area, respectively. N is the noise (error term) and is allowed to have a temporal structure estimated in terms of autoregressive and/or moving average parameters. I is a dummy variable that represents the intervention. We chose a model with a gradual impact for the construction of the dummy, which was most consistent with the development of intervention activities.

Content analysis

The written documentation compiled for Paper V has been analyzed using content analysis. The focus has been on the actions taken and the decisions made that have been of importance to the development of the components in the intervention. The software program OPEN-CODE was used for analyzing the written transcripts from the qualitative interviews. The data were coded and sorted into emerging themes.

A scale was developed for assessing level of institutionalization for the identified key factors. The range for each key factor is from 1 = low level, 2 = moderate level, to 3 = high level of institutionalization. A maximum score of 15 indicates the highest degree of institutionalization for each factor, and a minimum score of 5 no indication of institutionalization for any factor.

RESULTS

PAPER I: *Too Drunk for a Beer? A Study of Overserving in Stockholm.*

Objective:

- to evaluate the effects of a community alcohol prevention program on the frequency of alcohol service to intoxicated patrons at licensed premises.

The main finding from this study was a statistically significant improvement in refusal rate of alcohol service over time. At follow-up, 47% of the actors were denied alcohol service as compared to only 5% at baseline (Difference 42%, 95% Confidence interval (CI) 30.5 – 51.9). The group of licensed premises that had trained servers in RBS had the highest refusal rate of 55% in 1999. Other establishments in the intervention area that had not participated in the training had a denial rate of 48%, and the control group had a denial rate of 38%. The differences between the three groups were not statistically significant. Some factors had a significant impact on the probability of being served. These were crowdedness, level of music and which of the actors placed the order. If there were few patrons at the premises and if the music was communicable, the probability of being served was *higher*. Two of the actors had a higher probability of being served than did the remaining four actors. All actors at follow-up had a higher denial rate than did those at baseline. Other observations were that some of the bartenders used well-known techniques such as suggesting a non-alcoholic beverage or food, or delaying service.

PAPER II: *Can I Have a Beer, Please? A Study of Alcohol Service to Young Adults on Licensed Premises in Stockholm.*

Objective:

- to evaluate the effects of a community alcohol prevention program on the frequency of alcohol service to young adults at licensed premises.

At follow-up in 2001 the adolescents were served beer at 32% of their attempts to order, compared to 41% in 1998, and 45% in 1996 (baseline). The decrease in alcohol service in 2001 was statistically significant compared to the baseline in 1996 (Difference 13, 95% CI 5.7 – 20.0). No statistically significant differences were found between the intervention and control area. The reduction in frequency of alcohol service at follow-up II and baseline is statistically significant for both the intervention and the control area. When analyzing the impact of secondary factors on alcohol service outcome, only the presence of a doorman had a statistically significant impact (number of purchase attempts=238) (estimated odds ratio (OR) 0.18, 95% (CI) 0.09–0.38). Various models were also tested for those licensed premises that allowed the adolescents to enter (number of purchase attempts=161). Category of licensed premises was the only factor that had a significant impact on the outcome. The probability of being served was *lower* if the establishment was a bar or pub (estimated OR 0.18, 95% CI 0.05 – 0.54).

PAPER III: *Public Opinion on Alcohol Service at Licensed Premises: A Population Survey in Stockholm, Sweden 1999–2000.*

Objective:

- to explore public opinion on various strategies to reduce problems related to alcohol service at licensed premises.

