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Prevalence of Illicit Drug Use among Pregnant Women: A Cross-Sectional Study in Kerman, Iran

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ABSTRACT

Drug use during pregnancy is a growing public health problem worldwide. This study determined the prevalence of illicit drug use among pregnant women in Kerman, Sought East Iran. This cross-sectional study was performed in 2020 on the 966 pregnant women referring to the Central Clinical Laboratory of Kerman for routine pregnancy tests. Urine sample of pregnant women was tested anonymously in two stages. At first, a qualitative screening test was done using the rapid immunoassay method. Then for positive specimens, thin layer chromatography was used to confirm the initial positive results. Data were analyzed using Chi-square test and multivariable logistic regression. The mean age of the participants was 27.3±6.6 years. Most of the respondents (93.8%) were urban dwellers. Also, 7.0% (95% CI: 5.4–8.7) of urine samples were positive for illicit drug. Opium was the most frequently used drug (83.8%). No urine sample was positive for marijuana and tramadol. The older the participants, the more likely they used drugs (odds ratio=1.05; CI 95%:1.01-1.09). Women with low socioeconomic status were nearly 2.2 times more likely to use illicit drugs. The prevalence of drug use is alarming among pregnant women in South eEast Iran. Considering this issue is necessary during prenatal care.

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Introduction

The global prevalence of past-year drug use among people aged 15-64 years is estimated at 4.8% in 2018, which had an increasing rate of 28% compared to 2009 (1). In the Middle East, the prevalence of substance use disorder is 1.3 times that of the world (2). In Iran, one of the countries in the Middle East, the situation is worse, as opium use has been reported up to 3 times the global average (3). Kerman, a city located in the south-east of Iran, is the center of the biggest province of Iran with a population of 800000. Opium consumption is rooted in the history of Kerman. It is one of the most prevalent areas of opium use in Iran (3).

Women and men are more likely to use drugs at a young age, which means that women of childbearing age are at greater risk for substance abuse disorders (4). In 2012, half of the US women of reproductive age reported current use of alcohol, and 13% used other drugs (4).

Substance use among pregnant women is widely recognized as a significant public health threat (5). It can cause many problems for the fetus, including neonatal abstinence syndrome, low birth weight, and preterm labor (6). Substance use is also associated with poor prenatal care during pregnancy and fear of disclosing (7).

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A recent review of 70 articles showed that the prevalence of illicit drug use among pregnant women ranged from 1.65% (based on self-report) to 12.28% (based on toxicological analysis) (8). Most of the studies conducted in Iran on the prevalence of substance use in pregnant women have been based on self-reporting (9, 10). Furthermore, the use of the questionnaire is not acceptable owing to the underreporting due to fear and stigma among pregnant women (11). The only study which used a urine drug screen had a small sample size (12). Considering the high risks of drug use in pregnancy and the high prevalence of drug use, especially opium, in the South East of Iran, this study was performed to determine the prevalence of substance use among pregnant women and its related factors in Kerman as a hot spot for substance use disorders. The present study could be informative for policy-making and research in high-risk pregnancies.

Materials and Methods

This cross-sectional study was performed in the first half of 2020 at the referral laboratory of Kerman District Health Center. Kerman is the center of the biggest Province of Iran, located in the South East. The reason for choosing this center was that pregnant women from all areas of Kerman province are referred to public health centers for routine pregnancy blood and urine tests.

Inclusion criteria were age higher than 15 years and exclusion criteria were unwillingness to participate in the study. Sample size was calculated considering 95% CI and 5% prevalence rate of drug use and the power of 80%. A total of 1000 consecutive pregnant women were invited to participate in the study. Finally, 966 subjects agreed to be included in the study (96.6% response rate). The content validity of the checklist was approved by an expert panel. The inventory consisted of demographic (age, education, occupation, place of residence, and socioeconomic status) and obstetric characteristics (gestational age, parity, and the number of children). The socioeconomic status of the subjects was categorized into two levels (low and middle to high) based on their neighborhood status (13).

After explaining the purpose of the study to the women and obtaining their consent, a urine sample was taken. An aliquot of the redundant urine sample of pregnant women was coded, and testing was done anonymously. Also, the background data checklist was anonymously completed at the same time. More prevalent drugs in the Iranian community were considered (14).

