Tobacco Control and Public Health in Eastern Europe

Tokar, A., Andreeva, T. I., & Shulga, L. (2014). Social learning and peer education in responding to opiate overdose among injection drug users in Ukraine. *Tobacco Control and Public Health in Eastern Europe*, 4(1), 29-39. doi: 10.6084/m9.figshare.1064370

Social learning and peer education in responding to opiate overdose among injection drug users in Ukraine

Anna Tokar, Tatiana I Andreeva, Liudmyla Shulga

BACKGROUND: Opiate overdoses (OD) constitute one of the leading causes of avoidable deaths among people aged 20-40 years old. As peer-administered help in cases of overdose was found to be effective, we aimed to explore how much the subjects of the intervention are able to learn from one another and from their own experience.

METHODS: Secondary data analysis was performed with the 2008 dataset of peer-driven intervention among IDUs who were not involved in harm reduction programs earlier; recruiting was performed with respondent driven sampling methodology combined with peer education covering overdose response. Subsample of 6667 opiate users was considered. Data on overdose response strategies experienced by respondents were considered predictors and data on intended response strategies as outcomes. To reveal relationships between the experienced and intended responses, binary logistic regression analysis was performed.

RESULTS: With recommended strategies including calling ambulance, putting a person in recovery position, fixing the tongue, applying mouth-to-mouth resuscitation and cardiac massage, percentages of those planning to apply them was considerably higher (on average, 2.3 times higher) than the percentage of those having experienced them.

With other strategies including applying cold, pain, ammonia, percentages of those who experienced the strategy and those who planned to practice it were rather close and on average differed just by 1.1.

With all the strategies, the intention to apply a particular response in future was strongly associated with personal experience of having had this applied when having an overdose episode. Peer-education to larger extent determines the intentions of those who have not experienced particular overdose responses themselves. On the other hand, social learning contributes to persisting of those experienced strategies which cannot be recommended.

CONCLUSIONS: Social learning can impact intended overdose responses, its competing interaction with peer-education needs to be taken into account in harm reduction programs.

KEYWORDS: overdose (OD); injection drug users (IDUs); overdose prevention and response; overdose response communication; opiate drugs.

Социальное обучение и обучение по принципу «равный-равному» в реагировании на передозировки наркотиков опиоидного ряда среди потребителей инъекционных наркотиков в Украине

Токар А.В., Андреева Т.И., Шульга Л.А.

АКТУАЛЬНОСТЬ: Передозировки наркотиков опиоидного ряда являются одной из основных причин смертности, которую можно предупредить, среди людей 20-40 лет. Поскольку помощь, оказанная равными, является эффективным методом реагирования на передозировку,

мы стремились оценить, в какой мере участники интервенции могут обучить друг друга, а также использовать свой собственный опыт.

МЕТОДЫ: Вторичный анализ данных был проведен на основе массива 2008 года интервенции «Вмешательство силами равных» среди потребителей инъекционных наркотиков, которые ранее не участвовали в проектах снижения вреда; рекрутинг был проведен по методу «выборки, направляемой респондентами», в сочетании с обучающим компонентом по принципу «равный-равному», включающим вопросы передозировок. Была рассмотрена подвыборка из 6667 потребителей инъекционных наркотиков опиоидного ряда. Переменные о стратегиях ответа на передозировку, которые респондент испытал на себе, рассматривались как предикторы; переменные о стратегиях, планируемых респондентом в будущем, рассматривались как зависимые переменные. Для определения связей между прошлыми и будущими стратегиями ответа на передозировку был проведен бинарный логистический регрессионный анализ.

РЕЗУЛЬТАТЫ: В отношении рекомендованных стратегий ответа на передозировку, таких как вызов скорой помощи, восстанавливающая поза, фиксация языка, дыхание «рот-в-рот», непрямой массаж сердца, процент лиц, планирующий их применение в будущем, выше, нежели тех, кто имел опыт их применения. В среднем, процент респондентов планирующих применение этих стратегий в будущем, в 2,3 раза выше в сравнении с процентом лиц, испытавших эти стратегии на себе.

Доля лиц, испытавших на себе другие стратегии, в том числе применение холода, боли, нашатырного спирта, и тех, кто планирует их использовать, различаются мало.

Намерение применять те или иные стратегии ответа на передозировку связано с личным опытом применения этих стратегий во время случая передозировки. Образовательные вмешательства больше определяли намерения тех, кто не испытывал соответствующих действий на себе. Социальное обучение вносило вклад в повторение действий, которые не были рекомендованы в образовательных программах.

