



Sustained effects of a community-based intervention targeting illicit drugs in nightlife: A 20-year cross-sectional follow-up of ‘Clubs against Drugs’

Nina-Katri J. Gustafsson ^{*} , Kristin Feltmann , Tobias H. Elgán, Johanna Gripenberg ^{*} 

STAD, Centre for Psychiatry Research, Department of Clinical Neuroscience, Karolinska Institutet, and Stockholm Health Care Services, Region Stockholm, Stockholm, Sweden

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ABSTRACT

Background: Swedish law states that any handling or use of narcotics, including cannabis, is illegal. Nightlife is known to have high concentrations of illicit drug use and related problems. ‘Clubs against Drugs’ was implemented in 2003 and is a community-based, multi-component prevention program targeting illicit drug use and problems in licensed premises. Previous studies of the program have demonstrated improvements in staff interventions over time.

Aims: The study evaluated the long-term effects of the program on staff intervention frequency rates of dealing with obviously drug intoxicated patrons.

Methods: Cross-sectional data was collected in 2023 and compared to earlier assessments conducted in 2003, 2004, and 2008. Three teams, each consisting of two actors and three observers, visited licensed premises with doormen and open until 1 am or later in Stockholm city, Sweden on weekends. Professional male actors (pseudo-patrons) were trained by an expert panel to enact three standardized scenes of intoxication by stimulant drugs. **Results:** In 2023, a total of 137 visits were made. The results reveal an intervention rate of 56.9 % [CI 0.49–0.65] which is considerably higher than the 7.5 % [CI -0.01–0.16] at baseline ($p < 0.001$). However, the rate was lower than that at the 2008 follow-up (65.5 % [CI 0.53–0.78]), although the difference was not statistically significant ($p < 0.28$).

Conclusions: The effects of the ‘Clubs against Drugs’ program has been sustained for over 20 years indicated by the high level of staff interventions targeting obviously drug-intoxicated patrons, suggesting consistency in the work with different components of the preventive program.

Introduction

In comparison with many other western countries, Sweden has a restrictive drug policy, most obviously manifested in the Penal law on narcotics (Law, 1968:64) which states that any handling and own use of narcotics, including cannabis, is illegal. According to official reports this restrictive policy has been successful for keeping drug use low,¹ particularly among young people (UN 2007). However, amphetamine and cocaine use has increased among young adults in Europe (EUDA 2024; Grabski et al., 2022). International statistics until 2021 indicate

that the proportions of population with drug use disorders in Sweden are on similar levels to many other European countries but lower than in e.g., UK, Australia, US and Canada. Additionally, the rate of deaths attributed to drug use,² although at lower levels than other Nordic countries, were observed to be higher in Sweden than in e.g., the Netherlands (IHME 2024a, 2024b). However, more recent statistics illustrate that both confiscations of narcotics³ and own narcotic use have decreased between 2020 and 2023, and drug-related deaths⁴ have also continued to decrease since 2015 (Folkhälsomyndigheten, 2025; FolkhälsoStudion 2025).

^{*} Corresponding authors at: STAD, Centre for Psychiatry Research (CPF), Norra stationsgatan 69, plan 7, 113 64 Stockholm, Sweden.

E-mail addresses: nina-katri.gustafsson@ki.se (N.-K.J. Gustafsson), johanna.gripenberg@ki.se (J. Gripenberg).

¹ Ever using or using the last year.

² Per 100 000 people, including all drug use, including opioids and also when death was intended.

³ Police confiscations of drugs are depending on how much time is available for the police to detect crimes.

⁴ The increase in drug-related deaths was linked to increasing prescription of medical drugs, i.e., mixing opioids with buprenorphine rather than caused by restrictive laws (Fugelstad et al., 2019; Wikner et al., 2014).

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While most Swedes comply to the traditional restrictive views on drugs (Folkhälsomyndigheten, 2025), some have also challenged the zero-tolerance position of a drug-free society (Lerkanen & Storbjörk, 2023; Tham, 2021). A recently published study by Stenström and colleagues (2024) additionally question the effect of criminalization of drug use, arguing that it is not resulting in decreased consumption levels, problematic drug use or healthcare needs, or in fewer drug-related deaths compared to other Nordic countries. Traditionally conservative temperance movements⁵ also ask for a more humane drug policy moving forward, but still restrictive and not promoting legalization. Still, that many other countries have recently liberalized their laws and policies on cannabis for medical and personal use, and/or sales (EUDA nd), might have an impact on the use of and attitudes to other illicit drugs in Sweden. While most Swedes still hold a restrictive view on drugs and there have not yet been any large increases observed in the general population (Sundin, 2022), attitudes have started to shift towards more positive views and a decrease in perceived risks (Folkhälsomyndigheten, 2025). Young adults traditionally have more positive views and use drugs more often than others (Sundin, 2022), although research also reveal that one contributing factor for Swedish youth not to use drugs is the fact that it is illegal (Kvillemo et al., 2022).

In nightlife settings, a Norwegian study based on saliva samples among nightclub attendees found that 24.7 % had used any illicit drugs, of which 13.7 % had used cocaine and 13.1 % cannabis (THC) (Bretteville-Jensen et al., 2019). In Sweden, a study using breath samples of nightclub attendees found that 13.0 % had used illicit drugs and that the most frequently used substances were cocaine (6.4 %), amphetamine (3.8 %), and ecstasy/MDMA (1.8 %) (Feltmann et al., 2022). Additionally, polydrug use is common among people who use illicit drugs and often correlated with hazardous drinking (Feltmann et al., 2021; Lorvick et al., 2018; Miller et al., 2015; Smith et al., 2011). Furthermore, recently, both owners and staff at licensed premises, municipal officials and police in Sweden have described an increasing problem with the use and open sale of illicit drugs in the Swedish nightlife setting (Feltmann et al., 2024). Additionally, these drug sales have been linked to the criminal groups involved in severe violent crimes in Sweden (Gerell et al., 2020; Gustafsson et al., 2024). In contrast to this development is one of the key messages by Strang and colleagues (2012) which states that drug policies should aim to promote the public good by e.g., improving neighborhood safety, and community, and by reducing crime.

