Population Size Estimation of Drug Users in Isfahan City (Iran) Using Network Scale-up Method in 2018

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Abstract

Background: To provide prevention programs and educate drug users (DUs), the estimation of their population is necessary. This study aimed to estimate the population size of this hidden group in Isfahan city as a metropolitan in Iran using the network scale-up method (NSUM).

Methods: This cross-sectional study was performed in summer 2018 on 1000 people selected through a multistage sampling method based on 14 region of the municipality of Isfahan. The data collection tool was a questionnaire that was previously used in Dr. Banshi’s national plan without any changes. The Cronbach’s alpha value of the questionnaire was 0.826. Using correction factors such as transparency of response and the ratio of social network size used in previous national studies, the number of people with high-risk behaviors was estimated. The results were analyzed through NSUM based on survey analysis.

Findings: Among all kinds of DUs, men were the largest consumers. The prevalence of use of opium, cannabis, heroin/crack, stimulants, ecstasy, hallucinogens, tramadol, zolpidem, tobacco, and drug injection was 2983, 2342, 613, 766, 86, 268, 1185, 213, 5869, 135 in 100000 people, among individuals of over 18 years of age. In both sexes, the prevalence of using opium and its nectar and illegal treatment with methadone and buprenorphine was higher in people of over 30 years of age, while the prevalence of consuming cannabis, ecstasy, tramadol, tobacco products, and stimulants was higher in the age group of 18 to 30 years.

Conclusion: The results indicated that the prevalence of different DUs in Isfahan city, especially among men was higher than the reported average (especially in young men of 18-30 years of age). Since the prevalence of drug use varies based on the type of substance used among age groups, targeted preventive planning based on the type of drug used and age group is recommended.

Keywords: Drug users; Network scale-up method; Hidden population; Iran

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**Introduction**

To estimate the population size of hidden groups such as drug users (DUs) is a challenge for researchers and health care practitioners as well as society. The amount and type of drug use differ throughout the world. In a review in 2018, the prevalence of drug injection was estimated to be 0.033 among 31 countries.\(^1\) In a national research in Iran in 2014, the total number of DUs was estimated to be about 7500/100000 people.\(^2\) The results of various studies in Iran (2008-2012) have indicated that addiction with a frequency of 16.4% is the most important issue in the community.\(^3\) On average, 3 family members of an addicted person face drug-related problems directly.\(^4\) Disorganized family, increased crime rate, and some diseases such as hepatitis B and C, reduced work efficiency, as well as economic complications due to the high cost of care and treatment for DUs are some of the consequences of drug use.\(^5\) Therefore, with increase in the prevalence of drug use among the general population, individual, social, and economic problems in society will multiply.\(^6\) Therefore, planning to prevent and control drug use seems necessary and requires an understanding of all aspects of DU groups including their population size. Despite frequent efforts, for many reasons such as legal prohibition, stigma and discrimination, and lack of social acceptance in many countries of the world including Iran, these groups remain hidden and inaccessible, which makes it difficult to estimate their population size.\(^7,8\)

There are 2 methods for estimating the population size of hidden groups, direct and indirect. Direct methods such as census, counting, and referring have disadvantages such as the need for direct contact with the hidden population, individuals' hesitation in responding directly to questions, and the likelihood of the occurrence of response bias and social desirability bias that lead to underestimation.\(^9,10\) Therefore, indirect methods such as network scale-up method (NSUM), mapping, crosswise, and capture-recapture have been used to estimate the population size of hidden groups.\(^7\) Studies have indicated that NSUM is a more accurate method of estimating the population size of hidden groups than other indirect methods.\(^11,12\) This method does not require direct contact with hidden groups;\(^7,13\) a random sample of the general population is questioned about the number of people who have hidden behaviors on their social network. Then, considering the social network size in the general population and some other indicators, the size of the hidden population is estimated.\(^14-16\)