The analyses show strong public support for licensed premises to use responsible serving practices. Most popular were strategies focusing on the responsibility of the licensed premises, such as not serving alcohol to intoxicated patrons or underage patrons, making intoxicated patrons leave the premises, and offering a large variety of non-alcoholic beverages. A majority, 86%, also supported the notion that establishments should lose their alcohol license if they repeatedly serve alcohol to markedly drunk patrons and/or minors. More than half, 60%, supported RBS training of servers. Strategies to reduce availability were not supported. Only 5% supported an increase in price of alcohol at licensed premises. A third supported reduced opening hours and about a fifth, 18%, a reduction in the number of licensed premises. As concerns the majority of statements, the public support was stronger among non-frequent visitors compared to frequent visitors. Overall the respondents had a positive attitude toward the majority of strategies suggested to prevent violence at licensed premises. A large majority supported the notion that licensed premises should force obviously intoxicated and drug-influenced patrons to leave the premises.

Analyses of the non-responders showed a strong similarity in the pattern of responses compared to the other group of respondents. The same proportion as in the respondent group agreed with forcing intoxicated persons to leave premises and not serving alcohol to minors. A smaller proportion of the non-responding group supported cutting off alcohol service to intoxicated patrons (58%) as compared to the group of responders (76%). There was also considerable agreement with regard to the two statements selected for reducing violence.

The logistic regression analyses showed that frequent alcohol consumers, men, young people (≤ 30 yrs), and frequent visitors to licensed premises were less supportive of the strategies.

PAPER IV: Alcohol Prevention Targeting Licensed Premises: A Study of Effects on Violence.

Objective:

- to study the effects of a community alcohol prevention program on violent crimes.

When analyzing the time series data on police-reported violence, we had to control for the month of August for the years 1994 – 1998. A major annual event, called the Stockholm Water Festival, resulted in markedly higher peaks for number of crimes in those months. In 1999 the festival ended. This event was controlled for by using a dummy coded 1 for August 1999 and August 2000 and 0 otherwise. In the model, we also estimated a gradual intervention effect. This dummy variable takes the value of 0 for the pre-intervention period, increases gradually from January 1998 and attains the value of 1 in the last intervention month.

The estimation was performed on raw data, as the crime indicator did not have any strong time trends. We found a significant reduction in crimes in the intervention area when controlling for the development in the control area. The intervention parameter (-0.344) was statistically significant (SE=0.046, $p < 0.001$). The change was estimated at -29%, which is obtained from the expression: $(\exp[-0.344] - 1) * 100$.

PAPER V: Institutionalization of a Community Action Program Targeting Licensed Premises in Stockholm, Sweden.

Objective:

- to evaluate the level of institutionalization of a community alcohol prevention program. An additional aim is to test the feasibility of a set of indicators of institutionalization.

The analyses of the development of key factors support the notion that the key intervention components have been institutionalized in the community to a high degree.

Members of the action group accept the program activities and the qualitative analyses indicate a strong sense of participation. All action group members participate at a high level in the key intervention components (e.g. lecturing, lobbying, marketing training, and recruiting participants).

The data show a strong sustainability of activities. The development of number of RBS participants is sustained at a high level after the demonstration phase, as is the number of action group meetings.

Key leaders strongly support the intervention components. They have a high attendance rate at meetings in the action group. High-ranking officials have signed a written agreement to ensure continuation of the program. All action group members participate although no external funding is provided. Financial resources have also been provided, e.g., for production of training material.

In the municipal alcohol policy in Stockholm, RBS is strongly recommended for licensed premises with late opening hours. However, only a small number of establishments have developed written house policies (35/820).

Routines for monitoring of alcohol service have been developed and sustained by the Licensing Board (joint meetings with Police and Licensing Board officials, notification letters regarding overserving to licensed premises, and joint controls with the Police) after the demonstration phase. Separate police activities could not be estimated due to insufficient data. Recurrent evaluations of alcohol sales to underage and intoxicated patrons show a sustained increase in refusal rate over time.

All key factors were rated based on the scale developed to estimate level of institutionalization. The combined score for all key factors is 13, indicating a high level of institutionalization of the program. Compliance was rated as moderate, as there were insufficient data to estimate police activities. Structural changes were also rated as moderate due to the limited number of house policies developed during the demonstration phase and in continuation.