Nightlife is a substancegenic situation (Gustafsson, 2017), i.e., combining a high-risk setting for substance use with a larger proportion of people who are more prone to use substances. As such, the nightlife scene increases the risk of both patrons and staff in nightclubs and other establishments being negatively affected by feeling unsafe and at risk of violence (Bellis et al., 2002; Calafat et al., 2011; Feltmann et al., 2024; Zhong et al., 2020). Consequently, nightlife settings are an important and probably underused arena for substance use prevention and risk-reducing interventions (Bellis et al., 2002; Feltmann et al., 2024). Drug use and related problems present at licensed premises can be reduced through contextual strategies including the external environment, i.e., physical environment such as lighting at the entrance, entrance security, and staff monitoring; the interior environment, i.e., interior space such as dark corners and overall lighting, written drug policy, and staff action; and by mobilizing club owners and regulatory community agencies (Miller et al., 2009). It is well known in the field of prevention in nightlife settings that both external and internal environment have an impact on the volume of drugs which are consumed and the number of harms which are related to this setting. For example,

clubs in quiet industry areas are linked to higher drug use (Miller et al., 2009) and crowded places or hot temperature are related to harms (Palamar & Sönmez, 2022). Policies about when and how to intervene towards drug intoxicated patrons could contribute to a safer environment for patrons and staff (Belles et al., 2002; Bolier et al., 2011). According to a review of experimental studies examining the effects of interventions targeting substance use in nightlife settings, community interventions such as mobilizing the community or involving community members in work towards changing policies or practices can have a preventive effect on alcohol use (Bolier et al., 2011). The scientific basis for similar preventive interventions targeting illicit drug use in premises is more limited, but during the past decade the evidence for interventions in licensed entertainment settings has increased both for alcohol and illicit drugs (Bolier et al., 2011; Eassey et al., 2024; Elgán et al., 2024; Feltmann, Gustafsson, Elgán, & Gripenberg, 2025). Server training interventions have also shown to decrease substance use-related problems perceived in licensed premises, such as high-risk use and injured patrons, especially when combined with community-based policy interventions where stakeholders work towards stricter policies and practices at premises (Holder et al., 2000; Holder & Wagenaar, 1994; Wagenaar et al., 2000). The effectiveness of such training seems to be enhanced when combined with external enforcement (Elgán et al., 2024; Feltmann, Gustafsson, Elgán, & Gripenberg, 2025; McKnight & Streff, 1994; Toomey et al., 2008; Wagenaar et al., 2005). Enforcement in this context refers to authorities controlling that serving staff and owners of the licensed premises follow laws and policies to make sure drug use and drug handling is limited in the premises. To limit decreasing effects over time, it is recommended to have mandatory server training and to maintain enforcement strategies (Miller et al., 2009; Wagenaar et al., 2005).

The 'Clubs against Drugs' intervention program and earlier results

The purpose of Clubs against Drugs⁶ (CaD) is to create safer environments at licensed premises such as bars/clubs and other entertainment venues for both patrons and staff by increasing the intervention rate and improving the quality of staff members' interventions for obviously drug intoxicated patrons. Thus, the program is first and foremost an intervention on the universal level (Institute of Medicine 1994), aiming to promote positive behaviors in this environment rather than targeting people with drug use dependence. It builds on strategies developed for the Responsible Beverage Service program (RBS), a multi-component intervention developed by STAD,⁷ which targets licensed premises (Andréasson et al., 2000; Elgán et al., 2024; Feltmann, Gustafsson, Elgán, & Gripenberg, 2025; Månsson et al., 2007; Norström & Andréasson, 2003; Wallin et al., 2005). Statistics from the Licensing Board show that the number of licensed premises has increased steadily since the mid 1990's (Fig. 1a).

The Swedish Alcohol Act (Law 2010:1622) states that it is illegal to serve alcohol to patrons who are obviously intoxicated by alcohol or illicit drugs as well as to under-aged persons.⁸ Staff also have a legal responsibility to maintain order inside the premises. Together, these two parts of the law have been put into practice as not allowing severely intoxicated patrons to enter and by asking intoxicated patrons to leave the premises (Folkhälsomyndigheten 2014). Breaking the law could result in sanctions for licensed premises (e.g., warnings, license withdrawal) or sanctions for serving staff (e.g., fine). Although statistics from the Licensing Board do not support a trend in the number of sanctions (revocations and warnings) during the period; numbers rather fluctuate with more pronounced peaks in 2000, and 2005–2007 (Fig. 1b).

⁵ Debate article in National press 26 June 2025: <https://www.gp.se/debat/sedan-legaliseringen-i-kanada-anvander-var-fjarde-foralder-cannabis-regelbundet.471c5f1c-630a-4be2-9067-9c77ff958edb> [Since the legalization in Canada, every fourth parent is using cannabis regularly]

⁶ Refer to illicit drugs/narcotics.

⁷ STAD – STockholm förebygger Alkohol- och Dropproblem [STockholm prevents Alcohol and Drug problems]

⁸ The legal drinking age in Sweden is 18 years.