This method was used for the first time in 1986 to estimate the population size of people lost in the Mexican earthquake.\(^11\) It was then used to estimate the size of other hidden groups such as HIV affected individuals, earthquake victims, and homosexuals.\(^17\) In Iran, this method was also used to estimate the size of some hidden populations, for example, patients suffering from breast, uterine, ovarian, prostate, and bladder cancer in Kerman city, Iran,\(^18\) as well as dead and injured people in Bam earthquake in 2014.\(^19\) In addition, it was found in Golhesar village in Rey city, Iran, in 2016 that groups with the highest population among all DUs were men who smoked (103 per 1000 people), used hookah (88 per 1000 people), and used opium (76 per 1000 people).\(^3\)

In a national NSUM study performed in 2014, the prevalence of the use of opium and its nectar, heroin/crack and stimulants, tramadol and sedatives, illicit substances, and legal and illegal methadone therapy in Isfahan, as the third immigrant-friendly metropolis in Iran with a population of 2 million people, was above the national average.\(^2\) Although this study was conducted nationally, based on the Ministry of Health's suggestion, it was decided to estimate the population of DUs in Isfahan using NSUM. The results of this study can be helpful to provincial policymakers and experts in estimating the extent, direction, and type of preventive activities required, the costs, and required manpower as well as to obtain economic and executive support.

**Methods**

In a descriptive, cross-sectional study approved by the Vice-Chancellor for Research of Isfahan University of Medical Sciences, Iran, under code IR.MUI.REC.1396.296140, the number of DUs in Isfahan in June 2018 was estimated indirectly using NSUM.

The sample size was estimated at about 1000 people considering the drug use prevalence of 0.025 based on a national study,\(^2\) 95% confidence interval (CI), error rate of 0.03, and dropout coefficient of 0.02. Sampling was performed using
A standard questionnaire was used for data collection; its validity was evaluated by the experts in the Ministry of Health's Mental Health Bureau and its Cronbach's alpha was 0.826. Moreover, in order to localize the questionnaire for people in Isfahan, the questionnaire was also reviewed and modified during the sessions with experts in Isfahan and its content and nominal validity were evaluated through qualitative methods. Its reliability was evaluated in a pilot study and the kappa coefficient was estimated at 0.76. The main part of the questionnaire consisted of 12 questions on identifying at least 1 instance of using a drug such as opium, cannabis, heroin/crack, stimulants, ecstasy pills, hallucinogens, tramadol, zolpidem, and tobacco, injections of drugs in the past year, and using legal or illegal treatment with methadone, buprenorphine, and opium syrup. Each question is divided into 2 parts based on gender, male and female, and has three age groups: under 18, 18 to 30, and over 30. In each section, if the respondents knew someone, they would report the number of people. The last part included demographic questions (i.e., age, sex, education, and marital status).

Four interviewers (2 women and 2 men) were selected and trained through a role-playing method (Mr. Tavasoli, Mr. Torkan, Ms. Rezaei, and Ms. Talebi Por). The interviewers were assigned to different districts according to the timetable and based on the age-sex sampling table; they selected the passers-by and asked them for an informed consent. Before asking the questions, the interviewer explained the term “recognition” to the participants (having a relationship with an addicted person since 2 years ago, either in person or by phone, email, or any other methods).

Ethical considerations: All questionnaires were completed anonymously and all information remained confidential. In order to persuade people to answer the questions, the interviewers tried to find a relatively secluded place. Due to the possibility of increasing unwillingness to take part in the study, verbal consent was obtained rather than a written one.

The following formula was used to estimate the risk groups in the NSUM:

\[ T \times \frac{\sum_M}{2T} \times \frac{1}{v} \times \frac{1}{p} \]

where \( T \) is the total number of people in the community (the total population of Isfahan was 1961260 people), \( M \) is the number of DUs recognized by each participant, \( C \) is the social network size that is estimated at about 308 people in Iran. Due to the fact that the social network size of people with high-risk behaviors is smaller than general people, the popularity ratio (\( p \)), the ratio of the size of the network of high-risk groups to the general population, was used. Visibility (\( v \)) or the transparency coefficient is the percentage of people in contact with a DU and aware of their addiction. In this study, the transparency coefficient varied from 0.45 to 1 based on the type of drug. Stata Software (version 11; StataCorp, College Station, TX, USA) was used to analyze the data. The indicators of mean, standard deviation, frequency, and frequency percentage were used to data analysis and independent t-test and chi-squared test were used for data analysis. To compensate for the possible lack of response of the participants and to ensure that the participants were similar to the members of the community, and thus, to increase the validity of the results, the 95% CI of the estimates was calculated using survey analysis. Thus, participants from each of the 14 regions were weighted based on the population of that area (probability weight). The selected clusters from each area were also coded 1 to 4 as primary sampling units. The sex variable was considered as a stratum. A Finite population correlation was
used to determine the odds equivalent in selecting the samples. Finally, the estimations were calculated to a 95% CI.