Urine drug testing was done in two stages: (a) A qualitative screening test using the rapid immunoassay method (15), (b) Thin-layer chromatography (TLC) was used to confirm the initial positive results (16). All test steps were performed according to the kit instructions (Rojan Azma Company, Tehran, Iran) to detect morphine/opium, amphetamine, methamphetamine, buprenorphine, tramadol, methadone, and Marijuana. The sensitivity of the kit was 300 ng/ml for morphine and methadone, 500 ng/ml for amphetamine and methamphetamine, 10 ng/ml for buprenorphine, 100 ng/ml for tramadol, and 50 ng/ml for marijuana. TLC method as a widely available and reliable confirmation test has been established to confirm rapid immunoassay tests (17).

Chi-square test was used to compare categorical data between the groups. Multivariable logistic regression analysis was done to examine the association between the result of the urine screen test and the independent variables. Independent variables with $P<$ 0.25 in bivariable analysis were included for further multivariable analysis. Data were analyzed by IBM SPSS Statistics software (version 22). $P<0.05$ was considered statistically significant.

Results

Mean age of participants was 27.3±6.6 years. Other demographic and clinical characteristics of pregnant women were shown in Table 1.

In total, 7% (95% CI: 5.4–8.7) of pregnant women (n=68) used drugs. Opium was the most frequently used drug (Table 2). The prevalence of drug use by baseline characteristics was shown in Table 3. The two variables which showed significant association with drug use during pregnancy were age higher than 35 years (odds ratio=1.05; CI 95%:1.01-1.09) and low socioeconomic class (odds ratio=2.23; CI 95%:1.33-3.74).

Table 1. Demographic and obstetric characteristics of pregnant women tested for urine drug (n=966)

Variable	Frequency (%)
Age group	
≤18	75 (7.8)
19–34	757 (78.3)
≥35	134 (13.9)
Mother's educational level	
Lower than college	837 (86.6)
College	128 (13.3)
Missing data	1 (0.1)
Mother's occupation	
Household work	910 (94.2)
Productive work	56 (5.8)
Husband's educational level	
Lower than college	874 (90.5)
College	92 (9.5)
Husband's occupation	
Employed	941 (97.4)
Unemployed	25 (2.6)
Area of residence	
Urban	906 (93.8)
Rural	60 (6.2)
Socioeconomic status	
Low	455 (47.1)
Middle to high	511 (52.9)
Number of children	
No child	237 (24.5)
One child	308 (31.9)
Two or more children	421 (43.6)
Gestational age	
1st trimester	475 (49.2)
2nd trimester	436 (45.1)
3rd trimester	55 (5.7)
Parity	
Nulliparity	60 (6.2)
Low multiparity	707 (73.2)
High multiparity	199 (20.6)

Table 2. Frequency of each type of drug used according to urine drug screen (n=68)

Drug tested	Number (%)
Opium	57 (83.8)
Opium + Methadone	5 (7.4)
Methadone	3 (4.4)
Methamphetamine	2 (2.9)
Buprenorphine	1 (1.5)
Amphetamine	0
Tramadol	0
Cannabis	0

Table 3. Prevalence of drug use by pregnant women according to the baseline characteristics (n= 966)

Variable	Number of drug users (%)	P-Value
Age group		
<35	54 (6.5)	0.097
≥35	14 (10.4)	
Mother's education level		
Lower than college	58 (6.9)	0.714
College	10 (7.8)	
Mother's occupation		
Household work	66 (7.3)	0.296
Productive work	2 (3.6)	
Husband's education level		
Lower than college	62 (7.1)	0.838
College	6 (6.5)	
Husband's occupation		
Employed	67 (7.1)	0.547
Unemployed	1 (4.0)	
Area of residence		
Urban	66 (7.3)	0.247
Rural	2 (3.3)	
Socioeconomic status		
Low	44 (9.7)	0.003
Mid to High	24 (4.7)	
Number of children		0.016

Variable	Number of drug users (%)	P-Value
No child	9 (3.8)	
One child	31 (10.1)	
Two or more children	28 (6.7)	
Gestational age		
1st trimester	32 (6.7)	0.491
2nd trimester	34 (7.8)	
3rd trimester	2 (3.6)	
Parity		
Nulliparity	7 (11.7)	0.345
Low multiparity (1-3 pregnancy)	47 (6.6)	
High multiparity (≥4 pregnancy)	14 (7.0)	
Total	68 (7.0)	--

Discussion

The results of the present study showed that the prevalence of drug use among pregnant women was 7.0%.

