

Original Article

# Opioid and benzodiazepine use among adolescents and young adults in Denmark

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## ABSTRACT

**INTRODUCTION.** We aimed to investigate the prevalence of opioid and benzodiazepine use among Danish youths aged 13-26 years, and to document their knowledge of opioids, benzodiazepines and overdose prevention.

**METHODS.** An anonymous questionnaire was distributed via email and posters at youth educational institutions, and via social media. From September 2023 to April 2024, a total of 1,222 responses were collected.

**RESULTS.** In the present study, most adolescents and young adults knew of opioids and benzodiazepines (90.7% and 71.8%, respectively). Approximately one out of four had used one or the other at least once (opioids: 24.4%, benzodiazepines: 24.6%). One third of respondents with prior opioid use had their debut age using opioids between 16-18 (32.9%), and one third at an even younger age (32.6%). Only 7.1% reported gaining access to opioids through a doctor. Nearly one in four of the respondents had witnessed someone overdose (24.9%). However, less than half (41.2%) knew of the antidote that prevents opioid overdoses.

**CONCLUSIONS.** Although our results may be restricted to certain Danish youth groups, knowledge and use of highly addictive substances appear widespread. Among our respondents, nearly one out of four reported prior use of opioids and benzodiazepines. The majority had their debut age using opioids at a young age, between 16 and 18 years or younger. Less than half knew of the antidote that can reverse an opioid overdose.

**FUNDING.** Antidote Danmark.

**TRIAL REGISTRATION.** This study was a voluntary survey and, in accordance with Danish legislation, did not require ethical approval.

The opioid epidemic has been raging in the United States for years, with drug overdose deaths increasing over the past two decades, and deaths by overdose due to synthetic opioids rising from 2001 through 2021 [1]. According to the National Center for Health Statistics, drug overdose deaths in the United States decreased by 3% in 2023 compared to 2022 [2], indicating a stagnation. However, with an estimated 107,543 American lives lost due to drug-induced overdoses during 2023 and 81,083 due to opioids alone [2], an end to the opioid epidemic remains a distant prospect. Although Europe has not witnessed the same number of drug-induced overdose deaths as the United States, the rising production of synthetic drugs and online trade in drugs [3] raise concerns.

In Denmark, opioids are considered the most dangerous group of intoxicating substances by being highly addictive, having “... a narrow range between intoxicating dose and lethal dose ...” [4] and accounting for the highest number of fatal poisonings [4-6]. In this context, increased availability and use of opioids among Danish youths is a growing cause for concern [7]. In a 2023 survey, 15 out of 63 participating municipalities in Denmark reported an increase in opioid use among youths, with reports of opioids being accessed illicitly through various arenas [8]. Qualitative inputs from the municipalities further revealed an impression of young people not finding experimenting with opioids dangerous, with some comparing it to non-prescription drugs [8].

In the attempt to map opioid use among young people, a recent 2024 phone-based survey by the National Health Authority examined the prevalence of opioid and benzodiazepine use among 1,000 Danish youths aged 18-25 years [9]. Results showed that 2.7% reported prior use of opioids and 2.2% prior use of benzodiazepines not prescribed by a doctor [9]. While seemingly anonymous, the method of data collection was a direct phone call to participants initiated by an authority, potentially biasing the results.

The objective of the present study was to map the use of addictive substances by investigating the prevalence of opioid and benzodiazepine use among Danish adolescents and young adults through a fully anonymous questionnaire. Furthermore, we aimed to examine youths’ knowledge of opioids, benzodiazepines and overdose prevention.

## METHODS

The anonymous “Questionnaire of opioid and benzodiazepine use among adolescents and young adults in Denmark” targeted youths aged 13-26 years and was conducted by Antidote Danmark from September 2023 to April 2024. Antidote Danmark is a non-profit, non-governmental organisation established in 2013 to prevent deaths from overdoses. Antidote Danmark spreads knowledge to drug users, their families, and social and healthcare workers on how to recognise and prevent opioid overdoses. It also provides training on the use of and distributes take-home Naloxone (opioid antidote via nasal spray). Antidote Danmark is funded through private and governmental funding.

Prior to developing the questionnaire, a group of representatives from the population was consulted and asked how to best reach the target group and obtain genuine answers. The youths suggested an anonymous questionnaire that could easily be accessed online. Thus, an anonymous novel questionnaire was developed, comprising twelve questions that could be accessed by means of a link/QR code. Four supplementary questions were administered to respondents, who replied “yes” to previous use of opioids ([Appendix 1+2](#)).