DISCUSSION

Main findings

The main objective of this thesis was to study the effects of a community action program on problems related to alcohol consumption at licensed premises. Overall, the results support the notion that there has been a reduction in problems. Licensed premises refuse alcohol service to intoxicated and underage patrons more often, and there has been a reduction in violence over time. Public opinion in Stockholm is supportive of the key intervention components, as are key leaders and members of the action group. The analyses of key factors to determine institutionalization level indicate that the program has been integrated into extant routines in Stockholm. This improves the likelihood of long-term effects. Policy changes that have occurred are changes in enforcement routines by the Licensing Board, the written agreement ensuring the continuation of activities, and the strong recommendation in the municipal alcohol policy for licensed premises with late opening hours to train all servers in RBS. The number of licensed premises that have developed written house policies is few, however.

The refusal rate of alcohol service has increased in both the project and control area. Possible explanations for this could be spillover effects, primarily of enforcement activities. This indicates that enforcement has a stronger impact on alcohol service practices than does RBS training. Our results do not support the notion that the RBS training alone has produced the changes. This is in accordance with other studies showing that training (if not mandatory) has a limited impact on alcohol service practices (Graham 2000; Homel *et al.* 2001).

However, the same pattern was not found in the violence study. Reductions in violence were only present in the project area, and not the control area. This raises the question of how to reconcile the apparently conflicting results of the effect studies. Our hypothesis of a causal chain, where an increasing refusal rate of alcohol to intoxicated patrons results in a decrease in violence, has been challenged. The research on alcohol-related aggression tells us that alcohol can contribute to aggression if combined with expectancies of drinking-related aggression (Graham *et al.* 2000). It is possible that it is the *combination* of community mobilization, RBS training and enforcement that has the strongest impact on violence. As the development of written house policies has been small, the contribution of this component seems to be limited. The training includes

conflict management and motivates the servers and doormen to respond professionally to situations involving intoxication. Thus, increased skills in conflict management, over and above mere refusal of further service, may contribute to a decrease in violence. Another explanation for the differences may be found in the characteristics of the two study areas. Although we selected a control area that was *most* similar to the project area in outlet density and profile as an entertainment district, there are differences that have to be considered. Nightclubs have been identified as a category of licensed premises that disproportionately contribute to alcohol-related problems, e.g. violence (Stockwell *et al.* 1993). There are many more nightclubs in the project area compared with the control area. The numbers of guests at these premises are high, and these establishments have late opening hours (03 AM – 05 AM). All of them have doormen, a category of restaurant staff observed to be very important for handling aggressive situations either by preventing or provoking them (Wells *et al.* 1998). Early on in the project, the nightclubs (especially the popular ones) were identified as an important group to approach. Restaurant owners from the nightclubs have been very active in the action group, and the majority of these premises have sent servers to training. The Licensing Board and the Police have also focused much of their enforcement activities on the nightclubs, especially as they have very late opening hours and the observed incidence of problems is high in these entertainment areas. Most of the nightclubs are found within the intervention area. It is possible that the majority of violent incidents have been related to the nightclubs, and that changes in the nightclub environment have had an impact on police-reported violence. A third explanation to consider is displacement of problems. The reduction in violence in the project area could partly be explained by patrons choosing licensed premises in other areas instead, such as the control area. It is possible that this could explain part of the reduction, but it seems unlikely that this should be the main explanation, given the distances between the areas. Results from the multi-component Surfers Paradise program in Australia showed some turnover of guests, but the majority stayed at their favorite premises, adapting to the new expectancies and drinking norms (Homel *et al.* 1994).

Although we restricted the violence indicator to nighttime and geographical areas with a high density of licensed premises, the indicator covers all violent crimes committed in those areas during nighttime, restaurant related or not. We excluded violent crimes against underage persons, although abuse targeted at women was included, a crime that most often occurs in private homes. This category is only a small proportion of the total number of cases. Therefore, it is not likely that any changes in patterns of violence against women in private homes can explain the decrease in violent crimes during the project period.

