

Received: 27.6.2010  
Accepted: 19.9.2010

## Substance Misuse Patterns and Blood Types of Self-Introduced Addicts to Substance Rehabilitation Centers of Bam City

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### Background:

### Abstract

With regard to the perceptible population, cultural, social and environmental changes in the aftermath of the earthquake in Bam City, this study was conducted to pinpoint substance misuse patterns and to figure out the probable relationship between substance misuse and blood types of the addicts referred to Substance rehabilitation Clinics from 2006 to 2007 in Bam City.

### Methods:

In this case-control study, the sample size includes volunteering and self-introduced addicts and also a random selection of 360 healthy clients referred to the Blood Transfusion Organization as the control group. Both groups' data were analyzed using descriptive statistics and Chi square and the odds ratio was estimated too.

### Findings:

Three-hundred ninety nine individuals from nearly 3000 clients referred to the rehabilitation clinic from 2005 to 2008 participated with complete consent in the study. The highest frequency belonged to opium addicts (85.6%) and the most prevalent addiction type pertains to opium consumption via smoke inhalation (58.2%). The probability rate of AB negative blood type compared to other blood types among the addicts was 6.07 fold the control group.

### Conclusion:

There has been an increasing rate of addiction in bam after earthquake and The substance consumption pattern has moved towards more dangerous methods. The high prevalence of AB blood type brings about a lot of presuppositions for geneticists, epidemiologists, hematologists and all majors in basic sciences.

### Key words:

**Substance misuse, Blood type, Substance rehabilitation centers.**

### Page count:

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## Introduction

Nowadays, the propensity toward substance misuse is a growing and serious problem in the world. With regard to the effect of economical, social and cultural factors in causing the disease, the governments should adopt influencing policies and must have comprehensive information about the number, time, location and the reason of sympathy towards using drugs among individuals.<sup>1</sup> Addiction and disorders induced by substance misuse are among the biggest problems of the world. The United Nations' Office for Drug Control (UNODC) has considered addiction as one of the quadruplet crises in the world and has categorized Iran among the high-risk countries. A 0.5 percent prevalence rate of addiction has been mentioned in the world, while this rate is 1 to 2 percent for Iran and the deaths caused by addiction have been increasing systematically.<sup>2</sup>

The prevalence of substance misuse is different in different countries. Among the ages of 16 to 29 in Wales, England the prevalence of cannabis consumption is 29 percent; amphetamine, 9 percent; and LSD 6 percent.<sup>3</sup> The prevalence rate has been reported as 31 percent for alcohol and 7 percent for hashish among the 8 and 11 grade students in Cape Town within the last month. The consumption increases with the increase in age.<sup>4</sup>

The study conducted in 2001 showed that there are 3761000 consumers of illegal narcotic drugs (opium, opium residue and bopremorphine) among which 2547000 individuals had a misuse or dependence record.<sup>5</sup> Throughout a study, the prevalence of substance consumption among last year high school and pre-university boys in Kerman City was in turn 11.7% opium, 9.7% tranquilizers, 7.7% opium residue and 5.5% heroin and among girls it was 5.1% opium, 4.4% tranquilizers and 2.6% opium residue.<sup>6</sup> In another study at high schools in Isfahan, it was shown that 11% of students had a substance misuse record.<sup>7</sup>

Many hereditary factors have been known to be effective in decreasing or increasing specific diseases. In this regard, we may consider the relationship between blood types with infectious, non-infectious, psychological and social disorders. The individuals with blood type "A" are at a higher risk for being inflicted with

stomach cancer while those who have blood type "O" are more liable to duodenum ulcer.<sup>8</sup>

In Khamechian et al's study, the relationship between blood types and Rh was proved to be effective in causing malignant problems in the digestive system, in which blood type "O" had the highest frequency of 39%, followed by blood types A and B, and 94.7% of them had a positive Rh.<sup>9</sup> In a plan that has studied the relationship between blood types with breast cancer pre-awareness, the blood type AB has been introduced as a risk factor.<sup>10</sup> In addition, the relationship between diseases like vitiligo in Vali Khani et al's<sup>11</sup> study and cardiovascular problems in Farhood et al's study with blood type has been proved.<sup>12</sup>

