Opium use in a rural area of the Islamic Republic of Iran

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تعاطي الأفيون في المناطق الريفية من جمهورية إيران الإسلامية

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الخلاصـة: نظراً لقرب الموقع الجغرافي لجمهورية إيران الإسلامية من المراكز الكبرى لإنتاج المخدرات، فقد أصبح الحصول عليها ميسوراً رغم الجهود التي تبذلها المنظمات الحكومية وغير الحكومية. وقد استخدم العاملون الصحيون المحليون استبياناً مصمَّماً حول تعاطي الأفيون عند مقابلة 310 من القاطنين في المناطق الريفية في ولاية بابول. ومع تعديل الاستبيان لتصحيح التحيُّز الناجم عن نسبة الذكور إلى الإناث في العينة، كان الإبلاغ الذاتي عن تعاطي الأفيون 8.9٪. وأبلغ جميع من تعاطوا الأفيون وعددهم 42 شخصاً عن تعاطيه أكثر من مرتين أو ثلاث مرات في الأسبوع. وكان تعاطي الأفيون بالتدخين يتم لدى 95.2٪ من الحالات، وعن طريق الفم لدى 4.8 منهم. ولم تُذكر حالات من التعاطي بالحقن، كما لم يبلَغ عن تعاطي مواد أخرى بما فيها الكحول. وكانت هناك علاقة يُعتَدُّ إحصائياً بين تعاطي الأفيون وبين الجنس المذكر والبطالة وتدخين السجائر.

ABSTRACT Because of its geographic proximity to the major drug production centres, there is easy access to narcotic drugs in the Islamic Republic of Iran despite efforts by governmental and nongovern-mental organizations. Using a structured questionnaire as a basis for conversation, local health workers interviewed 310 residents of a rural area in Babol province about opium use. The self-reported rate of opium use, adjusted due to a bias in the sex ratio of the sample, was 8.9%. All the 42 opium users re-ported opium use at least 2–3 times per week in the previous 3 months. Opium was smoked by 95.2% and taken orally by 4.8%; there was no injecting use. There was no reported use of other substances, including alcohol. There was a statistically significant relationship between opium use and male sex, unemployment and cigarette smoking.

Consommation d'opium dans une région rurale de la République islamique d'Iran
RÉSUMÉ En République islamique d'Iran, du fait de la proximité géographique des grandes régions de production de drogues, il est facile de se procurer des stupéfiants malgré l'action des pouvoirs publics et des organisations non gouvernementales. Dans le cadre de conversations menées sur la base d'un questionnaire structuré, des agents de santé locaux ont interrogé 310 habitants d'une zone rurale de la province de Babol au sujet de l'usage de l'opium. Le taux de consommation déclaré par ces personnes, corrigé d'un biais lié au rapport de masculinité de l'échantillon, était de 8,9 %. Les 42 opiomanes recensés ont déclaré avoir consommé de l'opium au moins deux à trois fois par semaine au cours des trois mois précédents. L'opium était fumé dans 95,2 % des cas et pris par voie orale dans 4,8 % ; il n'était pas consommé par injection. Les personnes interrogées n'ont pas déclaré avoir consommé d'autres substances, notamment de l'alcool. Il existait un lien statistiquement significatif entre la consommation d'opium et l'appartenance au sexe masculin, le chômage et la consommation de cigarettes.

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Introduction

Because of its geographic proximity to the major opium production centres, the Islamic Republic of Iran has become a transit zone for traffickers, giving Iranians easy access to narcotic drugs [1]. Iranian drug policy includes imprisonment for possession and use of all illegal substances (e.g. heroin, opium, cannabis, stimulants, lysergic acid diethylamide and other hallucinogens), including alcohol, which is both religiously and legally prohibited. After prohibition of opium use in 1955, methadone and buprenorphine became available to registered addicts as part of treatment programmes. But illicit opium use is thought to remain common especially in the north of the country where it has traditionally been consumed as a treatment for pain, diarrhoea and insomnia [2]. Here, opium is typically either eaten or smoked in 1 of 3 forms: raw opium; opium dross (*sukteh*), which is the pyrolized residue that is scraped from opium pipes; or a refined opium product (*shireh*) made by boiling either raw opium or *sukteh* and collecting the residue [2].