**Results**

**Participant's characteristics:** A total of 1000 participants took part in the survey 50% of which were women. The age of the participants ranged from 18 to 73 years. The mean age (SD) of the participants was 34.4 (12.46) years and there was no significant difference between the mean age of men and women (P = 0.301). In both genders, most of the participants had a diploma. There was no significant difference between men and women in terms of education (P = 0.059). Most of the participants were married. There was no significant difference in marital status in both sexes (P = 0.757) (Tables 1 and 2).

The average total DUs (Drug use regardless of their use method except tobacco and sedatives) in Isfahan were estimated to be 9016/100000 people (95% CI: 8145 - 9887). The number for men and women was 8593/100000 people (95% CI: 9462-9462) and 422/100000 people (95% CI: 565-281), respectively. In all types of drugs, the prevalence of drug use was higher in men than women. In general, the highest prevalence was related to the use of tobacco, opium, and heroin/crack, respectively (Figure 1).

Among men, cannabis was the third most used drug after tobacco, and opium and its nectar, while it was the second most used drug among women. In both sexes, the prevalence of opium and Shireh use and illegal treatment with methadone and buprenorphine among people over 30 years of age was higher than that in other age groups.

![Figure 1. Prevalence of drug use in 100000 people based on drug type (industrial drugs)](image)

Likewise, the prevalence of cannabis, ecstasy, hallucinogens, tramadol, tobacco, stimulants, and zolpidem among men of 18-30 years of age was higher than that among the older and younger age groups. In addition, the prevalence of cannabis, stimulants, ecstasy, tramadol, zolpidem, and tobacco, legal treatment with methadone and buprenorphine, and injecting drug use was higher in women of 18 to 30 years of age. Furthermore, the prevalence of injecting drug use and legal treatment with methadone and buprenorphine was 0 in women under 18 years of age (Table 2).

### Table 1. Demographic characteristics of the participants

| Variable                          | Male       | Female     | P      |
|-----------------------------------|------------|------------|--------|
| Age (mean ± SD)                   | 35.20 ± 12.59 | 33.80 ± 12.05 | 0.076' |
| Age category (year) [n (%)]       |            |            |        |
| 18-20                             | 56 (5.6)   | 84 (8.4)   | 0.301**|
| 20-30                             | 163 (16.3) | 140 (14.0) |        |
| > 30                              | 281 (28.1) | 276 (27.6) |        |
| Education [n (%)]                 |            |            |        |
| Illiterate or elementary           | 34 (3.4)   | 20 (2.0)   | 0.059**|
| Pre-diploma                       | 91 (9.1)   | 80 (8.0)   |        |
| Diploma                           | 198 (19.8) | 199 (19.9) |        |
| Graduated                         | 177 (17.7) | 201 (20.1) |        |
| Marital status [n (%)]            |            |            |        |
| Single                            | 216 (21.6) | 169 (16.9) | 0.767**|
| Married                           | 280 (28.0) | 322 (32.2) |        |
| Divorced                          | 4 (0.4)    | 5 (0.5)    |        |
| Widowed                           | 0 (0)      | 4 (0.2)    |        |