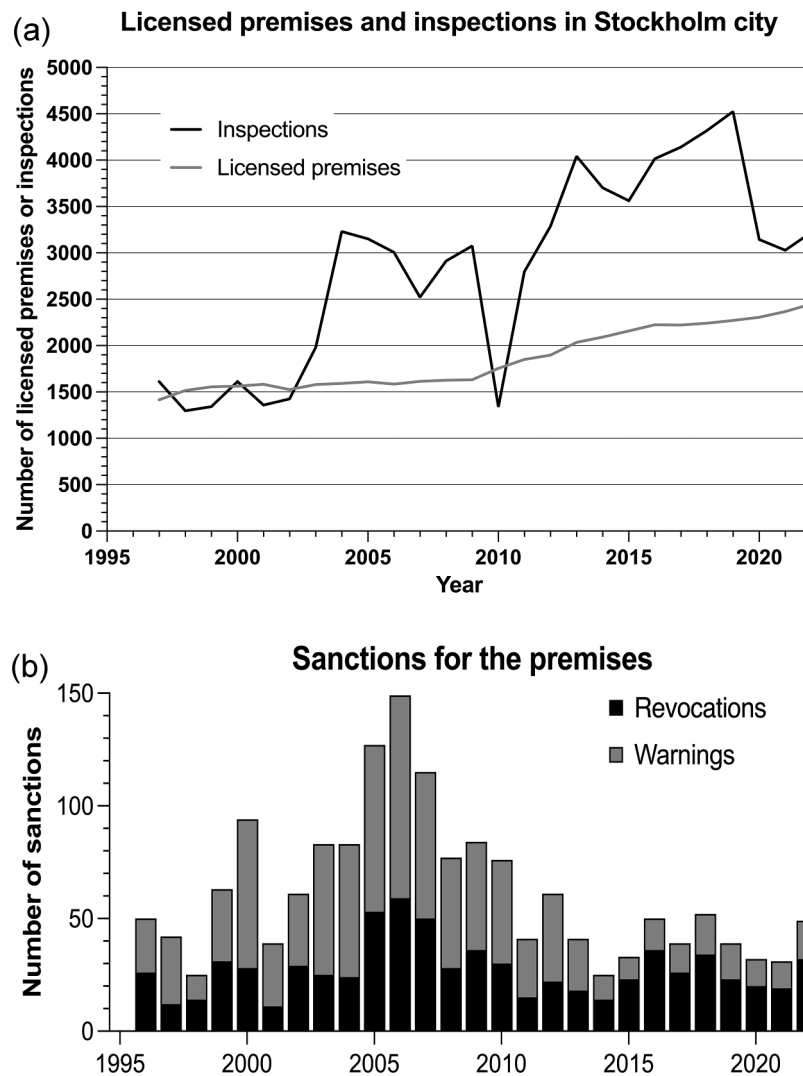


Fig. 1. Intensity of the prevention intervention. **(a)** The number of licensed premises and inspections conducted by the licensing board increased during the study period. **(b)** The number of sanctions issued by the municipality is depicted. Gray bars represent letters of warning, while black bars represent license revocations, stacked. (Source: Swedish Licensing Board).

In the early evaluations of the RBS program, a combination of community mobilization,⁹ server training and stricter enforcement of existing alcohol laws resulted in higher refusal rates to serve alcohol to under-aged and obviously intoxicated individuals (Wallin & Andreasson, 2004; Wallin et al., 2004). The promising results of the RBS program, in addition to a request from the nightlife industry and authorities for support to reduce illicit drug use problems, led to the development of the CaD program. CaD includes community mobilization, 1-day of drug training, policy work, improved enforcement, environmental changes, media advocacy, and public relations work (Table 1) (Gripenberg Abdon et al., 2011; Gripenberg et al., 2007). Server training not only includes encouragement to refuse serving, but also how to do it respectfully and safely by learning techniques of conflict management. The Police Authority and the Licensing Board enforce the law and conduct inspections of the licensed premises. Between 2002 and 2015, a specialized unit, created by the Police Authority and known as the Club Commission, actively worked to reduce and prevent nightlife-related crime. However, this specialized task force was disbanded when the Swedish Police

⁹ Community mobilization - Stakeholders e.g., hospitality sector, police, the municipality mobilize to counteract drugs in the nightlife by sharing information and discussing strategies in joint meetings.

Authority was reorganized in 2015. An additional aspect of importance for CaD was the new CaD media campaign¹⁰ which was launched in December 2022, and targeted environmental and societal incentives to encourage people not to use illicit drugs.

Licensed premises open after 1 am are obliged to have a certain number of security guards, depending on e.g., the size of the venue. The number is decided by the License Authority when granting the liquor license, and the Police Authority when granting a permit for public events. Security guards must maintain order and are often in charge of security, safety as well as age limit control at the entrance. It has been found that intoxication by alcohol or drugs is related to high levels of drug use (e.g. Byrnes et al., 2014; Miller et al., 2006) and Swedish laws have developed in accordance. Licensed premises are expected to deny entry to intoxicated patrons.

CaD training has been offered to staff at licensed premises since 2003, and a total of 980 individuals took part in the in-person course in Stockholm (Fig. 2). It was not offered as an in-person course between 2021–2022 due to Covid-19. However, a web-based course was

¹⁰ <https://krogarmotknark.se/nyheter/ny-kampanj-ska-motverka-droger-pa-krogen-infor-arets-stora-festhelger/> [New campaign will prevent drugs at nightlife establishments during the big holidays of the year]

Table 1
Components of the Clubs against Drugs (CaD) program.

