Open Access Publish Free

Report of Health Care

http shgri.com

Original Article

Volume 1, Issue 3, 2015, p. 104-108

Changes in the pattern of opium addiction in Bam after the earthquake

Mohammad Reza Aflatoonian[1], Iraj Sharifi[2*], Behnaz Aflatoonian[3], Kouros Divsalar[4]

[1]MPH, Head of Research Center of Tropical and Infectious Diseases, Kerman University of Medical Sciences, Kerman, Iran
[2]Professor, Head of Leishmaniasis Research Center, Kerman University of Medical Sciences, Kerman, Iran
[3]MSc, Research Center of Tropical and Infectious Diseases, Kerman University of Medical Sciences, Kerman, Iran
[4]MSC, Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran

Received: 6 March 2015
Accepted: 2 July 2015
Published online: 9 July 2015

***Corresponding author:**
Iraj Sharifi, PhD, Professor, Leishmaniasis Research Center, Kerman University of Medical Sciences, Kerman, Iran.
Tel: +98 341-3224616;
Email: iraj.sharifi@yahoo.com

Competing interests: The authors declare that no competing interests exist.

Citation: Aflatoonian MR, Sharifi I, Aflatoonian B, Sharifi F, Divsalar K. Changes in the pattern of opium addiction in Bam after the earthquake. Report of Health Care 2015; 1(3): 104-108.

Abstract

Introduction: Opium abuse is a serious public health threat of various magnitudes in Iran and neighboring countries. We conducted this study to explore the rate and intensity of opium addiction in Bam before the earthquake in comparison to the data collected after the earthquake.

Methods: This descriptive cross-sectional study was conducted in the city of Bam in 2010. We used cluster random sampling method to collect data. This was done through house-to-house visits by a team of trained indigenous health personnel and informants. The status of addiction was achieved through case informants and confirmed by an experienced physician.

Results: Opium addiction was significantly higher in men aged more than 50 (46%), illiterates (29.8%), labors/farmers (51.3%), private (50.7%) and jobless (21.6%) participants. Majority of the addicts (17.1%) were from the suburban areas (17.1%) as compared with those in urban areas (13.6%, $P<0.05$). Of the addicts, those with a history of addiction for 3-8 years ($P<0.05$), consumed 3-8 g ($P<0.01$), two sessions/day ($P<0.05$), used opium on a regular basis ($P<0.05$) and smoked with Sikh-sang ($P<0.001$) showed a significantly higher severity of addiction than the other groups. The mean scores of severity including duration, amount, session, regularity, and consumption device were 2.5, 2.2, 2.4, 1.9 and 2.6, respectively. The overall mean of severity was 2.3 for 226 addicts.

Conclusion: It seems that earthquake is a major traumatic risk factor for such an epidemic condition compared to the previous state of opium addiction. The present findings could be used for future prophylactic measures and therapeutic control strategies. These findings can be applied in clinical practice for active detection of opioid cases and subsequent treatment.

Keywords: Opium, Addiction, Epidemiology, Earthquake, Iran

Introduction

Opium abuse is a serious public health problem in Iran and neighboring countries (1). While heroin is the most widely consumed opiate worldwide, seventy five percent of opium that is not converted into heroin is consumed in just five countries (2). These countries include Iran (42%) followed by Afghanistan (7%), Pakistan (7%), India (6%) and the Russian Federation (5%). The United Nations Office on Drugs and Crime (UNODC) has considered addiction as one of the quadruplet crises in the world and has categorized Iran among the high risk countries. The prevalence rate of addiction is 0.5% for the world but it is 1% to 2 % for Iran and the deaths caused by addiction are increasing systematically (3). Reports also by the UNODC show that 93% of the world's illicit opium trade comes from Afghanistan (2). The current rise of addiction in Iran has propelled the government into a serious action by supporting addict treatment centers to offer methadone, providing rehabilitation access for addicts and those suffering from HIV/Aides and the hungry people (4). Raw opium consists of a broad spectrum of various chemical derivatives in its sticky secretions of the poppy (*Papaver somniferum*). The opium derivatives are mainly alkaloids including morphine, heroin, noscapine, papaverine, codeine and cocaine (5). In Iran, opium has been a popular medicinal plant substance for centuries, although its use and trade are officially prohibited. A random household study in northern Iran revealed a rate of 69/1000 for opium addiction. This survey did not include the number of unregistered opium abusers (6). In another study which was conducted among 2519 university students, findings showed that 4.4% of participants admitted using opium