ВЫВОДЫ: Социальное обучение может влиять на поведенческие стратегии ответа на передозировку, его конкурирующее взаимодействие с образовательными интервенциями должно учитываться в программах снижения вреда.

КЛЮЧЕВЫЕ СЛОВА: передозировка наркотиков; потребители инъекционных наркотиков (ПИН); профилактика передозировок; реагирование на передозировки; информирование потребителей инъекционных наркотиков; наркотики опиоидного ряда.

Соціальне навчання та навчання за принципом «рівний-рівному» у формуванні відповіді на передозування наркотиків опіоїдного ряду серед споживачів ін'єкційних наркотиків в Україні

Токар А.В., Андрєєва Т.І., Шульга Л.О.

АКТУАЛЬНІСТЬ: Передозування наркотиків опіоїдного ряду є однією з основних причин смертності, якій можна запобігти, серед осіб віком 20-40 років. Оскільки допомога, надана рівними, є ефективним методом відповіді на передозування, ми прагнули дослідити, якими чином учасники інтервенції можуть навчитись один від одного, а також використовувати власний досвід.

МЕТОДИ: Проведено вторинний аналіз масиву 2008 року інтервенції «Втручання силами рівних» серед споживачів ін'єкційних наркотиків, які раніше не були залучені до програм зменшення шкоди; рекрутинг проведений за методом «вибірки, спрямованої респондентами» в поєднанні з навчальним компонентом за принципом «рівний-рівному», включаючи питання передозувань. Розглянуто підвибірку з 6667 споживачів ін'єкційних наркотиків опіоїдного ряду. Змінні щодо відчутих стратегій відповіді на передозування розглядали як предиктори; очікувані стратегії відповіді (які можна застосувати у майбутньому) розглядали як залежні змінні. Для встановлення зв'язків між стратегіями відповіді на передозування, застосовані у минулому та майбутньому, було проведено бінарний логістичний регресійний аналіз.

РЕЗУЛЬТАТИ: Серед рекомендованих до застосування стратегій відповіді на передозування, наприклад, виклик швидкої, відновлююча поза, фіксація язика, застосування дихання «рот-у-рот», непрямий масаж серця, процент осіб, які планують застосувати такі стратегії, вищий, аніж процент осіб, які відчули їх на собі. У середньому, відсоткова частка осіб, які мають намір застосування таких стратегій, у 2,3 рази вища в порівнянні з відсотком осіб з практичним досвідом їх застосування.

Щодо інших стратегій, у тому числі й застосування холоду, болі, нашатирного спирту, відсотки тих, хто відчули такі стратегії, та тими, які планували їх застосування, різнились мало.

Намір застосування тих чи інших стратегій відповіді на передозування був пов'язаний з особистим досвідом застосування цих стратегій під час випадку передозування. Освітні втручання більше впливали на наміри тих, хто не відчув відповідних дій на собі. Соціальне навчання ро-

било внесок у закріплення дій, не рекомендованих в навчальних програмах.

ВИСНОВКИ: Соціальне навчання може впливати на поведінкові стратегій відповіді на передозування, його конкуруючу взаємодію з освітніми втручаннями треба брати до уваги в програмах зменшення шкоди.

КЛЮЧОВІ СЛОВА: передозування; споживачі ін'єкційних наркотиків (СІН); запобігання передозувань; реагування на передозування; інформування споживачів ін'єкційних наркотиків; наркотики опіоїдного ряду.

INTRODUCTION

Drug-induced deaths are internationally recognized as an important public health issue. Opiate overdoses account for a considerable number of potential years of life lost and constitute one of the leading causes of avoidable deaths among young people aged 20-40 years old, in many EU countries, where 8,000 such deaths are recorded annually (Hedrich, Vicente, & Fay, 2004).

Same as in previous studies, opiate overdose is defined here as any of the below symptoms occurring in conjunction with opiate drug use: turning blue / blue lips, difficulty breathing, losing consciousness, collapse, low pulls rate, no response to external irritants (sounds, pain), and inability to walk (Curtis & Guterman, 2009).

As regards the extent of opiate use problem in Ukraine overall, the Ukrainian Ministry of Internal Affairs had 153,077 drug users officially registered by early 2012. In 2011, the prevalence of mental and behavioral disorders due to drug use constituted 169.1 per 100,000 population according to the Ukrainian Ministry of Health (EMCDDA, 2010). However, officially registered cases are deemed to underestimate the real scope of the problem, and the number of injection drug users in 2011 was estimated at the level of 310,000 (Berleva et al., 2012; Berleva et al., 2010).

