Prevalence and Circumstances of Opiate Overdose Among Injection Drug Users in the Russian Federation

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ABSTRACT *Using a self-administered questionnaire, we examined the characteristics of opiate overdose in 16 cities of the Russian Federation. As indicated by responses from 763 injection drug users who took part in this study, 59% experienced an overdose, 81% reported seeing others experiencing an overdose, and 15% stated that they had witnessed a fatal overdose. The most common drug that caused opiate overdose was heroin (74%), although we also found that, in smaller towns, home-produced opiates tended to be a major overdose-causing agent. There were a number of factors that increased the likelihood of overdose, such as mixing opiates with alcohol and tranquilizers or having a longer history of opiate use. We also found that injecting drug users were reluctant to seek medical assistance when their peers experienced an overdose because of the perceived ineffectiveness of ambulance services and fear of police prosecution. At the same time, 57% of respondents admitted that they lacked appropriate skills to treat overdose. We discuss the implications of these findings for overdose prevention programs in Russia.*

INTRODUCTION

In the 1990s, there was rapid growth of illegal drug use in the Russian Federation (RF).¹ From 1990 to 1998, the number of people registered as drug users by the Russian Ministry of Internal Affairs (MVD) rose from 52,034 to 255,529. From 1995 to 1999, the number of registered drug users rose from 155,971 to 359,067 in state substance abuse treatment centers.² Estimates suggest that there are about 2 million drug users in RF.³

Until the late 1990s, the most popular injected opiate was a liquid derived from opium through a complex heating and mixing process usually performed on an apartment stove. The effects of this compound, called *chornaya* (black) or *khanka*, are similar to those of heroin.⁴ Among more recent trends is the increased supply of heroin on the Russian market and increase in drug injecting throughout the country.⁵ As drug injection increased, so did the number of drug-related deaths and overdoses. From 1990 to 1999, the overdose deaths have risen from 587 to 1,393, as registered by the Ministry of Internal Affairs.⁶ Because widespread opiate over-

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dose is a relatively new phenomenon in RF and state medical services have struggled under limited resources and poor operating conditions,⁷ emergency medical services have limited experience and few resources to address overdose cases.

The epidemiology, treatment, and prevention of opiate overdoses have been given little attention in the Russian academic press.⁸ In Russia, there are only a few studies of opiate overdose related to prevalence, clinical diagnostics, and medical law.^{8–13} Official medical data only recently started to include the prevalence of drug overdose. During a focus group conducted with members of harm reduction projects prior to this study, one of the problems identified was the poor state of toxicological equipment, particularly the chemicals necessary to examine overdose deaths, in many parts of RF. Monitoring of overdoses takes place in only a few Russian regions, and this monitoring is limited to prevalence data, which fails to address the circumstances of overdose and the effect of broader social and environmental factors.¹⁴

In this article, based on the results of a survey of opiate users in the RF, we examine the prevalence and circumstances of opiate overdoses among injection drug users (IDUs). Specifically, we attempt to identify the lifestyle and drug-using patterns of IDUs who overdosed, estimate the availability of emergency services to those suffering from overdose, and assess the willingness of respondents to participate in overdose prevention and treatment education programs.

METHODS

The survey was designed and coordinated by the Harm Reduction Training Project of AIDS Foundation East-West and carried out by Harm Reduction projects (mostly syringe-exchange programs) in 16 cities of RF in March–June 2001. The sample included major industrial centers such as Moscow, Ekaterinburg, Volgograd, Saratov, and Omsk, as well as capitals of less heavily industrialized areas such as Astrakhan, Lipetsk, Ulan-Ude, and Yuzhno-Sakhalinsk. As this list of cities indicates, respondents from the European Russia as well as from Siberia and the Far East were included in the sample.

