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DRUG USE AT LICENSED PREMISES PREVALENCE AND PREVENTION

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To my mother

ABSTRACT

Background: There are a number of public health concerns related to the use of illicit drugs such as violence, injuries, unprotected sex, and drug dependence. Particularly, there is a strong need to reach adolescents and young adults with drug prevention programs. It is therefore necessary to identify new settings in the community to target young people. The nightlife setting is one arena where many young people socialize, where illicit drugs are available, and where young people are introduced to and start experimenting with club drugs, frequently under the influence of alcohol. However, little is known about the prevalence of club drug use in Sweden. Furthermore, club drug prevention at licensed premises is a new field for intervention research.

Objective: The overall aim of this research is to increase knowledge on the prevalence and prevention of illicit club drug use at licensed premises. The thesis investigates methods to measure the prevalence of club drug use and the potential for community-based club drug prevention at licensed premises.

Method: This thesis is built around four articles (articles I to IV). Two studies (I and IV) were conducted to measure the prevalence of drug use. Different methodologies (self-report and biological markers) and study populations (staff at licensed premises, and electronic music dance event attendees) were used. To explore the possibilities of conducting community-based club drug prevention work such a program was developed and implemented based on a systems approach to prevention. The multi-component program included community mobilization, drug-training, policy work, increased enforcement, environmental changes, and media advocacy and public relations work. In articles II and III, the effects of this program on doormen intervention rates towards drug-intoxicated guests were evaluated using a pseudopatrol methodology with a pretest – posttest (longitudinal repeated measures) design.

Results: Drug use among staff and guests at licensed premises was found to be high. Evaluations of the long-term effects of the community-based intervention showed a significant increase in doormen intervention rates towards drug-intoxicated guests. Also, staff reported significantly lower levels of self-reported drug use as well as significantly lower levels of observed drug use among guests at the second measurement. Further, our results indicated that it was feasible to conduct alcohol breath and oral fluid drug testing in a Swedish club setting.

Discussion and conclusion: Increased doormen interventions, reduced rates of drug use among staff, and reduced observed drug use among guests suggest positive outcomes of the community-based intervention, as no other explanations for these improvements have been found. The findings demonstrate that the systems model for prevention of substance use was an appropriate model to guide club drug prevention efforts. We successfully used the model to select our intervention methods and implementation strategies.

LIST OF PUBLICATIONS

- I. **Gripenberg Abdon J**, Wallin E, Andréasson S. The "Clubs against Drugs" program in Stockholm, Sweden: two cross-sectional surveys examining drug use among staff at licensed premises. *Substance Abuse Treatment, Prevention, and Policy* 2011; **6:2**
- II. **Gripenberg J**, Wallin E, Andréasson S. Effects of a community-based drug use prevention program targeting licensed premises. *Subst Use & Misuse* 2007; **42:1883-98**
- III. **Gripenberg Abdon J**, Wallin E, Andréasson S. Long-term effects of a community-based intervention: 5 year follow-up of "Clubs against Drugs". *Addiction*, 2011; 106: 1997–2004.
- IV. **Gripenberg Abdon J**, Elgán T, Wallin E, Shaafati M, Beck O, Andréasson S. Measuring substance use in the club setting: a feasibility study using biochemical markers. *Substance Abuse Treatment, Prevention, and Policy* 2012; **7:7**

These articles will be referred in the text by their roman numerals (I-IV).

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LIST OF ABBREVIATIONS

ATOD	Alcohol Tobacco and Other Drugs
AUDIT-C	Alcohol Use Disorders Identification Test Consumption
BAC	Blood Alcohol Concentration
CaD	“Clubs against Drugs”
CAN	Council for Information on Alcohol and Other Drugs
CNS	Central Nervous System
DALY	Disability-Adjusted Life Years
EMDE	Electronic Music Dance Event
GHB	Gamma-hydroxybutyric acid
LP	Licensed Premises
LSD	Lysergic acid diethylamide
MDMA	3,4-methylenedioxymethamphetamine
PIRE	Pacific Institute for Research and Evaluation
RBS	Responsible Beverage Service
STAD	Stockholm Prevents Alcohol and Drug Problems

1 INTRODUCTION

The purpose of this introduction is to provide a brief background on the contextual issues surrounding club drug use in Sweden that have informed the four studies, presented as individual published journal articles, in this thesis. In this introduction, “club drugs” will be defined and presented as an international public health concern. Next, illicit drug use and drug policies in Sweden are covered followed by a description of the development of the Stockholm nightlife. Following this section the various methods used to measure club drug prevalence are presented followed by an explanation of the community-based drug prevention model used to guide the research contained in this thesis. This section describes problems related to drug use in a community setting and presents a systems approach to drug prevention that highlights the importance of community organization and mobilization in the development and maintenance of community-based programs. The last section describes STAD (Stockholm Prevents Alcohol and Drug Problems), which is the research and development unit where this research was conducted. A brief rationale of the thesis is presented prior to stating the overall aims of the research that comprises this thesis.

1.1 CLUB DRUGS

Club drugs refer to a range of stimulant and psychoactive substances such as MDMA/ecstasy, amphetamines, cocaine, GHB, ketamine, LSD/acid [1]. The most popular types of club drugs used can vary in different settings, cultures, and countries. These substances received their label as club drugs specifically because clubbers would use them to enhance their experience in nightclubs and dance events. Historically, the emergence of large electronic music dance events (EMDE) occurred in the mid-1980s, often referred to as “raves” or “technos,” and was frequently associated with illicit drug use [2-4]. Today the relationship between club drug use and dance music events is well established [5-7]. The rave culture first appeared in the United States and Britain and then spread to other parts of the world such as Australia, India, and Europe [8]. Raves typically lasted all night and were held at different venues each time, which could be farmers’ fields, concert halls and warehouses. Since alcohol was often not available at raves there was usually no age restriction [8]. Today the more modern phenomenon of clubbing, (late-night dancing at nightclubs, frequently combined with drug use) originating from international nightlife resorts such as Ibiza, has influenced the nightlife scene in Europe [9-10]. During the last couple of decades there has been an increased concern about the use of club drugs among the young adults around the world [9, 11-14].

1.2 GLOBAL PERSPECTIVES ON ILLICIT AND CLUB DRUG USE

Illicit drug use is a global problem [15]. It is estimated that some 200 million people worldwide use illicit drugs (amphetamines, cannabis, cocaine, and opioids) each year [16]. This number corresponds to 1 in every 20 people aged 15-64 years, and the highest use is found in developed countries. Years of life lost caused by illicit drug use (2.1 million) were more than those reported for alcohol (1.5 million). The reason for higher numbers for illicit drug deaths is that drug deaths in general are more acute in nature (e.g., overdose) and affect great numbers of young people, whereas alcohol

deaths tend to result from long-term abuse and affect people at later stages in life. However, when years lost due to disability (DALYS) are investigated illicit drugs cause 13 million DALYS (0.9% of global DALYS) which is considerable less when compared to alcohol that cause 69 million DALYS (4.5% of global DALYS) [17]. Whether estimating illicit drug deaths or DALYS there are a number of problems related to quantifying illicit drug use. For example, the fact that these substances are illegal complicates the accuracy of estimation of users and the associated harm illicit drug use causes. Also, several club drug substances such as MDMA/ecstasy have never been included in these studies. Further, the burden due to illicit drug use does not include adverse social effects on drug users (e.g., discrimination, stigma), or the adverse effects that drug-related problems have on communities (e.g., drug dealing, property crime).

1.3 PUBLIC HEALTH EFFECTS OF CLUB DRUG USE

The high availability and acceptance of illicit drug use in nightlife settings is disconcerting to public health officials. Nightclubs are a setting where people, particularly young adults, are often first introduced to and start experimenting with illicit drugs, frequently under the influence of alcohol. People that use club drugs can present risks to themselves and others, as well as to the club environments that they visit.

The adverse health effects of illicit drug use can be divided into four categories: the acute toxic effects (e.g., overdose), the acute effects of intoxication (e.g., violence), development of dependence, and adverse effects of sustained chronic, regular use (e.g., physical disease).

There are a number of acute as well as long-term physical and psychological problems related to the use of club drugs, including anxiety, paranoia, panic disorders, depression, memory problems, cardiovascular complications and hyperthermia [18-23]. Club drug use may also increase the risk for other public health related problems such as aggression, injuries, violence, and additional high-risk behaviors, for instance sexual risk-taking and drugged driving (driving under the influence) [20, 24-29]. Researchers in Sweden have also reported a connection between violence and illicit drug use and found that more than 10% of all violent crimes in Sweden during 1988-2000 were committed by people under the influence of illicit drugs [27].

In addition, since club drug users have been found to frequently engage in polydrug use (i.e., the consecutive or simultaneous use of two or more substances) the associated public health concerns are even more troublesome [30]. Several studies have identified negative effects from polydrug use such as decreased cognitive functioning, psychiatric comorbidity, drug dependence, and drug overdose [31-35].

1.4 ILLICIT AND CLUB DRUG USE IN SWEDEN

To study the prevalence of drug use and to follow the drug trends in Sweden school surveys have been conducted since 1971. These surveys are performed annually with 9th and 11th graders (15-17 years old). The 2011 rates for ever-use of drugs for Swedish 15-year olds are 9% for boys and 6% for girls, while for 17-year olds the rates are 20% for boys and 14% for girls. These surveys reveal that Swedish

adolescents have lower drug use rates compared to adolescents in most European countries and the U.S. [36-38]. However, few studies on drug prevalence rates with young adults and adults in Sweden exist, and most population surveys only include the use of cannabis. As a result, there is a lack of comprehensive knowledge on the prevalence and trends of the various types of illicit drugs used in Sweden. The more recent and limited findings on illicit drug use in Sweden are from a postal survey distributed in 2010 [38]. Participants (16-84-year olds) reported 12% ever use of cannabis and 2% reported use within the last year. Last year use of cannabis was highest in the 18-29 year age group, with 9% for men and 6% for women. In addition to the reported gender differences in cannabis use findings showed regional differences where illicit drug use was higher in major urban areas [38]. The most commonly used illicit drug in Sweden is cannabis followed by amphetamines and cocaine. However, the prevalence and use of cocaine has increased the most compared to 20 years ago.

Researchers in Sweden are also trying to determine the number of people with heavy drug abuse (i.e., having injected illegal drugs in the past 12 months, regardless of frequency, or having engaged in daily or near-daily use in the past four weeks). In the late 1970s the estimation was 15,000 people and in the late 1990s the number had increased to 26,000 heavy drug users. Drug-related deaths in Sweden are close to the average in the EU [38].

The Swedish Council for Information on Alcohol and other Drugs (CAN) studies the availability and development of prices on illicit drugs and report that the availability of drugs has increased and prices decreased. For example, since the late 1980s the prices for cannabis and cocaine have decreased by 50% and amphetamine by more than 60% [39]. Further, young peoples' attitudes towards drugs have become more liberal [40].

1.4.1 Swedish drug policy

Swedish drug policy is generally viewed as restrictive by international standards [41]. All non-medical handling of drugs is forbidden which includes production, distribution, sales, possession, and use. The use (i.e., consumption) of illicit drugs was criminalized in 1988, and since 1993 drug-intoxication may result in fines or a prison sentence for a maximum of 6 months. The more severe law also gave the police the right to drug test suspected users showing signs and symptoms of drug-intoxication. When the law was passed by parliament it was stressed that adolescents and young adults should be the main target of enforcement as a preventive strategy for early detection and deterrence of drug use. Furthermore, licensed premises are by law prohibited from allowing obviously drug-intoxicated guests into their establishment or serving such guests alcohol. Licensed premises therefore risk losing their liquor license if they have drug-intoxicated guests at their premises.

1.4.2 Nightlife in Stockholm

The nightlife setting in Stockholm has dramatically changed over the past 30 years, as demonstrated by a threefold increase in the number of licensed premises (i.e., clubs, bars, pubs, restaurants). In the 1980s, there were approximately 500 licensed premises in Stockholm and today there are around 1700 (Fig. 1). Several studies have shown

that outlet density increases the risk for alcohol-related problems such as car crashes, aggression, and violence [42-45].

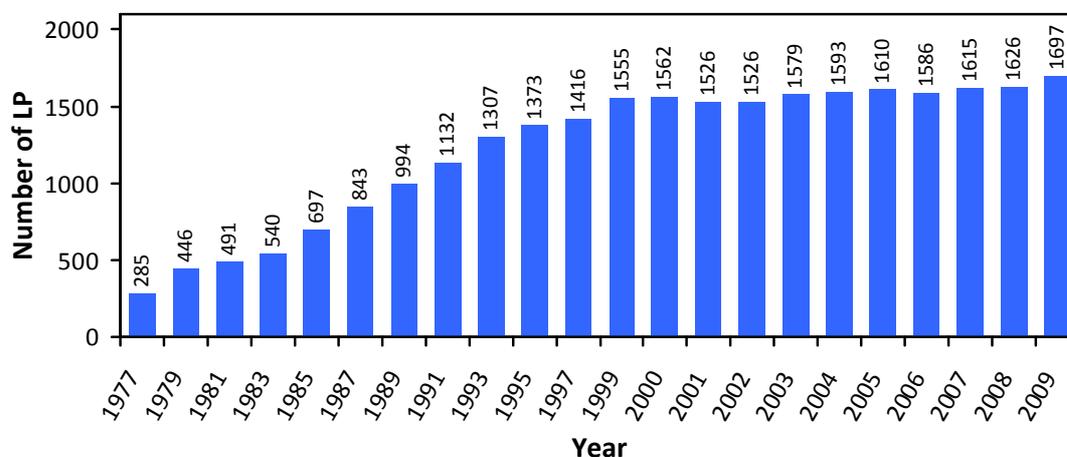


Figure 1. Number of licensed premises (LP) in Stockholm, 1977-2009.

Another dramatic change occurred in 1997 when the opening hours of licensed premises were extended from 03.00 A.M. until 05.00 AM. As of March 2012, approximately 350 licensed premises in downtown Stockholm remain open until 03.00 AM, and 15 licensed premises remain open until 05.00 AM. Researchers have found that extended opening hours at licensed premises in Australia resulted in increased levels of alcohol consumption, an increase in violence, an increase in monthly arrests, and increased levels of impaired driver road crashes [46-48]. Further, a recently published study conducted in Norway concluded that each additional 1-hour extension to the opening hours of licensed premises was associated with a 16% increase in violent crimes [49].

Public sentiment regarding the Stockholm nightlife has also changed in part due to increased reports of crime associated with nightclubs. One event that dramatically changed public perception was the “Stureplan murders” in December of 1994. Four people, one doorman and three guests, were shot and killed and 20 people were injured at the entrance to the Stockholm nightclub “Sturecompagniet.” Three men with criminal records used a machine gun to incite revenge on the crowd following an argument they had with the doormen earlier that evening. This incidence focused the public’s attention on the negative aspects of Stockholm nightlife including the presence of criminals, illicit drugs, violence, and weapons.

Additional shifts in public perception began when the rave culture reached Sweden in the 1990s. Authorities were urged to respond to the growing public concern related to the alarming reports of increased illicit drug use among young people. Of particular concern was the relatively new drug ecstasy that received considerable media attention for its serious negative health effects and in some cases death. The Stockholm police therefore created the “Rave Commission” in 1996, which comprised specially trained drug agents. Their main goal was deterrence and prevention of illicit drug use among adolescents and young adults. As a result of their

efforts the most popular and largest rave club in Stockholm was closed down in the early 2000s.

1.5 METHODS TO MEASURE PREVALENCE OF DRUG USE

Different survey methods are used to study drug prevalence. Examples are household postal or telephone surveys, school surveys and surveys targeting specific groups or attendees at special events such as music festivals and EMDEs [12, 50-54]. The most common method of assessing illicit drug use globally are surveys of school students [55]. This is mainly due to the low cost and high response rates of school surveys, as well as the ease of conducting surveys in the school setting. Hence, with the reliance on student surveys researchers have generally failed to study young adults aged 18-25 years old, which is the age group with the highest frequency of illicit drug use. The sensitive nature of certain survey questions, particularly questions regarding illicit drug use, also influence the accuracy of self-reported answers and may also lower response rates [56]. One problem that researchers in Sweden face, as well as many other countries, is a decrease in survey response rates.