It was proved through a study that individuals with AB blood type are less liable to psoriasis compared with other blood types.<sup>13</sup> In Aflatoonian and Zouhor 's study, the relationship between blood type and getting cholera was proved to be significant.<sup>14</sup> Adamin conducted a study on 548 American women who were suffering from endometrial carcinoma and assessed the relationship between blood type and Rh, concluding that Rh positive blood types and AB had a higher risk.<sup>15</sup> Besides, Connie's study showed that there is a relationship between H Pylori infection and blood type, age and smoking.<sup>16</sup>

Bam County has a population of 250000 which was equal to 85000 before the earthquake.<sup>17</sup> After the earthquake, there was a significant rise in population following January 5, 2003 earthquake because of immigration and a lot of commute from around the country. The consumption of drugs in this county has had a long history due to its geographical situation.

Following the earthquake, sympathy toward addiction increased due to psychological, social, economical damages and population changes. As customary methods, such as using a questionnaire or house-to-house research do not have appropriate authenticity in identifying the condition of addiction,<sup>18</sup> the selection of round the clock addiction withdrawal clinics in Bam City for conducting the study has been due to the ease of access to the required sample size and population diversity. This study was conducted with the aim of identifying the relationship between substance misuse pattern and blood types among the

addicts referred to the withdrawal center in Bam City.

## Methods

In this case-control study, the sample size includes patients and self-introduced volunteers referred to the private patented withdrawal clinic in Bam City, among whom 360 individuals were selected randomly by observing proper distribution from healthy and non-addicted individuals referred to the Blood Transfusion Organization from 2005 to 2008. The Ethics Committee of Neurological sciences approved the study.

The volunteering participants were examined by a trained group of clinicians and the questionnaire of demographic information including age, gender, occupation, education, living place, habits and behaviors and the type and method of using narcotic drugs was filled out. In case of consent of the individuals for identifying their blood type and Rh, they were referred to the laboratory. The individual's Rh and blood type in both groups was identified by the same kit and common method of agglutination with antigens A, B and Rh which was recorded in their questionnaire information form. The Blood Transfusion Organization has a national program and a standardized questionnaire and the addicts were omitted from the study by following ethical points and using routine experiments and the volunteering individuals have participated with full consent in this project. The Chi square test was used to identify the significance of difference in each blood group and Rh group and SPSS 10 for Windows (SPSS Inc., Chicago, IL) was used for analysis. Comparison of each blood group with other blood groups was performed independently; blood group A with non-A blood groups, B with non-B blood groups and AB with non-AB blood groups using  $2 \times 2$  tables in all cases. For odd ratio and relationship of pattern which tests were used?

## Results

From 2007 to 2008, 299 addicts from among those referred to the withdrawal clinic were interested to cooperate in this project and the blood type of 83 percent of them was identified. The frequency distribution of the addicts who

were applicant to withdrawal is presented in Table 1 according to their age and gender.

The applicants' level of education was namely, 5.9 percent illiterate, 50 percent under diploma, 30.4 percent diploma and associate degree and 13.7 percent had bachelor's degree and higher. Other details were mentioned as 77.8 percent were married and 22.2 percent were single; 38.3 percent were self-employed, 19.9 percent workers, 9.8 percent housewives, 8.6 percent farmers, 3.1 percent jobless and 2.7 percent were retired. Graph 1 shows the frequency of the type of substance consumption among these individuals. It shows that the kind of consumed drugs by the addicts was 85.6 percent opium which delineates a significant difference ( $P < 0.001$ ) compared with all other drugs. The consumption of other drugs includes; opium residue, 5.4 percent; delusion-inducing drugs like hashish, bang, marijuana, charas and similar drugs, 4.7 percent; heroin, 2.3 percent; and different kinds of tablets, 1 percent. The way of consuming opium; smoke inhalation, 58.2 percent; opium-smoker's pipe, 19.9 percent; eating, 12.9 percent; hookah, 7.8 percent; other cases, 1.2 percent. The number of times of consumption; 13.3 percent had consumed drugs once, 44.5 percent twice, 35.9 percent three times and 16 percent four or more times in a day (Table 2). Based on the place the drugs were consumed, 31.6 percent consumed the drugs outside the house, 28.9 percent in groups, 7.19 percent totally irregular and 48.8 percent totally regular consumed the drugs in their houses. Based on the opinion regarding attitudes towards withdrawal, 73.4 percent believe that withdrawal is quite useful and results in happiness and joyfulness, 26.6 percent believe that withdrawal is useless and harmful.