As regards the opiate overdose statistics, since 2005, Ukraine applies ICD-10. However, in the official guide issued by the P.L. Shupik National Medical Academy of Postgraduate Education, it is recommended to avoid using F 11.0 (acute intoxication) and F 11.5 (psychotic disorder) codes and to use F 11.2 (dependence syndrome) instead based on the official registration in addiction clinics. Along with this, codes from the ICD Chapter XIX "Injury, poisoning and certain other consequences of external causes" are defined as additional, the main code should be chosen from Chapter XX to characterize circumstances of death (Golubchykov et al., 2008). So, acute intoxication or poisoning never appears in the official statistics of deaths in Ukraine.

As there is no accurate information available about the numbers of overdose-induced deaths and nonfatal overdoses in Ukraine, we have earlier estimated that about 30 thousand nonfatal and 8 thousand fatal overdoses occur in Ukraine per year (Tokar & Andreeva, 2012).

Peer-administered help in cases of overdose was found to be feasible and effective in countries that implement overdose response programs (Baca & Grant, 2005). Obviously, the training curricula interact with the preexisting knowledge and predispositions the target group bears. In order to implement effectively peer-based interventions, it is important to take into account how much the subjects of the intervention are able to learn from one another and from their own experience. To answer these questions, we conducted secondary analysis of the data collected in 2008. The advantages of this survey included that it was conducted in association with a peer-driven intervention, which aimed to involve injection drug users who were not earlier covered with harm reduction services. The intervention also encompassed education by peers including overdose response strategies. After the educational session, all the respondents were surveyed and among other questions they were asked whether they have ever experienced an overdose, what strategies have been applied to them and what strategies they plan to apply once they observe an overdose in others. This made possible to explore whether the intended strategies were associated (a) with personal experience and with what witnesses told the respondent about his/her own episode of an overdose and its development and (b) with prior peer-education.

METHODS

Data collection

This analysis is based on the data collected within the 2008 peer-driven intervention (Shulga, Smyrnov, Matiash, & Dacenko, 2009). The model is based on "peer-to-peer" education approach, through which

trained and motivated representatives of certain social groups undertake organized or informal educating activities in a given group. An advantage of this model is the usage of injection drug users (IDUs) chains which already exist – thus we get an opportunity to access hard-to-reach groups of drug users even in closed drug scene conditions. Social workers select a few (six as a rule) first project clients, the so called 'seeds', and all the other clients are recruited by the project participants at their own discretion. Thus, theoretically, the recruiting process of the model grows exponentially, when every IDU brings a certain number of new clients.

The intervention involved participants who were IDUs aged 18 or older, willing to participate, not previously involved in harm reduction (HR) activities and who met such eligibility criteria as the ability to demonstrate the way s/he makes injections, including preparation for the injection, vein search, demonstrating injecting place and defining type of drug liquid used (Shulga et al., 2009). The intervention was based on 17 HR non-governmental organizations placed in 16 cities of seven regions plus Kyiv city. Oral informed consent was obtained from every survey participant. The study was approved by the Ethical Review Board of the Sociological Association of Ukraine and L. V. Gromashevsky Institute of Epidemiology and Infectious Diseases.

The self-administered questionnaire used in this survey contained seven (including two multiple-choice) questions dedicated to overdose (see Annex for exact wording). As the survey was conducted among injection drug users who were not involved in harm reduction programs earlier, the overdose-related answers could not result from participating in earlier educational programs for most-at-risk populations. However, the process of recruitment was combined with peer-education by the recruiter with overdose response issues integrated in the program.

The subsample considered in our analysis consisted of 6667 injection opiate users (opium poppy), for whom answers regarding drug use, overdose experience and demographic characteristics were available. IDUs who did not use opiates were excluded as they could not experience opiate overdose.

Outcome measures

The questionnaire contained eleven predetermined modes of overdose response, which the respondents had an opportunity to select in two multiple choice questions: a question about the experienced overdose and a question about a potential overdose in future which the respondent might observe and respond to. Five of the eleven were helpful strategies which were included in the peer-education program, other six were those commonly used by opiate users when they observe an overdose in their peers.

Whether a respondent plans to perform each and any of these types of intended behaviors when seeing anyone overdosed, were considered the outcome measures. A list of these eleven responses can be found in Table 2.

Potential determinants

Same eleven modes of overdose response were presented to the respondents as related to the question about their personal experience of overdose. They were expected to mark those responses which, according to their knowledge, people who happened to be around, practiced on them. We tested our hypothesis that knowing about rendering particular strategies which allowed surviving an overdose would lead to higher intentions to apply same strategies to other overdosed subjects. Socio-demographic characteristics and specifics of drug use behaviors were considered as potential confounding factors for all the outcome measures.