The majority of the research studies on substance abuse in pre-revolutionary Iran are confined to studies of registered addicts in clinical settings [3]. Since the Islamic revolution there has been some research on opium use in certain settings, such as schools and universities and specific groups, e.g. truck drivers [4–7]. However, the picture of drug use in the general population is still unclear. According to reports by drug control headquarters, data such as the number of people convicted of drug-related crimes and the number of addicts using the state welfare organization's treatment units and information supplied by rehabilitation centres, there were 1.2 million addicts in the Islamic Republic of Iran in 1997 [1]. Based on non-official but reliable reports from pa-tient addiction treatment centres around the country, the lifetime prevalence of opium use (all types and all frequency and intensity of dependence) was estimated at around 10.4% in 2002 [*Substance abuse in Islamic Republic of Iran: disseminations and dimensions*, unpublished report by the Judiciary Official Research Vice-Chancellor].

Investigations have shown an emerging trend of addiction in this country. According to the United Nations International Drug Control Programme, the rate of addiction in the Islamic Republic of Iran increases by at least 8% each year [8]. The community at risk is young and almost all of the studies on addiction have been focused on urban areas. Previous evidence suggested that heroin use predominated among those who were urban residents, whereas villagers attending clinics were more likely to be opium users [1]. Although a changing pattern from opium smoking to heroin injection is a documented trend in South and East Asia [9], in our country this trend seems to be at a lower rate and there is little information about rural areas [8].

This study in a rural area of Babol province aimed to document the self-reported use of opium and other substances and to study the risk factors for opium use among the population of the village.

Methods

This study was performed from 24th June to 20th July 2003 in Khoshrodpey, a rural area in Babol province, about 24 km from the capital city of the province. Data were collected in the summer as there is seasonal migration to work in cities in the winter.

According to data from Babol University of Medical Sciences, the population of the study area was about 25 500 at the time of the study and all inhabitants aged 15

years and over were eligible for inclusion. Based on a rate of addiction in the country of 10.4%, to estimate the addiction rate in our sample with 5% error and absolute difference 0.034, we calculated the required sample size as 310 people.

We used stratified randomized sampling from the 7 villages in Khoshrodpey rural area (Khoshrodpey, Sefidtoor, Kardicola, Sarbora, Paricola, Lamsokola and Moghorikola). Each village was a stratum and the sampling fraction in every village was weighted according to the size of the village population in relation to the total population in the main area. In each village, the sample was selected from a computer-generated random list of family members registered at the health centre. The response rate of families was almost 100%, although the distribution of respondents was different from the whole population due to the health system structure in the rural area.

For data collection, a structured questionnaire, administered by health care workers in every village, was used as a basis for conversation. We used interviews for data collection to increase the validity of the data since the diversity of literacy abilities in the villages precluded the use of a self-completed questionnaire. Because of the familiarity of interviewers with the respondents it was not possible to make the interviews anonymous. However, the data were reported anonymously and none of the researchers knew the study subjects.

The reliability and validity of the tool has been reported in a previous study [6]. The questionnaire asked about self-reported opium use and use of other drugs (heroin, alcohol, morphine and other substances) and cigarette smoking. For all reports the frequency and amount of usage was ascertained. Demographic factors were also collected: sex, age, marital status, level of education and occupation.

The village health care workers received training in data collection techniques, and all the interviewers had at least 7 years history of work in the village. We used local health care workers because they knew the village members and had had some previous consultations about substance use with them and had therefore built up confidence and trust with the local people; this helps reduce the likelihood of underreporting in substance use.

Data were entered into *Stata* 7 software and chi-squared, ANOVA, direct standardization and multiple logistic regression tests were used for analysis. For the regression analysis, adjustment was made for sex, and for the logit analysis we entered all the significant variables into the model: sex; age; marital status; education level; employment and cigarette smoking.

Results

Background characteristics

The mean age of participants was 45.8 [standard deviation (SD) 15.0, range 16–81] years. There were 35 female participants (11.3%) [95% confidence interval (CI): 7.8%–14.8%] and 275 males (88.7%) (95% CI: 85.2%–92.2%) (Table 1). In terms of marital status, 281 of the participants (92.1%) were married at the time of the study and 24 (7.9%) were single (5 never married, 1 divorced and 18 widowed).