However, we cannot conclude that the project activities provide the only explanation for the total reduction of 29%, but it is reasonable to assume that they have contributed significantly to the decrease.

It is not possible to estimate the impact of the separate intervention components on the alcohol problems. That would have required a different study design, comparing RBS training, enforcement, and house policies separately in different geographical areas, and various combinations of these components in other areas.

Another outcome measure that could have been used is the BAC level of patrons (Rydon *et al.* 1993; Stockwell *et al.* 1992). Such a study would have provided an opportunity to explore the hypothesized causal chain that an increased refusal rate leads to a lower intoxication level at the premises, and thereby a decreased risk of violence. From our studies it is not possible to determine the extent to which the increased refusal rate of alcohol service has decreased the overall intoxication level for patrons. In the actor study, we test how the servers respond to obvious signs of intoxication, which is more a test of intervention skills than of prevention. To prevent intoxication the server also has to observe the drinking pace, i.e. the amount of drinks a patron consumes during the evening and the rate of drinking. It can be hard to estimate the level of intoxication for patrons with a high tolerance for alcohol, as they might not show obvious signs. Furthermore, unpublished data from a BAC level study in Stockholm also showed that only 40% of the total amount of alcohol consumed during the evening had actually been consumed at the premises visited. The rest had been consumed at home, at a friend's home, or at another establishment (Wallin 2003).

In contrast to other projects targeting licensed premises, driving under the influence of alcohol (DUI) has not been the focus of the Stockholm initiative either in the training, enforcement activities or as an outcome measure (Saltz 1987; Mosher *et al.* 2002). When the project started the Swedish National Road Administration was invited and participated in some of the earlier meetings, but did not continue in the group. Although there are Swedish data on the association between visiting licensed premises and drunk driving, this was not defined by the group as a problem to prioritize or to conduct measures on (Vägverket 1997). The general opinion in the group was that DUI was a limited problem in central Stockholm, which has good provision of local transportation and taxis. As no studies on the prevalence of DUI in the project area (and/or control area) were conducted, we do not know whether this was a wise decision. It is possible that this component would have received more emphasis if Sweden had the same system of legal liability as in, for example, the US. In the US, servers are held liable if a patron consumes alcohol at a licensed premise and is

then involved in a traffic crash after leaving the establishment (Mosher 1984). Nevertheless, discussions on DUI problems are intensified when the project is disseminated to suburbs in Stockholm and other parts of the country. DUI is considered to be a much more prevalent problem in these areas, due to poor local transportation.

A good rating of age of patrons is a skill that servers have to acquire to avoid alcohol service to underage patrons. A study by Willner and Rowe (2001) showed that alcohol servers overestimated the ages of 13- and 16-year-olds when rating photographs. This indicates that servers need training in age perception. However, the same teenagers shown on the photos also performed actual alcohol purchases, showing a higher alcohol service rate than could be accounted for by misperceptions of age. We do not know to what extent the servers in the Stockholm study who served alcohol were poor at rating the ages of the adolescents.

Theoretical model

The theoretical model (Figure 2) was developed from a systems approach to alcohol prevention. Sub-systems that were targeted with the intervention were social norms (RBS training and media advocacy) and the legal sanctions system (enforcement of rules and regulations) to impact on the alcohol service practices at licensed premise and thereby the level of intoxication at licensed premises. By changing the extant pattern of intoxication, the social, health and economic consequences should decrease. Subsystems that were not specifically targeted in the action plan were the subsystem of formal regulations and control, and the subsystem of retail sales. Outlet density has not been a focus for the action group. Opening hours, on the other hand, has been a topic discussed recurrently at action group meetings. On this issue there have been clear differences in opinion between various representatives. The representatives of the hospitality industry have favored extended opening hours (05.00 AM), while others, such as the Police and the National Institute for Public Health, have suggested a restriction on late opening hours. During the study period 1996 to 2002, the municipal majority parties (center/right wing) had a liberal attitude to late opening hours (and number of licensed premises), but emphasized the importance of enforcement and training of servers. However, the Licensing Board has developed strict requirements for nightclubs with very late opening hours (05.00 AM). They have to train all servers, have doormen licensed by the Police, and send in a new application for reapproval for extended opening hours each year. They also receive more monitoring visits by the Licensing Board, 4 visits a

