



The Pattern of Opium Use in Patients on Methadone Maintenance Treatment

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ABSTRACT

Background: Nowadays, substance use has increased substantially. Substance has been a major social problem in Iran for many years. Addressing the substance use problem requires a thorough understanding of the dimensions and pattern of substance use. This study aimed to find a pattern of opium use, as the most frequently used opioid in Iran.

Materials and Methods: In this cross-sectional study, data were collected using a researcher-made questionnaire. After confirming the validity and reliability total number of 2018 patients participated in the study. Descriptive statistics including mean, median, and standard deviation were used for data analysis. In addition, SPSS 16 was used to analyze event and time-to-event data, and the hazard and survival functions (using cox regression).

Results: Our study results showed that of the 1788 (88.60%) participants who were using opium, as the main substance, with other substances, 87 were women and 1701 were men. Moreover, the Median age of opium use initiation among the total population (both genders) was 22 years. Thus, there was a statistically significant difference in the Median age of opium use initiation between men and women ($p < 0.05$). The analysis of substance use by people born in different decades showed that the age of opium use initiation had a declining trend. In addition, there was a significant difference in the Median age of opium use initiation between the people born in different decades ($p < 0.05$).

Conclusion: Opioid prevention education at an early age, i.e. in adolescence and even in childhood is essential.

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INTRODUCTION

Nowadays, substance use has increased substantially. From 2016 to 2017, the global opium production increased by 65 percent to 10,500 tons which is the highest estimate recorded by UNODC since it started monitoring drug production at the

start of the 21st century. A significant increase in opium poppy cultivation and gradual improvement of yields in Afghanistan increased opium production to 9,000 tons in 2018. The 2018 World Drug Report shows that drug markets are expanding with opium and cocaine production at high records, presenting multiple

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challenges on multiple fronts [1]. The existence of 218 million opioid users worldwide and Iran's adjacency to major opioid production centers and its exposure to the shortest transit route for opium have led to the complexity of substance use and addiction in Iran. Hence, despite the measures taken in various dimensions, drug addiction is widespread in different groups, especially the youth [2].

Global deaths directly caused by substance use increased by 60% from 2000 to 2015. In 2015, people aged 50+ accounted for 39 percent of all these deaths, which was an increase from 27 percent in 2000. About three-quarters of deaths from drug use disorders among those aged 50 and older are among the aging cohort of opioid users [1].

Drug use has been a major social problem in Iran for many years and the government of the Islamic Republic of Iran has an agenda to combat substance use [3]. Iran has a history of several hundred years of opium production and consumption. Thus, historically and culturally, there is the potential for the spread of substance use in Iran. Besides, socioeconomic changes in the last decade have brought about many factors contributing to vulnerability to problems such as drug addiction. These factors include an oil-dependent economy, the complications of eight years of war with Iraq, rapid population growth resulting in a significant increase in youth population, the spread of global communication technology, enhanced expectations among the youth, industrial development and its problems (such as migration), a significant increase in the urban population (especially on the outskirts), and unemployment. Moreover, despite the eradication of opium poppy cultivation within Iran after the Islamic revolution, access to opium and heroin has not declined in Iran due to high opium poppy cultivation in the neighbors on its eastern flank, especially Afghanistan. Additionally, stimulant production has also increased [4]. Afghanistan is the world's top illicit opium producer and produced 8870 tons of opium in 2007 (i.e. 92 percent of the world's opium) [1]. On the other hand, the pattern of substance use and addiction in Iran is different from that in other countries due to the role of family cohesion in child-rearing and religious and ethical foundations [4]. The results of epidemiological studies showed that opium (53.2%), marijuana (11.9%), "Glass" (methamphetamine) (8.1%), and heroin (7.1%) have been the most frequently used substances in Iran, respectively [3]. Opium is consumed more than any other type of narcotics and is the most well-known and available drug in Iran [5].

Addressing the substance use problem requires a thorough understanding of its dimensions. The

treatment programs designed and implemented based on a realistic assessment of the extent and quality of the patterns of substance distribution will succeed in substance use control. It means that substance use research is an inseparable part of an efficient substance control strategy and a key prerequisite for combating substance use. Such research should contribute to a timely and realistic assessment of substance use problems at national and local levels. Given that drug addiction is considered a disease, not a crime, this study was carried out to understand the dilemma and obtain more scientific information on the subject. Since confronting a situation demands a precise assessment of the situation, this study aimed to find a pattern of opium use (the most frequently used opioid in Iran) from the selected de-addiction centers in Shiraz and to make suggestions for the management of this pattern.

MATERIALS AND METHODS

This cross-sectional study was conducted from September to November 2019. The data on the underlying factors and times of opioid exposure in people attending public and private de-addiction centers in Shiraz was collected to measure the extent and manner of substance use over time (different decades).