once or more during their lives and of this 0.8% were current opium users (7). Opium abuse was more prevalent in men and its early initiation was significantly associated with life stress (8). It seems that opium abuse has become an emerging social problem of different magnitude in Iran and neighboring counties. A survey of drug abuse has been recently conducted in Afghanistan with the support of UNODC. The findings showed that there was about 0.6% opium users of the overall population in the country (2). The report also indicated that much more opium has been produced in Afghanistan than is used in the world at large. Researches carried out in treatment centers in India revealed that 90% of patients were opium consumers. Most of drug users were located in certain states of India (9). Recent surveys in China indicated that large proportions of adult males were opium addicts. At present, China faces substantial opiate abuse problems. Opiate abuse is a major threat to social security and public health of China due to its harmful medical impacts (10). Surveys conducted in Russian federation, Myanmar, Laos, Thailand and Turkmenistan revealed that illicit opiate abuses have become a social problem in different states (11). Currently, no information is available on the long term consequences of opium addiction, especially in Bam where a devastating earthquake has occurred. This study aimed to compare the rate and intensity of opium addiction among the inhabitants in the city and suburbs of Bam four years after the earthquake as compared to the data collected for the corresponding years before the earthquake.

Methods

Study location

This study was carried out in the south-eastern Iranian district of Bam in 2010, where a destructive earthquake occurred on December 26, 2003. The earthquake with a magnitude of 6.6 on the Richter scale led to 30 000 deaths, 30 000 injuries and destroyed almost 90% of health infrastructures and left serious social and medical consequences (12). The population of Bam in affected areas was 120 000 people; 70 000 in urban and the remaining in the suburban areas. In recent years, opium has been easily accessible in the area, due to the strategic location of Bam and its main transportation route. Most of opium is imported from Afghanistan to Iran for local consumption and the remaining is transported for onward export to other countries in the region and Europe (2).

Sampling

In this descriptive cross-sectional study we chose the statistical population by cluster random sampling method. A team of indigenous experienced health personnel and informants made house-to-house visits to collect data. The study was clinically confirmed by an experienced physician in urban and suburban areas of the city of Bam. Data were also gathered by case informants through communicating with addicts. In fact, this work was conducted in a community-based participatory manner (CBPM). A questionnaire was completed for each household, recording demographic characteristics and a history of opium addiction.

Opium addiction

In this survey, opium addicts referred to those individuals who consumed opium by various means on a daily basis for a period of at least 12 months according to the method proposed by Gilrame (13). The status of addiction was achieved through case-informants as face-to-face visits. The subjects were interviewed by a team of trained health personnel and the addiction was clinically confirmed by an experienced physician. Those consumers who smoked opium occasionally and in recent months for recreational purposes and opium-derived substances that did not meet the definition of opium addiction were excluded. The mean severity of opium consumption was assessed using a screening scale of one through four scores in order of increasing severity including mild (score 1), moderate (score 2), high (score 3) and heavy smokers (score 4).

Statistical analysis

Data extracted from questionnaires were entered into a computer using SPSS version 18 software. The chi-square and paired-sampels *t* tests were used for data analysis. *P* value less than 0.05 was considered as statistically significant.

Results

A total of 1481 individuals (mean age 25.7± 17 years) were randomly selected based on the study purposes (Table 1). Opium addiction was significantly higher ($P<0.001$) in males than females (male to female ratio; 19.5: 1). Addiction was observed in all age groups (226 addicts, 15.3%); individuals <20 years of age showed the lowest (0.3%), those at the age range of 20-50 years old presented moderate (24.3 %) and individuals >50 years old showed the highest rate of addiction (46.0%). There was a significant difference between different age groups ($P<0.001$). Concerning the educational status, illiterates were the most addicted subjects (29.8%), followed by diploma holders (16.5%), secondary school children (15.5%), primary school children (13.2%), ≥bachelors (5.9%) and children (0.5%). There was a significant difference between the illiterates and other educational status ($P<0.001$). Opium addiction was more prevalent in private sector, farmers/labors and then jobless individuals than other social classes. Majority of the addicts (17.1%) were among the suburban areas as compared with those in urban areas (13.6%, $P<0.05$). The frequency distribution of addicts by severity of addiction is presented in Table 2. Of the addicts, those with a history of addiction for a duration of 3-8 years ($P<0.05$) and consumed 3-8 g ($P<0.01$) for two sessions per day ($P<0.05$) were significantly different than others. Addicts who consumed opium on a regular daily basis ($P<0.05$) and smoked with Sikh-sang ($P<0.001$) were significantly different than the other groups. The addiction rate was assessed by a scale of one through four scores for each category. Therefore, the mean scores including