Community mobilization & collaboration	<ul style="list-style-type: none"> • A steering group, including representatives from STAD, the hospitality industry, Licensing board, Police authority, the Union for the hospitality industry, and the County administrative board, meets 6 times per year. • The steering group formulated a common goal for the CaD program, the aim of which was to reduce illicit drug use and related problems in licensed premises. If necessary, working groups were formed with representatives from the organizations in the steering group to co-produce training components, PR and media activities, and policy documents.
Training	<ul style="list-style-type: none"> • 1-day CaD-training for all staff (such as door staff, serving staff, and security guards) at licensed premises. The training covers medical effects and signs of drug use, incentives for working with prevention at licensed premises, the roles of CaD collaborators, including owners and staff. The training day concludes with practical training and an examination. • Brief (30-minute) web-based CaD-training for all staff, including temporary staff.
Enforcement	<ul style="list-style-type: none"> • Licensed premises are encouraged to develop policies and action plans for illicit drug use among patrons and staff. • The Police Authority and the Licensing board enforce the alcohol act that includes illicit drug use, for instance by conducting inspections at licensed premises.
Environmental changes	<ul style="list-style-type: none"> • Adjusting the environment at the premises to standards (self-supervision) e.g., doormen, good lighting at the entrance, ensuring that staff members have a good overview of restrooms and more private or dark areas inside premises, keeping the premises clean, minimizing the risk of drug use in restroom areas. • Changing as many parts of the environment as possible to take account of availability, social norms, the judicial system, enforcement, and social and medical factors.
Media	<ul style="list-style-type: none"> • CaD campaign including advertisements in the news media • Activities at the licensed premises • Press conferences • Media presence

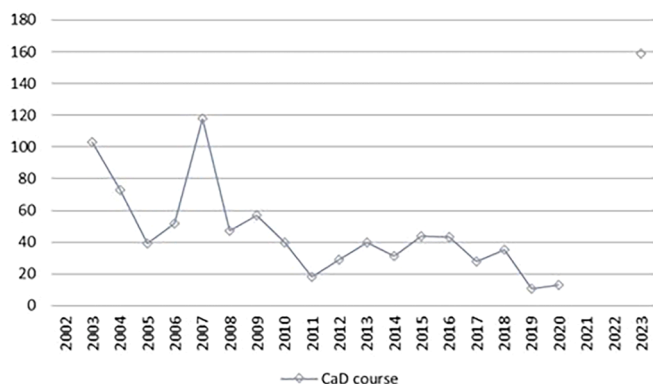


Fig. 2. Number of staff who participated in the Clubs against Drugs (CaD) training by year, 2003–2023. (Source: STAD).

developed and has been available since 2021. Up to 2023, a total of 1127 had taken part in the web-based course. CaD has been maintained over time using a steering group, a working group, and a network.

Earlier studies of the short and mid-term effects concluded that the CaD program increased the frequency of staff interventions regarding obviously drug intoxicated patrons between baseline in 2003 and the

follow-up in 2004, and that the effect had improved at the 5-year follow-up in 2008 (Gripenberg Abdon et al., 2011; Gripenberg et al., 2007). The aim of the present study was to investigate the long-term effects (20 years) of the CaD program on the frequency of staff interventions for obvious drug intoxicated patrons at licensed premises in Stockholm.

Methods

Data collection procedures

Data was collected in the nightlife setting in Stockholm. The same design and protocol were applied in 2023 as in the previous assessments in 2003 (baseline), 2004, and 2008 (Table 2).

The set-up

Seven professional male actors (pseudo-patrons), 27–40 years old, first watched the same film clip of signs of drug use (developed in collaboration with medical doctors and former drug users). They were trained by an expert panel to enact standardized scenes portraying obvious cocaine or amphetamine intoxication with expertise in signs of drug intoxication or experience of illicit drugs in the nightlife. In the 2023-year study, the panel of eight experts consisted of narcotic police officers, a former security guard with long experience of working at the entrance of night clubs, drug researchers involved in earlier studies, an earlier observer and a drama coach specialized in drug signs. Physical and psychological signs included e.g., loud, talkative, restless, nervous, overconfident/grandiose, dry mouth demonstrated by licking the lips and frequent swallowing, and repetitive involuntary muscle movements, e.g., fingers or jaw muscles (Gripenberg et al., 2007).

Since earlier studies have only included male actors, this study also only includes male actors based on the incitements that drug-intoxicated women might be assessed differently than men (Meyers et al., 2021; Room, 1996). For practical reasons, actors needed to be older than 25 years since some licensed premises have this age limit. The larger clubs tend to have patrons from a younger age range, why younger actors were chosen for this study; the older actors looked younger than their age. Fifteen observers, whose task was to discreetly follow the actors and make notes based on a study protocol, were also trained. A pilot study was conducted to test the performance of actors and observers.

In 2023, the number of establishments visited increased to include all establishments with doormen in central Stockholm open until 1 am or later (n = 117). Establishments from a wider area were included to account for changes in the nightlife scene, which has resulted in some of the larger clubs being situated outside the city center. A list of all licensed premises obtained from the municipal Licensing Board, and the presence of security guards was verified by police working in the area. Not having staff at the entrance was an exclusion criterion. The larger clubs (above 150 patrons) were visited twice. The reason for it was that they are well visited and it has a greater impact on nightlife if the staff do not act in accordance with policies. This resulted in a final number of 137 visits between April 14th and May 6th 2023, of which 20 licensed premises were visited twice. During each data collection night, 3 teams,

Table 2
Table outlining data collection in 2003, 2004, 2008 and 2023.