year, compared to other licensed premises, with one visit a year. It is possible that the intervention could have benefited from more systematically targeting the subsystems regulating alcohol availability. Outlet density and restrictions on hours or days of sale were ranked on the “top-ten” list for effective prevention by Babor *et al.* (2003). However, as the consensus on these strategies is limited between the different representatives in the action group, this would have been a challenge for the project coordinator. Alcohol taxes were also ranked as an effective formal regulation, but this is not a strategy that can be approached at the community level.

Public support is important for the acceptance of an intervention within a community (Treno *et al.* 1997). The study on public opinion in Stockholm showed good support for preventing patrons from becoming intoxicated, similar to other international studies (Giesbrecht & Greenfield 1999; Room *et al.* 1995). This has been a good argument, encouraging both local politicians and restaurant owners to approve of the intervention activities. Although the study showed that frequent guests to licensed premises were less supportive than were non-frequent visitors, the majority in this group was also supportive of preventing intoxication. Patrons constitute an important group for restaurant owners to pay attention to. Public opinion especially favored strategies entailing that the licensed premises are responsible.

The public did not support strategies such as outlet density (reduction of licensed premises), reduced opening hours or alcohol taxes (increased price). This is unfortunate, as these are effective measures for preventing alcohol problems at licensed premises. Perhaps the lack of public support is part of the explanation for why these strategies have not been systematically targeted by the action group. If the social norms and awareness within the population change, this could lead to stronger pressure for stricter formal regulation and control. Given the changes in the national alcohol policy and alcohol consumption pattern in Sweden, it seems unlikely that social norms will change in a more restrictive direction (Leifman 2002). It is likely that there has to be an increase in alcohol-related problems before there can be a change in extant social norms.

The RBS training

If we compare the RBS program in Stockholm with the minimum requirements for RBS programs identified by Mosher *et al.* (2002), the Stockholm training fulfills several of these. The training has good coverage of basic information, including both physiological and social effects of alcohol, and the legal

requirements concerning alcohol service. Role-plays are used in the section on conflict management, but the other sessions are more traditional with lectures and discussions. Both managers and servers (as well as doormen) are target groups for the training. The two-day training is considered to be very long in an international comparison. One requirement that is not fulfilled concerns policy development for managers. As both servers and managers are participating, house policies have not been included as a topic. There are exceptions though. A few training occasions have only included managers, and on those occasions house policy has been included. One explanation for the limited number of house policies developed in the project area could be the lack of this topic in the training, or a need for more training sessions only focusing on managers. Another characteristic of the Stockholm training is its local anchorage. One goal of the training is that the participants shall meet their own local administrator from the Licensing Board or their local police officer as lecturers. Training led by external agencies does not give opportunities for servers to discuss current topics with administrators who have knowledge of the local situation. It is also good for administrators from the Licensing Board and Police to meet restaurant staff and listen to their opinions and experiences, and discuss how their collaboration can be improved.

Community action research

Other researchers have pointed out the challenge of finding a balance between a strict research design and a community action intervention (Casswell 2000; Wagenaar *et al.* 1993). In this study, we have had to make some sacrifices regarding the study design to achieve a successful intervention. Baseline measures were conducted at a number of selected premises in both study areas. The intention was to focus the intervention on the premises in the project area included at baseline, primarily by offering them training. They had not agreed at baseline to train their servers, so this was a strategy based on motivating them to participate voluntarily. As the project started it became evident that some of the most important restaurants (nightclubs) had not been identified at the baseline, and other new popular nightclubs were started after 1996. The project coordinator chose to include these establishments in the project and offer them training, as they were considered to be important role models for the others. This was probably a good decision for the intervention. Having had popular restaurant and their owners as role models has been valuable both for media advocacy and for motivating licensed premises to participate in training. However, this also resulted in some problems with the follow-ups. At the time of

the follow-ups, some of the licensed premises from baseline had sent servers to training, but not the number that were expected. Therefore, we included restaurants situated in the project area that had trained servers in the follow-up even though they were not included at baseline.