Table 1. Demographic characteristics of the study population and history of opium addiction in Bam district, south–eastern Iran, 2010

Characteristics	Examined population		Opium addiction	
	No.	Percent	No.	Percent
Gender				
Male	762	51.4	215	28.2
Female	719	48.6	11	1.5
Age (year)				
<20	681	46.0	2	0.3
20-50	663	44.8	161	24.3
>50	137	9.3	63	46.0
Education				
Children(<6 years)	182	12.3	1	0.5
Illiterates	218	14.7	65	29.8
Primary schools	281	19.0	37	13.2
Secondary schools	386	26.1	60	15.5
Diploma holders	363	24.5	60	16.5
≥ Bachelors	51	3.4	3	5.9
Occupation				
Children	182	12.3	1	0.5
School children	330	22.3	0	0.0
University students	49	3.3	0	0.0
Employees	91	6.2	18	19.8
Labors/ Farmers	117	7.9	60	51.3
Private	203	13.7	103	50.7
House keepers	356	24.0	11	3.1
Jobless	1481	10.3	33	21.6
Residency				
Urban	786	53.1	107	13.6
Rural	695	46.9	119	17.1
Total	1481	100.0	226	15.3

Table 2. Frequency distribution of addicts by severity of addiction in Bam district, south-eastern Iran, 2010

Addiction status	No.	Percent	Mean score of intensity	P
Duration (year)				
<3	27	11.9		
3-8*	96	42.5	2.5	<0.05
>8-15	68	30.1		
>15	35	15.5		
Amount per Day (g)				
<3	33	14.6		
3-6*	127	56.2	2.2	<0.01
>6-10	51	22.6		
>10	15	6.6		
Session per day				
1	31	13.7		
2*	99	43.8	2.4	<0.05
3	73	32.3		
>3	23	10.2		
Regularity & time				
Regular day*	95	109		
Irregular day	66	29.2	1.9	<0.05
Regular night	46	20.4		
Irregular night	19	8.4		
Consumption instrument				
Traditional Vaphoor	37	16.4		
With hubble-bubble	20	8.8	2.6	<0.001
Sikh-sang*	156	69.0		
Eating	13	5.8		
Total	226	100.0	2.3	-

*There was a significant difference with other groups.

duration, amount, sessions, regularity, and consumption device were 2.5, 2.2, 2.4, 1.9 and 2.6, respectively. The overall mean of severity for 226 addicts was 2.3. Data were matched for addicts within a similar period of time intervals. The frequency of addicts (Figure 1) was significantly higher ($P<0.01$) four years following the earthquake (33.5%) as compared to that for the corresponding years before the earthquake (20.8%). The remaining (45.7%) belonged to other years, before or after the earthquake. The mean amount of opium use was significantly higher before the earthquake (6.5 g), compared to that after the earthquake (3.5 g, $P<0.001$). In contrast, the mean daily session of opium consumption was significantly lower before the earthquake (1.8 times) than that after the earthquake (2.5 times, $P<0.01$). Most of the addicts used traditional Vaphoor before the earthquake (75%) as compared to those after the earthquake who used Sikh-sang (70%, $P<0.00$). The mean daily consumption time in addicts before earthquake was significantly more in comparison to those addicts after the earthquake ($P<0.001$,Table 3)

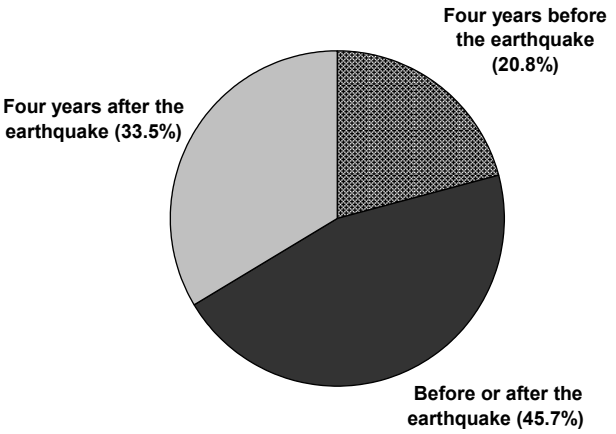

Figure 1. The frequency distribution of addicts before and after the earthquake in Bam, south-eastern Iran.