The sample size was estimated to be 2010 people considering the size of the statistical population attending MMT centers in Fars, Iran (19,600 people). Twenty centers were selected from among 134 existing public and private de-addiction centers through a random sampling method. Patients attending the selected centers were counted and those fulfilling the inclusion criteria were included in the study. The total number of patients attending the 20 selected de-addiction centers in Shiraz was 2018. The questionnaires were completed during the interviews between the psychologists of the selected centers and the study participants.

Data collection tools included a researcher-made questionnaire for collecting demographic information (age, gender), and information about exposure to opioid under investigation and the exposure time. The validity of the researcher-made questionnaire was confirmed by addiction experts. After a week, the questionnaires were distributed again to patients who had participated in the first stage and the final results of both stages were calculated using a correlation test. The final results showed a strong correlation between the answers given in the two test stages. The correlation between the variables was $r = 83$ to $r = 0.98$; therefore, the reliability of the questionnaire was confirmed. Descriptive statistics including mean, median, and standard deviation were used for data analysis. In addition, SPSS 16 was used to analyze

the event and time- to- event data as well as the Hazard and survival functions (using cox regression).

RESULTS

The results showed that, of the 1788(88.60%) patients, attending the selected de-addiction centers who used opium (as the main substance) with other substances, 87 were women and 1701 were men. In other words, 82.85% of the women and 88.91% of the men in the population under investigation were consuming opium (as the main substance) with other substances (Table 1).

The results also showed that the Median age of opium use initiation among the total population (both genders) was 22 years (25 years for women and 21 years for men). Women initiated substance use at an older age (4 years later) than did males (Table 2).

The results also showed that there was a statistically significant difference in the Median age of opium use initiation between men and women ($p < 0.05$) (Table 3).

Figure 1 shows a plot of survival in opium users in our study population. The horizontal axis represents time (years of age) and the vertical axis represents the cumulative survival. A straight line at the top of this plot shows a lack of opium use. However, cumulative survival declined with increase in age.

Table 4 shows the Median age of opium use initiation in the people born in different decades. The Median ages of opium use initiation were 48-30-26-24-20-18-16 years in the 1940-1950-1960-1970-1980-1990-2000, respectively.

The results also showed that a significant difference in the Median age of opium use initiation between the people born in different decades ($p < 0.05$) (Table 5).

DISCUSSION

As mentioned before, 1788 out of 2018 participants were opium users (88.60%) indicating that opium was a commonly used opioid among the subjects due to its availability and abundant production. In a study carried out in Iran in 2017, 5.4% of the population aged 15-64 (2, 802, 800 people) were regular users of opioids.

In agreement with our study results, the results of epidemiological studies showed that opium (53.2%), marijuana (11.9%), "Glass" (methamphetamine) (8.1%), and heroin (7.1%) are the most frequently used substances in Iran, respectively [6].

From 2016 to 2017, the global opium production increased by 65 percent to 10,500 tons which is the highest estimate recorded by UNODC since it started monitoring drug production at the start of the 21st century. A significant increase in opium

poppy cultivation and gradual improvement of yields in Afghanistan increased opium production to 9,000 tons in 2018. The 2018 World Drug Report shows that drug markets are expanding with opium and cocaine production at record highs, presenting multiple challenges on multiple fronts [1]. Given the UNODC World Drug Report, the high levels of consumption of this opioid can be due to its availability. The findings of Zakariaie's study also confirm this [7].

The study conducted by Jaswand et al in India showed that opium and barbiturates were the most widely used drugs after alcohol [8]. These results are inconsistent with the results of the present study regarding the prevalence of substance use. The reason can be due to the difference in culture and geographical location (proximity to opium producers) between the two countries.

The findings also showed that the prevalence of opium use was higher among men (88.91%) than among women (82.85%), and women initiated substance use at an older age (4 years later) than did males. There was a statistically significant difference between men and women.

The 2018 findings reported by the United Nations Office on Drugs and Crime show that the majority of people who use drugs are men, but women have specific drug use patterns. The prevalence of non-medical use of opioids and sedative drugs among women is comparable to that among men, while men start using drugs at an earlier age [1]. These findings are consistent with the results of the present study. Moreover, the findings of Taheri Sadri also showed that the majority of drug users were men (76 people (80.9%) while the number of female drug users was 18 (19.1%) [9]. The results are consistent with the present study. No study was found inconsistent with the present study in terms of the prevalence of substance use among men and women.

One reason for the difference in the prevalence of opium use between men and women may be women's fewer social interactions and lower access to opium. Another cause of this difference may be due to the small number of women in the study population as a result of their less willingness to attend de-addiction centers. This indicates the need for studies with a larger female population.