Table 3 shows that the risk proportion of dependence on drugs in individuals who have negative Rh is 3.1 times more than those who have positive Rh (OR = 3.1, CI 95%: 2.09-4.76,  $P < 0.0001$ ). Table 4 shows the frequency distribution of different blood types in both control and experiment groups and totally the frequency of blood type AB with a risk proportion (OR= 6.07, CI 95%: 16.4-2.2,  $P < 0.0001$ ) has a significant difference compared with other blood types and the highest risk proportion was between blood types AB- and B+, so much so

that the blood type AB- had a frequency of 12.4 times more than B+ among the addicts.

Table 1. Frequency distribution of the addicts interested in withdrawal according to age and gender.

Age (years)	Gender				Total	
	Male		Female			
	number	percentage	number	percentage	number	percentage
Lower than 20	10	4.0	2	4	12	4
21 to 30	87	35.2	19	37.2	106	35.4
31 to 40	76	30.6	16	31.4	96	30.8
41 to 50	39	15.7	9	17.6	48	16.1
Higher than 50	36	14.5	5	9.8	41	13.7
Total	248	82.9	51	17.1	299	100

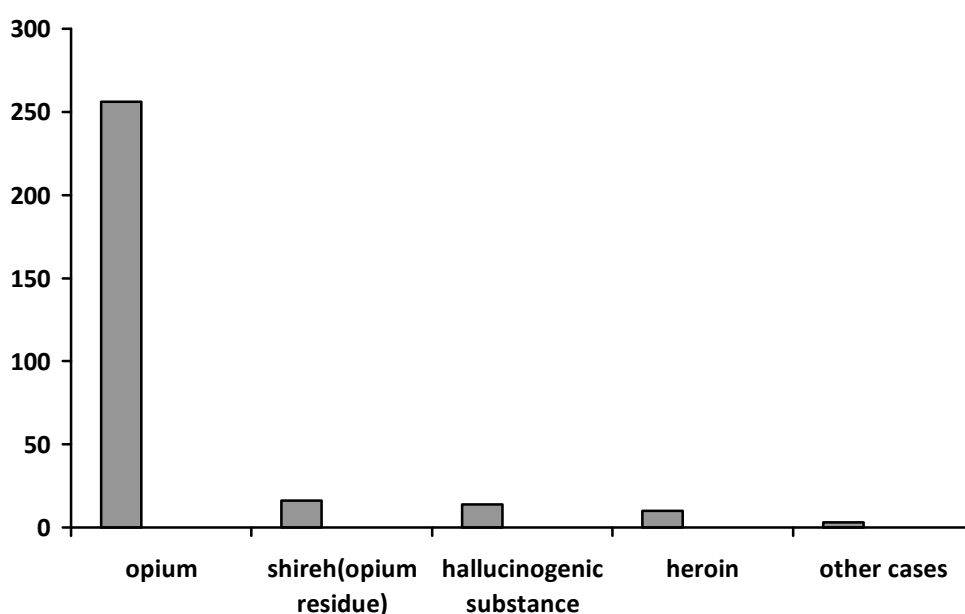


Figure 1. Distribution and frequency of substance consumption types among withdrawal applicants

Table 2. Frequency distribution of opium consumption methods among addicts according to daily consumption times

Consumption Method	Daily Consumption Times								Total	
	once		twice		three times		four times and frequent			
	number	percentage	number	percentage	number	percentage	number	percentage	number	percentage
Traditional (pipe)	7	13.7	23	45.1	18	35.3	3	5.9	51	19.9
Smoke inhalation	20	13.4	66	44.3	53	35.6	10	6.7	149	58.2
Hookah	3	15	9	45	7	35	1	5	20	7.8
Eating	4	12.1	15	45.5	12	36.4	2	6	33	12.9
Other cases	-	-	1	33.3	2	66.7	-	-	3	1.2
Total	34	13.3	14	44.5	92	35.9	16	6.3	256	100

**Table 3.** Frequency distribution of Rh among addicts referred to the withdrawal clinic and blood donors referred to the Blood Transfusion Organization in Bam City, Iran