	2003 n	2004 n	2008 n	2023 n
Number of teams	1	1	2	3
Visits (experiment)	40	48	55	137
Number of premises	28	28	28	117
Number of premises visited twice	15	21	27	20
Day of the week on which the study was conducted	Thursday-Saturday	Thursday-Saturday	Thursday-Saturday	Friday-Saturday
Time, hour	23–04	23–04	23–04	22–05

each consisting of 2 actors and 3 observers, collected the data, supervised by 2 researchers of which one worked all study nights, and the second position was changed between three other researchers. Supervision included assisting the teams regarding decisions on whether to leave or follow through with the experiment (for example if they noted many police officers) and provided the teams with names of additional places to visit if needed. The teams were asked to sign confidentiality agreements to decrease the risk of establishments being alerted about the study. After each attempt to visit, teams went out of sight from the premises to jointly complete a digital protocol on their mobile phones about the outcome and the characteristics of the premises. Additional information could be added using open-ended questions.

Measures

The main outcome was interventions by staff towards obviously drug intoxicated patrons at licensed premises. These included entry denial and other interventions, which were based on free text responses and grouped into the following categories 1) "Actors were admitted but observed or followed by doormen (without additional intervention)", 2) "Actors were admitted but observed/followed by doormen and later asked to leave the premises", 3) "Bar staff either intervened or alerted the doormen who asked the actors to leave the premises", 4) "Denied alcohol service", 5) "Other patrons intervened and/or alerted the doormen, who asked the actors to leave the club", and 6) "Police were contacted directly or after the actors were admitted" (all variables dichotomized).

Analyses

Premises included in the study were analyzed descriptively by reporting frequencies and proportions (%) of the characteristics of the clubs and their patrons (Table 3).

Frequencies, and proportions of intervention rates were reported by type of intervention for each attempted visit. χ^2 tests were performed to

Table 3
Descriptive characteristics of the total number of visits at licensed premises in 2023, n (%).

Characteristics (1; 0 ^a)	N = 137
Location (city center ^b ; ref: areas outside city center ^c)	73 (53.3)
Type of establishment (clubs or bars/pubs; ref: not clubs or drinking oriented)	122 (89.1)
Staff at the entrance (host; ref: security guards)	23 (16.8)
Lighting at the entrance (dark or semi dark; ref: light)	57 (41.6)
Queue at the entrance (queue – short/long queue; ref: no queue)	49 (35.8)
Number of patrons (well-visited or crowded; ref: few or half full)	73 (53.3)
Age of patrons (24 years or younger; ref: guests 25 years or above)	77 (56.2)
Intoxicated patrons due to alcohol or illicit drugs (many; ref: none or few) ^d	57 (41.6)
- Intoxicated patrons due to alcohol (many; ref: none or few)	57 (41.6)
- Intoxicated patrons due to illicit drugs (many; ref: none or few)	3 (2.2)
Music level (loud; ref: conversation friendly - low or none)	55 (40.1)
Lighting inside premises (dark or semi dark; ref: light)	111 (81.0)
Order at premises (disorder or less calm; ref: calm)	51 (37.2)
Security guards inside premises (none; ref: many or few)	60 (43.8)
Staff overview over the restroom area (poor; ref: good)	92 (67.2)
Staff training (no recent training; ref: staff trained in CaD or RBS)	64 (46.7)
Visible CaD posters inside premises (no; ref: yes)	126 (92.0)

^a Reference categories are presented to clarify the division of the dummy variable.

^b City center (high density of clubs): Norrmalm, Vasastan & Östermalm.

^c Areas outside city center: Södermalm incl. Old Town, Kungsholmen, Globen and Slakthusområdet.

^d The number of intoxicated patrons was related to the number of patrons currently visiting the premises.

provide indications of the magnitude of change in the refusal rate at the door, the sum of other interventions, and the main outcome i.e., the total sum of all types of intervention (Table 4).

Bivariate (simple logistic regression) analyses were carried out to assess the effect of the explanatory variables on the likelihood of staff intervening to deal with actors acting as if they were obviously influenced by illicit drugs (1 = yes, 0 = no). A multivariate logistic regression model was performed to estimate the associations between 'any intervention' and the explanatory variables; odds ratios (OR) and corresponding 95 % confidence intervals (CI). χ^2 tests with p-values are presented in Table 5. The statistical significance of the associations was tested by Wald's test.

Analysis was not pre-registered, and results should be considered exploratory.

This series of studies have been reviewed by the Swedish Ethical Review Authority in accordance to the Swedish Law about research on individuals (2003:460, 3 § and 4 §) and they have responded that they have no ethical objections to the studies (2011/343–31/5, 2015/860–31/5).

Results

Characteristics of the licensed premises in 2023

The majority of the licensed premises visited were situated in the city center and comprised clubs or bar/pubs, i.e., drinking oriented (Table 3). The use of security guards varied, but only a few premises did not have security guards at the door. Security guards present inside the premises were less common. In most premises, staff did not have a good overview of the restroom area. Few establishments had a queue at the time of the visits. Less than half had a dark entrance, but a clear majority of the premises were dark or semi dark inside. The music level was loud in less than half of the establishments. Disorder, i.e., a fairly large number of patrons,¹¹ of whom some were loud, was observed in less than half of the premises. During the majority of visits, the establishment was well-visited or crowded with predominantly young patrons (the majority looking younger than 20 years). Less than half of the establishments were perceived to have a large proportion of intoxicated patrons. Out of the 137 visits, less than half were carried out at premises where owners had not sent their staff to be trained in either RBS or CaD during 2022 or the first quarter of 2023. A few establishments had official CaD posters on display inside the premises.