Other methods used to determine illicit drug use include the collection of biological specimens such as blood and urine. Specimen collection methods are generally considered invasive for subjects and require trained medical staff. These methods are therefore primarily used by police and in a medical setting. However, recent advances in the drug testing field have allowed for the use of oral fluid which now can be used to detect a variety of drugs including amphetamines, cocaine, MDMA/ecstasy, opioids, and cannabis [57-59]. The advantage of sampling oral fluid is that this method is perceived as non-invasive, can be carried out by non-medical personnel, and does not require special facilities. Researchers in the U.S. have taken advantage of these new advances in drug detection and developed a method where self-report data are combined with oral fluid drug testing to study the prevalence of illicit drug use among patrons at clubs and EMDEs [60-62]. Using this methodology, Miller and co-workers reported that one out of four patrons at EMDEs used illicit drugs, and the most frequently used illicit drugs were cannabis, cocaine, amphetamine, and MDMA/ecstasy [61, 63]. They also found that there was a discrepancy between actual and self-reported drug use [60].

1.6 COMMUNITY-BASED DRUG PREVENTION

The majority of illicit drug interventions are being conducted in the school setting. These school prevention programs are of importance even though many of the programs are not showing significant effects on adolescents' drug use in the evaluations [64-65]. The most promising programs are the family-focused prevention programs [66-67]. However, there is a strong need to provide young adults (18-25 years old) with drug prevention programs, since they are the age group that has the highest frequency of drug use. Consequently, researchers need to identify and better understand the most appropriate community settings and methods to target young adults for drug interventions.

The nightlife arena is where many young adults socialize and it is also a setting where illicit drugs are available. In fact, young people in Sweden report that the most common place where illicit drugs are available are at licensed premises [40]. An increased number of arenas in the community where drugs are present can result in a higher

prevalence of drug use and therefore, an increased risk among a young adult population to develop drug-using habits and associated health problems. In a Swedish qualitative study, the life of young heroin users/addicts in a small town was explored. Prior to their use of heroin the participants in the study had experimented with club drugs. The participants were introduced to club drugs at nightclubs and raves, and reported that taking drugs in these settings were considered trendy and part of the nightlife scene [68].

1.6.1 Drug problems in the local community

Illicit drug problems are heterogeneously distributed with respect to population and geography and are therefore basically local problems [69]. However, the prevention strategies used at different levels (e.g., local, regional, national) will effect and interact with each other. For example, the strategies used at the community level will be influenced by the national drug policies. A problem for many local communities is that while they carry the cost and burden related to illicit drug use (e.g., negative social impact) they typically have little input on the most effective prevention strategies, such as the policies to reduce the availability of illicit drugs.

Table 1. Categorization of problems related to illicit drugs with potential implications for community-based interventions (Giesbrecht & Haydon, 2006) [70].

Problem focus	Implications for community-based interventions
A. Access and distribution	Access to illegal market (high/low availability) Price Spaces for consumption
B. Enforcement	Criminal justice system involvement and costs (regulating supply)
C. Social and economic costs	Lost wages and productivity Health care system costs Other support system costs (e.g. social services, emergency services)
D. Person	Use Underage use Heavy use
E. Drug	Poor or untested quality Polydrug use High potency
F. Behavior	Intoxication High risk action (e.g. sharing drug paraphernalia) Involving others in high-risk actions/consequences
G. Harm	Acute/trauma—self and others Chronic—self and others Social damage (e.g. victimisation, community disruption)

Table 1 organizes problems related to illicit drugs indicating the potential for community-based interventions. Here, different types of problems have been categorized in three levels: system and institutional response (A-C), individual or drug (D-F), and harms related to use (G) [70]. The top part of the table center on system level dimensions or underlying problems, such as the availability of illicit drugs, policies, and law enforcement. Effective strategies in these domains are expected to have extensive and long-term impact. The second arena incorporates the drug, the drug user, and the users' behavior in relation with the drug. This level is the most common focus in the majority of interventions. The third arena is related to the harm from illicit drug use. When planning an intervention it is important to determine at what level(s) the foci of the prevention strategies will be placed.

1.6.2 A systems approach to drug prevention

In 1998 Holder published a systems model to guide alcohol prevention [71]. This model was later expanded in 2004 to guide prevention efforts addressing alcohol, tobacco, and other drugs (ATOD) [72], and in 2008 a model specifically for psychoactive substances was developed [73]. According to Holder's systems model a community consists of several subsystems such as, drug availability, social norms, the judicial system, enforcement, price, individual factors, use and harm.

The theoretical underpinnings of this approach focus on the necessity for interventions to change the environment in order to achieve long lasting effects. If efforts only target specific at-risk groups, or those individuals who have already developed drug problems, only short-term effects are likely to result. Efforts should focus on influencing the systems that produce the drug problems in order to achieve long-term effects.

Figure 2 is a modified systems model for illicit drugs based on the models proposed by Holder (1998) and Birckmayer (2008) [71, 73]. The model identifies central factors which can both reduce and increase illicit drug use. In order to reach maximum effects in the reduction of drug use and drug problems a combination of strategies targeting as many subsystems as possible are required. Four principal factors are identified as determinants for illicit drug use in this model: availability of buying, price, drug dependence, and drug attitudes. These are the key factors that must be affected in order to reduce drug problems.

Strategies to reduce illicit drug use can be categorized into two broad groups: supply reduction and demand reduction. Supply reduction includes price, availability of buying, and production. Both availability of buying and production are influenced by perceived risk of arrest, drug laws, and enforcement of those laws. Demand reduction is influenced by drug attitudes and community norms. Community concerns about drug problems influence community norms in addition to generating pressure for enforcement.

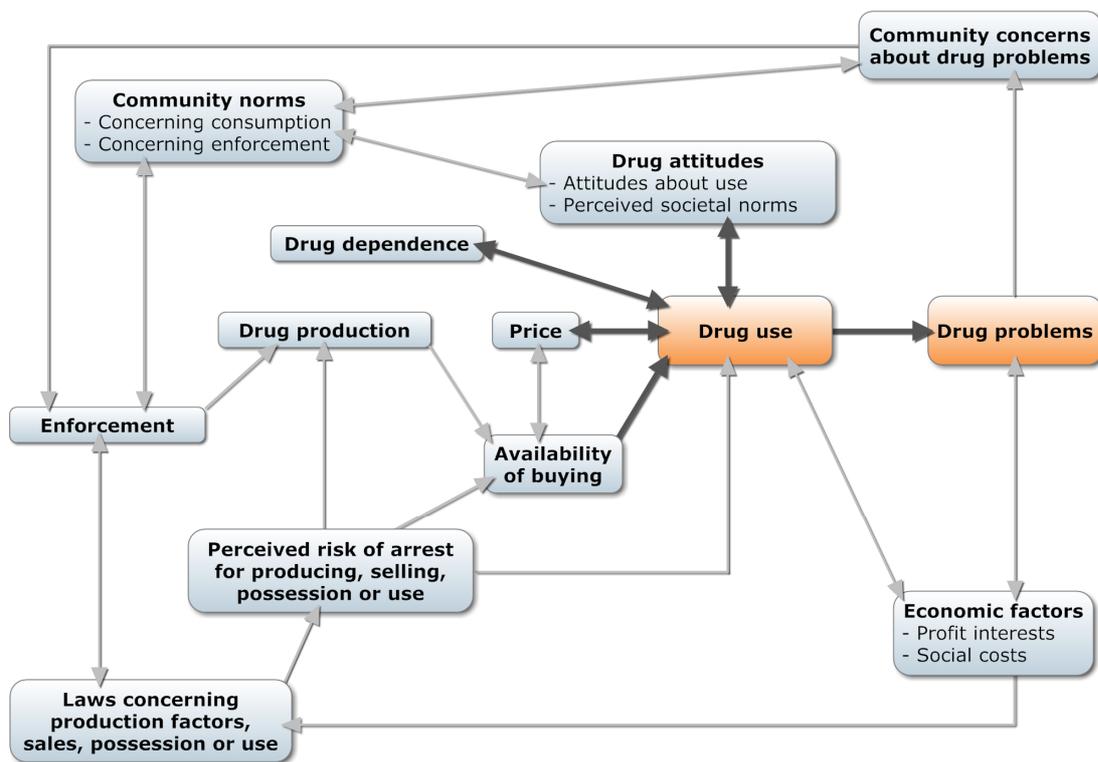


Figure 2. A systems model for drug problems and drug prevention. This modified model is based on those of Holder (1998) and Birckmayer et al. (2008) [71, 73].

This model suggests that a combination of different evidence-based strategies will have increased effectiveness on the reduction of drug use and drug problems. Examples of prevention strategies targeting different subsystems presented by Birckmayer et al include [73]:

- Supply/availability for buying drugs: Local law enforcement efforts to arrest suppliers and dealers [74]
- Supply/availability for buying drugs: Civil remedies to disrupt local markets
- Supply/availability for purchase: Alterations to the physical environment
- Price: Increased enforcement of laws regarding drug production and distribution [75]
- Community concern: Media advocacy [76]
- Community norms: Planned public education campaigns [77]

1.6.3 Community organization, action and the use of media

Numerous studies have identified the importance of including key community stakeholders for prevention programs to be successful [78-79]. Community organization and community action are important concepts to utilize when engaging community stakeholders. Community organization is a process to stimulate a community to use its own social structures and available resources to accomplish community goals decided primarily by community stakeholders consistent with

community norms and concerns. Strategically planned interventions are organized by local groups or organizations to bring about intended social or health changes [80-82]. It is sometimes referred to as community empowerment and partnership development.

The concept of community action has been used in a number of programs [83-84]. It involves the mobilization of important groups and gatekeepers, and the organization of resources within the community [85]. Most successful community action projects utilize a strategic planning and implementation process that include the following components: needs assessment, problem analyses, formation of an action group, formulation of goals and objectives, development and implementation of an action plan, obtaining support from key leaders, organizations, and the general population, evaluation, and revision and if appropriate, maintenance.

Media advocacy is a strategy used to gain support and to mobilize important target groups in the community. It involves a systematic presentation of news stories to create and increase awareness on specific topics in the local community. Media advocacy has been used in community trials to reduce alcohol-involved injury and could also be applicable in drug prevention programs [86-88].

1.7 STAD – COMMUNITY-BASED RESEARCH

This thesis is based on work conducted at STAD (Stockholm prevents Alcohol and Drug problems) [89]. STAD is a research and development unit within the Stockholm County Council and the Karolinska Institutet. Founded in 1995 STAD's general mission is to identify, develop, and evaluate promising methods for the prevention of alcohol- and drug-related problems. Most of STAD's prevention interventions utilize a community-based strategy, theoretically based on an environmental approach to prevention.

STAD conducts its prevention research in the following key areas: secondary prevention within the healthcare system (screening, brief intervention) [90-93]; family/parental education programs [94-97]; web-based interventions targeting children of substance abusing parents [98-99]; anabolic androgenic steroid prevention at fitness centers [100]; and alcohol and drug prevention at licensed premises [101-107].

One of STAD's most successful interventions is the Responsible Beverage Service (RBS) program which targets licensed premises in Stockholm. The program was initiated in 1996 in collaboration with governmental authorities and the hospitality industry. The goal of the program was to decrease alcohol-related problems, such as injuries and violence in the nightlife setting. The RBS-program is a multi-component program including community mobilization, RBS-training for serving staff, and enforcement of existing alcohol regulations. Studies have found a significant increase in the refusal rates of alcohol service to intoxicated and underage guests, and a decrease in the frequency of police-reported violence by 29% [102, 104, 107]. A cost-effectiveness analysis of the intervention displayed that for every 1 euro spent 39 euros were saved [101]. As a result of the positive findings, STAD's RBS-program has been disseminated to the majority of municipalities throughout Sweden.

1.8 A BRIEF RATIONALE OF THE THESIS

Young people in Sweden report that licensed premises are the most common venues where illicit drugs are available [40]. As previously described, the number of licensed premises in Stockholm has increased considerably which has undoubtedly increased the number of venues where young people can obtain illicit drugs. Consequently, increased access can result in a higher prevalence of drug use, and therefore, an increased risk among young people to develop addiction and other drug-related health problems. In addition, experimentation with club drugs can serve as a gateway to other drugs like heroin [68].

Public health officials, community members, and nightclub owners in Stockholm are hence concerned with how to best address the problem of club drug use at licensed premises. However, club drug prevention at licensed premises is a new field for intervention research. Thus, the aim of this thesis was to build upon previous community-based interventions in alcohol prevention specific to licensed premises [106, 109-113]. The desired outcome of the intervention under study was to reduce the availability of drugs at licensed premises and ultimately reduce the number of young people that experiment and use drugs in these settings. The core of our program development efforts was to give the members of the nightlife industry an active role in the development of local drug prevention programs, which was expected to reduce the cultural acceptance of drug use among young people in Sweden.

In summary, club drug use is an international phenomenon that is present in the Swedish nightlife setting. Importantly, this is a setting where young adults can be reached. There are a number of public health concerns related to club drug use. Little is known however about the trends of club drug use in Sweden. This thesis is expected to generate knowledge concerning the prevalence of drug use and to contribute to the field of evidence-based drug prevention research.

2 AIMS AND RESEARCH QUESTIONS

2.1 AIMS

The overall aim of this research is to increase knowledge on the prevalence and prevention of illicit club drug use at licensed premises. The thesis investigates methods to measure the prevalence of club drug use and the potential for community-based club drug prevention programs at licensed premises.

2.2 RESEARCH QUESTIONS

The thesis is comprised of four published research articles. The specific research question for each article is listed below:

Article I

What is the prevalence of club drug use among staff and guests at licensed premises in Stockholm?

Article II

Will a community-based club drug prevention program increase doormen interventions towards drug-intoxicated guests at licensed premises?

Article III

What are the long-term effects of a community-based club drug prevention program on doormen interventions towards drug-intoxicated guests at licensed premises?

Article IV

Can breath alcohol and oral fluid drug testing be used to measure the prevalence of alcohol and drug use among Swedish clubbers?

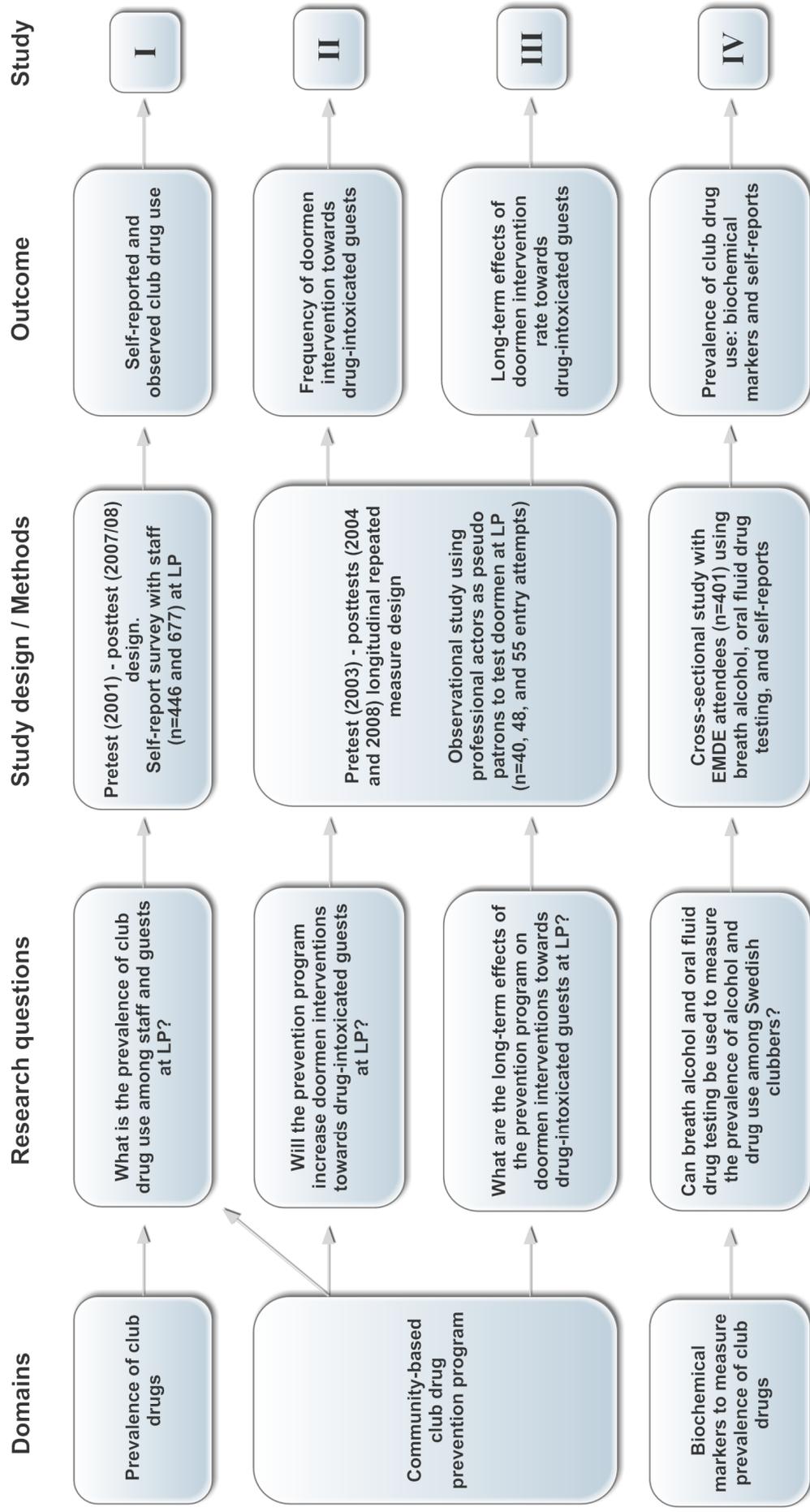


Figure 3. Overview of the research questions and overall research framework.