Discussion

Illicit opiate abusers remain to be a group of high risk for contraction of various disease conditions and serious long term consequences (14-19). Many factors might contribute to the increasing prevalence and severity of opium abuse including the aging population, availability, price, long-lasting effect, social acceptance and treatment of pain (14,20,21). In addition, opium is more frequently used for reducing physiological distresses (20,21). In the present study, opium addiction was observed in all age groups, although individuals aged more than 50 were highly addicted. The finding is consistent with other results (6,8). Reports have shown that natural disasters caused mainly by earthquake impose a significant impact

Table 3. The severity of opium consumption before and after the earthquake in Bam, south-eastern Iran, 2012

Consumption	Before the earthquake	After the earthquake	P value
Mean daily use	6.5 g	3.5 g	P<0.001
Mean daily session	1.8 times	2.5 times	P<0.01
Consumption device	Traditional Vaphoor 75%	Sikh-sang 70%	P<0.001
	Sikh-sang* 15%	Traditional Vaphoor 15%	
	Others 10%	Others 15%	
Mean daily consumption time	4 hours	2 hours	P<0.001

*A device with a hot metal plate, a stick and tube- like paper or aluminum foil for inhalation of opium smoke

on well-being of the survivors (22). It was estimated that one half of the adolescent population developed some types of post-traumatic stress disorders (PTSD) or psychological symptoms as the result of earthquake (22,23). Opium addiction was significantly higher in men, illiterates and also labors/farmers, private and jobless subjects than others. Many reports have indicated that the majority of addicts in Iran belong to different social classes (8,24). Opium consumption is strongly associated with sex, age, and income (7,8). Individuals in both limits of earning are vulnerable to addiction; those with a higher income including private sectors with extra money, perhaps the substance use require disposable income. On the other hand, opium abuse is prominent in those with low income such as illiterates, farmers, labors and also jobless subjects. In fact, these groups are at greater risk of social and individual harmful consequences of the earthquake and have ready access to opium (3,6,8,25). A logical procedure was used to evaluate the severity of opium consumption. The stability and potency of opium depends on the smoking habits. Those with a history of short duration with low amount of consumption, few sessions of smoking on a regular daily basis and eating opium were mild smokers. On the other hand, addicts with duration of more than 15 years, average daily dosage of more than 10 g, more than three daily sessions and with smoking habit at irregular nights were heavy opium consumers. Obviously, the pattern of opium use has significantly changed after the earthquake as compared to the data collected before the earthquake. Despite the expansion of various means of transportation and trade, currently the price of even imported opium is still expensive for the addicts in the region. Hence, two main factors have played a major role in the spreading of opium abuse; increasing availability of opium and a new mode of consumption (Sikh-sang). These facts have created a momentum of shift to more efficient and economical means of opium smoking with a shorter duration time. The underlying cause of this conversion seems to be the inability of addicts to supply their own daily opium consumption. Therefore, they prefer to use a lower amount of substance in a shorter time interval with multiple daily sessions by a dangerous means of smoke inhalation. This new fashion certainly leads to serious consequences. The findings here are not comparable to those found by others in various provinces of Iran (7,8), since they have basically reported the prevalence of opium consumption, not opium addiction. In this study, the rate and intensity of opium addiction were extraordinary high, particularly in individuals aged more than 50 and to a lesser degree in the age range of 20-50 years. In addition to the availability and low price of opium in the region, most of the adolescent survivors have lost their loved relatives and they have experienced a major traumatic event in their lifetime (22). Apparently, the earthquake was the main risk factor for such an epidemic condition of opium addiction in Bam district. However, results indicate that opium abuse was common before the earthquake and the survivors use opium on a large scale for various physical and psychological distresses even after the earthquake (21-23). At present, it seems that opium abuse is a major concern among the policy makers and the country faces a substantial opium abuse problem, especially in suburban settings affected by the earthquake.

Conclusion

Probably, earthquake is a major traumatic risk factor for such an epidemic condition compared to the previous state of opium addiction. The present findings could be used for future prophylactic measures and therapeutic control strategies when planning preventive programs. Opium use in Iran is a traditional custom and it is accepted by a large proportion of the population. This reality will impose a considerable detrimental effect to the health and social functioning of people (14).

Acknowledgements

We would like to express our heartfelt thanks to the personnel of Bam Health Center and Kerman University of Medical Sciences that helped us in carrying out this study.

Ethical issues

Before the survey began, several meetings were held with the inhabitants, district health authorities and health personnel to describe the aim, procedures and the potential benefits for planning future preventive programs. A complete willingness of the participants was obtained. The survey protocol was reviewed and approved by the Ethics Committee of Kerman University of Medical Sciences (protocol contract no 89/147, ethic no 16/9/k).

Authors' contributions

All authors equally contributed to the writing and revision of this paper.