The questionnaire was distributed through various channels, including emails and posters circulated at youth education facilities in Denmark and via social media. Emails linking to the questionnaire were sent to youth education programmes in Denmark, comprising all Danish high schools, adult education centres, higher technical examination programmes, vocational educations, social and health care educations, as well as boarding schools. Additionally, posters linking to the questionnaire were displayed in public areas and at youth educational institutions across Denmark. Some were handed out during overdose prevention classes arranged by Antidote Danmark. Additionally, posts linking to the questionnaire were uploaded on social media accounts of Antidote Danmark, including LinkedIn, Facebook and Instagram. After comparing the planned dates of Antidote events with the incoming responses, our estimate is that no more than 5% of the responses originate from Antidote events.

Most of the material used to promote the questionnaire was based on language used by adolescents and young adults, e.g. applying the term “pills” instead of “drugs”.

*Trial registration:* This study was conducted as a voluntary survey and, in accordance with Danish legislation, required no ethical approval.

## RESULTS

The survey included 1,222 respondents from Denmark aged 13-26 years. For information on respondent background, see **Table 1**.

**TABLE 1** Respondent background characteristics (N = 1,222).

	Total respondents, n (%)	Prior opioid use (n = 298)		Prior benzodiazepine use (n = 301)	
		n (%)	share %	n (%)	share %
Age group					
13-14 yrs	8 (0.7)	3 (1.0)	37.5	2 (0.7)	25
14-16 yrs	177 (14.5)	15 (5.0)	8.5	9 (3.0)	5.1
16-18 yrs	335 (27.4)	31 (10.4)	9.6	27 (8.9)	8.1
18-20 yrs	242 (19.8)	62 (20.8)	25.6	51 (16.9)	21.1
20-22 yrs	160 (13.1)	72 (24.2)	45	79 (26.2)	49.4
22-24 yrs	151 (12.4)	53 (17.8)	35.1	69 (22.9)	45.7
24-26 yrs	149 (12.2)	62 (20.8)	41.6	64 (21.2)	43.0
Gender					
Male	490 (40.1)	163 (54.7)	33.3	157 (52.0)	32.0
Female	660 (54.0)	118 (36.6)	17.9	123 (40.7)	18.6
Other	56 (4.6)	14 (4.7)	25	16 (5.3)	28.6
Undisclosed	16 (1.3)	3 (1.0)	18.6	5 (1.7)	31.3
Place of residence					
Greater Copenhagen	349 (28.6)	106 (36.6)	30.4	130 (43.1)	37.3
Central Jutland	195 (16.0)	31 (10.4)	15.9	22 (7.3)	11.3
South Jutland	165 (13.5)	24 (8.1)	14.6	19 (6.3)	11.5
East Jutland	136 (11.1)	46 (15.4)	33.8	45 (15.0)	33.1
South- and Central Zealand	136 (11.1)	26 (8.7)	19.1	28 (9.3)	20.6
Funen	70 (5.7)	13 (4.4)	18.6	11 (3.6)	15.7
North Zealand/Bornholm	70 (5.7)	19 (6.4)	27.1	16 (5.3)	22.8
Copenhagen/Frederiksberg	47 (3.9)	13 (4.4)	27.7	10 (3.3)	21.3
North Jutland	43 (3.5)	15 (5.0)	34.9	16 (5.0)	37.2
Not specified	11 (0.9)	5 (1.7)	45.5	4 (1.3)	36.4
Educational status					
In education	877 (71.8)	171 (57.4)	19.5	166 (55.0)	18.9
Not in education	345 (28.2)	127 (42.6)	36.8	135 (44.7)	39.1

Most respondents reported knowing of highly addictive substances, with 90.7% knowing opioids and 71.8% knowing benzodiazepines. More than half of respondents also reported knowing someone who had tried opioids

and benzodiazepines (61.7% versus 52.4%), and one out of four had witnessed an overdose (24.9%). Less than half of the respondents knew the antidote that prevents overdoses from opioids (41.2%) (Table 2).

