Relationship Between Psychiatric Distress and Criminal History Among Intravenous Drug Abusers in Iran

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Background: Sychotropic agents (alcohol, drugs, and illicit substances) have an important effect on the occurrence or exacerbation of psychological and behavioral derangements such as criminal activity and mental abnormalities.
Objectives: The objective was to assess the relationship between psychiatric distress and criminal history among abusers of intravenous drugs, including heroin, benzodiazepine, codeine, cannabis, opium, and ecstasy.
Materials and Methods: Criminal activity history and psychiatric distress were evaluated among intravenous drug abusers in drop-in centers (DIC) (141 subjects) and an outpatient service to delivery methadone to the addicts located in Razy Hospital (Baghdad, Iraq) (120 subjects). Logistic regression analyses using the SPSS for Windows 18.0 were used for analyzing the data.
Results: About 86% of the intravenous drug abusers had psychiatric distress and 48.2% had criminal activity history. DIC addicts group had a better mental well-being compared to the other group, but criminal history rate was similar in two groups. In multiple logistic regression, addiction to heroin (odds ratio [OR] = 1.9, 95% confidence interval [CI]: 1.1 - 4.1), mental disorders (β = 0.060, P = 0.026), and low level of education was highly related with criminal activity (OR = 0.17, 95% CI: 0.03 - 0.89).
Conclusions: Higher scores in mental well-being questionnaire of DIC addicts suggest the positive effects of psychological interventions. There is a possibility of the involvement of heroin in occurrence of mental disorders and criminal activity. This finding needs further investigations by larger cohort studies.

Keywords: Crime; Questionnaires; Drug Abusers; Mental Health; Psychiatric Distress

1. Background

Psychotropic agents (alcohol, drugs, and illicit substances) have an important effect on the occurrence or exacerbation of psychological and behavioral derangements such as criminal activity and mental abnormalities (1-5). In Hemphill and Fisher study, 52% of psychiatric patients were addicted to at least alcohol or one narcotic agent (6). Similar results have also been reported in several studies from Iran (7-9). Some studies reported that drug abuse is a factor that drives people toward perpetration of crimes, and there is a high correlation between these two variables (5, 10-12). In the USA, one study showed that alcohol or drug abusers had a double-chance of committing crimes (6).

An important issue which deserves more investigation is the effect of the type of drug abused and different combinations of drugs on criminal activity and its severity (5). In a study by Hemphill et al., the type of abused drug was influential in the occurrence or sever-ity of the crime (6). Furthermore, Nurco et al. found a significant relationship between heroin addiction and criminal activity (13). Bennett et al. showed that there is a positive linear relationship between multiple drug use and the number of perpetrated crimes too (14). These illegal substances may affect judgment or behavior directly, or they may lead to criminal behavior indirectly, when the addicted individual craves for the abused drugs (15).

There have been very limited studies in Iran on the association between criminal activity and drug abuse. To the best of our knowledge, so far, no study in Iran has been conducted to investigate the correlation between the type of abused substances and criminal activity.

2. Objectives

The objective of this study was to investigate the rela-

tionship between the type of abused drugs and criminal activity, the psychological status in drug abusers, psychological interventions performed in drop-in centers (DIC), and the relationship between alcohol consumption and criminal activity.

3. Materials and Methods

During the period of the months from September to December 2009, 141 subjects in DIC group and 120 subjects in Razy Hospital (Baghdad, Iraq) group were sampled in East Azerbayjan province, Iran. DIC centers in East Azerbayjan (Tabriz, Maragheh, and Mianeh) consisted of a government center, six private centers, and 10 mobile teams. The services provided by the DIC centers include: 1) admission and examination of the intravenous drug abuser, 2) provision of counseling services, 3) provision of free disposable syringes, 4) education of the mode of use of provided syringes and injection method, 5) counseling regarding substitution of methadone therapy for drug injections and its benefits, and 6) education of evidence of unsafe behaviors for prevention of diseases (16). DIC group consisted of intravenous drug abusers serviced by DIC centers.

We sampled all 10 DIC teams in proportion to the approximate number of addicts in region. The method of sampling was convenient and was continued for 4 months. Razy Hospital group consisted of subjects attended to receive methadone. Enrollment criteria for this group consisted of subjects who had been intravenous drug abusers at least during the last 4 months and who had not been subjected to services of DIC centers.