References

1. United Nations Office on Drugs and Crime: World Drug

Report. United Nations; 2011. http://www.unodc.org/documents/data-and analysis/WDR2011/The_opium-heroin_market.pdf.
2. United Nations Office on Drugs and Crime: Drug use in Afghanistan: Survey. Vienna, Austria: United Nations; 2009. http://www.unodc.org/documents/data and-analysis/Studies/Afghanistan
3. United Nations: Global illicit drug trends. Pretoria: UNODC; 2003. p. 101-36.
4. Farnia M, Ebrahimi B, Shams A, Zamani S. Scaling up methadone maintenance treatment for opioid-dependent prisoners in Iran. Int J Drug Policy 2010; 21(5): 422-4.
5. Kalant H. Opium revisited: a brief review of its nature, composition, non-medical use and relative risks. Addiction 1997; 92(3): 267-77.
6. Alemi AA. the iceberg of opium addiction. An epidemiological survey of opium addiction in a rural community. Drug Alcohol Depend 1978; 3(2): 107-12.
7. Ahmadi J, Fallahzadeh H, Salimi A, Rahimian M, Salehi V, Khaghani M , et al. Analysis of opium use by students of medical sciences. Journal of Clinical Nursing 2006; 15(4): 379-86.
8. Ahmadi J, Pridmore S, Alimi A, Cheraghi A, Arad A, Parsaeyan H, et al. Epidemiology of opium use in the general population. Am J Drug Alcohol Abuse 2007; 33(3): 483-91.
9. Ray R. The extent, pattern and trends of drug abuse in India-national survey. Ministry of social justice and empowerment, government of India and United Nations Office on Drugs and Crime; 2004.
10. Tang YL1, Zhao D, Zhao C, Cubells JF. Opiate addiction in China: current situation and treatments. Addiction 2006; 101(5): 657-65.
11. Kerimi N. Opium use in Turkmenistan: a historical perspective. Addiction 2000; 95(9):1319-33.
12. Seyedin SH, Aflatoonian MR, Ryan J. Adverse impact of international NGOs during and after the Bam earthquake: health system's consumers' points of view. American Journal of Disaster Medicine 2009; 4(3): 173-9.
13. Gilrame E. Substance abuse in young people. J Child Psychol Psyc 2000; 41: 55-80.
14. Vuong C, Van Uum SH, O'Dell LE, Lutfy K, Friedman TC. the effects of opioids and opioid analogs on animal and human endocrine systems. Endocr Rev 2010; 31(1): 98-132.
15. Page GG. Immunologic effects of opioids in the presence or absence of pain. J Pain Symptom Manage 2005; 29(5 Suppl): S25-31.
16. Majdzadeh R, Feiz-Zadeh A, Rajabpour Z, Motevalian A, Hosseini M, Abdollahi M, et al. Opium consumption and the risk of traffic injuries in regular users: a case-crossover study in an emergency department. Traffic Inj Prev 2009; 10(4): 325-9.
17. Divsalar K, Haghpanah T, Afarinesh M, Mahmoudi Zarandi M. Opium and heroin alter biochemical parameters of human's serum. Am J Drug Alcohol Abuse 2010; 36(3): 135-9.
18. Nemati MH, Astaneh B, Ardekani GS. Effects of opium addiction on bleeding after coronary artery bypass graft surgery: report from Iran. Gen Thorac Cardiovasc Surg 2010; 58(9): 456-60.
19. Wei G, Moss J, Yuan CS. Opioid-induced immunosuppression: is it centrally mediated or peripherally mediated? Biochem Pharmacol 2003; 65(11): 1761-6.
20. Ballantyne JC, Mao J. Opioid therapy for chronic pain. N Engl J Med 2003; 349(20): 1943-53.
21. McQuay H. Opioids in pain management. Lancet 1999; 353(9171): 2229-32.
22. Montazeri A, Baradaran H, Omidvari S, Azin SA, Ebadi M, Garmaroudi G, et al. Psychological distress among Bam earthquake survivors in Iran: a population-based study. BMC Public Health 2005; 5: 4.
23. Mousavi SS, Mahmoudi-Gharaei J, Bina M, Gholampoor E, Eisar S. Post traumatic stress disorder and general symptoms of anxiety in adolescent survivors of Bam earthquake. Iranian Journal of Psychiatry 2006; 1(2): 76-80.
24. Aflatoonian MR, Meymandi MS, Divsalar K, Mahmoudi M, Heravi G. Possible association between human blood types and opioid addiction. Am J Addict 2011; 20(6): 581-4.
25. Voukassovitch C. Drug addiction, anorexia: what is the connection? Ann Med Psychol (Paris) 1986; 144(7): 695-709. [In French].