**TABLE 2** Respondent knowledge and prior use of highly addictive substances, overdose and antidote (N = 1,222).

	n (%)
<i>Knowledge</i>	
Of opioids:	
Yes	1,108 (90.7)
No	114 (9.3)
Of benzodiazepines:	
Yes	877 (71.8)
No	345 (28.2)
Of someone trying opioids:	
Yes	754 (61.7)
No	468 (38.3)
Of someone trying benzodiazepines:	
Yes	640 (52.4)
No	582 (47.6)
Of someone overdosing:	
Yes	304 (24.9)
No	918 (75.1)
Of antidote:	
Yes	503 (41.2)
No	719 (58.8)
<i>Prior use</i>	
Of opioids:	
Yes	298 (24.4)
No	924 (75.6)
Of benzodiazepines:	
Yes	301 (24.6)
No	921 (75.4)

One out of four of the respondents reported prior use of highly addictive substances, with 24.4% reporting use of opioids and 24.6% use of benzodiazepines. Among respondents with prior opioid use, a third had their onset age between 16 and 18 years (32.9%). Another third had an even younger debut age (32.6%). Most respondents with prior opioid use had used opioids more than once (85.6%). Among the 298 respondents with prior opioid use, 51 (17.7%) reported daily use, corresponding to 4.2% of all respondents. However, 226 (75.8%) with prior use reported infrequent use, less than monthly. Only 7.1% of respondents with prior opioid use reported gaining

access to opioids through a doctor. Most did not specify the route of access (62.4%) or gained access to opioids via friends (18.5%), a regular dealer (14.8%) or social media/online (7.7%), etc. (Table 3). There was a higher prevalence of opioid and benzodiazepine use among male respondents and respondents not in education than among both female respondents and respondents in education (Table 1). Representative author-chosen statements in response to the question about the perceived effects of opioid use are presented in Figure 1.

**TABLE 3** Characteristics of opioid use (N = 298).

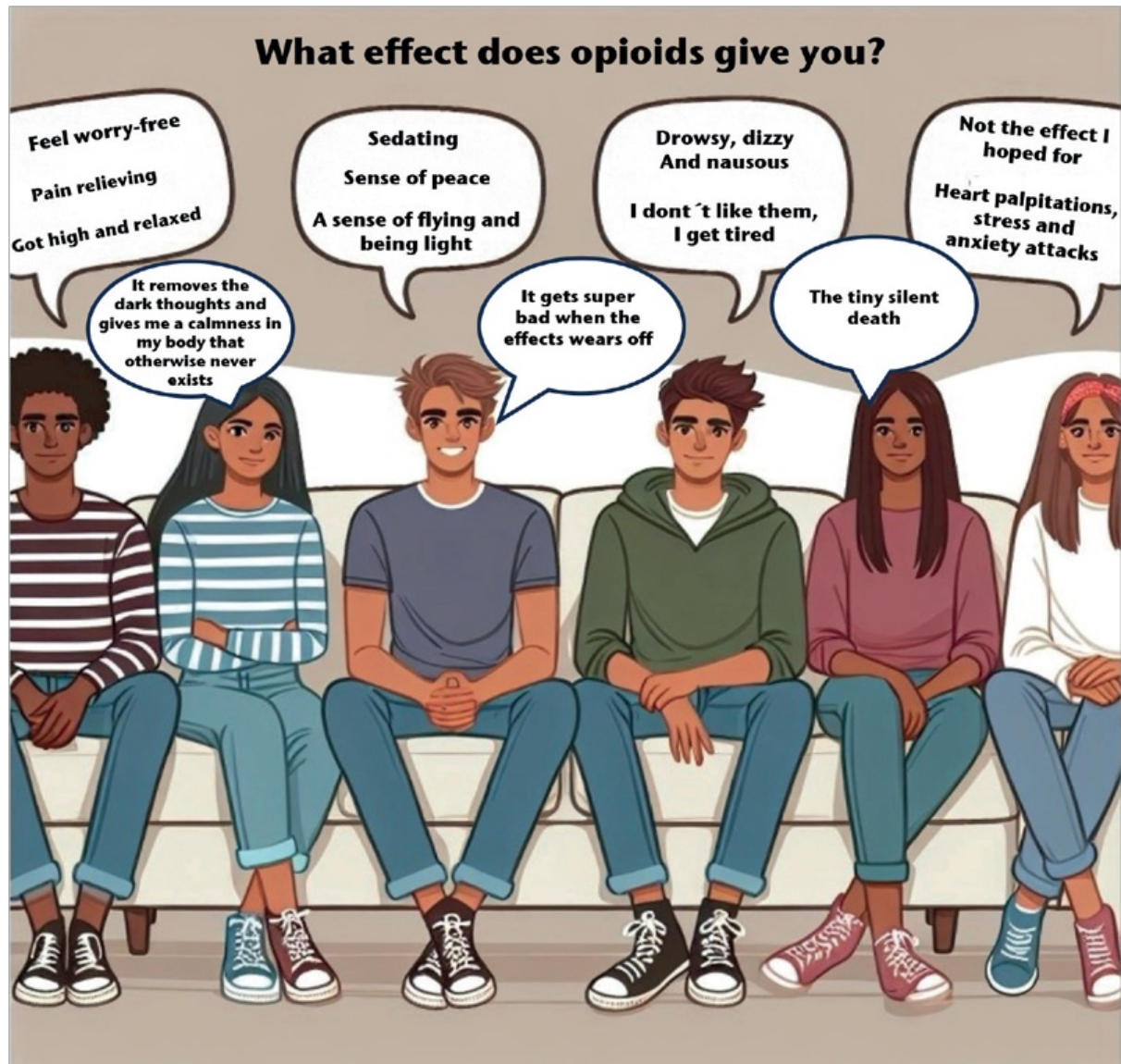
	Prior opioid use, n (%)
<i>Pattern of use</i>	
Not answered	1 (0.3)
1 ×	42 (14.1)
A few times	147 (49.3)
More often	37 (12.4)
Approx. 1 × a month	20 (6.7)
Daily	51 (17.1)
<i>Opioid use onset age</i>	
10-12 yrs	10 (3.4)
12-14 yrs	22 (7.4)
14-16 yrs	65 (21.8)
16-18 yrs	98 (32.9)
18-20 yrs	53 (17.8)
20-22 yrs	28 (9.4)
22-24 yrs	13 (4.4)
24-26 yrs	8 (2.7)
Not answered	1 (0.3)
<i>Access route to opioids<sup>a</sup></i>	
Not answered	186 (62.4)
Friends	55 (18.5)
A doctor	21 (7.1)
Regular dealer	44 (14.8)
Other	9 (3.0)
Family	11 (3.7)
The city	10 (3.4)
The street	11 (3.7)
Kiosks	6 (2.0)
Social media/online	23 (7.7)
School	4 (1.3)
Stealing it	10 (3.4)