Based on the results of the focus group discussion conducted with staff members of harm reduction projects, a self-administered questionnaire was developed by the AIDS Foundation East-West office in Moscow. The standardized instrument, containing mostly closed-end items on drug use and overdose circumstances, was later distributed among harm reduction projects responsible for selecting respondents and arranging interviews. In most cases, questionnaires were offered to available clients who attended needle exchanges in the respective cities. After the needle exchange, the project staff asked clients to fill out the questionnaire while they were on premises. The response rate was 47%. In total, 763 respondents took part in this study, but it should be noted that a convenience sampling method prevents us from generalizing our results to other IDUs in RF.

RESULTS

Demographic Profile

The demographic profile of respondents is summarized in Table 1. The majority of respondents, accounting for almost three fourths of the sample (71%), were male. There were 84% who were under 31 years of age, while just over a third of the

TABLE 1. Demographic profile of respondents

Characteristic	Total (N = 763), % (n)
Gender	
Male	71 (511)
Female	29 (208)
Age, years	
14–18	16 (115)
19–21	22 (157)
22–25	25 (181)
26–30	21 (155)
31+	16 (112)
Age opiate injections started (median), years	18
Duration of injection drug use (median), years	4 (ranging from less than 1 year to 7 years)
Usual place for opiate injections	
At home	54 (398)
At friend's place	20 (144)
On the street	17 (127)
Other location	9 (66)

respondents (38%) were in their teens and early 20s. The median age at which opiate injections was initiated was 18 years, and most respondents had been injecting drugs for 4 years. Over a half of respondents (54%) usually injected drugs in their homes, another 20% used them at friends' places, and 17% injected on the street. It is noteworthy that 23% of respondents from cities with over 500,000 residents injected drugs in public places, whereas only 11% of respondents from smaller towns did so (chi square = 21, $P < .001$). By the same token, 70%–85% of respondents in Astrakhan, Barnaul, Belgorod, and Lipetsk reported injecting drugs at home, compared to 24% of Moscow respondents.

The Distribution of Overdose

Of the respondents, 59% had experienced an overdose; 81% reported seeing others in this condition, and 15% had witnessed a fatal overdose. The highest proportions of respondents reporting to have experienced overdose were in Ekaterinburg (82%), Volgograd (81%), Moscow (79%), Yaroslavl (66%), and Togliatti (64%). Although respondents 22 years of age or older were more likely to have overdosed (chi square = 14, $P < .01$), the length of time injecting was more closely associated with overdose incidence (chi square = 68, $P < .001$). Thus, among those who had been injecting opiates for less than 1 year, only 27% had experienced overdose, compared to 49% of those with a 2-year injection experience. By the sixth year of injection, the proportion of respondents who experienced overdose reached 75%.

Overall, 74% of reported cases of overdose stemmed from heroin use, but there was significant variation among the 16 cities in the role of various opiates in provoking this condition. In major metropolitan areas, including Moscow (100%), Saratov (98%), Ekaterinburg (94%), Volgograd (88%), and Yaroslavl (87%), most respondents reported that their overdose was caused by heroin. However, home-made opiates such as *choyrnaya* or *khanka* were more frequently cited as overdose-

causing agents in smaller towns such as Astrakhan (83%), Barnaul (92%), Lipetsk (79%), and Elista (75%).

Mixing Drugs

Among respondents who had experienced overdose, 59% had mixed opiates with other drugs such as alcohol (56%), sedatives (23%), or antihistamine blockers (11%). The survey showed the reasons for overdose as perceived by those who had experienced it. Of people who had experienced overdose, 26% believed that their last overdose resulted from mixing opiates with alcohol or other drugs, whereas 25% stated the overdose was caused by increasing their dosage beyond their usual limit. Another 25% attributed their overdose to opiates of unknown quality, while the remaining 24% linked their last overdose to preceding abstinence.

Where Overdose Occurs

As indicated in Table 2, most respondents reported that their most recent overdose occurred at friends' places or in their own home. The majority of overdose victims (92%) stated that they injected drugs with other people when the overdose occurred.