The data collection instruments included a checklist for demographic variables and a structured and trained interview list for drug-related variables and the General Health Questionnaire-28 (GHQ-28). The GHQ-28 was used to assess psychiatric in respondents. This questionnaire was developed by Goldberg and Hillier to screen somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression. A review of studies on the validation of the GHQ-28 in different countries demonstrates its high validity and reliability as a screening tool of mental well-being in the community. This questionnaire was translated into the official language of Iran (Persian), which is comprehensible to almost every Iranian, and its validity and reliability were approved in previous independent studies (15, 17). The estimated intra-class correlation between the test–retest scores was 0.84, 0.85, 0.79, 0.88, and 0.91 for physical condition, anxiety, social dysfunction severe depression, and total score, respectively (18). For each item, four possible answers are available; 1: not all (score = 0), 2: no more than usual (score = 1), 3: rather more than usual (score = 2), and 4: much more than usual (score = 3). The score for subscales and total score were computed by summing over ranks in related items. For each item, including physical condition, anxiety, and social dysfunction subscales there were seven questions, and hence the possible range of scores for them is 0 - 21. For total score, the possible range would be 0 - 84. Likert scoring method of GHQ showed a cutoff point of 23 (scores higher than 23 indicate a mental disorder). The sensitivity, specificity, and the overall misclassification rates are of 70.5%, 92.3%, and 12.3%, respectively (15, 18).

Data collection was performed by face-to-face interviewing with the help of a psychologist and each center's head, who was a rehabilitated ex-addict (in order to have a good communication potential with the drug abusers). The interviewers had been totally trained by a physician and an epidemiologist. Furthermore, a gift was offered to each drug abuser in order to motivate the addicted patient for cooperation.

All analyses were performed using SPSS for Windows 18.0 (SPSS Inc., Chicago, IL, USA). Data were presented as mean with a standard deviation (SD) or 95% confidence interval (CI) and frequency (percent) for quantitative and qualitative variables, respectively. The mean score of the GHQ-28 subscales and its total score was compared between DIC and Razy centers using independent samples t-tests. Univariate and multiple logistic regression analyses were performed to assess the relationship between psychiatric distress and subjective report of criminal activity with controlled type and number of abused substance, use of alcohol and demographical variables. In this approach, significant variables in the univariate analyses were candidate to enter in the multivariate analysis. Some variables were deleted due to low number of the observations in some of their categories. Odds ratios (OR's) and their 95% CI's were presented as the effect size of the relationships. P value < 0.050 was considered as statistically significant.

4. Results

Average age of intravenous drug abusers was 27.9 years (95% CI = 26.57 - 29.35) in DIC centers and 28.1 years (95% CI = 26.64 - 29.42) in Razy Hospital. Women constituted a very small percentage of the studied cases: only 4 (3.3%) and 2 (1.6%) of the sample in DIC centers and Razy Hospital, respectively. The most common occupation groups in both groups (DIC centers and Razy Hospital) were unskilled and semi-skilled workers, who constituted 78 (60.5%) and 58 (50.0%) of the drug abusers, respectively. It is noteworthy that 24 (18.6%) and 34 (29.3%) of the drug abusers were unemployed in DIC centers and Razy Hospital groups, respectively. Forty (29.6%) of the addicts in the DIC group and 44 (36.7%) of the Razy Hospital group had education levels of primary school or lower. As for the marital status, 90 (64.7%) drug abusers in DIC group and 80 (66.7%) drug abusers in Razy Hospital group were single. Unprotected (and of course extramarital) sexual relationship among single drug abusers occurred in 39 people (22.9%) and the average number of intercourses in the last 30 days was 4.8 times (SD = 5.6). It is noteworthy

that 35 (20.5%) of the single drug abusers declined to answer this question.

Self-reported alcohol consumption was 78 (57.8%) in DIC group, which was higher than Razy Hospital group (15 subjects; 12.6%) ($\chi2$ = 55.6, P < 0.001). The average amount of alcohol consumption among alcoholic cases was 4.3 (SD = 4.9) glasses per day. In DIC and Razy Hospital groups, this average was 4.5 glasses (SD = 4.8) and 3.3 glasses (SD = 5.4) respectively (t = 4.6, P < 0.001).

One sample t-test was used to compare the status of drug abusers regarding psychiatric distress variables. Drug abusers in DIC centers group and Razy Hospital group were different in all four aspects of psychological health in a statistically significant manner (all P < 0.050) (Table 1). Based on the cut-off point of score 23 for identifying subjects with mental illness, 76.2% (96 subjects) of DIC subjects and 95.5% (107 subjects) of Razy Hospital subjects did not have evidence of mental well-being (P < 0.001).