As mentioned in the findings section, the Median age of opium use initiation among the total population (both genders) was 22 years indicating the opium use initiation at an early age. Also, the Median age of opium use initiation was 25 years for women and 21 years for men indicating that women initiated substance use at an older age (4 years later) than did males. Jalilian also showed that the age of substance use initiation had a declining trend in Iran and a change in the pattern

of substance use was reported, especially among the youth [5]. According to the findings of Razaghi et al., the mean age of substance use initiation in women was 10.6 ± 27.5 (i.e. women initiated substance use at an older age (6 years later) than did males [10]. Given that there is a time interval between their study and the present study, their results are consistent with the results of this study in which women initiated substance use 4 years later than did males indicating that the mean age of substance use initiation has decreased by 2 years.

A study conducted in India in 2012 also showed that opioid addicts have been hospitalized for quitting addiction at younger ages in the last three decades [11].

According to the UNODC World Drug Report 2018, about 275 million people (5.6% of the world population) aged 15-64 consumed drugs at least once in 2016. Given the vulnerabilities of different age groups, this report shows the higher prevalence rates of substance use and related harms among young people compared with those in older people [1].

Other studies also showed that early adolescence (14-12 years) to middle adolescence (17-15 years) is a sensitive period for the onset of substance use and this crisis may reach its peak in late adolescence (18-25 years). The earlier the onset of substance use, the more likely they are to develop drug dependence [8]. Over the last century, the rise in the proportion of drug users and the decline in the initiation age has not been observed only in Iran but also in the world [12-15]. The results of the above studies are consistent with the results of the present study. No study was found showing the initiation of substance use at older ages among people born in different years.

The present study revealed a statistically significant difference in the Median age of opium use initiation between the people born in different decades (7 decades) indicating the declining trend of the age of opium use initiation in consecutive decades so that people born in the 1940 began opium use at the age of 48 and those born in the 2000 (the last decade under investigation) started opium use at the age of 16. These results imply the need for providing education about the side effects of opioids (especially opium) in late childhood and early adolescence. A study conducted in Kerman, Iran, reported that the most common (38%) age range for substance use initiation was 14-20 years [16].

The mean age of drug addicts was about 33 years within the age range of 32.4 - 33.6. Only 3.2% of drug addicts were younger than 20 years [17].

In a study conducted in India in 2012 titled "Changing pattern of substance use in patients attending a de-addiction center in north India", the

data on all the patients admitted to a de-addiction center in north India between September 1978 and December 31, 2008, were analyzed and the patients were compared with each other by their hospitalization date in three decades (1978-1988, 1989-1998, and 1999-2008). And the results showed that the age of hospitalized addicts to quit substance use has significantly decreased over the past two decades and the rates of hospitalization at the center have increased eight-fold over the past three decades. 36.8% (204 people), 42.9% (809 people), and 53.2% (2219 people) of drug-dependent patients have been enrolled in drug treatment over the past three decades, respectively ($P < 0.001$). The rates of natural drug use have decreased over the three decades (47.4, 26.5, and 18.3%, $P < 0.001$) [11]. There was also no other study conducted based on the decades of births of the population with results inconsistent with the results of the present study.

According to the findings of this study indicating that men are more likely to use opium compared with women and start opium use at earlier ages and the age of opium use initiation has decreased over the past 3 decades and people begin opium use at adolescence, the following recommendations are offered to prevent the onset of opioid use (especially opium) at an earlier age:

1. providing education about the side effects of opioids (especially opium) in late childhood and early adolescence and developing effective information interventions, life skills training, teaching healthy lifestyle models, development of alternative activities, development of spirituality and religion, and strengthening counseling services for male and female school students as well as university students.
2. Modifying structures and playing a more effective role in substance use management by economic, social, cultural, and political microsystems.
3. Trying to prevent easy access to substances (opium) which necessitates developing a strategy for primary prevention of substance use as well as concurrent efforts of science centers and universities, judicial centers, and Police to prevent the onset of substance use at an early age.
4. More serious interventions by cultural centers to correct adolescents' attitudes and wrong beliefs about opium and other opioids.
5. Strengthening the sensitivity of all governance structures to substance use management.
6. Promoting and developing specialized structures with sufficient knowledge for planning and systematic management.

7. Participatory policymaking, capacity building, and increasing the authority of non-governmental organizations.
8. Strengthening drug diplomacy, dealing with heads of drug networks, training specialists, and increasing the coverage of standard programs, taking advantage of all capacities and continuous evaluation of the measures.

It is hoped that the results of this study and the implementation of the above suggestions will help prevent the onset of opium use at an earlier age to have a society without the social harms caused by substance use.

Ethical statement

All studies should have been performed within an appropriate ethical framework and all authors declare and consider facts described by "Committee on Publication Ethics" (COPE).