SD: Standard deviation  
't-test, **'x²-test
### Table 2. The estimated prevalence [95% confidence interval (CI)] of drug use based on gender and age groups

| Have used at least once in the past year | Total | Point prevalence (95% CI) per 100000 |
|-----------------------------------------|-------|--------------------------------------|
|                                         | Total | < 18 | 18-30 | > 30 | Total | < 18 | 18-30 | > 30 |
| Opium                                  | 2983  | 2685 | 58    | 917  | 1942  | 61   | 1.57  | 21   | 44   |
| (2561-3406)                             |       | (2302-3068) | (34-82) | (715-1118) | (1620-2193) | (36-86) | (0.7-3.9) | (5.5-36) | (28-60) |
| Cannabis                                | 2342  | 2101 | 391   | 323  | 241   | 29   | 184   | 28   |
| (1902-2782)                             |       | (1692-2509) | (239-542) | (1139-1636) | (224-421) | (147-336) | (14-43) | (110-259) | (6-50) |
| Heroin and Crack                        | 613   | 597  | 21    | 271  | 283   | 22   | 0.6   | 14   | 7    |
| (406-820)                               |       | (393-801) | (12-31) | (175-367) | (172-394) | (5-39) | (0.2-1.6) | (2-26) | (2-12) |
| Stimulants                              | 766   | 722  | 33    | 425  | 264   | 44   | 3     | 26   | 15   |
| (575-965)                               |       | (537-907) | (13-53) | (305-545) | (186-341) | (21-67) | (0.5-7) | (7-44) | (7-23) |
| Ecstasy                                 | 86    | 68   | 5     | 55   | 6     | 21   | 3     | 16   | 2    |
| (40-137)                                |       | (35-100) | (0.7-10) | (27-82) | (2-14) | (0.5-42) | (0.3-6) | (4-35) | (1-6) |
| Hallucinogens                           | 268   | 256  | 45    | 201  | 10    | 11   | 2     | 7    | 2    |
| (186-350)                               |       | (182-331) | (18-71) | (146-256) | (1.5-22) | (0.3-23) | (1-6) | (1-12) | (1-6) |
| Tramadol                                | 1185  | 1123 | 98    | 764  | 263   | 59   | 3     | 41   | 15   |
| (976-1394)                              |       | (954-1293) | (52-145) | (625-903) | (167-340) | (25-94) | (1-7) | (16-66) | (4-26) |
| Zolpidem                                | 213   | 140  | 38    | 56   | 45    | 74   | 9     | 33   | 32   |
| (4-431)                                 |       | (5-285) | (6-83) | (2-115) | (0.5-90) | (1-148) | (5-23) | (11-76) | (5-58) |
| Tobacco products                        | 5869  | 5010 | 552   | 2710 | 1737  | 870  | 77    | 532  | 260  |
| (5480-6257)                             |       | (4532-5488) | (453-651) | (2493-2927) | (1590-1883) | (761-978) | (56-98) | (456-608) | (225-296) |
| Injectable drugs                        | 135   | 131  | 4     | 58   | 69    | 5    | 0     | 3    | 2    |
| (90-180)                                |       | (87-174) | (1-6) | (19-96) | (48-90) | (0.1-9) | 3     | (1-7) | (1-4) |
| Continuous injectable drugs             | 57    | 57   | 0.5   | 34   | 22    | 0    | 0     | 0    | 0    |
| (24-90)                                 |       | (24-89) | (0.2-1) | (2-67) | (11-33) |         |       |       |       |
| Legitimate treatment with               | 1592  | 1568 | 62    | 621  | 184   | 8     | 42    | 9    | 5    |
| Methadone and Buprenorphine             | (1426-1757) | (1403-1732) | (29-95) | (518-724) | (728-987) | 18 (5-30) | (2-23) | (0.5-10) |
| Illegitimate treatment with             | 434   | 432  | 16    | 137  | 279   | 1    | 0     | 0    | 1    |
| Methadone and Buprenorphine             | (358-509) | (357-507) | (2-29) | (90-183) | (223-336) | (0.5-2) |       |       |       |

CI: Confidence interval
The results indicated a high prevalence of use of different types of drugs in Isfahan. Tobacco use was the highest prevalence, followed by opium and cannabis in men, and cannabis and opium among women, respectively.

The highest prevalence of drug use in Isfahan was related to tobacco. In a study by Meysamie et al., the use of tobacco and its derivatives was estimated at 14.8% in the country and 13.7% in the population aged 15-64 years.\(^1\) The prevalence of smoking and hookah was 12.5% and 2.7%, respectively.\(^2\) Holding educational programs to reduce the use of tobacco and especially hookah in the Iranian younger generation is recommended.