3 MATERIALS AND METHODS

The present thesis is built around four published articles. Figure 3 summarizes domains, research questions, study design/methods, and outcome variables for each article. The first article presents self-reported and observed drug use among staff and guests at licensed premises. The next article examines the effects of a multi-component community-based club drug prevention program on doormen intervention rates towards drug-intoxicated guests. The third article evaluates the long-term effects of the intervention also using doormen intervention rates as an indicator. Finally, the last article describes a method using biochemical markers to study the prevalence of drug use at licensed premises.

The methods section begins with a description of the theory-based “Clubs against Drugs” program that was developed and evaluated as part of this thesis work. The description of the intervention components is followed by a presentation of methods utilized in the four articles. Subsequent sections report on the results from the articles, after which a discussion, conclusion and acknowledgments section follows. The last part of the thesis includes the four published articles.

3.1 THE “CLUBS AGAINST DRUGS” PROGRAM

The aim of this project was to study the effects of a multi-component community-based prevention program to reduce club drug use at licensed premises in Stockholm. To achieve this, a theory-based community intervention had to be developed and implemented. The first step was to review the scientific literature to learn if other research teams had conducted studies on illicit club drug prevention at licensed premises. However, our search indicated that this area had not been studied to a great extent. What we did find was a number of articles that covered the prevalence and effects of different types of club drugs [2-3, 7-8, 108]. On the other hand, alcohol prevention at licensed premises had been widely published by researchers at STAD and others [104]. There was also a considerable literature from other parts of the world on the prevention of alcohol-related problems at licensed premises, including promising studies of responsible beverage service [109-117].

The club drug prevention program at STAD shared its theoretical base in the systems approach with alcohol prevention [71]. It also built on and applied the experiences from the alcohol field. Our hypothesis was that these theoretical assumptions were equally applicable to drug prevention.

3.1.1 Prevalence data and needs assessment

Initially a project coordinator was selected. After the literature review was completed the program planning process was initiated by assessing the needs of the target population (e.g., nightlife industry and authorities) and conducting prevalence studies. This planning phase involved the following aspects:

- To study the illicit club drug situation at licensed premises in Stockholm
- To study the prevalence of club drug use and types of drugs used

- To determine the extent and nature of problem related to club drug use in the nightlife setting
- To explore the community's resources, readiness, and expectations and identify important stakeholders and authorities
- To identify enabling and reinforcing factors as well as barriers to initiate a club drug prevention program
- To gain suggestions for intervention strategies from the target population

A key informant interview study with policemen (4), doormen (5), and club owners (5), and a survey with 446 staff at licensed premises were conducted [118-119]. Results from these studies revealed that drug use at licensed premises were high both among staff and guests. Staff reported that they frequently saw drug-intoxicated guests and 43% reported that they saw drug-intoxicated guests at licensed premises every week. About half of the participants had seen someone take drugs at a licensed premise during the last year. Staff also reported a significantly higher use of illicit drugs than the general population in Sweden. Last year drug use for all staff was 27%, and the highest rates were found in the youngest age group (<25 years old) with a 41% last year drug use rate. These rates were significantly higher when compared to a population study in Stockholm where the same age group (<25 years) reported a last year drug use rate of 9% [120]. The most commonly used drugs among staff were cannabis, cocaine, amphetamine, and ecstasy. Differences were found between staff that were last year drug users and non drug users. Drug users saw more drugs and drug-intoxicated guests, they had a more liberal attitude towards drugs, and they were less likely to intervene towards drug-intoxicated guests (Table 2).

Table 2. Rate comparisons between staff that were last year drug users and non drug users that agreed with different statements about illicit drugs.

	Rates for last year drug users that agree. % (n=113)	Rates for non drug users that agree. % (n=135)
There is more drugs today than 5 years ago	51	41
I see drug-intoxicated guests every week or more frequent	58	36
I have seen somebody been offered drugs during the last week	18	5
Drug-intoxicated guests should always be asked to leave licensed premises	57	82
It should be illegal to be drug-intoxicated	39	71
I have asked a drug-intoxicated guests leave the licensed premises where I work	35	52

Key informant interview participants expressed great concern over the increase of illicit club drug use in the Stockholm nightlife setting. They said that cocaine was the most popular club drug and was also the most glorified drug. Cocaine had changed from being the drug for the “rich and famous” to now being “everyone’s” drug. Interview participants had several explanations for the increase in illicit club drug use:

- 1) Prices of drugs had decreased
- 2) Availability of drugs had increased
- 3) The attitude towards club drugs had become more liberal, especially among adolescents and young adults
- 4) The increase in the number of clubs with late open hours

The participants conveyed that the presence of drugs and drug-intoxicated guests at licensed premises created a number of problems such as aggression, threats, violence, and the occurrence of weapons. Several problem situations with polydrug use were mentioned. For example, participants reported that illicit drug users could consume very large amounts of alcohol without showing obvious symptoms of alcohol intoxication. All doormen had experienced incidences with guests suddenly turning extremely violent without warning, which they related to polydrug use.

Interview participants further reported that illicit drugs were found at all types of licensed premises however they believed that the prevalence was much higher at popular clubs with late open hours in the nightclub area of down town Stockholm. There was no longer a stereotypical club drug user that could be identified. Club drug users were found in all socioeconomic statuses, but were more frequent among men than women. However, one group that was identified as frequent drug users were staff at licensed premises, and the interview participants stressed the importance of targeting staff at licensed premises in club drug prevention work. Policemen and doormen were especially interested in participating in a prevention program to reduce illicit club drug use and judged the community readiness to be high.

Several barriers were identified. One potential barrier could be the lack of interest from club owners and their staff to participate in a club drug prevention program. There was a concern that clubs might lose business if they would get involved in club drug prevention work. However, the club owners said they would participate in an intervention if all their competitors also agreed to participate. They stressed the importance of joining all the popular clubs together in order to develop communal strategies. Another recognized barrier was lack of community resources and funds. In addition, a barrier of great concern for the nightlife industry was the cooperation, or lack of cooperation, with the authorities. They were concerned that the police would not have enough resources to help them out if they required their assistance. They were also worried that they would risk losing their liquor license if the Licensing Board would find out that the clubs had problems with illicit drug use.

The participants had a number of suggestions for prevention strategies. These included:

- Improved cooperation with and between authorities and the nightlife industry

- Environmental changes at licensed premises to make them less appealing for the sale and use of drugs
- Increased enforcement and more frequent visits by the police
- Comprehensive policy work with written house policies
- Information to guests and the public
- Drug-training for club staff and the police

All different categories of club staff were in need for training. However, doormen were identified as the prioritized group to train. The participants stressed the importance of doormen denying drug-intoxicated guests entry to licensed premises for a number of reasons. To begin with, denying drug-intoxicated guests entry results in fewer guests under the influence of illicit drugs which likely results in the lower prevalence of illicit substances that can be consumed inside the premises. Also, if clubs deny drug-intoxicated guests entry, the clubs are taking a visible action and stand against illicit drug use. National legislation explicitly prohibits the admission of obviously drug-intoxicated guests into licensed premises. In order for the doormen to comply the law they have to be informed about the law, trained to recognize drug-intoxicated guests, trained on how to handle drug-intoxicated guests (e.g., conflict management), and be motivated to work actively against illicit club drug use.

To summarize the community analysis procedure, we found that illicit club drug use was high both among staff and guests at licensed premises in Stockholm, and the stakeholders (e.g., municipality, nightlife industry, Police Authority) perceived that a number of serious public health problems were associated with the presence of illicit drugs in the nightlife setting. Community readiness was perceived as high since the stakeholders expressed great interest in participating in club drug prevention and also had numerous suggestions on program strategies.

The program components of the “Clubs against Drugs” program included community mobilization, drug-training, policy work, increased enforcement, environmental changes, and media advocacy and public relations (PR) work. Each component will be described in detail below and the intended effect on the subsystems in the systems model (Fig. 2) will be presented in the blue boxes.

3.1.2 Community Mobilization

In the systems model (Fig. 2), community mobilization is intended to influence several of the subsystems. For instance, one of the important objectives of community mobilization is to increase *community concerns about club drug problems* which has an effect on *community norms* related to club drug consumption and enforcement, which in turn affects *drug attitudes*.

STAD’s expertise with the Responsible Beverage Service program, in conjunction with the completed needs assessment, aided in the identification of important stakeholders and authorities in the community. The key stakeholders and authorities along with their motives to participate in the action group were mapped (Table 3).

Table 3. Motives for key stakeholders to participate in the community action group.

Stakeholders	Motives for participation
The County Council	Reducing injuries and health problems
The Municipality (Licensing Board)	Reducing problems at licensed premises – social problems, public nuisance, and crime Alcohol regulations covering licensed premises stating that drug use-impaired patrons are not allowed at the premises
The Police Authority	Law and order
The National Institute of Public Health	Public health Enforcement of legislation, national perspective
The County Administration	Enforcement of legislation, regional perspective Alcohol regulations covering licensed premises stating that drug use-impaired patrons are not allowed at the premises
The organization for restaurant owners/leading nightclub owners	Increase staff competence Good relation with authorities, and image towards the population as being a serious industry
The Union for restaurant staff	Psycho-social working environment

Stakeholders and authorities were contacted and individuals/representatives were invited to join an action group. The primary task for the action group was to formulate goals and objectives, followed by development and implementation of an action plan. It was decided that the first step would be to mobilize the high-risk clubs (i.e., popular clubs with late open hours in central Stockholm) and, in cooperation with them, develop the action plan. The owners of the 18 top clubs in Stockholm were invited to a first meeting with the other key community stakeholders and authorities. The meeting resulted in the formation of four working groups: one group developed written workplace policy documents for staff, one group developed written policy documents for guests, one group developed of a workplace drug policy-training course, and one group developed media and PR strategies. When the working groups presented their documents and ideas a couple of months later, they also decided to formally create the “Clubs against Drugs” Association. As a result a declaration for the Association was written that included a commitment to engage in drug prevention work at licensed premises. All the owners of the member clubs signed the declaration.

The researchers together with the action group and the “Clubs against Drugs” Association determined which theory-based prevention strategies were most appropriate for the community intervention. The selection of intervention components was guided by a systems approach for club drug prevention (Fig. 2), as well as founded on the needs assessment and prevalence data.

The action group met regularly (approximately 5 times per year) starting in 2002. The “Clubs against Drugs” Association was formed in November 2002. In 2008 the action group was replaced by a steering committee (Table 4).

2002	2003	2004	2005	2006
<p>March</p> <ul style="list-style-type: none"> - Data from prevalence survey and needs assessment presented, resulting in national news media coverage <p>April</p> <ul style="list-style-type: none"> - 1st action group meeting <p>October</p> <ul style="list-style-type: none"> - The Police Authority initiated the Club Commission for a 6 month period <p>November</p> <ul style="list-style-type: none"> - Licensed premises (LP) invited to a first "Clubs against Drugs" (CaD) meeting - The meeting received national news media coverage - 2 working groups developed <p>December</p> <ul style="list-style-type: none"> - Funding obtained from the National Drug Coordinator in Sweden <p>.....</p> <ul style="list-style-type: none"> - 2 action group meetings - 1 CaD meeting 	<p>February</p> <ul style="list-style-type: none"> - The CaD drug policy documents presented - 3 new working groups created <p>March</p> <ul style="list-style-type: none"> - Policy-training for owners initiated - The Police Authority decided to extend the existence of the Club Commission <p>April</p> <ul style="list-style-type: none"> - The baseline of the actors study conducted <p>May</p> <ul style="list-style-type: none"> - Drug-training for doormen initiated <p>August</p> <ul style="list-style-type: none"> - The club owners created the CaD association and signed a plan of action <p>September</p> <ul style="list-style-type: none"> - Policy-training for managers initiated <p>October</p> <ul style="list-style-type: none"> - the launch of the film "The Club junkie" resulted in media coverage <p>November</p> <ul style="list-style-type: none"> - Drug-training for other staff initiated <p>.....</p> <ul style="list-style-type: none"> - 5 action group meetings - 6 CaD meetings 	<p>January</p> <ul style="list-style-type: none"> - The clubs had in-house policy-training for all staff, followed by staff signing the drug-policy <p>March</p> <ul style="list-style-type: none"> - The results from the baseline actors study presented - The CaD webpage www.krogarmotknark.se launched <p>March - November</p> <ul style="list-style-type: none"> - The first CaD PR campaign + media advocacy was on-going <p>April</p> <ul style="list-style-type: none"> - The 1st follow-up of the actors study conducted <p>May</p> <ul style="list-style-type: none"> - Base-line environmental inspection rounds initiated <p>.....</p> <ul style="list-style-type: none"> - 5 action group meetings - 6 CaD meetings 	<p>January</p> <ul style="list-style-type: none"> - The steering committee responsible for the institutionalized Responsible Beverage Service (RBS)-program decided to start working towards integrating the CaD-program with the RBS-program <p>May</p> <ul style="list-style-type: none"> - Results from the follow-up actors study presented, resulting in national news media coverage - Follow-up environmental inspection rounds initiated <p>September</p> <ul style="list-style-type: none"> - The steering committee requested STAD to develop a plan for integration and institutionalization of the CaD-program <p>.....</p> <ul style="list-style-type: none"> - 5 action group meetings - 5 CaD meetings 	<p>February</p> <ul style="list-style-type: none"> - STAD presented the integration and institutionalization plan to the action group and steering committee <p>May-June</p> <ul style="list-style-type: none"> - A media advocacy and PR campaign conducted as new clubs join, resulting in national news media coverage <p>.....</p> <ul style="list-style-type: none"> - 3 action group meetings - 4 CaD meetings

2007	2008	2009	2010	2011
<p>January</p> <ul style="list-style-type: none"> - The Police's Club Commission institutionalized <p>April</p> <ul style="list-style-type: none"> - Follow-up prevalence survey study among staff at LP initiated 	<p>January</p> <ul style="list-style-type: none"> - Funding obtained from the National Institute of Public Health - The last meeting of the action group - A new steering committee for the RBS and CaD work was developed and the drug-training was institutionalized <p>October</p> <ul style="list-style-type: none"> - The 2nd follow-up of the actors study conducted <p>November</p> <ul style="list-style-type: none"> - The National Institute of Public Health funds a national dissemination of the CaD model to 20 municipalities 	<p>January</p> <ul style="list-style-type: none"> - A national steering committee is formed <p>March</p> <ul style="list-style-type: none"> - A national CaD conference is held in the city of Västerås <p>October</p> <ul style="list-style-type: none"> - A national CaD conference is held in the city of Göteborg - A national CaD campaign is conducted at all the participating clubs during the weekend of 23-24th 	<p>January</p> <ul style="list-style-type: none"> - The National Institute of Public Health funds an update of the educational film "The Club Junkie" <p>October</p> <ul style="list-style-type: none"> - A national CaD conference is held in the city of Norrköping 	<p>January</p> <ul style="list-style-type: none"> - The steering committee initiates the development of a new written agreement specifying the key stakeholders' responsibility for the institutionalization of the CaD work <p>October</p> <ul style="list-style-type: none"> - A national CaD conference is held in the city of Karlstad <p>November</p> <ul style="list-style-type: none"> - The production of a national CaD promotional film is initiated
<ul style="list-style-type: none"> - 5 action group meetings - 1 CaD meeting 	<ul style="list-style-type: none"> - 1 action group meeting - 4 steering committee meetings - 1 CaD meeting 	<ul style="list-style-type: none"> - 6 steering committee meetings - 3 CaD meetings - 6 national steering committee meetings 	<ul style="list-style-type: none"> - 6 steering committee meetings - 3 CaD meetings - 5 national steering committee meetings 	<ul style="list-style-type: none"> - 6 steering committee meetings - 3 CaD meetings - 4 national steering committee meetings

Table 4. Important events and times for initiation of intervention activities in the "Clubs against Drugs" (CaD)-program during the period 2002-2011.