Rh	Addict Group n = 249		Blood Donors n = 360		Risk Proportion	CI Confidence Interval	P value
	number	percentage	number	percentage			
Positive	164	65.9	321	89.2	0.74	0.58–0.95	0.17
Negative	85	34.1	39	10.8	3.1	2.09–4.76	0.0001

**Table 4.** Frequency distribution of addicts and non-addicts' blood types referred to the withdrawal clinic and the Blood Transfusion Organization

Blood type	Addicts Referred to Withdrawal Center		Blood Donors to Blood Transfusion Organization		Total		OR Risk Proportion Compared with Other Groups	CI	P value
	number	%	number	%	number	%			
A <sup>+</sup>	50	18.5	87	24.2	133	21.8	0.83	0.56–1.22	0.34
A <sup>-</sup>	17	6.8	12	3.3	29	4.8	2.05	0.96–4.36	0.06
B <sup>+</sup>	35	14.1	103	28.6	138	22.7	0.49	0.32–0.75	0.001
B <sup>-</sup>	20	8	5	1.4	25	4.1	5.78	2.14–15.61	0.0001
AB <sup>+</sup>	36	14.5	20	5.6	56	9.2	2.6	1.47–4.6	0.001
AB <sup>-</sup>	21	8.4	5	1.4	26	4.3	6.07	2.26–16.32	0.0001
O <sup>+</sup>	47	18.9	111	30.8	158	25.9	0.61	0.42–0.89	0.01
O <sup>-</sup>	27	10.8	17	4.7	44	7.2	2.29	1.22–4.3	0.008
Total	249	100	360	100	609	100			

249 individuals cooperated for identifying their blood type from among 299 self-introduced individuals.

## Discussion

The average age of the addicts in this study was  $35.4 \pm 1.8$  years; the highest portion was the 20-29 year age group (34.7 percent) and the lowest portion was the higher than 50 years age group (14.7 percent). These changes in age and gender are probably to some extent due to the history and culture of Bam City and also due to the earthquake incidence; particularly, that the immigrants to Bam City are mainly the youth and the middle aged looking for jobs which have both changed the population pattern of Bam City and also have driven the frequency of addiction toward the youth. Because of immigration, the influence of the earthquake and also the lower possibility of indecency of addiction among households and Bam culture, its proportional frequency is 77.8 percent among the married, 13.7 percent among the bachelor degree holders and 17.6 percent among governmental jobs which is rather higher than its average in the country.<sup>19</sup> Due to geographical and ancient records, (85.6) because of immigration and frequent commuting and its consumption method is 58 percent in form of smoke inhalation. The next rankings are for

residue consumption (5.5 percent), delusion-inducing substances and other tablets (4.7 percent, heroin (2.3 percent) and all other cases (1 percent) which is perhaps a souvenir brought by the immigrants followed by a change in the consumption pattern in Bam City. In a recent study in Kerman in 2006, 63 percent of the addicts used opium, 20 percent used codeine and 17 percent used other drugs.<sup>20,21</sup> In another study which was performed on senior high school students, the relative frequency of substance consumption was 34 percent opium, 22 percent residue, 16 percent heroin and 28 percent consumed different kinds of tablets.<sup>3</sup> Although opium has the highest rate of consumption in Bam, the consumption pattern is going to change like all metropolitan cities and it is going toward more dangerous substances available in the market. Nowadays, the role of genetic factors in causing major diseases has been recognized and its role in causing psychological, physical and social diseases is becoming more prevalent.<sup>8</sup> A study which is based on research in the recent ten years shows that there is a relationship between smoking cigarettes and the genetic factor in

causing addiction to nicotine and also protection against re-smoking.<sup>22</sup>

Blood type is a genetic factor that isolates individuals to blood types A, B, AB, and O, based on having antigen A or B or none of them, with a positive or negative Rh based on the presence or absence of Rh antigen. Numerous studies have been carried out showing the relationship of blood types and Rh with infectious or non-infectious diseases.<sup>9-16</sup> Up to now, there has been no study revealing the relationship between blood types and addiction or at least such a study has not been recorded. The results of this study showed that blood group AB was 3.4 times more than other blood groups in Addicts (CI 95%: 2-5.42,  $P < 0.0001$ ) and negative Rh was 3.1 times more than positive Rh (CI 95%: 2.09-4.76,  $P < 0.0001$ ), AB negative blood type is 6.07 times more than other blood types and is statistically significant ( $P < 0.0001$ ). Other analytical studies must be conducted in other regions of the country so that the relationship between blood types and sympathy toward addiction is more precisely and clearly recorded. It is also suggested that Hygienic, social and political authorities be precisely attentive to addiction procedure in Bam City so that the ruinous calamity of addiction, esp. to modern drugs, does not wreck more havoc and damage to earthquake-stricken people.