The prevalence of drug use in the present study was much higher than the results obtained from the nationwide research (1%) (10) or the studies conducted in other Iranian cities (1.5%) (18). Three reasons could be responsible for the high percentage of drug use in the present study. First, other studies have used the self-report method. Fear of punishment and stigma leads pregnant women to conceal drug use (7). This fear may be more pronounced in countries such as Iran with anti-drug policies (19). Accordingly, the use of self-report to determine the prevalence of substance use in pregnancy is not recommended (11). A recent review showed that the prevalence of drug use among pregnant women is 7.4 times higher in studies utilizing laboratory methods compared to those that relied on self-report (8). Second, Kerman, where this study was conducted, is one of the most prevalent areas for substance use disorders in Iran (3). A recent study stated that the prevalence of opium use in Kerman is 3.5 times the national average (20). A survey conducted with a similar method (urine screen test) on adult population of Kerman revealed that 14.4% of urine samples were positive for opioids (16). Third, since the present study only included public sector clients, the upper socioeconomic classes participate less in the study. It has been proven that substance use is more common in the lower socioeconomic classes (3). Tavella et al. (2020) reported that the total prevalence of worldwide illicit drug use during pregnancy (using the weighted average of the 70 studies) was 1.83%, and this rate is higher in Asia (6%) than in other continents (8).

Opium was the most frequently detected drug in the urine samples in the present study. Considering opium, methadone, and buprenorphine as opioids, it can be concluded that 97.1% of the positive results were related to opioids. Considering the potential harms of opioid use during pregnancy on neonatal health outcomes, policymakers should seriously consider this issue (21). No pregnant woman tested was positive for marijuana. In a study in Spain, the most common substance detected was marijuana, and no one tested was positive for opioids (22). In the US studies, marijuana was the most commonly detected drug among pregnant women (23). This finding shows that the pattern of drug use in pregnant women follows the practice of the general population.

Multivariable logistic regression analysis showed that living in a low socioeconomic neighborhood was linked to a higher rate of drug use during pregnancy. This finding is in line with the study results from the US (24) and Canada (25). That's why the expert panel from countries with a lower prevalence of substance use in pregnancy recommends universal drug screening during pregnancy (5). Higher age was another risk factor that increased the possibility of drug use as part of routine. It may be due to having more opportunities to consume drugs during the time. It may be warranted to request urine drug test as part of the routine screening programs of pregnant women higher than 35 years old in areas where drug use is more prevalent.

Some strengths of this study were the large sample size and the use of toxicological analysis to determine the prevalence of substance use in pregnant women.

The main limitation of this study was that it did not include private sector clients.

Conclusion

The results of the present study revealed that the prevalence of opioid use is high among pregnant women in southeastern Iran. The concern was more evident especially in women over 35 years and in the lower socioeconomic classes.

Declarations

Acknowledgements

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Conflicts of interest

The authors declared no conflicts of interest.

Ethical considerations

Before enrolling of women in the study, the objectives and method of the study were explained to the pregnant women. They were assured about complete confidentiality and anonymity (anonymous unlinked testing). All participants signed the written informed consent.

Ethical approval

The study protocol was approved by Ethics Committee (approval code: IR.KMU.REC.1401.116)

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Authors' contribution

MG and NN contributed substantially in the conception and design of the study. HG carried out the data collection and analysis. NN analysed and interpreted the data. MG drafted the manuscript. NN and HG reviewed the manuscript critically for important intellectual content. All authors read and approved the final manuscript and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

References

1. United Nations Office on Drugs and Crime. World Drug Report 2020: Drug Use and Health Consequences. Vienna: United Nations Office on Drugs and Crime (2020) (accessed June 22, 2021).
2. Saeed K, Taj M. A regional framework for action on substance use and public health. Eastern Mediterranean Health Journal. 2017; 23(3): 129.
3. Moradinazar M, Najafi F, Jalilian F, Pasdar Y, Hamzeh B, Shakiba E, et al. Prevalence of drug use, alcohol consumption, cigarette smoking and measure of socioeconomic-related inequalities of drug use among Iranian people: findings from a national survey. Substance Abuse Treatment, Prevention, and Policy. 2020; 15(1): 1-11.
4. McHugh RK, Wigderson S, Greenfield SF. Epidemiology of substance use in reproductive-age women. Obstetrics and Gynecology Clinics. 2014; 41(2): 177-189.
5. Louw KA. Substance use in pregnancy: the medical challenge. Obstetric Medicine. 2018; 11(2): 54-66.
6. Reitan T. Substance abuse during pregnancy: A 5-year follow-up of mothers and children. Education, Prevention and Policy. 2019; 26(3): 219-228.
7. Stone R. Pregnant women and substance use: fear, stigma, and barriers to care. Health & Justice. 2015; 3(1): 2.
8. Tavella RA, De Abreu VO, Muccillo-Baisch AL, Da Silva Junior FM. Prevalence of illicit drug use during pregnancy: A global perspective. Anais da Academia Brasileira de Ciências. 2020; 92(4): e20200302.
9. Sadat Tavafian S, Ramezan Zadeh F. Cigarette smoking, illicit medicine, substance and alcohol abuseamong pregnant women: A cross sectional study from Iran. International Journal of Fertility and Sterility. 2008; 2(1): 35-38.
10. Eslami M, Yazdanpanah M, Taheripanah R, Andalib P, Rahimi A, Nakhaee N. Importance of pre-pregnancy counseling in Iran: results from the high risk pregnancy survey 2012. International Journal of Health Policy and Management. 2013; 1(3): 213.
11. Garg M, Garrison L, Leeman L, Hamidovic A, Borrego M, Rayburn WF, Bakhireva L. Validity of self-reported drug use information among pregnant women. Maternal and Child Health Journal. 2016; 20(1): 41-47.
12. Tabatabaei SM, Behmanesh-Pour F, Salimi-Khorashad A, Zaboli M, Sargazi-Moakhar Z,