3.1.3 Drug-training

In the systems model (Fig. 2), the different training programs aim to increase knowledge about club drugs and drug related problems, and to change the *attitudes towards club drug use*. In addition, if doormen are trained to identify, and denying entry of drug-intoxicated guests in addition to cooperating with the police when suspecting a drug crime, the *perceived risk of a drug arrest* is expected to increase.

One of the prevention strategies was to develop a drug-training program for two main categories of club staff. The program included a two-day drug-training for doormen, and a one-day drug-training for other staff (e.g., serving staff). Since results from the needs assessment highlighted the importance of training doormen more emphasis was placed on training this group, which is in accordance with findings from previous research [121]. Doormen have the potential to both prevent and provoke aggressive incidents at licensed premises [122].

3.1.3.1 Doormen training

A working group consisting of the head of the Stockholm Police's Club Commission (see description of the Club Commission under the heading increased enforcement, page 23), and the teacher responsible for drug-training at the Stockholm Police Academy, a former doormen, and the project coordinator at STAD developed the training programs. The purpose of the training was to increase knowledge on how to identify drug-intoxicated guests and their behavior (i.e., how drugs affect people's appearance, what behaviors are linked to drug use and dealing), how to react when something suspicious is observed, change staff's attitudes towards club drug use, to motivate and encourage staff to intervene towards club drug use, and to improve cooperation between the nightlife industry and authorities (especially the police). The two-day training for doormen covered:

- signs and symptoms of drug use
- medical effects of drug use
- drug regulations and laws pertaining to licensed premises
- drug policy work
- conflict management

The training sessions consisted of a mixture of lectures, group discussions, case studies, role-plays, and watching of an educational film followed by discussions. The speakers and discussion leaders at the trainings were representatives from the police's Club Commission, experts from the Karolinska Institutet, specialists in workplace drug policy work, and a group of professional actors from a forum theatre group. There was a one-week interval between day 1 and day 2 of the training to give participants time to practice the skills they learned on the job in their respective club setting and to allow time for reading, reflection, and discussion. At the end of day 2 the participants were required to take a written exam and score above 70% in order to receive a diploma (Table 5). The one-day drug-training for serving staff was a compressed version of the doormen training, but without the written examination. Figure 4 shows the number of trained doormen each year and also the cumulative number of doormen trained.

3.1.3.2 The educational movie “The Club Junkie”

An important part of the drug-training was the educational movie “The Club Junkie”. This movie was produced specifically for drug-training of doormen and staff at licensed premises. The three members of the drug-training working group, in addition to two former drug users that worked at clubs in Stockholm, and a movie director/producer developed the movie. The purpose of the movie was to visually illustrate the physical, psychological, and social behavior patterns indicative of illicit drug use. Legal aspects of illicit drug use at licensed premises, drug-related problems in the nightlife setting, and typical problem situations that doormen and staff have to handle were included. The showing of the movie was followed by group discussions with the use of a discussion manual.

Day 1	Day 2
<p>Drug Police Session (2 hours)</p> <ul style="list-style-type: none"> - Signs and symptoms of drug use - Swedish drug laws and regulations <p>Speaker: Police officer from the Club Commission</p>	<p>The Movie "The Club Junkie" and Group Discussions (1.5 hours)</p> <ul style="list-style-type: none"> - The group discussions are based on drug-related problem situations presented in the film <p>Discussion leader: STAD representative and police officer from the Club Commission</p>
<p>Drug Related Harm - The Medical Perspective (2 hours)</p> <ul style="list-style-type: none"> - How drugs affect the individual physically and psychological, short- and long-term effects, theories of addiction, withdrawal and treatment. <p>Speaker: Addiction researcher from Karolinska Institutet</p>	<p>My Life as a Working Drug Addict - Abuse, Work, and Rehabilitation (1.5 hours)</p> <ul style="list-style-type: none"> - Two perspective of drug abuse will be presented: guest and staff at licensed premises <p>Speakers: Two specialists in workplace drug policy work</p>
<p>Case Studies and Group Discussions (2 hours)</p> <p>Discussion leader: Police officer from the Club Commission</p>	<p>Conflict Management (3 hours)</p> <ul style="list-style-type: none"> - Role-plays and group discussions <p>Session leaders: four professional actors from a forum theatre group and a police officer from the Club Commission</p>
<p>Summing up day 1 and homework assignment for next week</p>	<p>Summing up the course, written exam and course evaluation</p>

Table 5. Course schedule for the 2-day drug-training for doormen.

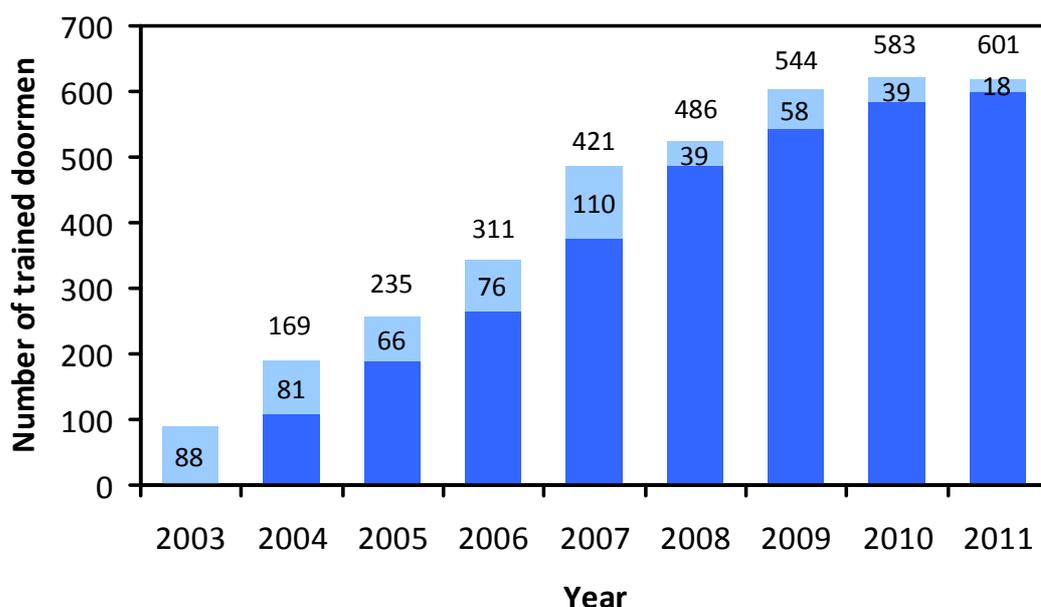


Figure 4. The cumulative number of drug-trained doormen per year, from May 2003 through 2011 (values shown above the bars). Light blue boxes indicate the number of drug-trained doormen each year (values shown inside the bars).

3.1.4 Policy work

In the systems model (Fig. 2), policy work undertaken in this intervention act in several of the subsystems. For example, the policy training of owners, managers and staff is intended to change *attitudes about drug use* that will influence *community norms* and *drug use*.

Policy work was conducted at different arenas (e.g., municipality, county council, organization for restaurant owners, trade unions). For instance, at the municipal level efforts were made to make drug-training for doormen mandatory for clubs with late open hours. However, since prevalence studies at project initiation showed that not only guests but also staff at licensed premises had high rates of drug use themselves a central part of the intervention was to reduce drug use both among staff and guests through policy work. Further, our data showed that non drug-using staff were more likely to intervene towards drug-intoxicated guests. Therefore, an important focus of the “Clubs against Drugs” prevention program was to reduce drug use among staff as part of the aim to reduce the overall drug use at licensed premises. A comprehensive drug policy approach was used that included the development of written policies, education of staff, training for managers, drug testing and rehabilitation [123-124]. The first step was to train the owners and managers of the member clubs. They were offered a workplace policy course at the Karolinska Institutet covering all aspects of policy work at licensed premises including laws and regulations, and practical case studies.

The trained owners and managers then selected leaders within their organizations, to be subsequently trained by STAD. These trained leaders conducted additional trainings, with the use of a training manual, at their own licensed premises about the “Clubs against Drugs” drug policies. In order to study how the in-house training was perceived by the staff a survey was handed out after the training. A total of 249 employees from

15 different licensed premises responded to the survey. The overall refusal rate was 3.1%, and missing data on specific questions varied between 2.0-3.6%. The average age of the survey participants was 27 years and 33% were women. The focus of the survey was to measure staff's attitudes after training towards workplace alcohol and drug testing. Overall, staff did not perceive workplace alcohol and drug testing to be sensitive and the majority believed that alcohol and drug testing was an important part of creating drug free working environments (Table 6).

Table 6. Staff attitudes towards workplace alcohol and drug testing after policy-training. Average scores are presented on a ten point scale ranging from 1 to 10.

	Average scores (n=249)
Do you think that this policy-training has given you sufficient information on the drug testing procedure? (1 = not at all to 10 = sufficient)	8.4
How sensitive would it be for you to have to do random drug testing that test for illicit drug use (urine analysis)? (1 = very sensitive to 10 = not at all sensitive)	8.5
How sensitive would it be for you to have to do random alcohol testing (breath alcohol)? (1 = very sensitive to 10 = not at all sensitive)	8.5
How important do you think drug testing of staff at licensed premises is for creating a drug free workplace? (1 = not at all important to 10 = very important)	7.9
How important do you think alcohol testing of staff at licensed premises is for creating a drug free workplace?	7.2

Other important components of the policy work was the provision of information about the drug policy and the “Clubs against Drugs” intervention to all newly hired staff, as well as mandatory signing of the drug policy document by all staff. The policy document stated for example that drug use was not accepted among staff and guests, and that obviously drug-intoxicated guests should not be admitted into licensed premises.

3.1.5 Increased enforcement

In the systems model (Fig. 2), the intention of the Police Authority's work and especially the "Club Commission" was to increase the *perceived risk of being arrested* for a club drug related crime, which in turn will influence the *availability of buying drugs*.

Increased enforcement, especially by the Police Authority, was a vital part of the intervention. From the beginning stages of developing the intervention, the Police

Authority was supportive and showed great interest in collaborating and participating in the prevention program, from the police commissioner to the community police. The police were experienced in addressing the safety concerns in the nightlife setting prior to the initiation of the “Clubs against Drugs” program. Their main focus had been to reduce violent crimes. However, in October of 2002 the Stockholm Police Authority created a new task force, the “Club Commission” for a six months trial period (Table 4).

The head of this new commission stated that the task force would divide their work between three categories: operational field work, investigation, and cooperation with agencies and organizations. The objectives were expanded to include illicit drug-related crimes, violent crimes, and weapons. The group consisted of specially trained drug agents that worked in teams in the nightlife setting visiting the clubs from 10 P.M. until closing at 5 A.M.. Arriving at the clubs they would talk to the doormen and other staff to find out how the situation was going that evening. The drug agents wore civilian clothes to blend into the club settings and were trained to identify drug dealers and users by their signs and symptoms of drug-intoxication and their social behavioral patterns. The commission focused on arresting the drug dealers and also to confronting and fining guests for drug-intoxication as a preventive strategy for early detection and deterrence of drug use. All categories of guests were charged with drug crimes, even national as well as international celebrities, which resulted in media headlines, with the message that anyone that used illicit drugs would risk being charged.

Another part of the task force was the investigation team and the Club Commission also had their own prosecutor. The close work of the investigators and the prosecutor and their specialization in nightlife related crimes resulted in a rapid processing of all the criminal charges.

In addition to traditional police work the commission was involved in many different aspects of the intervention. An important part of their work involved efforts to reduce and prevent club drug-related crimes and they worked closely with STAD to plan the different intervention activities. Examples of their involvement included lectures and hosted trainings, participation in work groups, attendance and presentations at meetings (action group meetings and “Clubs against Drugs” meetings), regular meetings with doormen, and collaboration with media activities. The improved cooperation and trust between the police and the nightclub industry resulted in doormen and staff calling the police when they observed or suspected drug crimes.

When the Club Commission was evaluated after their six month trial period, the Police Authority decided to extend the commission’s service. Since that time the size and the scope service provided by the Club Commission has increased over time. As a result, they reported that the number of illicit club drug arrests had increased over the years. In 2006, an additional strategy to decrease nightlife crime was introduced by the Police Authority as they started placing two mobile police offices in the downtown area during the weekends. Moreover, in 2007 the Club Commission was institutionalized into Stockholm Police’s regular operations (Table 4).

3.1.6 Environmental changes

In the systems model (Fig. 2), the purpose of the environmental changes at clubs was to increase the *perceived risk of being arrested for selling, possessing, and using club drugs*, which in turn decreases the *availability of club drugs* at licensed premises.

An additional component of the intervention program was to encourage and facilitate the club owners and managers to change the physical space of their premises in order to make them less appealing for the sale and use of drugs. An example of an environmental change was improved lighting at the entrances of licensed premises that allowed doormen a better chance of identifying drug-intoxicated patrons and refusing them entry. Another example was to change the restroom areas to make them less appealing to consume drugs. A model for motivating owners and managers of licensed premises to conduct environmental scans and changes was developed (Fig. 5). A checklist was also developed to assist in the documentation of the process and included observation of the physical environment (e.g., lightning at the entrance, “flat areas” used for intake of drug powder at restrooms, size of the restroom booths), documentation of policy work, prevalence of drug training, and information to patrons. As part of the intervention, the licensed premises were visited and suggestions for improvements were made. A follow-up study was conducted one year later to evaluate if the environmental improvement were completed (Fig. 5).

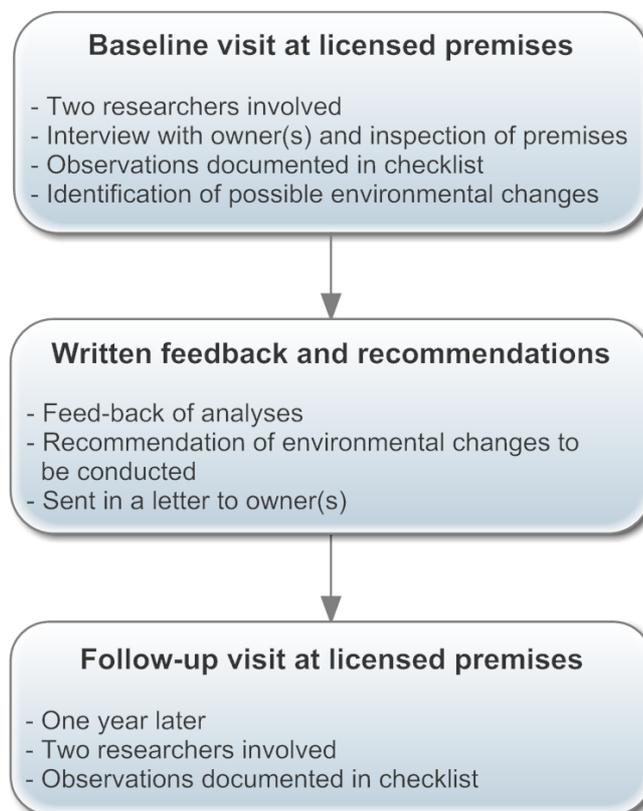


Figure 5. A model for measuring and motivating licensed premises to perform environmental changes to reduce drug use.

3.1.7 Media Advocacy and PR

In the systems model (Fig. 2), the purpose of the media advocacy and PR work was to affect several of the subsystems such as *community concerns about drug problems* which in turn influence *community norms* as well as producing pressure for control measures and *enforcement*.

Media advocacy and public relations (PR) work was an additional prevention strategy. The media and PR work was conducted in efforts to increase awareness of club drug-related problems, to mobilize and obtain community support for the prevention program, inform stakeholders, politicians, key policy decision makers, “club goers” and the general public about the progress of the project, and to influence norms and values related to club drug use.