The target group for the community action project has not been the population. Public opinion is important for local action, but the citizens or restaurant patrons have not been actively involved in the formulation of goals and development and implementation of action plans. Instead the primary target groups for the mobilization have been authorities and the hospitality industry. This approach is similar to projects conducted in the US, Australia and New Zealand (Casswell *et al.* 1989; Holder *et al.* 2000; Wagenaar *et al.* 2000a). Other projects have been more focused on the citizens, involving them in the intervention process, for example the Swedish Kirseberg project (Hansson *et al.* 1993).

Many facilitators of community action projects identified in earlier research studies have also been found in this work. The importance of key leader support is one requirement for successful intervention (Holmila 1997). In Stockholm the local politicians as well as high-ranking representatives of authorities and the hospitality industry have supported the activities, and also enabled continuation of the program. Local data have been recurrently presented (formative evaluation) and discussed in the action group. Media advocacy has been systematically applied throughout the project period. This has resulted in media exposure, especially of the evaluation results, in newspapers, TV and radio. The opportunity for action group members to participate in the orientation, decision-making and financial management of the project has created a feeling of ownership and common interest. This was made possible by avoiding a top-down approach. Instead the project coordinator has used a bottom-up strategy, involving important target groups in all stages of the project. Time is another facilitating factor both for implementation and institutionalization (Giesbrecht & Rankin 2000; Holder & Moore 2000). It took five years for the project to become institutionalized, that is regulated by the written agreement.

Community mobilization has been the main strategy to motivate community members to support and participate in the activities. This strategy has many similarities to health promotion initiatives (WHO 1986; Green *et al.* 1996; Bracht 1990).

In a recent study by Bourdages *et al.* (2003) on heart and lung disease prevention, keys to effective intersectoral community mobilization were identified. Key factors were: (i) to motivate concerned and influential community members to commit to shared goals, (ii) to form a system for multiorganization among key organizations, taking into consideration their strengths, resources and

competencies, and acknowledging divergent perspectives, (iii) to set up formal structural arrangements to facilitate clear decisions with clear leadership, (iv) to clearly define objectives and responsibilities, (v) official support and legitimization from participating agencies, government authorities, and organizations with adequate resources devoted to partnership building. All these factors have been observed as facilitators in the Stockholm program. Influential organizations and authorities have been involved and motivated to commit to the shared goal of reducing alcohol-related problems. A system (action group) was developed for multiorganization. The frequent regular meetings facilitated mobilization. One of the tasks for the project coordinator was to emphasize strengths and competencies both from representatives of the hospitality industry as well as authorities. The action group has been led by a chairman and the decision process has been clear to the participants. With the written agreement, the responsibility for all members of the action group was clarified and agreed upon. High officials and politicians have given their support and legitimization for members to participate in the intervention activities.

The scale developed in Paper V was an attempt to estimate the level of institutionalization of a community alcohol prevention program. Analyses of the restaurant program in Stockholm indicate a high level of institutionalization. Activities are accepted by important groups (including key leaders) within the community, and sustained at a high level. By signing a written agreement, the organizations and authorities guarantee the continuation of the program. Activities are not dependent on specific individuals. According to Jepperson (1991), this is a requirement for institutionalization.

This was a first attempt to develop a tool for estimating level of institutionalization. The scale may need to be further refined. All indicators could be more specified, to clarify criteria for the different levels: low, moderate, and high for all key components. When the scale is tested by others, we will know more about its usefulness for determining level of institutionalization.