a) Multiple answers were allowed.



**FIGURE 1** Selected statements from respondents to the question “What effect do opioids give you?”

The figure is partly created with Microsoft Copilot and was translated from Danish using Google Translate.



## DISCUSSION

The present results suggest that among certain groups of Danish youths, knowledge of opioids and benzodiazepines is widespread, accompanied by a high prevalence of use and exposure to overdoses. Nearly one out of four report prior use of opioids and benzodiazepines. Most of the respondents with prior opioid use had used opioids more than once and were presumably gaining access to them by bypassing their doctor. The majority had their debut age using opioids at a young age. Regarding the effects opioids give the users, a variety of effects were reported in their responses. Ranging from physiological effects as "sedating", "pain relieving", "drowsy, dizzy and nauseous", "Got high and relaxed" and "I don't like them, I get tired" to more psychological effects such as "worry-free", "sense of peace", "the tiny death" and "anxiety attacks".

Furthermore, a significant part of respondents had witnessed someone overdose, but less than half were familiar with the antidote that counteracts opioids. As many young people underestimate the danger of prescription drugs [8], these results underline the importance of further investigation into young people's readiness to act in the event of an overdose as well as the adequacy of their knowledge.

The prevalence of prior use found in the present study is inconsistent with findings from a recent survey by the National Health Authority [9]. Both studies were anonymous, nationwide surveys targeting approximately 1,000 Danish youths; however, the present study targeted youths aged 13-26 years, whereas the National Health Authority study targeted youths aged 18-25 years. In the present study, we found a prevalence of opioid use among Danish youths about nine times higher (24.4% versus 2.7%) and a prevalence of benzodiazepine use more than ten times higher (24.6% versus 2.2%) than in the previous study. Furthermore, in contrast to the present study, the prevalences found in the National Health Authority study solely represented use that was not prescribed by a doctor. However, in the present study, only 7.1% of respondents with prior opioid use reported gaining access to opioids from a doctor.

The present study collected data by means of an anonymous questionnaire accessed via a link or QR code, while the National Health Authority study collected data through direct phone calls to participants, potentially compromising their experience of anonymity. However, unlike the present study, the National Health Authority study used a sample representative of the actual population, with a lower risk of selection bias.