The “Clubs against Drugs” Association decided at their first meeting to develop their own brand/trademark with carefully planned PR strategies. Professional PR and communication companies were chosen to develop and prepare the media and PR strategies. Role models from the nightlife industry were selected as spokespersons for the Association and the campaign. The owners of the member clubs agreed to accomplish a number of tasks before the launch of the media and PR campaign, which included:

- The owners, managers and all staff should be policy-trained
- All staff should have signed the written drug policy
- The doormen should be drug-trained
- Physical environmental changes to complicate the sale and use of drugs should have been completed

The day before the big launch of the media and PR campaign, in March 2004, all the club owners and their staff were invited to an information and mobilization meeting held in a theatre to accommodate the several hundred staff members. A number of speakers conveyed their gratitude and support to the club owners and their staff. Speakers included the Swedish Drug Tsar, the head of the Club Commission, the head of the Licensing Board, and the PR spokespersons. The following day the “Clubs against Drugs” media and PR campaign was launched which included a number of different approaches to communicate the “Clubs against Drugs” messages:

- A press conference
- Presentation of the logotype (Fig. 6)
- A launch of “Clubs against Drugs” web page
- An eighty square meter banner on a building in the nightclub area (Fig. 7)
- A brass engraved plate was placed at the entrance of all member clubs (Fig. 8)

- A map over the locations of the member clubs in 700 taxis (Fig. 9)
- All staff wore a pin with the logotype
- All doormen wore the logotype
- Signs and stickers with different messages (Fig. 10)
- PR and ads in newspapers and magazines (Fig. 11)
- Signs in the subway stations and areas surrounding member nightclubs
- PR and ads with the “Clubs against Drugs” spokespersons (Fig. 12)
- Coasters and information to guests in the clubs



Figure 6. The “Clubs against Drugs” [Krogar mot Knark] symbol which was created by a working group that included members from the participating nightclubs.

Following the launch of the campaign news stories were systematically presented over time to media. Evaluation of media coverage, during this four month period (March-June 2004), documented over forty news stories in national and local media such as TV, radio, and newspapers.

In 2006, several new nightclubs in the southern central area of Stockholm joined the Association. At this point it was decided to conduct an additional large scale campaign to announce the new clubs’ membership. Furthermore, throughout the intervention period several media activities were carried out. Consequently, the “Clubs against Drugs” project has received on numerous occasions national news coverage on TV, radio, newspapers, magazines, books, and the Internet.

In 2008, the National Institute of Public Health funded a national dissemination of the “Clubs against Drugs” model to 20 municipalities in Sweden (Table 4), and today approximately 40 municipalities are included in the national club drug prevention work.



Figure 7. An eighty square meter banner placed in the city center of Stockholm. The banner was a part of the PR campaign in 2004 and 2006, and sends a message specifically to club drug users. The banner reads:

“It may be the case that you will experience that it has become more difficult to use club drugs around here – Clubs against Drugs”.



Figure 8. The “Clubs against Drugs” sign placed at the entrance of the member clubs. The sign reads:

Dear guest,

We are in the Association Clubs Against Drugs. The aim of the Association’s initiative is together to emphasize that we are simply not prepared to accept drugs in our work environment – either amongst staff or guests.

This is actually nothing new – drugs are still seedy, unhealthy, illegal and foolhardy.

Regard this notice as an even clearer statement of our position and an invitation to understanding and mutual respect; staff, guests and between human-beings.

Thank you and a warm welcome,

Clubs Against Drugs

Krogar Mot Knark

Vi är 17 krogar i Stockholm som har slutit oss samman i *Krogar Mot Knark*. Tillsammans har vi bland annat tagit fram en gemensam narkotikapolicy, utbildat vår personal och vidtagit åtgärder för att försvåra knarkande hos oss. För att vi vill kunna erbjuda en bra arbetsmiljö för vår personal och en trevlig stund för våra gäster.

Varmt välkommen,

01. **Blue Moon Bar** Kungsg. 18
02. **Stacy** Regeringsg. 59
03. **Daily News** Kungsträdgården
04. **Café Opera** Operahuset
05. **Kharma** Stureg. 10
06. **Lydmar** Stureg. 10
07. **Chiaro** Birger Jarlsg. 24
08. **Spybar** Birger Jarlsg. 20
09. **Laroy** Biblioteksg. 21
10. **Sturecompagniet** Stureg. 4
11. **Sturehof** Stureplan 2
12. **East** Stureplan 13
13. **Halv Trappa Plus Gård** Lästmakarg. 3
14. **Buddha Dining and Bar** Biblioteksg. 9
15. **Isolé** Biblioteksg. 5
16. **Riche** Birger Jarlsg. 4
17. **Berns** Berzelii Park

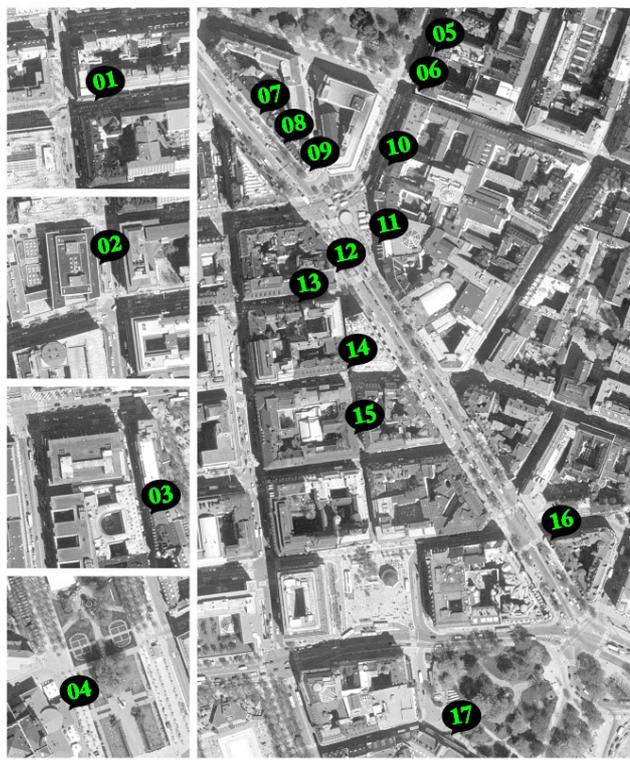


Figure 9. A map showing the location of the member “Clubs against Drugs” licensed premises. This map was placed in 700 taxis during a four month period in 2004. The name, street address and location for each of club are listed. The text above the list of the member clubs reads:

Clubs Against Drugs

We are 17 clubs in Stockholm that have united in Clubs Against Drugs. Together we have, amongst other things, developed a drugs policy, trained our staff and taken measures to make it more difficult to use drugs at our establishments. We do this in order to create a good work environment for our staff and a pleasant time for our guests.

A warm welcome,

Vår personal är specialutbildad på att känna igen tecken på drogpåverkan

Krogar Mot Knark
 BERNS, BLUE MOON BAR, BUDDHA DINING AND BAR, CAFÉ OPERA, CHARO, DAILY NEWS, EAST-HALV TRAPPA PLUS GÅRD, ISOLÉ, KHARMA, LARÖV, LYDMAR, RICHE, SPY BAR, STACY, STURECOMPAGNET OCH STUREHOF.
 WWW.KROGAR.MOTKNARK.SE

Och vad trodde du?

Krogar Mot Knark
 BERNS, BLUE MOON BAR, BUDDHA DINING AND BAR, CAFÉ OPERA, CHARO, DAILY NEWS, EAST-HALV TRAPPA PLUS GÅRD, ISOLÉ, KHARMA, LARÖV, LYDMAR, RICHE, SPY BAR, STACY, STURECOMPAGNET OCH STUREHOF.
 WWW.KROGAR.MOTKNARK.SE

Hantering av narkotika i våra lokaler rapporteras till polis

Krogar Mot Knark
 BERNS, BLUE MOON BAR, BUDDHA DINING AND BAR, CAFÉ OPERA, CHARO, DAILY NEWS, EAST-HALV TRAPPA PLUS GÅRD, ISOLÉ, KHARMA, LARÖV, LYDMAR, RICHE, SPY BAR, STACY, STURECOMPAGNET OCH STUREHOF.
 WWW.KROGAR.MOTKNARK.SE

Tack för att du inte knarkar här

Krogar Mot Knark
 BERNS, BLUE MOON BAR, BUDDHA DINING AND BAR, CAFÉ OPERA, CHARO, DAILY NEWS, EAST-HALV TRAPPA PLUS GÅRD, ISOLÉ, KHARMA, LARÖV, LYDMAR, RICHE, SPY BAR, STACY, STURECOMPAGNET OCH STUREHOF.
 WWW.KROGAR.MOTKNARK.SE

Som om det nånsin varit på något annat sätt

Krogar Mot Knark
 BERNS, BLUE MOON BAR, BUDDHA DINING AND BAR, CAFÉ OPERA, CHARO, DAILY NEWS, EAST-HALV TRAPPA PLUS GÅRD, ISOLÉ, KHARMA, LARÖV, LYDMAR, RICHE, SPY BAR, STACY, STURECOMPAGNET OCH STUREHOF.
 WWW.KROGAR.MOTKNARK.SE

Det är inte okej

Krogar Mot Knark
 BERNS, BLUE MOON BAR, BUDDHA DINING AND BAR, CAFÉ OPERA, CHARO, DAILY NEWS, EAST-HALV TRAPPA PLUS GÅRD, ISOLÉ, KHARMA, LARÖV, LYDMAR, RICHE, SPY BAR, STACY, STURECOMPAGNET OCH STUREHOF.
 WWW.KROGAR.MOTKNARK.SE

Figure 10. Different message that the clubs could place at their clubs. One bubble says: “The presence of drugs in our premises will be reported to the police”.



Kära gäst,

Vi är 17 krogar i Stockholm som har slutit oss samman och startat arbetet med *Krogar Mot Knark*. Tillsammans har vi bland annat tagit fram en gemensam narkotikapolicy, utbildat vår personal och vidtagit åtgärder för att försvåra knarkande på krogen. På detta sätt hoppas vi kunna ändra attityden till knark i vår omgivning. Det handlar om att vi vill kunna erbjuda en bra arbetsmiljö för vår personal och en trevlig stund för våra gäster.

Krogen är ju speciellt utsatt när det gäller knark. Att det finns knark på en krog ger en indikation om att det lätt kan bli otryggt. På krogar där gästerna knarkar använder ofta även personalen knark, vilket såklart skapar en rätt obehaglig arbetsmiljö. Knarkandet för också med sig en mängd andra allvarliga problem som våld och organiserad brottslighet, och detta vill vi naturligtvis inte ha hos oss på våra krogar.

Tyvär ingår knark allt oftare som en del i festandet bland vissa. För en del är det ballt att knarka lite och de som gör det ser inte sig själva som knarkare. Men "partyknarkarna" ska förstå att vi ser dem, att vi vet precis vilka de är och att vi inte accepterar deras knarkande hos oss. Förhoppningsvis får sig en del en tankeställare.

Vi vill såklart att våra krogar ska upplevas som trygga, bra och trevliga sammanhang att vistas i. Ett tydligt ställningstagande inför vår personal och inför våra gäster ger oss krögare ökade möjligheter att vara aktiva mot knarket på alla fronter. Personalen ska förstå att man kan få hjälp om man själv använder knark, och också känna att det är meningsfullt att vi tillsammans arbetar för att göra våra krogar helt knarkfria.

Våra ordningsvakter har fått specialutbildning. Vi skärper kontrollen vid våra dörrar och avvisar drogpåverkade gäster. Vi har förstärkt bevakningen av toaletter och andra områden där det oftast förekommer hantering av knark. Om vi ser klara tecken på påverkan eller hantering av knark kommer vi självklart meddela polisen.

Vår officiella kampanjsymbol, pratbubblan, hoppas vi ska uppfattas som ett klart besked. Vi säger ifrån! Ingen tyst överenskommelse, inget hysch-hysch, inget tissel-tassel. För att ingen ska tro något annat, så talar vi gärna om hur det egentligen ligger till. Vi är krogar mot knark. Och det betyder att vi inte accepterar narkotika alls.

Vi hoppas att den allmänna inställningen ska bli att det inte är okej att knarka. Vi hoppas att våra gäster och vår personal känner att vi tar ställning för att vi bryr oss.

Varmt välkommen,

Krogar Mot Knark

BERNS, BLUE MOON BAR, BUDDHA DINING AND BAR, CAFÉ OPERA, CHIARO, DAILY NEWS, EAST, HALV TRAPPA PLUS GÅRD, ISOLÉ, KHARMA, LARROY, LYDMAR, RICHE, SPI BAR, STACY, STURECOMPAGNIET OCH STUREHOF.
WWW.KROGARMOTKNARK.SE

Figure 11. A full page PR ad that was placed in a number of different newspapers and magazines. See next page for an English translation.



Dear Guest,

We are 17 clubs in Stockholm that have united and started working with *Clubs Against Drugs*. Together we have, amongst other things, developed a drug policy, trained our staff and taken measures to make it more difficult to use drugs at clubs. In this way we hope to alter attitudes towards drugs in our surroundings. We do this in order to create a good work environment for our staff and a pleasant time for our guests.

Clubs are of course especially vulnerable with regard to drugs. The presence of drugs at a club is an indication that it can easily become insecure. At clubs where the guests often use drugs the staff also often use drugs, which of course creates a really unpleasant work environment. Drug taking also brings with it a great many other serious problems such as violence and organized crime and naturally we want to avoid this at our clubs.

Unfortunately drugs are increasingly used by certain individuals when partying. For some it is cool to dabble with drugs and they do not regard themselves as drug abusers. But 'party drug users' should understand that we see them, that we know exactly who they are and that we do not accept their drug taking at our establishments. Hopefully, a few will have something to think about.

Naturally we want our clubs to be experienced as secure, nice and pleasant contexts to be in. by adopting a clear position in front of our staff and our guests we club owners have a greater opportunity to be active against drugs on all fronts. Staff members should understand that you can receive help if you use drugs and also feel that it is meaningful for us to work together to make our clubs free of drugs.

Our security staff has received special training. We are increasing our checks at the entrance and refusing entry to guests who are under the influence of drugs. We have reinforced our monitoring of toilets and other areas often involved in drug activity. If we see clear signs of drug intoxication or dealing in drugs naturally we inform the police.

We hope that our official campaign symbol, the talk bubble, will be regarded as a clear message. We say no! No 'gentleman's agreement', no hush-hush, no whispering about it. To avoid anyone being able to get the wrong impression we are happy to talk plainly about the actual situation. We are Clubs Against Drugs. And that means we are simply not prepared to accept drugs.

We hope that the general attitude will be that it is not acceptable to take drugs. We hope that our guests and our staff feel that we adopt this position because we care.

Warm Welcome,

Clubs Against Drugs

Heidi Weiring
Cat Opera

Vi är 17 krogar i Stockholm som har slutit oss
sammans i *Krogar Mot Knark*. Tillsammans
har vi bland annat tagit fram en gemensam
narkotikapolitik, utbildat vår personal och
vidtagit åtgärder för att förvärta knarkande
hos oss. För att vi vill kunna erbjuda en bra
arbetsmiljö för vår personal och en trevlig
stund för våra gäster.

Krogar Mot Knark
BENNE, BLUE MOON BAR, BIZZERIA DOMINGO AND BAR CANT'OPERA, CHIRAZ,
DAILY NEWS, LUGA, MØY, TERNER, PULS, JARÅ, JULE, JUVANNA, LARBY, LYDAR,
NICE, SPYBAR, STICK, STUBBEN, MÅNEN, TÖD, FUSKIBAR
WWW.KROGARMOTKNARK.SE

Kristoffer Ahlborn
Sturecompagniet

Vi är 17 krogar i Stockholm som har slutit oss
sammans i *Krogar Mot Knark*. Tillsammans
har vi bland annat tagit fram en gemensam
narkotikapolitik, utbildat vår personal och
vidtagit åtgärder för att förvärta knarkande
hos oss. För att vi vill kunna erbjuda en bra
arbetsmiljö för vår personal och en trevlig
stund för våra gäster.

Krogar Mot Knark
BENNE, BLUE MOON BAR, BIZZERIA DOMINGO AND BAR CANT'OPERA, CHIRAZ,
DAILY NEWS, LUGA, MØY, TERNER, PULS, JARÅ, JULE, JUVANNA, LARBY, LYDAR,
NICE, SPYBAR, STICK, STUBBEN, MÅNEN, TÖD, FUSKIBAR
WWW.KROGARMOTKNARK.SE

PG Nilsson
Sturehof

Vi är 17 krogar i Stockholm som har slutit oss
sammans i *Krogar Mot Knark*. Tillsammans
har vi bland annat tagit fram en gemensam
narkotikapolitik, utbildat vår personal och
vidtagit åtgärder för att förvärta knarkande
hos oss. För att vi vill kunna erbjuda en bra
arbetsmiljö för vår personal och en trevlig
stund för våra gäster.