The behaviors of doormen and other staff

Refusing admittance and other interventions

Considering all interventions by staff to deal with the actors during the visits, a statistically significant increase was observed at the 20-year follow-up in 2023 (Table 4). The total number of interventions increased from 7.5 % at baseline in 2003 to 56.9 % at follow-up in 2023 ($\chi^2 = 15.93, p < 0.001$). The change between 2023 and the previous follow-up in 2008 was not statistically significant ($\chi^2 = 1.18, p = 0.277$). The most common intervention was refusing entry. In 2023, access was denied at the door in 43.1 % of the visits, which is a statistically significant increase compared to 7.5 % at baseline in 2003 ($\chi^2 = 17.21, p < 0.001$). The increase was not significant compared to the refusal rate in 2008 ($\chi^2 = 2.43, p = 0.119$). No interventions other than refusal at the entrance were reported at baseline, while several additional intervention techniques were used in 2008. These other interventions were significantly less common in 2023 compared to 2008 ($\chi^2 = 6.21, p < 0.012$), decreasing from 34.5 % to 13.9 %.

¹¹ Fairly large number was somewhere between a less than half full place and a crowded place where guests had difficulties to pass through the premises.

Table 4

The rate of interventions at baseline (2003) and follow-up (2004, 2008, 2023) studies, n (%), Confidence Interval).

Intervention (yes/no)	Baseline 2003 (n = 40)	Follow-up 2004 (n = 48)	Follow-up 2008 (n = 55)	Follow-up 2023 (n = 137)	p-value ^b 2008–2023	p-value ^b 2003–2023
Total number of interventions, n (%) (CI)	3 (7.5) (-0.66–15.66)	13 (27.1) (14.51–39.66)	36 (65.5) (52.89–78.02)	78 (56.9) (48.64–65.23)	0.277	0.001
Actors were denied entry by doormen	3 (7.5)	7 (14.6)	17 (30.9)	59 (43.1)	0.119	0.001
Other interventions ^a	0 (0)	6 (12.5)	19 (34.5)	19 (13.9)	0.012	0.012
Actors were allowed to enter but observed or followed by security guards (without additional intervention)	0 (0)	1 (2.1)	6 (10.9)	6 (4.4)		
Actors were admitted but observed/followed by security guards and later asked to leave the premises	0 (0)	0 (0)	1 (1.8)	2 (1.5)		
Bar staff either intervened themselves or alerted a security guard who asked the actors to leave the premises	0 (0)	0 (0)	1 (1.8)	6 (4.4)		
Refused alcohol service	0 (0)	0 (0)	0 (0)	2 (1.5)		
Other patrons intervened and/or alerted a security guard who asked the actors to leave the premises	0 (0)	0 (0)	0 (0)	1 (0.7)		
Police were contacted immediately or after actors were admitted	0 (0)	5 (10.4)	11 (20.0)	2 (1.5)		

^a In one case an attempt was made to intervene, but the actors were able to leave before any intervention took place.

^b Pearson’s χ^2 test, considered significant at 95 % level
CI: confidence interval.

Table 5

The impact of numerous factors on the likelihood of intervention by staff in the 2023 study (significant figures at 95 % level shown in bold type). Results from logistic regression analyses.

	Bivariate analyses				Multivariate analyses			
	χ^2 (df)	OR	p-value	CI	χ^2 (df) ^a	OR	p-value	CI
Location: city center (ref: outside city center)	2.36 ⁽¹⁾	1.70	0.125	0.861 – 3.371	2.85 ⁽¹⁾	2.06	0.091	0.890 – 4.780
Club or bar/pub (ref: not club/drinking oriented)	3.81 ⁽¹⁾	2.98	0.051	0.960 – 9.251	2.34 ⁽¹⁾	2.88	0.126	0.743 – 11.173
No security guard at the entrance, e.g., host (ref: security guard)	14.26⁽¹⁾	0.16	<0.001	0.054 – 0.451	7.64⁽¹⁾	0.18	0.006	0.053 – 0.606
Dark/semi dark lighting at the entrance (ref: light)	3.81 ⁽¹⁾	2.00	0.051	0.989 – 4.043	3.04 ⁽¹⁾	2.17	0.081	0.908 – 5.183
No queue at the entrance (ref: queue)	0.16 ⁽¹⁾	1.15	0.691	0.568 – 2.343	0.49 ⁽¹⁾	1.39	0.485	0.550 – 3.519
Well-visited or half full (ref: few patrons or half full)	0.66 ⁽¹⁾	0.76	0.418	0.381 – 1.494	0.73 ⁽¹⁾	0.68	0.392	0.281 – 1.643
Young age of patrons (>24 years) (ref: 25 years or older)	0.31 ⁽¹⁾	0.82	0.577	0.414 – 1.635	0.86 ⁽¹⁾	0.66	0.355	0.268 – 1.603
Many ^b intoxicated patrons (alcohol/illicit drugs) (ref: none or few intoxicated patrons)	3.81 ⁽¹⁾	2.00	0.051	0.989 – 4.043	3.68 ⁽¹⁾	2.45	0.055	0.980 – 6.109
Dark/semi dark lighting inside premises (ref: light)	0.28 ⁽¹⁾	0.79	0.597	0.330 – 1.896	2.08 ⁽¹⁾	0.43	0.149	0.139 – 1.349
Loud music (ref: conversation friendly music level)	1.70 ⁽¹⁾	1.59	0.193	0.788 – 3.195	0.87 ⁽¹⁾	1.65	0.351	0.574 – 4.760
Disorder/less calm at premises (ref: calm)	0.49 ⁽¹⁾	1.29	0.483	0.636 – 2.602	0.04 ⁽¹⁾	1.11	0.840	0.407 – 3.025
No security guard inside premises (ref: many/few security guards)	1.21 ⁽¹⁾	0.68	0.272	0.345 – 1.351	0.00 ⁽¹⁾	1.00	0.994	0.401 – 2.477
Staff members have a poor overview of the restroom area (ref: good overview)	5.64⁽¹⁾	0.41	0.018	0.189 – 0.872	5.98⁽¹⁾	0.31	0.014	0.120 – 0.792
No recent CaD or RBS training (ref: establishment referred staff to course)	2.36 ⁽¹⁾	0.59	0.125	0.297 – 1.162	0.12 ⁽¹⁾	0.86	0.729	0.359 – 2.046