Of those who experienced overdose, 76% reported that this condition occurred when they were with their friends. Similarly, among 601 reported cases of observed overdose, 80% happened to respondents' friends, while in only 12% of cases the victim was a stranger to the respondent. Almost 15% (111) of the sample reported having seen a fatal overdose.

Dealing with Overdose

During the interview, the respondents were questioned regarding the help that was usually offered when an overdose occurred. As shown in Table 3, 48% of respondents who experienced an overdose reported receiving rescue breathing when they experienced an overdose, while 63% provided rescue breathing to others suffering from this condition. Drug users also resorted to causing pain to people experiencing overdose in an attempt to make them stay awake. Thus, 32% of overdose victims reported having pain-induced treatment by others, while almost a quarter of those who observed an overdose (23%) used the procedure to prevent others from having

TABLE 2. Environment in which last overdose occurred

Location of last overdose	% (N)	
Home	37	(160)
Street	15	(67)
Friend's place	40	(173)
Other	8	(33)
Others present when the overdose happened	To you	To a person you know
Friends	76 (288)	80 (479)
Parents/relatives	11 (43)	3 (20)
Boyfriend/girlfriend	11 (43)	5 (30)
Strangers	2 (7)	12 (72)

TABLE 3. Types of emergency assistance offered to people experiencing overdose

Type of Assistance	Direct Overdose %(n)	Observed Overdose %(n)
Called ambulance	16 (56)	13 (68)
Rescue breathing	48 (162)	63 (341)
Caused pain to keep awake	32 (111)	23 (124)
Other	4 (13)	1 (6)

an overdose. Other practices included putting the person having an overdose into a cold shower or snow, walking the victim, and injecting boiled or salted water. An ambulance was called in about one of every six or eight cases of self (16%) or observed (13%) overdose.

Avoiding Ambulance Services

In an attempt to specify the reasons behind this reluctance to seek professional medical help, respondents were asked why they had refrained from calling an ambulance during the last incidence of observed overdose. Of those who had not called for an ambulance, 80% stated that they managed their peer's overdose alone, and 17% said that they avoided ambulance services out of fear of police repression.

In those rare instances when respondents had called for medical help, the assistance was usually provided (Table 4). In most cases, those who experienced overdose either received on-site treatment or were taken to the hospital by the ambulance. Three respondents reported that medical service was refused because the patient was a drug user. In approximately a quarter of the cases when the ambulance was requested (23% and 29%, respectively), the ambulance arrived when an overdose victim had already recovered.

Despite the fact that reports on calls for ambulance resulting in subsequent police prosecution were rare, respondents' comments on the topic of overdose revealed that distrust of medical institutions is deeply ingrained among drug users and is one of the motivating factors behind decisions not to call an ambulance. Statements that illustrate the uneasy relationship between drug users and medical professionals are given in Table 5.

Willingness to Enroll in Overdose Treatment Programs

Respondents were asked to evaluate whether they had enough information and skills to prevent fatal overdose. Of respondents, 57% admitted that they did not, 60% were interested in additional information on the topic, and 44% expressed willingness to enroll in a training course to learn first aid to assist those having

TABLE 4. Ambulance actions on arrival at the scene

	Direct overdose % (n)	Observed overdose % (n)
Service was no longer needed	23 (34)	29 (67)
Offered on-site help	43 (64)	40 (94)
Took to hospital	24 (36)	19 (44)
Service refused	2 (3)	2 (5)
Other	8 (14)	10 (24)