Krogar Mot Knark
BENNE, BLUE MOON BAR, BIZZERIA DOMINGO AND BAR CANT'OPERA, CHIRAZ,
DAILY NEWS, LUGA, MØY, TERNER, PULS, JARÅ, JULE, JUVANNA, LARBY, LYDAR,
NICE, SPYBAR, STICK, STUBBEN, MÅNEN, TÖD, FUSKIBAR
WWW.KROGARMOTKNARK.SE

Anders Timell
Riche

Vi är 17 krogar i Stockholm som har slutit oss
sammans i *Krogar Mot Knark*. Tillsammans
har vi bland annat tagit fram en gemensam
narkotikapolitik, utbildat vår personal och
vidtagit åtgärder för att förvärta knarkande
hos oss. För att vi vill kunna erbjuda en bra
arbetsmiljö för vår personal och en trevlig
stund för våra gäster.

Krogar Mot Knark
BENNE, BLUE MOON BAR, BIZZERIA DOMINGO AND BAR CANT'OPERA, CHIRAZ,
DAILY NEWS, LUGA, MØY, TERNER, PULS, JARÅ, JULE, JUVANNA, LARBY, LYDAR,
NICE, SPYBAR, STICK, STUBBEN, MÅNEN, TÖD, FUSKIBAR
WWW.KROGARMOTKNARK.SE

Figure 12. PR ads with four of the “Clubs against Drugs” spokespersons. All of them were well-known representatives from the Stockholm nightlife industry.

3.2 ARTICLE I - SURVEY WITH STAFF AT LICENSED PREMISES

The aim of this study was to examine the prevalence of club drugs at licensed premises in Stockholm. Different study designs, methods and participants were considered. We chose to survey staff of licensed premises for several reasons. Reports from community stakeholders, especially the Police Authority indicated club drug use was high among staff at licensed premises. Since we planned to develop and implement a community-based club drug prevention program we felt staff at licensed premises were likely to provide a great deal of insight into the problem. In addition, for any club drug intervention to be successful staff at licensed premises would have a fundamental role the development of the prevention strategies and the implementation of the program.

Since there were no comprehensive registers that listed the names of individuals who worked at licensed premises, it was not feasible to randomly select survey participants. A cohort study could not be conducted mainly due to staffs' concern about anonymity (i.e., identifiable information would need to be collected to perform a follow-up study). Consequently, a non-randomized cross-sectional survey design was selected. Two surveys were conducted with staff at licensed premises; the first in 2001 (before the "Clubs against Drugs" program was initiated) and the second in 2007/08 [125]. Participants were asked to complete the survey during STAD's Responsible Beverage Service training. The anonymous survey was administered in a classroom setting and consisted of four sections:

- 1) Demographics, (e.g., gender, age, years working experience at licensed premises)
- 2) Respondents' own drug use experience (e.g., last year use, types of drugs used)
- 3) Respondents' attitudes towards drug use (e.g., laws for licensed premises, illicit vs. legal drugs)
- 4) Observed drug use among guests at licensed premises (e.g., observed drug-intoxicated guests, drug offers, drug intake)

Both surveys were conducted during a one-year period, (from January 2001 to December 2001, and from April 2007 to March 2008). There are on an average 14 server trainings taking place on a yearly basis. Survey participants included staff working at licensed premises in the central part of Stockholm. Data were collected from 446 staff in 2001 and 677 staff in 2007/08. There was no significant difference between the two measurements in mean age ($p=0.533$) or mean years of working experience ($p=0.245$). The only significant difference between the two sample groups was a decreased proportion of males at follow-up from 60% to 51%.

3.3 ARTICLE II AND III – PSEUDOPATRON OBSERVATIONAL STUDY

In study II and III a one-group pretest – posttest (longitudinal repeated measures) design was used. The pretest study was conducted in 2003, and two posttest studies, the first in 2004 and the second in 2008, were also conducted. Study II reports on the effects of the program on the frequency of doormen interventions towards drug-

intoxicated guests and compares baseline to the first follow-up study [126]. Study III evaluates the long-term effects of the program on doormen intervention rates and compares the second follow-up study with earlier measures [127].

The setting chosen for these studies were popular licensed premises with late open hours (identified as high-risk premises by the Club Commission and in the needs assessment) located in central Stockholm that used doormen to screen guests. All licensed premises that fulfilled these criteria were included in the study, resulting in 28 licensed premises. Different study design options were explored with the intention to include a control group. However there were several reasons that prevented the inclusion of a control group; all the licensed premises were closely located in the same close geographical area, a number of them were owned and managed by the same company, and many of the establishments used the same security companies that supplied them with doormen (a doorman could work at a number of different licensed premises). The possibility of having a control group in other Swedish cities was also investigated. This was not feasible since it was essential to coordinate these studies with the local police. At this point in time, the police departments in these cities did not have task force groups (like the Stockholm police's Club Commission) specializing in nightlife related crimes.

Since there were no previously published methods on how to evaluate doormen behavior towards drug-intoxicated guests, such a methodology had to be developed. Asking doormen to complete a survey after training was not considered to be a reliable evaluation tool. Given that doormen are required by law to intervene towards drug-intoxicated guests, it was not likely that they would admit to not doing their job. Our research team decided that an observational study of doormen's behavior would be the most appropriate and accurate method based on the literature on alcohol prevention. In the alcohol prevention field, observational studies using actors as pseudopatrons to evaluate changes in servers' behavior after training, (i.e., where actors have portrayed alcohol intoxication) have successfully been used [113, 128-130].

Based on the research methods using alcohol-intoxicated pseudopatrons we developed a similar method for actors portraying drug-intoxication. Male professional actors were hired and trained by an expert panel to enact a scene of obvious cocaine/amphetamine drug-intoxication. Cocaine/amphetamine intoxication was chosen since it was identified by the police, in both the needs assessment and prevalence study, to be the most commonly observed type of drug-intoxication in Stockholm nightlife. The expert panel consisted of policemen from the Club Commission, a TV/film director/producer, a former nightclub employee, a former drug user, and researchers from STAD. The standardized scene was created by the expert panel using their vast knowledge and experiences. In order to validate the scene, different films from EMDEs and other club events were thoroughly observed and used as a comparison. When the scene had been carefully rehearsed it was filmed for documentation. This film was also viewed at the time for the follow-up studies to make sure that the same level of drug-intoxication was performed at each of the measures.

The standardized scene

The standardized scene included typical signs and symptoms of obvious central nervous systems (CNS) stimulants (i.e., cocaine/amphetamine). CNS stimulant intoxication produces both physical and mental signs of use, and the actors were trained to clearly show the following signs:

- Expressing feelings of power and self-confidence
- The appearance of being speeded (i.e., alert, nervous, restless)
- Loud and talkative
- Effects on muscular function, which were demonstrated by muscular tension in the cheeks, chewing, jaw movement, and involuntary movement of the fingers
- Dryness of mouth, which was expressed by frequent swallowing, licking of the lips, touching the mouth, and frequent swallowing
- Numbness of nose from snorting the drug, which was portrayed by touching of the nose

The procedure

The actors would walk up the entrance of a club and perform the standardized scene. Two trained male observers would follow and monitor the actors' performance, the doormen's behavior, and other staffs' behavior. The observers also evaluated other variables at entry and inside the club (see list below). Figure 13 illustrates the general outline of a club evaluation. A pilot study was carried out in order to test the study procedure in an authentic nightlife setting, to test and refine the data collection protocol and the observation techniques, and most importantly to establish that the actors' performance were standardized. Licensed premises were visited on Thursdays, Fridays, and Saturdays between 11 p.m. and 4 a.m., and an entry attempt took between 30-60 minutes. Licensed premises were supposed to be tested twice and were naturally not informed of these visits. The results from an individual licensed premise was never disclosed, the results were always presented on a group level. The same licensed premises were tested in 2003, 2004, and 2008.

The protocol

A protocol was developed to record the outcome of a club evaluation. The main variable studied was if the doormen intervened towards the actors or not. The types of intervention techniques used by the doormen were also recorded. Other variables documented were:

- Number of doormen present at entrance
- Queue at entrance
- Lighting at the entrance
- Security staff inside premise
- Lighting inside premise
- Level of crowdedness inside
- Number of intoxicated guests
- Overall order at the premises
- Day (weekday vs. weekend)

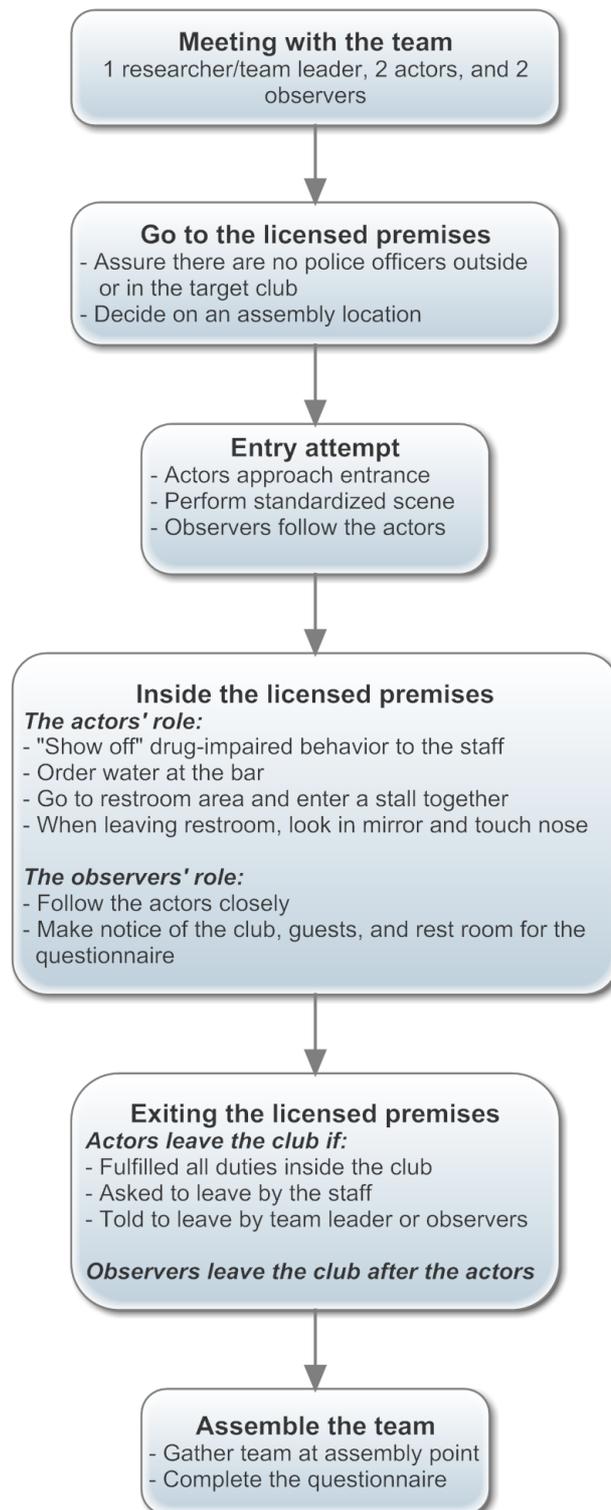


Figure 13. A flowchart presenting the general outline of the club-evaluations using actors as pseudo-intoxicated patrons.

3.4 ARTICLE IV – BIOLOGICAL MARKERS AND SELF-REPORT

The aim of the fourth study was to evaluate the feasibility of measuring the frequency of alcohol and drug use among Swedish clubbers using breath alcohol and oral fluid drug testing [131]. The methodology tested was a modified version of a portal method developed by U.S. researchers, which included both self-reported data and biochemical assays to measure alcohol and illicit drug use among patrons [60-62]. The setting was a 40 hour EMDE on a cruise ship on the Baltic Sea with 875 passengers departing from Sweden. Participants on the cruise were randomly invited to participate in the study. Data collection included:

- 1) A face-to-face questionnaire that contained questions on demographics, alcohol consumption during the present day/night, and the AUDIT-C (Alcohol Use Disorders Identification Test Consumption) instrument screening for risky alcohol use [132-134].
- 2) A self-administered questionnaire that contained further demographic questions and questions concerning licit and illicit drug use. Substances surveyed included cannabis, cocaine, amphetamines, and ecstasy with regards to use ranging from ever use to last 48 hour use, as well as planning to use at this event.
- 3) Oral fluid samples were collected to determine illicit drug use [58].
- 4) Blood alcohol concentration (BAC) levels were measured using a breath analyzer [135].

The procedure

Groups of attendees at the EMDE were randomly invited to participate by the research team's recruiters. Once the individuals had agreed to participate, they were given a glass of water to rinse their mouths to get accurate readings. The data collection was initiated by an alcohol breath test. The face-to-face interview was then started. Next, oral fluid samples were collected, during which time the participants filled out the self-administered questionnaire. When data collection was completed the participants were given a food coupon worth about U.S. \$15 or 10€. A total of 422 passengers were asked to participate in the study, 21 of these declined to participate, resulting in a refusal rate of 5.0%.

The Pharmacological Laboratory at the Karolinska University Hospital analyzed the saliva samples using mass spectrometry.

3.5 ETHICAL CONSIDERATIONS

All studies included in this thesis have received ethical clearance from the Regional Ethical Review Board at the Karolinska Institutet in Stockholm.

When conducting community-based research several ethical issues are involved. One ethical consideration is to find out what problems the community has identified. It might be difficult to justify the implementation of a prevention program that the community would itself not prioritize. It was therefore important to conduct a community needs assessment to identify the community's needs and relevant target groups and stakeholders. By mobilizing the Stockholm community, and forming an action group comprised of a variety of community stakeholders, we believed the community was more likely to assume ownership of the intervention.

Further, a number of precautions have been taken throughout the research project to reduce possible ethical problems:

- The studies have been presented, discussed and approved by the action group i.e. representatives from the authorities, organizations and, in particular, representatives from the hospitality industry have approved the studies.
- No licensed premises have been identified in reports from the project, neither to media nor to the action group.
- The actors, observers, and the expert team all were required to sign professional secrecy agreements, never to disclose what licensed premises were tested or results from individual licensed premises. Further, prior to or during the study periods they were not to mention that the studies were being conducted.
- The actors in the pseudopatron study were not committing a crime since they were not drug-intoxicated; they were acting as if they were under the influence of drugs. Hence, the doormen were not committing a crime either.
- In the staff survey, no information where individuals could be identified was collected and the participants were not asked to provide information about what licensed premises they worked for.
- The doormen tested in the pseudopatron studies were never identified.
- Participation in the surveys with staff and with EMDE attendees were voluntary and anonymous, which was verbally presented and in writing.
- The members of the research team on the cruise ship had to sign professional secrecy agreement never to disclose where the study was conducted, including the name of the cruise line or event organizer.

4 RESULTS

The results of the four studies in this thesis are thoroughly presented in articles I-IV. Below follows a brief summary of results from each article.

4.1 ARTICLE I – SELF-REPORTED AND OBSERVED DRUG USE

What is the prevalence of self-reported and observed club drug use among staff and guests at licensed premises in Stockholm?

Overall, 60% of the staff reported *ever-use* of illicit drugs in 2001 compared to 53% in 2007/08, and *last year* drug use for the sample in 2007/08 was 19% which is significantly lower compared to 27% for the 2001 sample. Further, the four most commonly used drugs among staff were cannabis, cocaine, amphetamine, and ecstasy [125].

The highest rates of drug use were reported by staff in the two youngest age groups, i.e., those younger than 25 and those between the ages of 25 and 29. However, in 2007/08 staff reported significantly lower rates of drug use than staff in 2001. For example, the youngest age group (18-24 year olds) had decreased last year drug use from 41% to 29%, and the age group of 25-29 year olds had decreased from 33% to 18%.

The staff in 2007/08 reported significantly lower rates on all observed club drug use questions such as, observed drug-intoxicated guests, observed drug intake and observed drug offers.

When comparing staff that had never used drugs to staff that had used drugs during last year there were significant differences. Staff that were drug users reported higher rates of observed drug use among guests as well as more liberal attitudes towards drug use than non drug users. While drug-using staff compared to non drug-using staff reported more observations of drug use among guests, they were less inclined to intervene e.g., 20% of drug users reported that they would call the police if they saw someone take drugs at the licensed premises where they worked compared to 81% of the non drug users.