^a Wald χ^2 statistics from logistic regression modelling.

^b The number of intoxicated patrons was related to the number of patrons currently visiting the premises.
CI: confidence interval; OR: odds ratio.

Predictors of staff intervention

In the bivariate analysis (Table 5), two variables were statistically significantly associated with the outcome. Having a host at the entrance, rather than a security guard, and having staff with poor overview of the restrooms were associated with staff being less likely to intervene to deal with drug intoxicated patrons. When controlling for other variables included in the multivariate analysis, these results were maintained. The overall model was statistically significant when compared to the null model ($\chi^2(14) = 37.08, p < 0.001$), explaining 32.0 % of the variation in interventions (Nagelkerke R^2), and correctly predicting 73.5 % of cases.

Discussion

The aim of this study was to evaluate the long-term effects of the preventive multi-component Clubs against Drugs program intended to improve the rate of staff interventions to deal with obviously drug intoxicated patrons. The CaD program provided a unique opportunity to study what impact consistent preventive work in a nightlife setting has on staff strategies to create a safe environment at licensed premises by refusing access to drug intoxicated patrons. It is rare to maintain

preventive interventions over such an extended period as 20 years, particularly in a nightlife setting.

In 2023, 20 years after baseline, the CaD still had a sustained and statistically significant positive effect on the intervention rate of doormen and other staff in terms of dealing with drug intoxicated patrons. Three of the interventions are specifically worth mentioning. In 2023 it was less common for doormen to validate their decision to admit actors by observing or following the actors into the premises. It was also far less common to involve the police. However, in 2023 it was somewhat more frequent for bar staff to intervene themselves or request the security guards to ask the actors to leave.

Due to the COVID-19 pandemic, there was no in-person CaD training between early 2020 and the spring of 2023. The sustained high intervention rates, regardless of COVID-19 related difficulties, can be explained by 1) a shorter web-based course launched in 2021, in which >1000 individuals participated, 2) the continuous work of the steering group with 6 annual meetings, and 3) a CaD campaign highlighting drug use in licensed premises. Nevertheless, in closer to 60 % of the attempts, actors were granted admission to the licensed premises, indicating room for improvement in refusal rates. However, there might be two possible

explanations for this outcome, i.e., it might be a deliberate strategy to admit patrons and later contact the police, or it might be the result of a poorly executed task by doormen (security guard or host). There is a shortage of security guards working in the nightlife setting in Stockholm. This may have a negative impact on the club owners' opportunities to choose reliable security staff. It has, however, been observed in this and earlier follow-ups (Gripenberg Abdon et al., 2011; Gripenberg et al., 2007) that strategies other than rejection at the door are used, including admitting drug intoxicated patrons as a tentative response. This approach might be useful, particularly if the doorman is unsure of whether or not there is a basis for action and has been presented as a possible strategy during the CaD training. However, by allowing a person who have used illicit drugs into the premises might result in conflicts inside the premises when the patron is later removed and the night is cut short. In light of the Swedish zero-tolerance perspective (Lerkanen & Storbjörk, 2023; Tham, 2021) allowing drug intoxication inside the premises could be interpreted as drug use being tolerated on the premises. With a larger number of users inside the licensed premises, the custom base for dealers also increases. It has been observed and reported by people working in this environment that open drug dealing inside establishments has increased and that it is perceived as having decreased safety for patrons and staff (Feltmann et al., 2024; Kvillemo et al., 2023).

Considering all interventions carried out by staff, the intervention rate was higher compared to baseline in 2003 but did not differ significantly compared to the follow-up in 2008. Some changes were particularly observed in the way doormen and others reacted. It seems as if the police were not as often contacted by doormen as in 2008. The specialized police task force, the Club Commission, which was abolished in 2015, is a change since the previous follow-up. As the Club Commission specifically targeted drug-related crime in the nightlife setting and were well-known to owners and staff (i.e., the Club Commission's phone number was widely disseminated among doormen). This change is likely to have had a negative impact on the drug situation in the setting since police units today are assigned to areas with concentrated nightlife on weekends, but the rotation of personnel might not allow a similar level of personal connections and trust. Staff at premises can call a special police phone number (helpdesk) when criminal activity or individuals are present, but staff are less familiar with it than that of the Club Commission. Additionally, due to recent developments with increased drug sales inside premises and drug market-related conflicts (Brå, 2019, 2021, Brottsförebyggande rådet, 2023; Feltmann et al., 2024), police officers working in this area today have been asked by the Swedish police authority to focus their resources on urgent problems related to criminal groups and less on prevention, i.e. targeting drug use among patrons.