Servers are a high-risk group for heavy alcohol consumption (Kjaerheim *et al.* 1995). At the lecture on medical effects of alcohol at the RBS training, servers are encouraged to test their alcohol consumption using the AUDIT test. Even though the focus of the lecture is on the servers' profession, it is likely that some of them also reflect on their own alcohol consumption.

Limitations of the studies

Reliability and validity

One challenge of the actor study was to standardize the intoxicated behavior. The behavior had to be credible, clearly showing obvious intoxication with the same level of drunkenness at every visit. For this study the behavior chosen was selected by experts from the hospitality industry and authorities. At baseline, the behavior was videotaped as a guide for follow-up studies. Experts also participated at the auditions, and during rehearsals of the scene.

Two actors conducted the whole study with 100 visits at baseline, 1996 (Andréasson *et al.* 2000). As this was very demanding, more actors were recruited for the follow-up, men in the same age group of 25–35 years. Observers were present at every visit to ensure that the actor portrayed the same level of intoxication. Despite the efforts to standardize the behavior, two actors at follow-up had a significantly higher probability of being served than did the other four actors. This underscores the problems associated with working in a real-life environment. One explanation for the differences could be the level of intoxication portrayed. Yet, another explanation for differences in alcohol service rate between the actors could be that servers also pay attention to other factors, e.g. the way the actors look.

Another limitation of both studies of alcohol service is that we did not know whether the individual bartender or server taking the order had actually been trained in RBS. The information available concerned whether or not the licensed premises had sent staff to training. It would have been valuable to have known the training status of the individual server. This would also have controlled for potential problems of staff turnover, i.e. if a server moves from the project area to the control area.

Access to hospital data would also have been useful. Some studies have shown reductions in injuries, parallel to an *increase* in police-reported crimes. Their explanation was that the intervention had led to more police activity, and that this prevented the incidence of assaults, even though the number of reported crimes increased (Burns *et al.* 1995; Putnam *et al.* 1993).

Non-response

In the population study on public opinion, the response rate was fairly low, 59%. An extended non-response study was conducted on a random sample of this group. Telephone interviews with the non-responders in the questionnaire study indicated good comparability in terms of patterns of answers between the two groups. Even so, selective non-response can still affect the ability to generalize the results (Caetano 2001). The group of individuals who still do not want to participate may differ both from the respondents in the questionnaire and from those interviewed by telephone. As we do not know whether the group of non-responders differs in terms of risk factors, such as alcohol consumption, or in their views on alcohol policies, the results must be interpreted with some caution.

Spillover effects

Spillover effects from an intervention area to a control area have been observed in several studies (Casswell 2000). News travels fast if an intervention is popular and successful. Local mobilization is a part of community action initiatives, leading to building networks and dissemination of information.

From our process data it is clear that there has been spillover of parts of the key intervention elements to the control area. This is most marked for the enforcement component. The Licensing Board is in charge of the whole Stockholm municipality, which covers both the project and control area. Any changes in routines therefore affect both areas. The notification letters and the joint controls with the police have been conducted in both areas. We have not had access to any systematic data on police activities, except for joint controls with the Licensing Board. Therefore we do not know whether the police have changed their enforcement activities over time or whether there have been any differences between the project or control area. However, the special task force for restaurant-related crimes has focused its efforts in the project area, as most nightclubs are situated there. The collaboration during the demonstration phase with local police officers was developed primarily with officers from the project area. But, police officers in the control area have shown an interest in participating early on, and were not particularly fond of working in a control area. Even though the restaurant project did not develop collaboration with police officers from this area until June 2001, they have been participating at the regular meetings together with the Licensing Board.