In general, staff reported restrictive attitudes towards drugs for instance in 2001, the majority of individuals supported Swedish drug laws requiring drug-intoxicated guests being asked to leave (74%), and in 2007/08 the staff reported an even greater (85%) level of support for this law.

4.2 ARTICLE II – EFFECTS ON DOORMEN INTERVENTION

Will a community-based club drug prevention program increase doormen interventions towards drug-intoxicated guests at licensed premises?

At follow-up in 2004, the doormen intervened in 27.0% of the entry attempts, which was a significant improvement ($P = 0.018$) compared to a 7.5% intervention rate at baseline in 2003 [126]. The doormen used different types of intervention techniques. The most commonly used technique was simply to deny the actors entry, the second most used technique was to let the actors into the premises, after which the doormen contacted the police.

A total of 40 attempts were performed at baseline and 48 attempts at the follow-up. The baseline study was conducted before doormen drug-training was initiated, and when the follow-up study was conducted 80 doormen had been trained, which was estimated to amount to 40% of the doormen employed at these establishments. No competing club drug interventions targeting licensed premises and /or doormen had been on-going during the study period.

4.3 ARTICLE III - LONG-TERM EFFECTS

What are the long-term effects of a community-based club drug prevention program on doormen interventions towards drug-intoxicated guests at licensed premises?

At the follow-up study in 2008 the doormen intervened in 65.5% of the attempts, a significant improvement compared to 27.0% ($P = <0.001$) at the first follow-up in 2004 and to 7.5% ($P = <0.001$) at baseline in 2003 (Fig. 14) [127].

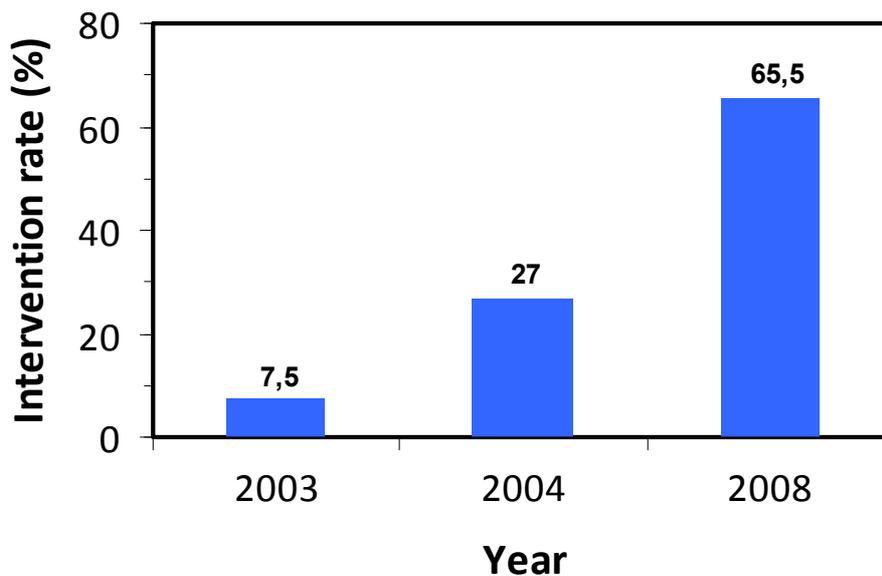


Figure 14. Frequency of doormen interventions at baseline in 2003 and follow-ups in 2004 and 2008.

In 2008, a greater number of intervention techniques were used compared to the two earlier measurements. The three most frequently used techniques in 2008 were to deny entry, let the actors into the establishment after which the doormen contacted the police, and to follow the actors until they left the licensed premises. In 2008, doormen contacted the police at eleven of the entry attempts compared to five times in 2004, and zero times in 2003. Multivariate logistic regression revealed that none of the variables studied were significantly associated with the probability of doormen intervention.

4.4 ARTICLE IV – PREVALENCE OF DRUG USE

Can breath alcohol and oral fluid drug testing be used to measure the prevalence of alcohol and drug use among Swedish clubbers?

Only 5% of the approached passengers on the EMDE cruise refused to participate, and of the 401 study participants only 5 declined oral fluid drug testing. Results demonstrate that 10.1% of the participants were positive for illicit drug use. The most commonly used drug was amphetamine, followed by ecstasy, cannabis, and cocaine [131].

There was a discrepancy between measured drug use and self-reported drug use as only 3.7% reported drug use during the last 48 hours. Further, 6% reported that they were planning to use drugs during the EMDE, and 9.2% reported that they usually use drugs when clubbing.

The mean number of self-reported standard drinks (defined as drinks containing 12 grams of pure alcohol, *i.e.*, one bottle of beer, one glass of wine, etc.) consumed by the participants each night was 8.8 drinks, 9.9 for men and 6.8 for women. The average BAC level was 0.10%, 0.11 and 0.08, for men and women respectively. About 62% of the participants had a BAC level of $\geq 0.08\%$, while approximately 23% had a measured level of $\geq 0.15\%$, and almost 6% had a level of $\geq 0.20\%$. About 6% of the participants had not consumed any detectable levels of alcohol.

Self-reported AUDIT-C scores revealed that a majority (76.0% of the men and 80.7% of the women) of the participants had an overall risky alcohol consumption pattern (using a threshold of ≥ 5 for men and ≥ 4 for women).

The mean BAC levels for the illicit drug users were significantly higher ($p=0.004$) than for non-drug users, 0.13% compared to 0.10%. The significant association between BAC levels and illicit drug use remained after controlling for possible confounding factors.

5 DISCUSSION

The four studies in this thesis are discussed in detail in articles I-IV. Below follows a brief summary discussion of the findings from the studies.

5.1 MAIN FINDINGS

The overall aim of this thesis was to increase knowledge on the prevalence and prevention of illicit club drug use at licensed premises. The thesis investigated methods to measure the prevalence of club drug use and the potential for community-based club drug prevention at licensed premises.

To explore the potential for and effects of community-based club drug prevention work such a program was developed and implemented based on a systems approach to prevention. In articles II and III, the effects of this program on doormen intervention rates towards drug-intoxicated guests were evaluated using a pseudopatron methodology. The findings indicated that the prevention program had increased the frequency and effectiveness of doormen interventions towards obviously drug-intoxicated guests. Hence, there is promising potential for conducting community-based club drug prevention work at licensed premises.

Two studies were conducted to measure the prevalence of drug use. In article I, self-reported drug use among staff and observed drug use among guests at licensed premises were studied and found to be high compared to the general population. However, staff reported significantly lower levels of self-reported drug use as well as significantly lower levels of observed drug use among guests at the second measurement, which was conducted five years after the intervention was initiated.

The second study measuring prevalence of drug use (article IV) indicated that it was feasible to conduct alcohol breath and oral fluid drug testing in a Swedish club setting to measure the prevalence of alcohol and drug use. The participation rate was high and the oral fluid drug testing was well accepted by the EMDE attendees. One interesting finding was the discrepancy between actual and self-reported drug use.

In the next section the findings from the studies will be discussed. First the findings from the community-based club drug prevention program will be discussed, followed by the club drug prevalence studies. Next, the strengths and limitations of the studies will be presented. The last two sections briefly present the implications and suggestions for future research.

5.2 COMMUNITY-BASED CLUB DRUG PREVENTION

STAD initiated prevention work at licensed premises to reduce alcohol-related problems in the Stockholm nightlife setting. Evaluation of the alcohol prevention program showed promising effects [101-102, 104, 106-107]. While promoting

responsible beverage service at licensed premises, stakeholders as well as the researchers identified public health problems related to illicit club drug use at licensed premises. Based on the experiences with alcohol prevention STAD decided to expand their research in the nightlife setting to include the prevention of illicit club drugs.

5.2.1 Systems model

The theoretical model for the “Clubs against Drugs” program was based on the systems model (Fig. 2). According to this model it is important to target as many subsystems as possible with a combination of prevention strategies to reach maximum effects. In the “Clubs against Drugs” intervention the prevention strategies were specifically selected to target different subsystems. *Community concerns* were targeted with the community mobilization process and with the media advocacy. *Community norms* were targeted with the PR campaigns. The drug-training and policy work targeted *drug attitudes*. *Perceived risk of arrest for a drug crime* and *availability of club drugs* were targeted with the increased enforcement by the Police Authority and with the environmental changes conducted at the clubs.

All the different selected prevention strategies were successfully implemented in the local community (Table 4). The community was mobilized and action group and “Clubs against Drugs” meetings were held on a regular basis. PR campaigns were conducted, and media advocacy was utilized during the intervention period which resulted in numerous national and local media coverage in all available types of media (e.g., newspapers, TV, radio, magazines). Drug-training for staff and doormen was ongoing throughout the intervention, and today over 600 doormen have been trained (Fig. 4). One of the priorities in the beginning of the project was policy work, and policy documents were developed, owners and all staff were policy-trained and everyone had to sign the policy documents. Environmental changes were performed at the clubs in order to make the premises less appealing for the use and sale of drugs. The Police Authority has been an important component of the successful implementation process and the effects of the program. The support and collaboration with the police was initiated at the program planning phase and have been ongoing throughout the intervention.

A subsystem that was not targeted was *laws concerning production factors, sales, possession or use*. There were two reasons for that. First, national drug policies are difficult for the local community to influence. Second, since Swedish drug policy is restrictive there was no need to target changes in the laws. However, the action group has made efforts to make drug-training for doormen mandatory. *Drug production* was not targeted specifically either.

The indicator chosen to evaluate the long-term effects of the “Clubs against Drugs” program was doormen intervention rates towards drug-intoxicated guests using actors as pseudopatrons. Actors portraying drug-intoxication by cocaine/amphetamine is a new methodology developed by researchers at STAD.

5.2.1.1 Evaluation of long-term effects using pseudopatrons

By using the pseudopatron methodology we found that doormen in central Stockholm had significantly improved their intervention rates towards obviously drug-intoxicated guests. These observed changes in doormen behavior are most likely due to the “Clubs against Drugs” program for several reasons. To begin with, the intervention program was successfully implemented in the local community and was also sustained throughout the intervention and follow-up period. At the second follow-up, 460 doormen had been trained (Fig. 4). Further, to our knowledge there were no indications of changes in drug use patterns or changes in attitudes towards drug use among the target population or population as a whole that could explain these improvements. To continue, no competing interventions targeting doormen at licensed premises were ongoing during the study period. Moreover, comparable multi-component community-based programs have shown effects in the alcohol prevention field (e.g., improvement in the rates of refusal of alcohol service to alcohol-intoxicated pseudopatrons) [106, 113, 130].

The doormen had been trained to use different techniques to intervene towards drug-intoxicated guests. The preferred method was to simply deny drug-intoxicated guests entry, which is in accordance with the law covering licensed premises. However, the police officers and the doormen discussed during the drug-training course that if the doormen felt uncomfortable denying a drug-intoxicated guest entry, they could let them in followed by immediately calling the police for assistance. Our findings showed that the most frequently used technique by the doormen was to deny the actors entry, and the second most frequently used doormen technique was to let the pseudopatrons into the club and then call the police for help. The cooperation between the police and doormen increased over time as indicated by the increase in doormen calling the police for help. At the baseline measure the doormen never called the police and at the second follow-up the doormen called the police eleven times.

In our second survey at licensed premises staff reported that they observed significantly lower rates of drug-intoxicated guests, drug offers, and drug intake. These reports from staff are in line with the observed improvements in doormen behavior. Consequently, if doormen are doing a better job at preventing drug-intoxicated guests from entering licensed premises then the staff inside the premises should observe fewer guests under the influence of illicit drugs, and less drugs present overall.

One important aspect to consider with regard to the improved results was the length of the intervention. Other researchers have shown that community-based programs take time to develop, implement and to eventually become institutionalized [79, 130, 136].

Another point worth mentioning is that the pseudopatron study is not an evaluation of just the doormen drug-training component. It is an evaluation of the whole multi-component program, as we can not separate the effects of specific components. The drug-training of doormen alone would most likely not have improved the doormen behavior to the extent found. A number of studies have shown that training alone will not have effect on staffs’ frequency of intervention [107, 130, 137-138].

Findings from community-based alcohol prevention programs have indicated that interventions that combine community mobilization with training, enforcement and policy work can be effective in reducing alcohol-related problems [101, 113, 128, 130, 138]. Our studies were based on previous research on alcohol prevention at licensed premises. Our findings suggest that the alcohol prevention approach can also be applied to illicit drug use at licensed premises.

5.3 PREVALENCE OF CLUB DRUG USE

5.3.1 Survey with staff

When planning the drug prevalence survey with staff at licensed premises several concerns were raised. For example: Would staff perceive the questions about their own drug use experiences as too personal? And would that affect the participation rate? If they took the survey, would they admit to using illicit drugs? Results from the two surveys showed that these concerns were exaggerated as none of the staff refused to fill out the survey. Missing data on specific items never exceeded 7%, which was highest on the section on personal drug use experience. Further, more than half of the staff reported prior drug use.

In addition to providing valuable prevalence data on drug use among licensed premises staff, the results from the first measurement in 2001 also received extensive media attention. No previous Swedish study had reported such high drug prevalence rates. For example, 41% of staff in the 18-24 age group reported last year use, compared to the general population where 9% of the same age group in Stockholm reported last year drug use [120]. The media coverage facilitated the community mobilization process as well as increased the community's awareness of drug use in the nightlife setting. Before the press conference in 2002, where prevalence data were released to media, results were presented to leading club owners. Some owners expressed great concerns about the negative press that could result from the release of data to the media. In order to be prepared for this, it was decided that the club owners would speak at the press conference about their concerns related to club drug use among their staff and guests in the Stockholm nightlife scene, and that they were ready to actively work to prevent and reduce drug use at their licensed premises. The analysis of the media reporting following the press conference, found that the main messages presented were that club owners in Stockholm were to ready take responsibility and "do what it takes to fight club drug use".

Results from the comparisons between staff that were non drug users and last year drug users at the base-line measure in 2001 were central for the selection of prevention strategies. Drug-using staff observed more drug-intoxicated guests but were less likely to intervene. Therefore, to increase the potential of interventions towards drug-intoxicated guests our efforts included strategies to reduce drug use among staff. A comprehensive workplace drug prevention approach was developed specifically for licensed premises with the assistance from one of Sweden's leading experts in field.

At the second measurement, staff reported significantly lower rates of drug use. It was the two youngest age groups that had decreased last year drug use the most. Staff attitudes towards illicit drugs had become more restrictive and a significant increase in staff reported that they would call the police if they saw someone take drugs at the licensed premises where they worked. Even though our study design reduces our ability to interpret the results causally, it may be possible that the “Clubs against Drugs” program might have contributed to these positive results. Especially since there were no other competing explanations for the decrease. No other competing interventions targeting drug use among staff at licensed premises had been ongoing during the intervention period.

5.3.2 Biological markers

During the planning phase of the research project different methods to measure prevalence of illicit drug use were explored. The possibility of using saliva samples was discussed with experts at the Pharmacological Laboratory at the Karolinska University Hospital in 2001. However, at that time, the feasibility and the reliability of using saliva for studying the presence of illicit drugs in the nightlife setting was questioned. Since then, technical advances have made it more convenient to collect oral fluids and to reliably analyze the samples.

Researchers at PIRE (Pacific Institute for Research and Evaluation) in Berkeley, USA have utilized these technical advances to develop a methodology that combines biological markers and self-report to study alcohol and drug prevalence at EMDEs [62, 139]. Despite the successful execution of these studies in the U.S. there was doubt that the same methodology would work in Sweden. With Sweden’s stricter enforcement of the drug-intoxication laws, in addition to concerns related to personal integrity issues, doubt centered on whether or not clubbers would be reluctant to participate and/or truthful in their responses in this type of study.

To improve our chances of successfully implementing this methodology, particularly since this was the first time it was used in Sweden, we selected a setting similar to what was used in the U.S. studies (i.e., EMDEs). As a result, it was decided and approved to carry out the study at an EMDE on a cruise ship. When our research team arrived to the cruise line’s departure hall and saw the police officers and the drug detecting dogs that all passengers had to pass by to board the ship, we expected to get low prevalence rates of positive drug tests.

The EMDE attendees were willing to participate, as only 5% refused. There were several possible explanations for the high participation rate:

- The food coupon given as an incentive for participation seemed important to the EMDE attendees.
- The recruitment process was carefully planned and included the selection of suitable staff on the research team(i.e., socially skilled, outgoing personality, and similar age as the EMDE attendees).