While it is difficult to fully claim that actual changes have taken place over time in the ways staff intervene based on the open-ended questions in the protocol, the observations provide ideas for future research. Earlier studies of prevention efforts in nightlife have established that several aspects in external and internal environment are important for keeping drug intoxication levels low (Miller et al., 2009). The present study revealed that having security guards at the entrance (rather than hosts) and staff with a good overview of the restroom areas are crucial for the ability of staff to intervene when encountering drug intoxicated patrons. The effectiveness of server training in limiting drug problems in the establishments by following the law and policies has been observed to be more successful when combined with enforcement carried out by the Police Authority and the Licensing Board toward licensed premises owners and staff, which is one of the components in CaD (McKnight & Streff, 1994; Toomey et al., 2008; Wagenaar et al., 2005; Wallin & Andreasson, 2004; Wallin et al., 2004). However, the present results also suggest that the presence of security guards (who are trained and controlled by the Police Authority) at the entrance is associated with higher intervention rates, i.e., deny entry or assist serving staff when asking intoxicated patrons to leave. This has positive effects on the number of drug-intoxicated patrons in the establishments and

drug-related problems in this setting but could mean higher risks for the refused patron. The individuals showing signs of clear drug intoxication may be vulnerable to harm when turned away from a club without assistance e.g., health issues, accidents, or assaults. Swedish establishments do not work with harm-reducing strategies to the same extent as some other countries e.g., first-aid rooms, drug checking, brief interventions (Bellis et al., 2002; Betzler et al., 2019; Brunt, 2017; Kurtza et al., 2017). Instead, in situations where it is not obvious that the staff need to call for an ambulance, it is the police who decide whether a person needs to be allocated to an arrest, an emergency department, or other treatment. There has been a resistance towards harm-reducing strategies in Sweden; while needle-exchange now exist in many cities, it was a controversial question for a very long time (Karlsson et al., 2021).

Strengths and limitations

The study used professional actors playing standardized scenes, which are likely to be more robust than questionnaires to staff and more time-effective than an observational study. The actors were trained, and their performance was validated by an experienced expert panel. Observers checked that they acted in accordance with the signs of drug intoxication used in all studies. Using a larger number of actors compared to earlier studies is expected to diminish the impact individual actors have on the result. In addition, the 2023 follow-up was based on the total sample of venues. Owners of the premises were not informed beforehand about the data collection, and efforts were made to conduct the study discretely.

There were some limitations. Swedish drug policy is unique in that it is very restrictive in comparison to many other Western countries, which could result in limited possibilities to generalize the results to other countries. This study had a repeated cross-sectional design with no comparison, which limits causal conclusions. As CaD is available nationally, it is not possible to find a comparable area that fulfills the criterion of being one of the major cities in Sweden but without clubs already working with this method. Furthermore, no data was presented regarding whether or not the staff tested in the study had participated in the CaD education or of the strictness of the enforcement strategy. Additionally, the study only used male actors to match the design of earlier studies, and the outcome might have been different using female actors. Other characteristics of the patrons might also affect the degree to which staff intervene. Although the CaD program involves community representation, it does not partner up or collaborate with people with lived experience of recreational drug use, who might have first-hand experience of the intervention. While not a study limitation, it could be a further improvement of the CaD method to involve recreational users in the entire process.

Conclusions

The study showed that the effects of a community-based intervention targeting illicit drugs in licensed premises can be maintained over a longer period (20 years) when using a multi-component solution including, e.g., staff training and enforcement activities. Nevertheless, the majority of the doormen admitted obviously drug intoxicated patrons, suggesting that the CaD intervention work needs to be intensified. The results of the exploratory analysis additionally suggest that in order to increase intervention rates at clubs and other venues, establishments should aim to have security guards rather than hosts at the entrance, and that the premises should be planned so as to ensure that staff have a good overview of the restrooms. A recommendation is therefore that establishments prioritize keeping a security guard at the door to avoid allowing obviously drug intoxicated patrons to enter the premises. However, establishments should also enable trained staff to keep tabs on drug-taking practices inside the premises by having a good overview of the inner environment. Staff's training in policies and regulations as well

as in the signs of drug use and strategies for how to handle drug-related situations is a necessity for ensuring a safe nightlife setting.

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Clinical trial registration details: Not applicable.

Ethical statement

The study focuses on professionals and their choice of interventions in their role as security guard or serving staff at licensed premises, i.e., it is not considered to be studies of (private) individuals. This series of studies have been reviewed by the Swedish Ethical Review Authority in accordance to the Swedish Law about research on individuals (2003:460, 3 § and 4 §) on several occasions and they have responded that they have no ethical objections to the studies (2011/343-31/5, 2015/860-31/5). Ethical approval was not sought for the last follow-up study because it follows the same study design as earlier submissions to the ethical board which have resulted in the response stated above. Informed consent cannot be obtained since the study is conducted as a “secret visit” and names of staff is not collected. The Authors declare that there is no conflict of interest. The study received financial support by the Swedish National Council for Crime Prevention and by the Police Authority in Stockholm, but they have not had any influence over what was written in this article.

CRediT authorship contribution statement

Nina-Katri J. Gustafsson: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Kristin Feltmann:** Writing – review & editing, Visualization, Validation, Investigation. **Tobias H. Elgán:** Writing – review & editing, Validation, Investigation, Funding acquisition. **Johanna Gripenberg:** Writing – review & editing, Validation, Methodology, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. Johanna Gripenberg and Tobias Elgán reports financial support was provided by the Swedish National Council for Crime Prevention. Johanna Gripenberg reports financial support was provided by the Police Authority in Stockholm. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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