The prevalence of the use of opium and its nectar in Isfahan was likely similar to that of a study by Baneshi (2565/100000 people).\(^2\) but it is higher than the national average estimate reported in a study by Nikfarjam et al. (1500/100000 people).\(^2\) In the present study, after tobacco products, opium was the second and third most used substance among men and women, respectively.

In the current study, cannabis use was estimated at around 2000/100000 people, which is much higher than the estimated number reported by Nikfarjam et al.\(^2\) (2016) (457/100000 people) and Baneshi (854/100000 people).\(^2\) Although a study indicated that cannabis use was not common among Iranian women,\(^3\) in the present study, cannabis was the second most commonly used substance among women in Isfahan after tobacco products.

The prevalence of tramadol use in Isfahan was approximately similar to that reported by Baneshi (1185/100000 people).\(^2\) Easy access to this drug, lack of parental awareness of its consequences, the treatment of early ejaculation, and the lack of a serious plan for its use in society are some of the causes of the tendency to use tramadol.\(^4\)

The prevalence of stimulant drug use in Isfahan was similar to that in the study by Baneshi (864/100000),\(^2\) but higher than that in the study by Nikfarjam et al. (300/100000).\(^2\) In the study by Shokouhi et al.\(^5\) and Ansari-Moghaddam et al.\(^6\) the substances with the highest prevalence of use among adolescents in the country were hallucinogens (25.3%), sedatives (25.0%), hookah (23.1%), and opium (22.0%) and stimulants, respectively; they reported entertainment and coping with stress and anxiety (20.1%), and social crises as some of the motivations for substance abuse. Evidently, easy and low-cost access to different drug compounds and purity rates are other reasons for increase in drug use.\(^7\)

The prevalence of heroin/crack use in Isfahan is like that reported by Baneshi,\(^2\) but is higher than that reported by Nikfarjam et al. (350 per 100000 people).\(^2\) The prevalence of hallucinogens in Isfahan was like that in the study by Baneshi (221/100000),\(^2\) but was lower than that in the study by Nikfarjam et al. in which the use of hallucinogens combined with ecstasy and amphetamines was examined (300/100000).\(^2\) In a study by Hamdieh et al., the rate of delusional and psychotropic substances like ecstasy among adolescents and young people aged 15 to 35 years in Tehran, Iran, was reported to be 3.8%.\(^7\) Further study into how this age group can gain access to hallucinogens is recommended.

The highest prevalence of the use of ecstasy pills in the city of Isfahan, which was first estimated by the NSUM, was in the sexually active age group of 18-30 years. Prolonged duration of ejaculation may be one of the reasons for the use of ecstasy pills. A study reported a prevalence of about 21% for the use of ecstasy pills at least once in the lifetime of students of Guilan University of Medical Sciences, Iran.\(^8\)

The present study estimated the prevalence of zolpidem in Isfahan through NSUM for the first time, and the results indicated that the use of this hypnotic drug was much higher than the expected medical consumption, especially in people of 18 to 30 years of age. There have been reports of zolpidem addiction in athletes, physicians, and students, necessitating attention to this modern addiction and examination of the causes of young people's tendency to take this drug.\(^9\)
The prevalence of injecting drug use in Isfahan was lower than estimations in the studies by Baneshi (457000),2 and Nikfarjam et al.22 and Jafari et al. in Tabriz (280/100000 people).30 People who inject drugs are one of the key groups at higher risk of HIV/HCV infection in some parts of the world including Iran.31

Female sex workers, homosexual men, and injecting drug users (IDUs) are the 3 most vulnerable groups of a society at risk of developing HIV.32

In the present study, it was estimated that more than one-third of men who inject drugs had a constant behavioral addiction, while the prevalence of injecting drugs in women was 0.