TABLE 5. Respondents' reasons for avoiding ambulance services

Mistreatment by the ambulance staff	Fear of police	Perceived ineffectiveness of ambulance services
"When you call an ambulance, they arrive late. When they arrive, they don't have syringes or medicine. They are angry at us for bothering them with some 'junkies.' They call the police and we get arrested." (Saratov)	"Had we known that the police wouldn't come with the ambulance, fewer people would have died from overdose." (Moscow)	"Even if you call Skoraya [ambulance], it will arrive in 30–40 minutes. I saw many people dying while we waited for the Skoraya to arrive." (Ekaterinburg)
"Doctors hate us." (Lipetsk)	"We don't call an ambulance because they don't perceive injectors as human beings and try to get us arrested or registered with police" (Pskov)	"Even if you don't tell doctors the real reason for your call, they look at the age [of the victim]. If it is under 25, they may not come at all or arrive in 1–1.5 hour." (Moscow)
"When the ambulance arrived, they searched the pockets [of an overdose victim] and took all his money." (Yaroslavl)	"We don't call an ambulance because in this case we end up being registered with Narcological Dispensary and police." (Ekaterinburg)	"Skoraya arrives in 30–40 minutes, and by that time (the overdose victim) turns blue." (Ulan-Ude).

an overdose. However, respondents between 14 and 18 years of age, who are the least prepared to treat overdose, were also the least interested in getting additional information or education.

DISCUSSION

This study is one of the first attempts to assess the prevalence and consequences of nonfatal opiate overdose among IDUs in RF. It is important to emphasize that overdose prevalence and circumstances vary by location. While more localized research is needed to characterize and properly address local overdose problems, certain trends emerged as common to the drug-using scene in the 16 cities included in this study. Confirming earlier reports,^{15–17} the study found that overdose poses a major health risk to IDUs. Of respondents, 59% reported experiencing an overdose, with approximately 50% having experienced an overdose within 2 years of injecting. This prevalence estimate is not dissimilar to estimates derived from surveys in western Europe, although it is higher than some reports.^{18,19} Also consistent with the international evidence is the finding that older IDUs are more likely to experience overdose than their younger counterparts.²⁰

A major factor that determines whether an overdose is fatal is the responses of those present.²¹ This study shows that the majority of the respondents (81%) had witnessed another's nonfatal overdose, and that 15% had observed a fatal overdose. In addition, 92% of respondents indicated that they had injected with others, usually friends, on their last overdose occasion. This suggests that the opiates tend

to be consumed in tightly knit groups. These data emphasize the clear potential for reducing fatalities and harm associated with overdose should those present respond rapidly and appropriately.

Of immediate relevance in terms of overdose risk management is the provision of education in cardiopulmonary resuscitation (CPR) via outreach workers and peer educators to IDUs. The need for peer education approaches to overdose risk management is also evidenced by the fact that the remedies often employed by IDUs in the event of an overdose are of unknown efficacy. Strategies such as walking the victim, immersing the victim in cold water or snow, and injecting boiled or salt water may delay effective resuscitation and a call for medical help. In addition, peer educators can be encouraged to teach that mixing opiates with other drugs such as alcohol and tranquilizers increases the likelihood of overdose and thus should be avoided.

The prevention of fatal overdose can also depend on how rapidly medical help is provided. This study showed that heroin and home-produced opiates were usually injected at home or at a friend's place and almost always in the company of others. In addition, our data suggest reluctance among IDUs to report overdoses to medical services; one in six overdoses experienced by respondents resulted in request for medical assistance. This reluctance was associated with a fear that medical help would lead to police interest or charges and would be ineffective. In addition to developing peer-based education in overdose risk management, there is a need to increase the proportions of overdoses for which medical help is sought, as well as the speed of calls and ambulance service delivery. However, before this can become a realistic possibility, there is a need to consider how best to improve medical responses to deal with overdose among drug users as well as the local relationships developed among narcology (drug treatment services), ambulance, and police. This network development is necessary to prevent adverse consequences for individual drug users when seeking medical help.

In conclusion, our study highlights that prevention and risk management of overdose should be an important priority for community-based harm reduction projects as well as for medical services in Russia. Not only is overdose preventable, but also, if appropriately managed, death from overdose is avoidable. We therefore recommend the introduction and expansion of a combination of peer-based outreach with multisectoral medical interventions in overdose prevention and management targeting IDUs.

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