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CONFLICT OF INTEREST STATEMENT

None

REFERENCES

1. Merz, F., United Nations Office on Drugs and Crime: World Drug Report 2017. 2017. SIRIUS-Zeitschrift für Strategische Analysen, 2018. 2(1): p. 85-86.
2. Amirpour, M. and M. Ghorbany, Investigate the changing patterns of drug use from low risk to high risk. *Social Welfare Quarterly*, 2013. 13(48): p. 201-228.
3. Sorami H, R.A., Rafiei H, Ismaili M., The Comprehensive Document on Research about Combating Narcotics, Psychedelics and drug Precursors Using a Social Approach (Annex IV to the Fifth law, hundred and Thirty-Fourth meeting hold by Drug control committee) 2017: Office of Research and Education, Drug control committee
4. The comprehensive document on Primary Prevention of Substance Use by the Drugs Control Department 2011: Image Designers.
5. Jalilian, F., et al., Prevalence and pattern of drug abuse among prisoners in Kermanshah city. *Iranian Journal of Health Education and Health Promotion*, 2013. 1(2): p. 41-50.
6. Sorami, H., Drug Users Statistics in Iran. 2017: Office of Research and Education, Drug control Drug control committee. .
7. Zakariaie, M.A., An Introduction to the Scientific Study of drug Addiction in the Country T.E.D.C.o.t.S. Strategic Report, the Drugs Control Department., Editor. 2009.
8. Johnson, B.D., et al., An analysis of alternatives to New York City's current marijuana arrest and detention policy. *Policing: An International Journal of Police Strategies & Management*, 2008.
9. Taheri, A. and S.P. Fard, Investigating the causes of changing substance use patterns from traditional (low risk) to industrial (high risk) substance use in North Khorasan: Bojnourd. . *Journal of North Khorasan Police Force Knowledge.*, 2015. Second.
10. Razaghi, M.R., A., Hosseini, M., & Madani, S., A Rapid Assessment of Substance Use in Iran: Volume One, t.W.O. United Nations Drug Control Program, Deputy of Prevention and Cultural Affairs, Tehran., Editor. 2009.
11. Basu, D., et al., Changing pattern of substance abuse in patients attending a de-addiction centre in north India (1978-2008). *The Indian journal of medical research*, 2012. 135(6): p. 830.
12. Bobrova, N., et al., Injection drug users' perceptions of drug treatment services and attitudes toward substitution therapy: a qualitative study in three Russian cities. *Journal of Substance Abuse Treatment*, 2007. 33(4): p. 373-378.
13. Chingtham, T., Prevalence and pattern of substance abuse among the students of higher secondary schools. *Voice Res*, 2015. 4(2): p. 2277-7733.
14. Sanders, B., et al., A typology of drug-related offending among young homeless injection drug users. *Journal of drug issues*, 2009. 39(4): p. 777-802.
15. Daniel, L.T., G. Krishnan, and S. Gupta, A study to assess the prevalence and pattern of substance use among male adolescents in suburban area of Delhi. *Indian Journal of Social Psychiatry*, 2017. 33(3): p. 208.
16. Dortaj, F., The role of effective factors in tendency towards new drugs. 2010.
17. Rahimi, A., et al., Geographical distribution of substance use and psychosocial disorders, facilities and services available in Iran in 2006, T.a.M.E. Ministry of Health, Editor. 2009.

Table 1: The number of opium users by gender

Gender	Total N	N of Events	Percent
Female	105	87	82.85%
Male	1913	1701	88.91%
Overall	2018	1788	88.60%

Table 2: Means and Medians age of opium use initiation

Gender	Mean ^a				Median			
	Estimate	Std. Error	95% Confidence Interval		Estimate	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
female	26.805	.943	24.955	28.654	25.000	1.271	22.509	27.491
male	22.912	.178	22.563	23.262	21.000	.156	20.694	21.306
Overall	23.102	.177	22.756	23.448	22.000	.154	21.699	22.301

Table 3: Overall Comparisons

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	15.620	1	.000

Table 4: Means and Median age of opium use initiation among people born in different decades

Decade of Birth	Mean ^a				Median			
	Estimate	Std. Error	95% Confidence Interval		Estimate	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
1940	48.714	3.853	41.163	56.266	48.000	1.309	45.434	50.566
1950	33.917	1.758	30.472	37.362	30.000	3.464	23.210	36.790
1960	28.484	.672	27.168	29.800	26.000	.866	24.302	27.698
1970	25.102	.301	24.513	25.691	24.000	.346	23.322	24.678
1980	21.139	.178	20.789	21.488	20.000	.197	19.614	20.386
1990	18.176	.208	17.768	18.583	18.000	.237	17.535	18.465
2000	14.429	1.043	12.384	16.473	16.000	.926	14.185	17.815
Overall	23.102	.177	22.756	23.448	22.000	.154	21.699	22.301

Table 5: Overall Comparisons

	Chi-Square	df	Sig.
Log Rank (Mantel-Cox)	423.380	1	.000