The results of this study indicated that the prevalence of different drug abuse types among men is more likely than women. The results of several national surveys in Iran indicated that men make up more than 90% of the addicted population.33 The reasons for this gender difference in drug use include greater family and social freedom and higher income in men, as well as the fear of disclosing this behavior in women due to cultural reasons, and therefore, low reporting among women.21

According to the results of the present study, the highest prevalence of drug use among men and women was observed in the age groups of 18 to 30 and over 30 years, which is in line with the study by Nikfarjam et al. In the study by Kelishadi et al. in Isfahan, the age of onset of smoking and hookah use was 14.5 and 11.2 years, respectively.24 According to the subject of 10-year causes of the country’s prisons and state addiction treatment centers, about 70% of the country’s addicts are between 19 and 39 years of age.35 One of the reasons for the high prevalence of substance use at this age may be achieving social independence after entering university, work, or military environments. Evidently, it is also important to pay attention to children of less than 18 years of age. A study by Ranjbaran et al. indicated that students with poor economic status and a large family are more likely to be exposed to drug use and addiction.36 In another study, the most number of drug users used cigarettes, hookah, pills, cannabis, drinks, boys were aged 19-20 and then 17-18 years.37

One of the limitations of the present study was the impossibility of household-based random sampling due to the sensitivity of the considered subject, i.e., drug use. Therefore, through multistage sampling and random selection of people at specified intervals, we attempted to approach the sampling systematically. Second, there is likely reporting bias because some refusing people to participate in the study may recognize many DUs in their social network. However, due to the inability to track people, it was not possible to check and compare the characteristics of DUs with those participating in the study. Third, the size of the social network of DUs is smaller than that of the general population,2 which will cause underestimation. Moreover, the size of the social network of the general population may vary by gender and age, and even by various regions of the country. However, due to the lack of accurate information in this regard, it was decided to use the indices used in earlier studies in Iran.

Conclusion

The results of the present study showed that the prevalence of drug use in Isfahan city, especially in men, is significant and in some cases even higher than the average reported in other studies in the country. Since the prevalence of drug use varies by the type of substance used in the age groups of 18-30 and over 30 years, targeted preventive planning by type of drug and age group is recommended.

Conflict of Interests

The Authors have no conflict of interest.

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Authors’ Contribution

Collected data, analysis, and wrote the original draft: MAJ; statistics advisor- contributed to analysis: MB; contributed to analysis, review, and editing: MN.
References

1. Degenhardt L, Peacock A, Colledge S, Leung J, Grebely J, Vickerman P, et al. Global prevalence of injecting drug use and sociodemographic characteristics and prevalence of HIV, HBV, and HCV in people who inject drugs: A multistage systematic review. Lancet Glob Health 2017; 5(12): e1192-e1207.

2. Baneshi MR. Estimation of size population of sex high risk and drug abuser and alcohol user in Iran in 2013. Kerman, Iran: Kerman University of Medical Sciences; 2013. p. 80-96. [In Persian].

3. Lotfi Z, Gheirati E, Tajik F, Tavakoli Z, Mahmoodi M, Holakouie Naieni K. Estimation of the population of drug abusers using the network expansion method for assessment of the community in the Golhesar village, Tehran. J Sch Public Health Inst Public Health Res 2016; 14(3): 29-43. [In Persian].

4. Sarrami H, Ghorbami M, Taghavi M. The survey two decades of prevalence studies among Iran university students. Research on Addiction 2013; 7(27): 9-36. [In Persian].

5. National AIDS Committee Secretariat, Ministry of Health and Medical Education. Islamic Republic of Iran AIDS Progress Report: On Monitoring of the United Nations General Assembly Special Session on HIV and AIDS. [Online]. [cited 2015 Mars]; Available from: URL: https://www.unaids.org/sites/default/files/country/documents/IRN_narrative_report_2015.pdf

6. Tamini A, Narouei M, Rigi A. The place of social capital in the prevention and control of occurrence of crime in society. Environment Conservation Journal 2015; 16(SE): 49-59.

7. Shokoohi M, Baneshi MR, Haghdoost AA. Size estimation of groups at high risk of HIV/AIDS using network scale up in Kerman, Iran. Int J Prev Med 2011; 3(7): 471-6.

8. Heydari Z, Baneshi MR, Sharifi H, Zamanian M, Haji-Maghsoodi S, Zolala F. Evaluation of the treatment failure ratio in individuals receiving methadone maintenance therapy via the network scale up method. Int J Drug Policy 2019; 73: 36-41.