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## Limitations

The role of other factors, especially the role of friends, parents' addiction, and religious beliefs was not taken into account.

## Conclusion

Due to an easy access to opium, the prevalence rate of consuming other drugs is lower in Bam City. The relative frequency distribution of addiction among blood types AB<sup>+</sup>, AB<sup>-</sup> and Rh may be because of a higher sympathy toward addiction or more interest toward addiction withdrawal or the higher rate of presence of such individuals in the region in the aftermath of Bam earthquake, on which the genetic and other factors affect. It seems essential to conduct more precise researches in this regard.

**Conflict of interest:** The Authors have no conflict of interest.

## Acknowledgement

This project was approved by the Neurological Sciences Research Center of Kerman University of Medical Sciences. Hereby, the scientific and financial support of this center and Dr. Vahid Sheibani from Bam Blood Transfusion Organization and Dr. Pedram Ghazanfari, the authority from the withdrawal center who kindly cooperated are appreciated.

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## ارتباط سوء مصرف مواد و گروه‌های خونی معتادان خود معرف مراجعه کننده به مراکز درمان وابستگی به مواد شهر بم

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تاریخ دریافت: ۸۹/۴/۶

تاریخ پذیرش: ۸۹/۶/۲۸

### چکیده

از آن جایی که در شهر بم بعد از زلزله تغییرات محسوس جمعیتی، اجتماعی، فرهنگی و محیطی رخ داده است. این مطالعه با هدف تعیین اپیدمیولوژی و فراوانی گروه‌های خونی معتادان مراجعه کننده به کلینیک ترک طی سال ۸۷-۱۳۸۵ در شهر بم انجام گرفت.

این مطالعه از نوع مورد شاهدهی بود. حجم نمونه آن را معتادان خود معرف و داوطلب همکاری تشکیل می‌دادند. در این روش انتخاب تصادفی، ۳۶۰ نفر از مراجعین سالم به سازمان انتقال خون به عنوان شاهد انتخاب شدند. اطلاعات جمع آوری شده هر دو گروه با استفاده از آمار توصیفی و آزمون  $\chi^2$  مورد تجزیه و تحلیل قرار گرفت.

از بین ۳۰۰۰ مراجعه کننده به کلینیک ترک در طی سال‌های ۸۷-۱۳۸۵، ۳۹۹ نفر از آن‌ها با رضایت کامل همکاری نمودند. بیشترین فراوانی را معتادان به تریاک نشان می‌داد (۸۵/۶ درصد) و شایع‌ترین نوع اعتیاد مصرف تریاک به صورت سیخ و سنگ بود (۵۸/۲ درصد). گروه خونی AB<sup>-</sup> ۶/۰۷ برابر سایر گروه‌های خونی در گروه معتادان فراوانی داشته است.

نتایج بررسی نشان داد شیوع اعتیاد در شهر بم بعد از زلزله رو به افزایش بوده است. مهاجرت و رفت و آمدهای فراوان شاید الگوی مصرف مواد را به شیوه‌های خطرناک‌تر سوق داده است. فراوانی بیشتر گروه خونی AB نسبت به سایر گروه‌ها، پیش فرض‌های زیادی را برای متخصصین ژنتیک، اپیدمیولوژی، خون شناسی و سایر رشته‌های علوم پایه ایجاد می‌نماید.

**سوء مصرف مواد، گروه خونی، مراکز درمان وابستگی به مواد.**

### مقدمه:

### روش‌ها:

### یافته‌ها:

### نتیجه‌گیری:

### واژگان کلیدی:

تعداد صفحات: ۸

تعداد جدول‌ها: ۴

تعداد نمودارها: ۱

تعداد منابع: ۲۲

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