Shaare-Mollashahi S. Substance abuse and its associated factors among pregnant women: A cross-sectional study in the Southeast of Iran. Addiction & Health. 2018; 10(3): 162.
13. Robinette JW, Charles ST, Gruenewald TL. Neighborhood socioeconomic status and health: A longitudinal analysis. Journal of Community Health. 2017; 42(5): 865-871.
14. Amin-Esmaeili M, Rahimi-Movaghar A, Sharifi V, Hajebi A, Radgoodarzi R, Mojtabai R, Hefazi M, Motevalian A. Epidemiology of illicit drug use disorders in Iran: prevalence, correlates, comorbidity and service utilization results from the Iranian Mental Health Survey. Addiction. 2016; 111(10):1836-1847.
15. Kapur BM. Drug-testing methods and clinical interpretations of test results. Bulletin on Narcotics. 1993; 45(2): 115-154.
16. Nakhaee N, Divsalar K, Meimandi MS, Dabiri S. Estimating the prevalence of opiates use by unlinked anonymous urine drug testing: a pilot study in Iran. Substance Use & Misuse. 2008; 43(3-4): 513-520.
17. Timcheh-Hariri A, Balali-Mood M, Sadeghi M, Lari N, Riahi-Zanjani B. Comparison of ELISA and TLC methods for the morphine detection in urine of drug abusers. Iranian Journal of Toxicology. 2016; 10(3): 47-50.
18. Kazemian M, Fallahi M, Afjeh SA, Fakhraee SH, Sanii S. Evaluation of Medication Use and Drug Abuse During Pregnancy in Tehran. Journal of Comprehensive Pediatrics. 2019 2019; 10(2): e66257.
19. Mirzaei S, Yazdi-Feyzabadi V, Mehrolhassani MH, Nakhaee N, Oroomiei N. Setting the policy agenda for the treatment of substance use disorders in Iran. Harm Reduction Journal. 2022; 19(1): 1-10.
20. Noorbala AA, Saljoughian A, Yazdi SA, Faghihzadeh E, Farahzadi MH, Kamali K, Faghihzadeh S, Hajebi A, Akhondzadeh S, Mousavi MT. Evaluation of drug and alcohol abuse in people aged 15 years and older in Iran. Iranian Journal of Public Health. 2020; 49(10): 1940.
21. Maghsoudlou S, Cnattingius S, Montgomery S, Aarabi M, Semnani S, Wikström AK, et al. Opium use during pregnancy and infant size at birth: a cohort study. BMC Pregnancy and Childbirth. 2018; 18(1): 1-8.
22. Roca Comas A, Vila Domènech JS, Massa Solé J, Timoneda Paz P, Peñas Boira M, Herrero Espinet FJ, et al. Prevalence of illicit drug use at the end of pregnancy: a cross-sectional study at the time of birth. Minerva Pediatr. 2020; 72(1): 37-44.
23. Chang JC, Holland CL, Tarr JA, Rubio D, Rodriguez KL, Kraemer KL, Day N, Arnold RM. Perinatal illicit drug and marijuana use: an observational study examining prevalence, screening, and disclosure. American Journal of Health Promotion. 2017; 31(1): 35-42.
24. Louw VE, Brown QL, Martins SS, Palamar JJ. Characteristics of drug use among pregnant women in the United States: Opioid and non-opioid illegal drug use. Drug and Alcohol Dependence. 2018; 183: 261-266.
25. Brown RA, Dakkak H, Gilliland J, Seabrook JA. Predictors of drug use during pregnancy: the relative effects of socioeconomic, demographic, and mental health risk factors. Journal of Neonatal-Perinatal Medicine. 2019; 12(2): 179-187.