9. Zamanian M, Zolala F, Haghdoost Aa, Baneshi MR. Effect of estimation method, definition of ratio, and the plausible range in estimating social network size. Soc Netw Anal Min 2018; 8(1): 35.

10. Rastegari A, Haji-Maghsoodi S, Haghdoost A, Shatti M, Tarjoman T, Baneshi MR. The estimation of active social network size of the Iranian population. Glob J Health Sci 2013; 5(4): 217-27.

11. Bernard HR, Hallett T, Iovita A, Johnsen EC, Lyerla R, McCarty C, et al. Counting hard-to-count populations: the network scale-up method for public health. Sex Transm Infect 2010; 86(Suppl 2): ii11-ii15.

12. Guo W, Bao S, Lin W, Wu G, Zhang W, Hladik W, et al. Estimating the size of HIV key affected populations in Chongqing, China, using the network scale-up method. PLoS One 2013; 8(8): e71796.

13. Zamanian M, Zolala F, Haghdoost AA, Baneshi MR. Estimating the annual abortion rate in Kerman, Iran: Comparison of direct, network scale-up, and single sample count methods. Int J Fertil Steril 2019; 13(3): 209-14.

14. McCarty C, Killworth PD, Bernard HR, Johnsen EC, Shelley GA. Comparing two methods for estimating network size. Human Organization 2005; 60(1): 28-39.

15. Shati M, Haghdoost A, Majdzadeh R, Mohammad K, Mortazavi S. Social network size estimation and determinants in Tehran province residents. Iran J Public Health 2014; 43(8): 1079-90.

16. Zamanian M, Zolala F, Haghdoost AA, Haji-Maghsoodi S, Heydari Z, Baneshi MR. Methodological considerations in using the Network Scale Up (NSU) for the estimation of risky behaviors of particular age-gender groups: An example in the case of intentional abortion. PLoS One 2019; 14(6): e0217481.

17. Shokouhi M, Mohebbi E, Rastegari A, Hajimaghsoodi S, Haghdoost AA, Baneshi MR. The introduction of network scale-up method: an indirect method to estimate the hard-to-reach populations. Iran J Epidemiol 2014; 10(1): 81-92. [In Persian].

18. Haghdoost AA, Baneshi MR, Haji-Maghsoodi S, Molavi-Vardanjani H, Mohebbi E. Application of a network scale-up method to estimate the size of population of breast, ovarian/cervical, prostate and bladder cancers. Asian Pac J Cancer Prev 2015; 16(8): 3273-7.

19. Daneshi S, Haghdoost AA, Baneshi MR, Zolala F. The estimated frequency of spinal cord injury, amputation (Hands and feet) and death in the Bam earthquake using the network scale up method. Iran J Epidemiol 2014; 10(3): 9-14. [In Persian].

20. Nasirian M, Hosseini Hooshyar S, Haghdoost Aa, Karamouzian M. How and where do we ask sensitive questions: Self-reporting of STI-associated symptoms among the Iranian general population. Int J Health Policy Manag 2018; 7(8): 738-45.