The differing prevalences of use found in the two studies may be conditioned by several factors, including differences in the representativeness of the sample and the data collection methods. One hypothesis might be that the higher prevalence of use found in the present study is indicative of the importance of full anonymity when aiming to obtain valid responses to tabooed questions. Conversely, the higher prevalence in the present study may be overstated as individuals with previous drug use might be more inclined to be interested in Antidote Danmark.

The present results show that, despite being aware of certain groups of drugs, Danish youths may have insufficient knowledge to respond effectively in the event of an overdose. Among initiatives aimed at reducing overdose fatalities are providing education to at-risk populations and the distribution of the antidote naloxone [10], an opioid antagonist reversing the effect of opioids, recommended by the WHO to "People likely to witness an opioid overdose ..." [11]. Apprehensiveness, however, pertains to such harm reduction strategies. Some argue they may lead to an unintended increase in substance use and riskier behaviours, with one paper (preprint/not peer-reviewed) claiming "... that broadening naloxone distribution led to more opioid-related emergency room visits and more opioid-related theft, with no reduction in opioid-related mortality" [12]. In contrast, substance use among two groups of heroin users has been found to decrease following naloxone training, thus not supporting concerns of escalated risk behaviour [13]. Furthermore, most studies have pointed to reductions in overdose deaths by naloxone distribution [14]. Hence, the European Monitoring Centre for Drugs and Drug Addiction has proposed extensive distribution of naloxone, aiming at reducing fatalities by twenty times the number of annual opioid-related overdoses [15]. One study also found that providing students with a drug educational programme impacted student knowledge and reduced total substance use [16].

In recent years, preventive initiatives aiming at saving lives have been rolled out in Denmark. It has become mandatory to train all future drivers in basic resuscitation, and the "heart runner programme" has been shown to increase the likelihood of first aid being provided in the event of out-of-hospital cardiac arrest [17]. Similar initiatives on overdose prevention and drug education targeting youths seem warranted.

The present study has focused on full anonymity, which imposes limitations including an unknown response rate, risk of multiple responses per respondent, the sample not being fully representative of the age group's

actual demographic composition in Denmark and a share of responses being collected from educational events arranged by Antidote Denmark. Furthermore, the present study represents the first use of the questionnaire and should be validated through other populations. Lastly, the study is limited by possible skewing of results, as a particular group of respondents, potentially more prone to highly addictive substances, may have been recruited. The sample might have been more representative if the questionnaire had been distributed independently of Antidote Denmark events. Still, it is estimated that no more than 5% of responses were collected through events.

Despite these limitations, the present results highlight the pressing need for initiatives that enable youths to take precautionary action in the event of an overdose and navigate a life characterised by easy access to prescription drugs with potentially fatal impact. One such initiative includes offering youths targeted education on drugs and overdose prevention that is both age-appropriate [18] and "... relatable and meaningful to young people ..." [19]. To be adequate, such efforts should include information on the risks associated with mixed drug use and using drugs in solitude [20], awareness of the narrow range between intoxication and fatal overdose [4] and indicators of fatal intoxication [20] in combination with actionable steps in case an overdose occurs, including widespread distribution of take-home naloxone.

Also crucial is uncovering factors involved in the onset and maintenance of recreational use of prescription drugs as well as initiatives aimed at increasing well-being, resilience and a sense of community among youths, along with access to free and effective drug treatment.

## CONCLUSIONS

In this anonymous questionnaire survey of 1,222 Danish adolescents and young adults, the vast majority knew of opioids and benzodiazepines. Approximately one out of four had used one or the other, and 4% reported daily opioid use. Most youths with prior opioid use started using opioids at a young age, and fewer than one in ten reported accessing opioids through their doctor. Despite 25% of adolescents and young adults having experienced someone overdose, fewer than half knew of the antidote that can reverse an opioid overdose.

Establishing the true prevalence of illegal drug use among Danish youths is challenged by the taboo surrounding the use of illegal drugs. Nevertheless, the present data indicate that the use of highly addictive drugs is widespread among certain Danish youth groups. Therefore, providing youths with targeted education on drugs and overdose prevention is urgently needed as part of a broader effort to reduce overdose deaths.

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**Supplementary material:** <https://content.ugeskriftet.dk/sites/default/files/2025-06/a08240534-supplementary.pdf>



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