Regarding education, 31.8% of the participants were illiterate, 22.3% could read and write, 23.2% had finished primary school and 11.0% had a high school diploma,   (Table 1). Employment of the participants is also shown in Table 1: 49.3% were farmers, 10.8% were unemployed, 7.2% worked at home, 0.7% were retired, 1.6% were students and the remainder were employed in other occupations.

For smoking habit, 28.1% of participants (95% CI: 23.1%–33.1%) reported smoking more than 1 cigarette per day in the last 6 months (Table 1). Significantly fewer females smoked (2.9%) than did males (31.3%) (*P* < 0.001).

Self-reported opium use

A total of 42 participants (13.5%) reported using opium (95% CI: 9.7%–17.4%). Because the rate of addiction was related to

the sex of participants and the sex ratio in our sample was different from the main population (estimated to be 1:1 according to data from Babol University of Medical Sciences), the directly adjusted rate (DSR) of reported opium use adjusted for sex was 8.9% (95% CI: 5.8%–12.1%).

All of the opium users reported opium usage at least 2–3 times per week in the previous 3 months. Most opium users (35, 83.3%) reported the frequency of usage as

Table 1 **Demographic characteristics and smoking status of the total sample and opium users**

Variable	Total sample (*n* = 310)		Opium users (*n* = 42)	
	No.	%	No.	%
Sex				
Male	275	88.7	41	97.6
Female	35	11.3	1	2.4
Marital status				
Married	281	92.1	38	90.5
Single	24	7.9	4	9.5
Level of education				
Illiterate	99	31.8	12	28.6
Read and write	69	22.3	8	19.0
Primary school	72	23.2	11	26.2
High school	34	11.0	10	23.8
2 years of college	20	6.5	1	2.4
Bachelor or higher degree	16	5.2	0	0.0
Employment				
Unemployed	33	10.8	11	26.2
Farmer	151	49.3	17	40.5
Rancher	23	7.5	4	9.5
Work at home	22	7.2	1	2.4
Retired	2	0.7	0	0.0
Government sector employee	40	13.1	4	9.5
Private sector employee	10	3.3	1	2.4
Storeman	20	6.5	4	9.5
Student or college student	5	1.6	0	0.0
Cigarette smoking (in last 6 months)				
> 1 cigarette per day	87	28.1	31	73.8
Non-smoker	223	71.9	11	26.2

a few times per day and the remainder (7, 16.7%) reported less than daily usage but a few times per week. The main form of opium use was inhalation of smoke for 40 users (95.2%) and orally for 2 (4.8%). There were no reports of injecting use of opium or use of any other substances.

Opium use was significantly different according to the sex of participants (Table 1); 97.6% of opium users were males compared with 88.7% of the total sample and 2.4% of opium users were females versus 11.3% of the total ($P = 0.049$). The crude OR for opium use for males versus females was 1.12 (95% CI: 1.05–1.19).

There was also a statistically significant difference in opium use between unemployed participants and those with a job at the time of the study; 26.2% of opium users were unemployed versus only 10.8% in the total sample ($P < 0.04$) (Table 1). The crude OR for opium use among unemployed versus employed respondents was 2.94 (95% CI: 1.64–5.27).

Level of education also tended to be related to opium usage (Table 1); those with a collage or university degree had lower rates of opium use than the total sample, whereas those with a primary- or high-school diploma tended to have higher rates (23.8% of opium users had high-school diploma versus only 11.0% in the whole sample)

Smokers comprised 73.8% of opium users compared with only 28.1% of the total sample. There was a statically significant relationship between cigarette smoking (> 1 cigarette per day in the last 6 months) and opium use ($P < 0.001$). The crude OR for opium usage in smokers versus non-smokers was 10.6 (95% CI: 5.02–22.44).

Because of the observed relationship between independent variables (e.g. sex and cigarette smoking) and between each independent variable with opium use, and to overcome the effect of sample size in subgroup analysis, we performed multivariate logistic regression analysis using the significant variables: sex, age, marital status, education level, employment and cigarette smoking. Table 2 shows the final model and supports the preliminary results from the basic statistical tests. There was a statistically significant relationship between opium use and male sex (adjusted OR = 4.22; 95% CI: 1.10–55.55), unemployment (OR = 5.13; 95% CI: 1.90–13.80) and cigarette smoking (OR = 10.35; 95% CI: 4.53–23.63).