21. Meysamie A, Ghaletaki R, Haghazali M, Asgari F, Rashidi A, Khalilzadeh O, et al. Pattern of tobacco use among the Iranian adult population: Results of the national Survey of Risk Factors of Non-Communicable Diseases (SuRFNCD-2007).
Tob Control 2010; 19(2): 125-8.
22. Nikfarjam A, Shokoohi M, Shahesmaeili A, Haghdooost AA, Baneshi MR, Haji-Maghsoudi S, et al. National population size estimation of illicit drug users through the network scale-up method in 2013 in Iran. Int J Drug Policy 2016; 31: 147-52.
23. Rahimi Movaghar A. A review on the prevalence and the patterns of drug abuse in women in Iran. Social Welfare 2004; 3(12): 203-26. [In Persian].
24. Bashirian S, Barati M, Fathi Y. Prevalence and factors associated with tramadol abuse among college students in west of Iran: An application of the theory of planned behavior. Avicenna J Neuro Psycho Physiology 2014; 1(1): 26-30. [In Persian].
25. Shokouhi M, Mohebhi E, Rastegari A, Hajimaghsoodi S, Haghdooost AA, Baneshi MR. The introduction of network scale-up method: An indirect method to estimate the hard-to-reach populations. Iran J Epidemiol 2014; 10(1): 81-92. [In Persian].
26. Ansari-Moghaddam A, Rakhshani F, Shahraki-Sanavi F, Mohammad M, Miri-Bonjar M, Bakhsheh NM. Prevalence and patterns of tobacco, alcohol, and drug use among Iranian adolescents: A meta-analysis of 58 studies. Child Youth Serv Rev 2016; 60: 68-79.
27. Hamdieh M, Asheri H, Motaleb N, Boroujerdi A. Prevalence of Alcohol and Drug Abuse in Young People, 15-35-Year-Old, Living In Tehran, Iran. Pajouhesh Dar Pezeshki 2009; 32(4): 315-9. [In Persian].
28. Jaliliyan F. Investigating the relationship between Healthy and Unhealthy Social Informal Links among Youth addicted. Research on Addiction 2009; 5(18): 99-114. [In Persian].
مقدمه: برای اراذل برنامه‌های پیشگیری و آموزش مصرف‌کننده مواد مخدر (DUs) با Drug users (DUs) با در نظر گرفتن کلیه افرادی که تحت تاثیر دارویی بوده و یا در صورت مشاهده آنها با استفاده از روش بسط شبکه‌ای (Network scale-up method) با استفاده از مدل‌های گروه‌بندی، اهداف اصلی برنامه‌های پیشگیری، برنامه‌های عملی اجتماعی، نقش‌آفرینی‌ها و نیز تحقیقات، شبکه‌های بین‌بیماری زنده‌مانده و وابستگی استفاده می‌شود.

روش‌ها: این مطالعه مقطعی در تابستان 1397 بر روی 1000 نفر به روش نمونه‌گیری چند مرحله‌ای در 14 منطقه شهرداری اصفهان انجام شد. اطلاعات با استفاده از پرسشنامه انجام داده شد. در نتیجه 1397/2/28: با استفاده از عوامل اصلی ویرایشگری، بخش سوالات همانند زنده و نیز انجام شده شکل‌گیری شده تا این نتیجه را به زبان انگلیسی انجام دهد.

یافته‌ها: در بین انواع مصرف‌کننده مواد، بیشترین آمار مربوط به مصرف‌کننده مواد مخدر بود. شیوع مصرف تریاک، حشیش، هروئین/کراک، هپاتیت س، اکستازی، داکسی، اکسید، زوال، و نیز نرخ مصرف مخدر در افراد بالای 18 سال به ترتیب: 298, 242, 612, 626, 729, 742, 758, 87, 180. در مورد شیوع مصرف مواد، در افراد تابعه و نیز نرخ مصرف مواد بود. در این مطالعه نیز نشان داده شد که شیوع مصرف مواد در جوانان (به سال 30 سال) بوده و نیز نشان داد که شیوع مصرف مواد بسیار بالا بوده و نیز نشان داد که شیوع مصرف مواد در جوانان نیز بالا بوده و نیز نشان داد که شیوع مصرف مواد بسیار بالا بوده و نیز نشان داد که شیوع مصرف مواد بسیار بالا بوده.

نتیجه‌گیری: شیوع مصرف‌کننده مواد مخدر در شهر اصفهان بیشتر از در مردان بالای 18 سال بوده و نیز نشان داد که شیوع مصرف مواد بسیار بالا بوده و نیز نشان داد که شیوع مصرف مواد بسیار بالا بوده و نیز نشان داد که شیوع مصرف مواد بسیار بالا بوده.

واژگان کلیدی: مصرف‌کننده مواد، روش بسط شبکه‌ای، گروه‌های پنهان، ایران

ارجاع: ابی‌شانسی، سید نهادی، مهندس، پژوهش‌های بازخوری، نمره‌های مربوط به آندریوم با استفاده از روش بسط شبکه‌ای شیوع‌ها در شهر اصفهان، مجله انسداد و سلامت، 1300، 3/17: 258-249.

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