Data analysis

The data were analyzed using the statistical package SPSS 15.0 for Windows. Descriptive statistics of socio-demographic characteristics included percentage distributions of categorical variables as well as means and their 95% confidence intervals for continuous variables. All the descriptive characteristics were considered in all subjects and among those who pointed to their personal experience of having overdose. Percentages of those who experienced particular overdose responses and of those who intended to practice particular overdose responses were estimated among all the opiate users included in the study, among those who have ever experienced an overdose, and among those who have experienced a particular overdose response. Associations between having experienced a particular overdose response and the intention to perform it in future were explored in both bivariate and multivariate logistic regression analysis controlling for all the demographic and drug use characteristics available, namely age, gender, level of education, family status, place of living. In the logistic regression analysis, the in-

tention to perform each kind of overdose response was considered an outcome measure, and the experience of same response was considered a predictor. Namely, we answered the question 'Are those to whom ambulance was called when they were overdosed, more or less likely have intention to call an ambulance to help others whom they observe overdosed in future (other characteristics controlled)?' and ten similar questions about the other modes of action within overdose response. In this way we explored the role of social learning, as we were able to compare those who had an experience of overdose responses and those who did not have such experience.

With regard to peer-education, we did not have such comparison groups; thus we used another approach to the analysis: we compared intended behaviors with regard to those strategies that were recommended by peer-educators and those that were not. Because all the respondents were assumingly equally exposed, we compared not the groups of people but the groups of intended behaviors.

RESULTS

The subsample of opiate users consisted of more males (63.2%) than females (36.8%). On average, the study subjects were 26 years old. Most respondents (85.8%) acquired secondary education (full or basic secondary education at school, college, or vocational school), and 13.3% – higher education (basic or complete). More than half (54.6%) of respondents have never been married (see Table 1). More than three quarters of respondents reported living in an apartment or a house along with other people.

Injection opiate drug use was initiated on average at 17.8 years of age. Over 60% considered themselves dependent on drugs, and most reported using drugs daily (37,5%) or every other day (28,6%).

Over one third of the respondents reported to have experienced opiate overdose ever in life. This subgroup was on average slightly older, but having initiated drug use at an earlier age. In this subgroup compared to those who have never been overdosed, larger proportions were men, people with less than secondary education, those divorced or separated, living alone or in the street. A larger proportion of these people reported using drugs daily and a smaller proportion - once per week. Over 70% considered themselves drug dependent and a much larger proportion (42% vs. 25%) were clients of an addiction clinic.

Association between experienced and intended overdose response

Percentages of respondents who reported to have experienced each of the eleven types of overdose response strategies when having an overdose are shown in Table 2 and they were varying from 4 to 49%. Percentages of respondents who intended to apply each strategy in future varied from 5 to 80%. Overall, there was a consistency between the experienced and the intended percentages with regard to most strategies: those more likely practiced were more likely intended.

With regard to most prevalent strategies, percentages of those who planned to apply them was considerably higher than the percentage of those who have experienced them. This was true for calling ambulance, putting a person in recovery position, fixing the tongue, applying mouth-to-mouth resuscitation and cardiac massage, i.e. for those strategies that were recommended in the peer-education program. On average, percentages of those who intended to apply these strategies was 2.3 times higher than the percentage of those who experienced them.

With regard to several other strategies including applying cold, pain, ammonia, percentages of those who experienced the strategy and those who planned to practice it were rather close and on average differed just by 1.1 times.

With regard to all the strategies, the intention to apply a particular response in future was strongly associated with personal experience of having had this applied when having an overdose episode. Odds ratios were higher for less prevalent strategies and lower for those which are intended by the majority of respondents. No major confounding by the explored demographic and drug use characteristics was found. On average, with regard to the recommended strategies, the intended response after having experienced it was 3.1 more likely; with regard to other (non-recommended) strategies it was 2.6 more likely.

Characteristics of particular overdose responses in descending order of their frequency are listed below.

Particular overdose responses

Fixing the tongue was the most frequent both experienced (50%) and intended (80%) response to an observed overdose.

Calling ambulance is recommended as an effective overdose response strategy, and could be ex-

tremely important during first few minutes of overdose case (Curtis & Guterman, 2009). Overall, it was the second most frequent overdose response: 30% of those who have experienced opiate overdose reported this was done to them and only 19% of respondents reported that they do not plan to call ambulance for others being overdosed. However, those who have experienced overdose themselves were somewhat less likely (78% vs. 81%) to intend to call the ambulance to help others though those who reported that the ambulance was called for them were still more likely to intend to call it (85%).