Discussion

The crude prevalence of opium use in our study was 13.6% and the reported frequency

Table 2 **Logistic regression analysis of factors associated with opium use**

Independent variable	Adjusted OR	95% CI	*P*-value
Sex (male versus female)	4.22	1.10–55.55	0.048
Age (each year increase)	1.01	0.98–1.05	0.431
Marital status (currently married versus other)	0.48	0.09–2.43	0.372
Education level (each level increase)	1.13	0.79–1.60	0.506
Employment (unemployed versus employed)	5.13	1.90–13.80	0.001
Cigarette smoking (> 1 cigarette/day versus non-smoker)	10.35	4.53–23.63	< 0.001

OR = odds ratio; CI = confidence interval.

of opium use was more 2–3 times per week. Adjusting for the difference between the sex ratio in the population and our sample the rate was 8.9% (95% CI: 5.8%–12.1%) which is not significantly different from the 10.4% estimated lifetime prevalence of opium use in the whole country as reported in 2002 by the Judiciary Official Research Vice-Chancellor [*Substance abuse in Islamic Republic of Iran: disseminations and dimensions*, unpublished report].

Our results are similar to the study performed on high-school students in neighbouring Golestan province [*6*]. There was no reported use of heroin and other substances in our study, whereas in the study in Golestan the main substance abuse reported was alcohol consumption, and it seems there is a significant difference in the pattern of substance use in rural and urban areas in the Islamic Republic of Iran [*5*]. In another study in the Islamic Republic of Iran to assess the pattern of cocaine and heroin use in a sample of the Iranian general population, 2.8% of the subjects admitted the use of heroin once or more during their lives and the use of heroin varied by sex [*10*]. In a study on a randomly selected sample of 205 psychiatric patients, 76% of the men and 34% of the women admitted to substance use at any time [*11*]. The prevalence of opium use in our study was significantly lower than a study of opium use in truck and bus drivers in the Islamic Republic of Iran that utilized both morphine tests and psychiatric interviews. Even allowing for differences in methodology, it seems that certain jobs, such as long-distance driving, may predispose people to opium use [*7*].

Opium users in our study were predominately men (97.6%). The low use of opium by women is similar to other studies in the Islamic Republic of Iran and elsewhere [*3,8,9*]. Further studies, especially with a qualitative approach, investigating the reasons for opium use in men and the factors that deter women from opium use would be helpful.

As cigarette smoking was a significant predisposing factor for opium use, we propose a multidisciplinary approach to prevent tobacco usage especially in young adults who are at greater risk of addiction.

Employment status is also important; unemployment was a significant risk factor for opium use. We cannot tell if the substance users were jobless first and then became substance users or vice versa, but it is obvious that social problems and instability may predispose people towards substance use and that the addicted person is likely to lose his/her job because of low attendance and poor concentration at work.

People with a college of university education also had a lower tendency to use opium than those who were less educated, although the highest rate of use was in those with a high-school diploma. It is important in prevention strategies to target educational messages about addiction and its adverse effects to the level of education in different population audiences [*12*].

There are some limitations to the study. The sex ratio in our sample was very different from the main population, which may be due to the sociocultural situation in Iranian society which limits women's participation in social and investigational activities. However, we adjusted for sex bias in the rate of opium use. Another limitation is that the data on opium use were self-reported. However, self-reported illicit drug use has been widely investigated and found to be reliable and usually valid [*13,14*]. Reliability of this method of data collection is typically high, ranging between 0.80 and 0.95. Validity can also be good but is lower than for reliability and can be very dependent on the setting (e.g. a criminal justice versus drug rehabilitation/treatment setting) and the

population studied [2]. In the study in Go-lestan province, the validity of self-reported opium use was assessed by comparing the results of the questionnaire to the results of the urine analysis (the gold standard) in the subgroup of 150 subjects who had both measurements. Sensitivity of self-reporting was 0.93 (95% CI: 0.87–0.97) and specificity 0.89 (95% CI: 0.83–0.93). In the same study, in test–retest reliability analysis of self-reporting for opium use the agreement was 99.3% (kappa = 0.96) and for duration of opium use the agreement was 83.3% (kappa = 0.74) [2].

A well-designed population-based investigations of substance use in rural and urban areas is recommended. Qualitative approaches may be particularly useful to identify predisposing factors of substance use and to plan for prevention.

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