- The saliva sampling procedure was easy to administer and well accepted by the participants.
- The oral fluid drug testing methodology does not provide immediate test results thus participants were assured that their drug test would remain confidential.
- The EMDE attendees showed great interest in receiving their results from the breath alcohol test.
- The organizers of the EMDE had publicized their support of our study in the event program.

The analysis of the oral fluids revealed that 10.1% of the participants were positive on illicit drug use. This is lower than what has been reported for U.S. EMDEs where an average of 26% of attendees were drug-positive [61]. While it is possible that attendees at this event used less illicit drugs than attendees at U.S. EMDEs, it is impossible to ascertain if this is truly the case. What might also account for this difference were the preventive efforts at the cruise line's departure hall (e.g., drug detection dogs) that may have decreased the frequency of illicit drug use. The U.S. studies were not conducted on cruise ships. In addition, we were assigned a data collection spot on the ship that passengers could bypass. Hence, passengers under the influence of illicit drugs could avoid the research team.

There was also a discrepancy between self-reported drug use and actual drug use as only 3.7% of the EMDE attendees reported illicit drug use during the last 48 hours. One explanation could be reporting bias as people might be disinclined to report drug use. The U.S. researchers also found this discrepancy but to a lesser extent [60].

The average BAC levels of our study participants was 0.1% which was higher when compared to studies conducted at university pubs in Sweden (mean values between 0.075-0.087%) and in the U.S. EMDE study [61, 140]. In the U.S., about one third of the EMDE attendees had BAC levels $\geq 0.08\%$, while in our sample it was about two thirds [61]. The higher observed BAC levels may be explained by the high availability of alcohol and low control of amounts consumed. Alcohol was available in the ship's bars, restaurants, and tax free liquor store. Passengers could purchase large amounts of beer, wine, and strong spirits to later consume in their cabins.

The participants also reported an overall (i.e., not related to this event) risky alcohol consumption pattern as indicated by the AUDIT-C scores. Not surprisingly, the participants' high BAC levels were significantly associated with AUDIT-C scores indicative of risky consumption, and frequent clubbing.

One noteworthy finding was the association between alcohol consumption and illicit drug use. All participants that tested positive on illicit drug use had also been drinking alcohol and had significantly higher BAC levels than the non-illicit drug users. The association between illicit drug use and high BAC levels remained after controlling for other possible confounders using multivariate analyses. In other words, the common perception that illicit club drug users drink less alcohol than non-illicit drug users was

not true for our sample. This finding agrees with results from our key informant interview study, where participants reported that illicit drug users frequently consume large amounts of alcohol.

5.4 STRENGTHS AND LIMITATIONS

Conducting community-based intervention studies has many challenges. Researchers have to balance their needs with the community's needs and expectations. Researchers strive for strong study designs, preferably randomized controlled trials, while the community is often concerned with immediately solving the problems at hand. Researchers are often required to compromise on study designs or in some instances, find the barriers too insurmountable to overcome and opt not to conduct community-based studies. Community acceptance, support, participation, and ownership are important conditions to foster for program institutionalization. Throughout the "Clubs against Drugs" intervention a major focus was placed on engaging the community and the key stakeholders in the project. The community's key stakeholders were involved in the whole program development process from the planning phase, to the implementation of the program, and also in discussions on different methods to evaluate the program.

5.4.1 Community-based club drug prevention

This research project was the first attempt by researchers to develop, implement, and evaluate a community-based illicit club drug prevention program in Sweden. We have not found any other documented community-based interventions targeting club drug use at licensed premises in the scientific literature. Our results show that it is possible to mobilize the local community and implement a multi-component club drug prevention program in a community.

5.4.1.1 Pseudopatron methodology

To study doormen intervention towards drug-intoxicated guests we developed a new pseudopatron methodology portraying cocaine/amphetamines intoxication. A strength of this evaluation method is that it does not rely on doormen self-report on how they act towards drug-intoxicated guests. The methodology tested the doormen's intervention rates using actors portraying as if they were under the influence of illicit drugs. Pseudopatrons portraying alcohol-intoxication have been used in several earlier studies [113, 128-130]. By standardizing a scene with the help of an expert panel and documenting this on film, we were confident that the actors performed the same drug-intoxicated behavior at baseline and the follow-ups. Another strength was that the main observer participated in all three measurements and at all of the entry attempts ensuring observer reliability. The repeated measures design allowed for testing the same licensed premises at each measurement.

There are some limitations of this study to consider. Primarily, the inclusion of a control group in the study design was not possible for a number of reasons: 1) the number of licensed premises fulfilling the inclusion criteria (high-risk licensed premises with late open hours that use doormen to screen guests) was limited, and therefore all (n=28) were included in the study, 2) many of the licensed premises have the same owners with the same policy work and use the same security companies that

supply the licensed premises with doormen, 3) doormen could work at more than one licensed premises, 4) the licensed premises are located close to each other in a small geographical area, making it difficult to randomly divide them into intervention and control groups, and 5) in order for the licensed premises to participate in the intervention the owners required that all their competitors (the most well-known, high-end licensed premises, with late open hours and doormen) were included. Since a randomized control trial design was not feasible, the study adopted a pretest-posttest (longitudinal repeated measures) design.

Another limitation of this study is that we were not able to verify whether the doormen on duty that were tested had participated in the drug-training. The nature of this study made it impossible to request information from the club owners on which doormen were working on the nights of the study, since we for ethical reasons did not want the club owners, doormen or staff to know that we were conducting these studies (neither before nor after the study).

5.4.2 Prevalence of club drug use

This research project has contributed to the scientific understanding on the prevalence of club drug use at licensed premises in Stockholm. Before these studies were conducted little was known about the prevalence of club drugs, types of drugs used, and attitudes towards drug use in the Swedish nightlife setting.

5.4.2.1 Staff survey

The same procedures for sampling and data collection were employed at both measurements which facilitated comparisons between measurements. The response rate was high, as all of the staff attending server training agreed to participate, and missing data was low. Since both data collection periods were conducted during a one year period, seasonal variations of drug use could not explain the results (i.e., some types of drugs might be more commonly used during the summer months). Although random sampling was not possible, we believe that the sample used was the best available representation of staff from licensed premises with late open hours in Stockholm, as training was required for all licensed premises opened after 1 A.M..

There are limitations to this study that constitute potential threats to the validity of our findings. The lack of a control group and national comparison data reduces our ability to interpret the findings causally. Nevertheless, the two cross-sectional sample groups are very similar in most demographic characteristics.

5.4.2.2 Biological markers

Most drug prevalence studies rely on surveys. In this study, self-report data could be compared with actual drug use. This was the first study in Sweden to use oral fluids to measure drug use in a club setting. One strength of the study was that almost half of the EMDE attendees were included in the study, and that only 5.0% of the attendees asked to participate in the study refused.

One limitation was that we conducted our study at one single EMDE on a cruise ship. To better understand club drug use at EMDEs a greater number, as well as different types of venues need to be investigated. The fact that the study was conducted on a

cruise ship might have contributed to the high participation rate, given that passengers on a cruise ship have nowhere else to go. A challenge when conducting portal surveys at regular clubs (i.e., land-based clubs) concerns the recruiting process since people are eager to get into or quickly leave the event, and hence do not want to waste time participating in a study.

Another limitation is that we only tested for the four most commonly used drugs (i.e., cannabis, cocaine, amphetamines, MDMA/ecstasy). The testing for other types of drugs such as GHB, mushrooms, benzodiazepines, and the relatively new drug mephedrone may have provided interesting results. Researchers should consider adding additional types of drugs in future club drug studies that analyze saliva samples. The accuracy of self-reported drug use by intoxicated people is also a limiting factor in the interpretation of survey results. In this study, the average BAC levels were 0.10%, which could have affected the participants' cognitive functioning, memory, and judgment, which may have resulted in a lowered ability to accurately fill out the survey.

5.5 IMPLICATIONS

Illicit club drug use is an international public health concern. There is a strong need to create prevention programs to reduce drug-related problems in the nightlife setting. In order to do so, additional investigations are required to increase our knowledge and understanding about the club culture, types of drugs used, prevalence rates, testing methodologies, and appropriate prevention methods and strategies. Historically, the majority of drug prevention programs have been conducted in the school setting. However, it is necessary to expand our efforts to the settings (e.g., nightclubs, EMDEs) where young adults can be reached.

Public health policymakers must prioritize the nightlife setting for drug prevention programs. We know that drugs are prevalent in the nightlife setting and this setting serves as a culturally normative space where many young adults socialize. Nightclubs are a setting where young adults often first are exposed to and start experimenting with illicit drugs (especially club drugs), frequently under the influence of alcohol. One recommendation for policymakers and licensing authorities is to require mandatory drug-training for all staff at licensed premises (particularly for doormen). Policymakers could further encourage and participate in the process of developing written policy documents and guidelines for licensed premises. Police Authorities also have a significant role in prevention of club drug use, as they need to cooperate with the nightclub industry to more effectively reduce club drug use, in addition to increase their operational field work and enforcement of drug laws. Increased enforcement by the Police Authority will likely serve as deterrence and prevention of illicit drug use.

Programs that aim to reduce club drug use and drug-related problems (e.g., violence, addiction, unprotected sex) could have great social significance and improve community health and safety. Given the promising results from our research, policymakers should dedicate additional resources towards community-based club drug prevention programs to decrease the availability and social acceptability of drugs, and to influence the community concerns and norms related to illicit drugs in the nightlife setting. It is our hope that with increased drug prevention programs the number of

youths being exposed to and experimenting with club drugs will be significantly reduced.

The findings presented in this thesis highlight the importance of conducting needs assessments and involving the community and key stakeholders, especially the nightlife industry, from the start of prevention efforts. Our successes hinged on the involvement of the owners, doormen and staff of licensed premises. Further, our findings suggest that in order to effectively reduce drug use among guests, drug use among staff should also be targeted. Consequently, staff at licensed premises are an important target group in club drug prevention programs.

While interventions that aim to reduce the entry of drug-intoxicated guests are important they are not sufficient as an environmental strategy to reduce drug use. This study provides strong support for a more comprehensive environmental prevention approach to community drug use.

Lastly, it is important to stress that community-based interventions require sufficient resources and specific knowledge on how to develop, implement and evaluate community-based interventions. Successful prevention work calls for patience, strategic planning, funds, and time. It takes time to develop and implement interventions in the local community and it takes even more time before effects can be measured. If programs are shown to have effects, the institutionalization process involves additional challenges and time.

5.6 FUTURE RESEARCH

The findings presented in this thesis underscore the importance of further research on club drug prevention programs. Club drug prevention in the nightlife setting is a new field of research and we are lacking in our understanding of the club culture, types of club drugs used, and the prevalence of drug use that is required to develop effective prevention programs. Additional studies to evaluate the effects of community-based club drug prevention programs are essential. Examples could be monitoring police-reported violent crimes in the nightlife areas, drugged driving, and data on visits to emergency rooms, and emergency care.

The studies in this thesis had limitations in terms of study design. As we move forward in developing and evaluating prevention programs randomized controlled trials could be attempted. Furthermore, greater efforts should be taken to delineate the contribution of different components to program outcomes in future club drug interventions. This is a very important aspect to consider in order to implement cost-effective programs. Conducting cost-effectiveness analysis of community-based club drug prevention programs is another challenging and valuable future research endeavor. In order to conduct these analyses researchers should investigate how prevention program outcomes are correlated with effect measures such as violence data [101].

We conducted one study at a specific event to evaluate the feasibility of using biological markers to study the prevalence of illicit drug use in the club setting. Further studies at different type of events would be valuable to better understand illicit drug use

in the nightlife setting. The methodology of combining self-report with biological markers could also be used to study the prevalence of drug use in other settings such as sport events and festivals. Studies using biological markers could also be used to measure the effects of interventions that target illicit drug use, where a baseline study of drug use could be compared to results from a follow-up study.

In addition, future research in the drug testing field should aim to simplify the use of biological markers in field research. Improving upon the recently developed process of using a breath test to measure illicit drug use would facilitate biological drug testing [141-143]. The use of a breath drug test, similar to the way breath alcohol is measured, would dramatically improve the ease of conducting club drug prevalence studies among young adults.

6 CONCLUSION

Findings from the studies that comprise this thesis reveal a promising potential for club drug prevention programs in the nightlife setting. Following prevalence studies, careful community analysis and community mobilization, the multi-component intervention was successfully implemented in the community.

The systems model for prevention of substance use was found to be an appropriate model to guide club drug prevention efforts. We successfully used the model to select our intervention methods and implementation strategies. Increased doorman interventions and reduced rates of drug use among staff and reduced observed drug use among guests suggest positive outcomes of the intervention as no other explanations for these improvements have been found.

In our surveys with staff we found that drug use was high both among staff and guests. Our findings show that in order to more effectively reduce drug use among guests, drug use among staff should also be targeted.

Using biological markers such as oral fluids have great potential for measuring club drug use in the nightlife setting. Our findings demonstrate that the willingness to give a saliva sample was high in our sample, and the oral fluid analysis of illicit drug use provided different information than the self-reported data on illicit drug use.

Community-based interventions require several conditions such as sufficient resources and specific knowledge on how to develop, implement and evaluate community-based interventions. It takes time to develop and implement interventions in the local community and it takes additional time before effects can be measured. If programs are shown to have effects, the institutionalization process involves further challenges.

7 SVENSK SAMMANFATTNING

Bakgrund: Det finns en rad hälsoproblem relaterade till bruk av narkotika såsom våld, skador, oskyddat sex och beroendutveckling. Det finns därför ett stort behov av att utveckla nya metoder för att hindra såväl ungdomar som unga vuxna att experimentera med narkotika. Krogen är en arena där många unga människor umgås och är även en högriskmiljö för narkotika. Det saknas dock kunskap om narkotikaförekomst och trender i krogmiljön i Sverige. Det saknas dessutom erfarenheter av att bedriva narkotikaförebyggande arbete i krogmiljö både i Sverige och internationellt.

Syfte: Syftet med avhandlingen är att öka kunskapen om förekomst av narkotika och narkotikaprevention i krogmiljö. I avhandlingen undersöks metoder för att mäta förekomst av narkotika i krogmiljö samt möjligheten att bedriva ett lokalt förankrat aktionsinriktat narkotikaförebyggande arbete på krogar.

Metod: Avhandlingen består av fyra delarbeten. Syftet med två av studierna (artikel I och IV) var att mäta förekomst av narkotika i krogmiljö. Olika metoder (självrapportering och biologiska markörer) och olika studiepopulationer (kroganställda och klubbbesökare) studerades. För att studera möjligheten att bedriva ett narkotikaförebyggande arbete i krogmiljö har ett aktionsinriktat forskningsprojekt, ”Krogar mot Knark”, utvecklats och implementerats i Stockholm. ”Krogar mot Knark” är ett multikomponentprogram, baserat på en systemmodell, som utgår från krogen som en högriskmiljö för narkotikamissbruk. De komponenter som ingår är förbättrat samarbete mellan berörda myndigheter och krogbranschen, förändringar i krogmiljön, policyarbete, ökad polisiär närvaro, narkotikautbildningar för olika målgrupper, och media- och PR-arbete. I två artiklar (II och III) utvärderas om interventionen haft effekt, där dörrvakternas hantering av narkotikapåverkade gäster har använts som en indikator på förändrade rutiner på krogarna. I utvärderingen har professionella skådespelare använts som agerar kraftigt narkotikapåverkade, där forskningsfrågan är om de blir uppmärksammade och avvisade i högre grad efter interventionen.

Resultat: Narkotikaanvändning var hög både bland gäster och personal på Stockholms krogar. Resultaten visar att interventionen lett till en signifikant mer restriktiv hantering av narkotikapåverkade gäster från dörrvakternas sida. Vidare rapporterar kroganställda en signifikant minskad användning av narkotika samt att de ser en signifikant minskning av narkotikapåverkade gäster på krogen. Våra resultat visar också att det är möjligt att använda en metod som inkluderar biologiska markörer för att mäta narkotikaförekomst bland klubbbesökare.

Diskussion och slutsats: Denna studie visar att systemmodellen framgångsrikt kan användas för narkotikapreventiva insatser. Dörrvakternas mer restriktiva hantering av narkotikapåverkade gäster och minskat narkotikaanvändande bland personal och gäster tyder på att interventionen ”Krogar mot Knark” haft effekt eftersom någon annan förklaring till dessa förändringar inte kunnat påvisas.

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