Putting the victim of overdose in recovery position was the third most frequent reaction experienced

Table 1. Descriptive statistics of the study sample

Characteristics	Options	Among all (n=6667)	Among those with experience of overdose (n=2355)
Age		26,1 (25,9-26,2)	27,7 (27,5-28,0)
Age of first drug injection		17,8 (17,7-17,9)	17,4 (17,3-17,5)
Gender			
	Male	63,2%	69,9%
	Female	36,8%	30,1%
Educational level			
	less than secondary	10,5%	12,7%
	secondary	34,9%	32,8%
	professional	41,3%	40,5%
	higher education	13,3%	14,0%
Family status			
	Never married	54,6%	47,3%
	Married or living together	27,7%	28,5%
	Divorced or separated	15,6%	21,4%
	Widowed	2,1%	2,9%
Place of living			
	Apartment/house– alone	17,6%	21,5%
	Apartment/house – with other people	78,4%	74,1%
	Hotel /dormitory	1,8%	1,6%
	Medical facility	0,3%	0,7%
	Student dormitory	1,1%	0,5%
	Street (empty buildings, cars, parks, other)	0,8%	1,6%
Personal experience of non-fatal overdose ever in life			
	No	64,7%	
	Yes	35,3%	100%
Frequency of drug use by injection during last 7 days			
	Every day	37,5%	50,1%
	Once per two days	28,6%	23,7%
	Once per week	21,9%	14,9%
	Other	12,0%	11,2%
Registration at an addiction clinic			
	No	71,9%	54,4%
	Yes	25,0%	41,9%
	No answer	3,1%	3,7%
Drug dependence by self definition			
	Yes	61,3%	72,5%
	No	27,7%	19,3%
	No answer	11,0%	8,2%

by 25% and intended by 60% of respondents. Even higher percentages (86%) intended to practice this strategy among those who experienced its effect.

Applying cold was the fourth most frequent response and was both experienced and intended by about one third of the respondents. It is not an effective strategy, but it was suggested to be applied by 28% of respondents.

Mouth-to-mouth resuscitation was the fifth most frequent strategy applied. While about 10% experienced it, about 30% intended to use with the percentages mounting to 60% when related to those having experienced it.

Injecting water or glucose was on the sixth place with 14% having experienced and about 21% planning to use it.

Applying pain was intended by about 17% of respondents, and along with applying cold, no larger percent intended to apply these strategies than the percentages of those who have been applied them to.

Cardiac massage was on the eighth place among other strategies. It was experienced by 8% and intended by about 28%.

Comparison of peer-education and social learning effects

Though the data do not allow direct comparison of peer-education and social learning impact on the intended overdose response, Table 3 shows average percentages of respondents who intend certain strategies grouped by whether the strategy was experienced (subject

Table 2. Experience and intention to apply particular overdose response strategies among opiate injection drug users

	Experienced responses	Intended responses			Measures of association between personal experience of a particular measure and the intention to apply it to others		ΔOR(%)
	by those who have had overdoses	among all opiate users	among all who have had overdoses	among those who have experienced a particular response when being overdosed	crude odds ratio (95% CI)	adjusted odds ratio (95% CI)*	
N	2355	6667	2355				
Recommended strategies							
Put the person in recovery position	25,2%	61,2%	60,2%	86,2%	4,4 (3,5–5,6)	4,4 (3,5–5,6)	-0,3
Fix the tongue	49,1%	79,8%	81,3%	89,8%	2,6 (2,1–3,1)	2,5 (2,0–3,1)	3,3
Mouth-to-mouth resuscitation	10,2%	31,4%	30,3%	59,6%	3,4 (2,6–4,4)	3,6 (2,7–4,8)	-6,8
Cardiac massage	8,0%	27,8%	28,0%	55,7%	3,4 (2,6–4,6)	3,4 (2,5–4,5)	1,6
Call ambulance	30,5%	81,0%	78,1%	84,7%	1,4 (1,1–1,7)	1,5 (1,2–1,8)	-8,4
Sum of helpful strategies	123,0%	281,2%	277,9%	376,1%			
Needless strategies							
Help to walk	5,9%	5,4%	5,5%	21,6%	5,2 (3,4–8,0)	5,2 (3,4–8,0)	0,5
Apply snow, ice or cold shower	32,2%	28,0%	33,2%	52,5%	3,3 (2,9–3,9)	3,2 (2,7–3,7)	5,5
Apply physical pain	20,0%	16,9%	20,8%	42,3%	4,1 (3,4–5,0)	3,8 (3,1–4,7)	8,2
Inject water or glucose	14,4%	21,5%	21,7%	49,0%	3,8 (3,1–4,8)	3,9 (3,1–4,8)	-0,8
Take the victim to fresh air	8,3%	7,9%	8,2%	29,2%	5,3 (3,8–7,3)	4,9 (3,5–6,9)	6,4
Use ammonia	3,9%	5,1%	5,5%	24,2%	6,3 (3,8–10,3)	5,4 (3,3–9,0)	13,6
Sum of needless strategies	84,7%	84,8%	94,9%	218,7%			