Overall impact on the prevalence of alcohol problems in the community

The community action project has been described in some of the papers as a multi-component project. This term has been used as it incorporates the mobilization of several actors and the use of several intervention components (RBS training, enforcement activities, written house policies and media advocacy). For this project there has been an advantage in focusing the attention on a particular problem – responsible beverage service. Still, if we consider the prevalence of alcohol problems within a community, only a limited part of the alcohol-related problems is dealt with through this strategy. To have a real impact on the overall prevalence of alcohol problems within a community, it is probably necessary to implement a broader multi-component strategy. This involves including more actors (politicians, administrators, voluntary organizations, the business community, and the health and medical sector) and using more methods/strategies.

Future challenges

In the National Action Plan 2001, the importance of RBS training for servers is emphasized (National Action Plan 2001). Following the National Action Plan, the National Institute for Public Health was given the task to disseminate the model developed by the STAD-project in Stockholm to the rest of Sweden (Socialdepartementet 2001). This is a promising policy development, indicating an awareness of the potential benefits of the model on the part of national politicians and administrators. However, there is a need for more research on dissemination (Oldenburg *et al.* 1999). We lack information on the best practices of spreading community action models. Useful theories have been developed, such as the “Diffusion of Innovations”, but more empirical studies are necessary to gain insights into facilitators of and barriers to the dissemination process (Rogers 1995). As concerns the key intervention activities, we do not know the potential impact of each intervention component. It would be valuable to further explore whether all components are necessary, and/or how they should be combined to produce results. A future development is also to include other outcome measures, such as DUI and hospital data in the evaluation. And yet another challenge is to estimate the cost-benefit ratio of the intervention (Levy & Miller 1995).

CONCLUSIONS

The community action program has decreased problems related to alcohol consumption at licensed premises.

A community action program mobilizing local actors, representing authorities and the hospitality industry, has decreased problems related to alcohol consumption at licensed premises in the inner city of Stockholm. The refusal rate of alcohol service to intoxicated and underage patrons has increased, and violent crimes have decreased during the project period. A combination of activities (community mobilization, RBS training, policy initiatives and efficient monitoring) has contributed to the reduction in problems. Spillover of enforcement activities to the control area seems to have had an impact on the alcohol service rate in that area as well. However, there has only been a reduction in violence in the project area. One explanation may be that the intervention has had its greatest impact on nightclubs. They have been specifically targeted by the program, and contribute to the majority of problems related to intoxication and violence. The density of nightclubs is much higher in the project area compared with the control area. Another possible explanation is that the RBS training has increased servers' and doormen's skills in conflict management. The results from the effect studies support earlier findings that multi-component interventions targeting licensed premises at the community level have a potential to reduce alcohol-related problems.

Strategies to reduce alcohol-related problems at licensed premises are supported by public opinion.

Public opinion in Stockholm is supportive of strategies to reduce intoxication and violence at licensed premises. Strategies to motivate/pressure licensed premises to use responsible beverage service practices receive most support. Both non-frequent and frequent visitors to licensed premises support such activities, although frequent visitors support them to a lesser extent. The public does not support a reduction in number of licensed premises, reduction in opening hours, or an increase in prices of alcoholic beverages. This indicates a lack of awareness in the general population regarding the effectiveness of strategies of reduced availability. It also suggests a need to create such an awareness if such strategies are to be employed.

The community action program has been institutionalized, thereby increasing the likelihood of long-term effects on problem levels.

The results indicate a high level of institutionalization of the community action program. Activities are accepted and sustained by relevant target groups: key leaders, authorities, and organizations. A system for cooperation has been developed involving regular meetings. Representatives of the action group have participated in the key intervention components, without any external funding provided. All members of the action group have signed a written agreement to ensure a permanent organization for RBS. Enforcement activities have been developed and sustained. Recurrent evaluations of alcohol sales to underage and intoxicated patrons indicate persistent and positive effects on the use of responsible service practices. As key intervention components have been integrated into extant routines in the community, this increases the likelihood of long-term effects on alcohol-related problems. However, further studies on the institutionalization process are necessary to gain more insights into facilitators and barriers.

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