* adjusted for age, gender, education, place of living, marital status, frequency of drug use, dependence and age of drug use initiation;

ΔOR(%) - percent of attenuation of OR after adjustment for the socio-demographic and drug use characteristics.

Table 3. Average percentages of people who intend to practice a particular overdose response, depending on whether a strategy was experienced and recommended by peer-educators, and their ratios

		Participants		Ratios
		experienced	non-experienced	
Strategies	recommended	75%	55%	1,37
	non-recommended	36%	13%	2,84
Ratios		2,06	4,28	

to social learning) and whether it was recommended (subject to peer-education). Marginal ratios show that both experienced and taught strategies are more likely intended. However, when comparing ratios by groups we see that ratio for peer-education is larger among those who did not experience a particular response. Similarly, the ratio for social learning is larger for those strategies not suggested by peer-educators. Thus, social learning and peer-education play competing roles in determining the overdose response strategies intended by the opiate users.

DISCUSSION

The conducted study allowed comparing the impact of peer-education and social learning on overdose response intentions among opiate users in Ukraine. We found that peer-education to larger extent determines the intentions of those who have not experienced particular overdose responses themselves. On the other hand, social learning contributes to persisting of those experienced strategies which cannot be recommended.

As behavioral strategies rendered by their peers are readily uptaken by representatives of high-risk groups of injection opiate drug users, peer-education and other interventions need to take this into account. We attribute the observed phenomenon to strong social learning present within the IDUs community (Bandura, 1986, 1989). We hypothesize that younger IDUs shape their behavioral patterns with regard to overdose response strategies, and this happens through observational learning. These behavioral patterns of overdose response performed by older IDUs are important in modeling behaviors by younger IDUs; similarly, feedback provided by more experienced peers can contribute to reinforcing the acquired behavioral patterns. Moreover, observational learning involves maturation and experience, which was shown in numerous studies of parents-infants relationships. In a similar way, younger less experienced IDUs would imitate behaviors of older more experienced IDUs.

Social networks theory is another helpful approach to understand the revealed phenomenon (Klovdahl, 1985). It explains how information spreads via IDUs community through the network of contacts. This leads to understanding that those overdose response strategies, which are believed by IDUs to be effective, would eventually spread to whole IDUs community of the region via social networks. The positive side of this finding is that healthy and genuinely effective response strategies once popping into the target network will be spread through it as well. The goal for harm reduction professionals is to teach and train a critical portion of the target group. Similar conclusions were made in several papers by Samuel Friedman and his colleagues (Friedman et al., 1997; Neaigus et al., 1994). The fact that this phenomenon was observed in a group of IDUs who were not earlier involved in harm reduction programs shows that certain behavioral changes can be achieved without direct coverage of all target population. Certainly this does not refer to those behavioral changes that are related to equipment or disposable materials use. However, behaviors that require information and skills (like what to do with overdosed individuals) are likely to be pliable to this type of impact.

The second major finding is related to the discordance between intentions and practice. Obviously, it may be considered a result of peer-education integrated in the recruitment process. The prevalence of intended responses was much higher than that of the experienced ones, and this clearly differed for taught (recommended) and non-taught responses.

Another finding in our study is related to a rather high prevalence of both practiced and intended responses like applying cold or pain to those suffering opiate overdose. The observed belief that this is something worthwhile doing may

derive from poorly learnt lessons of how to check the consciousness of those overdosed (Shulga, Matiyash, & Varban, 2008), and the diagnostic technique was understood as a way to provide help. Misconceptions shared by IDUs about strategies of overdose response are gained with experience of drug use (and probably observing overdose in others), are more prevalent in those who have longer experience of drug intake, and stronger dependence. Same concept of social learning discussed above may be the anchor that keeps these improper strategies in practice. To overcome this, strong emphasize on practice component of recognizing and responding to opiate overdose is extremely important as done in countries where effective programs are in place (Bennett, Bell, Tomedi, Hulsey, & Kral, 2011; Piper et al., 2007; Piper et al., 2008; Sherman et al., 2009; Tobin, Sherman, Beilenson, Welsh, & Latkin, 2009)

The study bears some limitations as it is based on self-reported data, which could be associated with social desirability, interviewer bias and recall bias, that is respondents might have been likely to select those overdose response strategies they had heard of from their peers. However, as we compare responses prone to same impacts, this makes unlikely to affect the overall conclusions. The sampling method did not allow for genuinely representative sample of Ukrainian IDUs. However, taking into account the specifics of the sampled group, the chosen sampling method was appropriate to answer the research questions that we addressed.

The present study has practical implications for the 'Take Home Naloxone' (THN) program provided since 2009 to overcome overdose problem. The THN program consists of educational component about effective overdose prevention and response strategies to develop practical skills of applying them. Naloxone kits (2 or 3 doses of Naloxone, alcohol wipes and syringes) are distributed to IDUs, their sexual partners and family members. We recommend that educational component takes into account and discusses with program participants their earlier experience and beliefs regarding response strategies practiced in IDU community. Further research is needed to evaluate how knowledge and skills obtained by IDUs through THN programs influence overdose-related mortality and peer-rendered help practices in Ukraine.

CONCLUSIONS

1. Social learning and transfer through social networks is a phenomenon which plays a major role in the community of injection opiate drug users.

2. By means of social learning, behavioral changes that are based on knowledge and skills can reach IDUs groups that are not directly linked to harm reduction programs.

3. Social learning and peer-education show interaction with each other with regard to overdose response: those strategies that have been experienced are less likely influenced by education programs, and vice versa.

4. Misconceptions shared by IDUs about strategies of overdose response gained with experience of drug use are to be addressed in the overdose prevention and response programs that are being established and developed in Ukraine.

ABOUT THE AUTHORS

Anna Tokar
School of Public Health, National University of Kyiv-Mohyla Academy, Kiev, Ukraine.
International Charitable Foundation "International HIV/AIDS Alliance in Ukraine"

ORCID 0000-0003-4992-6819

Email: annatokar@yandex.ru

Tatiana I. Andreeva was affiliated with the same School of Public Health, National University of Kyiv-Mohyla Academy, Kiev, Ukraine.

ORCID 0000-0001-5663-6225

Email: tatianandreeva@gmail.com

Liudmyla Shulga
School of Public Health, National University of Kyiv-Mohyla Academy, Kiev, Ukraine.
International Charitable Foundation "International HIV/AIDS Alliance in Ukraine"

Email:
shulga.liudmyla@gmail.com

This paper was received: December 28, 2012; accepted: June 16, 2014; published: June 27, 2014.

REFERENCES

Baca, C. T., & Grant, K. J. (2005). Take-home naloxone to reduce heroin death. *Addiction, 100*(12), 1823–1831. doi: 10.1111/j.1360-0443.2005.01259.x

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*: Prentice-Hall, Inc.

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist, 44*(9), 1175–1184. doi: 10.1037/0003-066x.44.9.1175

Bennett, A. S., Bell, A., Tomedi, L., Hulsey, E. G., & Kral, A. H. (2011). Characteristics of an overdose prevention, response, and naloxone

distribution program in Pittsburgh and Allegheny County, Pennsylvania. *Journal of Urban Health, 88*(6), 1020–1030. doi: 10.1007/s11524-011-9600-7

Berleva, G. O., Dumchev, K., Kasyanchuk, M., Nikolko, M., Saluk, T., Shvab, I., & Yaremenko, O. (2012). Analytical report of the results of research “Evaluation of number of most at risk populations for HIV in Ukraine”. Kyiv: ICF “International Alliance in Ukraine”.

Berleva, G. O., Dumchev, K. V., Kobyshcha, Y. V., Paniotto, V. I., Petrenko, T. V., Saliuk, T. O., & Shvab, I. A. (2010). Analytical report based on sociological study results "Estimation of the Size of Populations Most-at-Risk for HIV Infection in Ukraine in 2009" from http://www.aidsalliance.org.ua/ru/library/our/monitoring/pdf/indd_en.pdf.

Curtis, M., & Guterman, L. (2009). *Overdose Prevention and Response A guide for people who use drugs and harm reduction staff in Eastern Europe and Central Asia*. New York: Open Society Institute.

EMCDDA. (2010). EMCDDA (European Monitoring Centre for Drugs and Drug Addiction) > Countries > Country overviews > Ukraine > Drug-related deaths. from http://www.emcdda.europa.eu/publications/country-overviews/ua#drd

Friedman, S. R., Neaigus, A., Jose, B., Curtis, R., Goldstein, M., Ildefonso, G., . . . Des Jarlais, D. C. (1997). Sociometric risk networks and risk for HIV infection. *Am J Public Health, 87*(8), 1289–1296. doi: 10.2105/ajph.87.8.1289

Golubchykov, M., Sil’chenko, V., Irkin, I., Sazonova, I., Gaydar, S., & Kravchuk, N. (2008). *Coding of incidence and mortality according to International Statistical Classification of Diseases 10, methodological recommendations” (in Ukrainian)*. Kyiv: National medical academy of postgraduate education named after Shupik P. L.

Hedrich, D., Vicente, J., & Fay, P. (2004). Overdose: a major cause of avoidable death among young people. *Drugs in Focus*(13).

Klovdahl, A. S. (1985). Social networks and the spread of infectious diseases: the AIDS example. *Social Science & Medicine, 21*(11), 1203–1216.

Neaigus, A., Friedman, S. R., Curtis, R., Des Jarlais, D. C., Terry Furst, R., Jose, B., . . . Ward, T. (1994). The relevance of drug injectors' social and risk networks for understanding and preventing HIV infection. *Social Science & Medicine, 38*(1), 67–78.

Piper, T. M., Rudenstine, S., Stancliff, S., Sherman, S., Nandi, V., Clear, A., & Galea, S. (2007). Overdose prevention for injection drug users: lessons learned from naloxone training and distribution programs in New York City. *Harm Reduct J, 4*, 3. doi: 10.1186/1477-7517-4-3

Piper, T. M., Stancliff, S., Rudenstine, S., Sherman, S., Nandi, V., Clear, A., & Galea, S. (2008). Evaluation of a naloxone distribution and administration program in New York City. *Subst Use Misuse, 43*(7), 858–870. doi: 10.1080/10826080701801261

Sherman, S. G., Gann, D. S., Tobin, K. E., Latkin, C. A., Welsh, C., & Bielenson, P. (2009). "The life they save may be mine": diffusion of overdose prevention information from a city sponsored programme. *Int J Drug Policy, 20*(2), 137–142. doi: 10.1016/j.drugpo.2008.02.004

Shulga, L., Matiyash, O., & Varban, M. (2008). Model “Naloxone - agent for opiates overdose control as part of harm reduction program for IDUs” (in Russian). Kyiv: ICF “International Alliance in Ukraine”.

Shulga, L., Smyrnov, P., Matiash, O., & Dacenko, O. (2009). Model “Peer-driven intervention”: history, experience, perspectives (in Russian). Kyiv: ICF “International Alliance in Ukraine”.

Tobin, K. E., Sherman, S. G., Beilenson, P., Welsh, C., & Latkin, C. A. (2009). Evaluation of the Staying Alive programme: training injection drug users to properly administer naloxone and save lives. *Int J Drug Policy, 20*(2), 131–136. doi: 10.1016/j.drugpo.2008.03.002

Tokar, A., & Andreeva, T. (2012). Estimate of the extent of opiate overdose in Ukraine. *Tobacco Control and Public Health in Eastern Europe, 2*(Supplement 1, 2nd conference 'Economics, sociology, theory and practice of public health'), s57-s58. doi: 10.6084/m9.figshare.92843

ANNEX

Overdose-related questions in the PDI questionnaire

1. Have you ever experienced overdose in your whole lifetime?

- No
- Yes

2. Have you received any help?

- No
- Yes

3. What did they to help you? (multiple choice)

- Placed in recovery position
- Took out and fixed the tongue
- Conducted mouth-to-mouth resuscitation
- Conducted cardiovascular resuscitation
- Helped to walk
- Applied cold, ice, cold water (including cold shower)
- Applied pain (pinch, hit)
- Injected water or glucose
- Called ambulance
- Took to fresh air
- Applied ammonia spirit
- Other (identify what)
- Difficult to answer
- Refuse to answer

4. If you observe a person experiencing overdose what will you do to help this person? (multiple choice)

- Put in recovery position
- Take out and fix the tongue
- Conduct mouth-to-mouth resuscitation
- Conduct cardiovascular resuscitation
- Help to walk

Apply cold, ice, cold water (including cold shower)

Apply pain (pinch, hit)

Inject water or glucose

Call of ambulance

Take to fresh air

Apply ammonia spirit

Other (identify what)

Difficult to answer

Refuse to answer

5. What do you think are the chances for you personally to experience overdose?

Impossible

Possible

Difficult to answer

Refuse to answer

6. If you experience OD what are the chances for you to be along in this case?

Impossible

Possible

Difficult to answer

Refuse to answer

7. If you experience overdose, will you receive help?

Yes

No

Difficult to answer