In this study, the self-reported rate of criminal activity in intravenous drug abusers was 48.3% (126 cases). The most frequent crime types associated with other crimes were selling illicit drugs (44 subjects, 40%), theft (30 subjects, 27.4%), and violence (24 subjects, 21.8%). Counterfeiting, forgery, and check fraud being an accessory to murder, selling and possession of firearms and rape consisted 10.8% of the crimes reported by respondents (12 subjects). Frequency distribution of the type of addiction (heroin, benzodiazepine, codeine, hashish, and opium) according to the committed crimes among intravenous drug abusers is available in Table 2.

In order to investigate variables related with criminal activity, a univariate multiple regression test (unadjusted analysis) was performed initially. Illiterate or low-educated drug abusers had a higher rate of crime perpetration than drug users with an education level of graduated university (OR = 4.76, P = 0.021). Furthermore, heroin abusers and drug abusers without mental well-being had a higher rate of committing crimes (OR = 2.5, P = 0.002) and (OR = 1.05, P = 0.017). Test results are shown in Table 3.

For studying the factors involved in criminal history in the presence of possibly confounding variables, multiple regression test (adjusted analysis) was used. In this model, chance of criminal activity was higher in lower educated abusers, in heroin abusers and abusers without mental well-being (OR = 5.9, P = 0.036; OR = 2.1, P = 0.049 and, OR = 1.16, P = 0.026, respectively) (Table 3).

Table 1. Comparison of General Health Questionnaire-28 Total and Subscales Scores Between Two Groups of Intravenous Drug Abusers Studied in Drop-in Centers and Razy Clinic [a]

General Health Question	DIC [b]	Razy Hospital	P Value
Somatization	10.01 ± 5.43	10.82 ± 4.72	0.0230
Anxiety	11.35 ± 5.50	12.37 ± 4.86	0.0010
Social dysfunction	09.37 ± 6.05	12.26 ± 4.04	0.0001
Depression	10.84 ± 6.90	13.38 ± 5.17	0.0001
GHQ [c] total score	42.06 ± 20.78	49.14 ± 14.57	0.0010

[a] Data are presented as Mean ± SD.
[b] Drop-in centers.
[c] General Health Questionnaire.

Table 2. Frequency Distribution of the Type of Addiction According to the Committed Crime Among Intravenous Drug Abusers [a]

Abused drug	Crime			
	Sale of Illicit Drugs	Theft and Forgery	Violence	Sale of Drugs, Theft, or Violence
Heroin	7 (31.8)	7 (31.8)	5 (22.7)	3 (13.6)
Benzodiazepines	10 (50.0)	4 (20.0)	3 (15.0)	3 (15.0)
Codeine	-	-	-	-
Cannabis	15 (38.5)	12 (30.8)	6 (15.4)	6 (15.4)
Opium	17 (53.1)	3 (9.4)	8 (25.0)	4 (12.5)

[a] Data are presented as NO. (%).

Table 3. Relationship Between Some Demographic and Drug Related Variables With Criminal History Based on Uni- and Multi-Variate Analyses [a]

Variables and its cofactors: NO. (%)	Unadjusted Analysis			Adjusted Analysis		
	P	OR [b]	CI [c]	P	OR [b]	CI [c]
Group						
DIC [d]: 141 (54)		1.00				
Razy clinic: 120 (46)	0.820	0.94	0.58 - 1.50	-	-	-
Age	0.880	-	-	-	-	-
Marital status						
Married: 170 (65.6)		1.00				
Single: 89 (34.4)	0.230	0.73	0.43 - 1.20	-	-	-
Educational status						
≤ Primary: 84 (32.9)		1.00			1.00	
Middle: 83 (32.9)	0.140	0.63	0.34 - 1.17	0.069	0.49	0.24 - 1.10
High school: 73 (28.6)	0.610	0.85	0.45 - 1.60	0.570	0.80	0.37 - 1.70
Graduated university: 15 (5.9)	0.021	0.21	0.54 - 0.79	0.036	0.17	0.03 - 0.89
Job						
Unskilled worker: 136 (55.5)	0.190	1.00	0.79 - 2.80	0.160	1.00	0.79 - 3.90
Skilled worker: 52 (21.5)	0.160	1.50	0.85 - 2.90	0.800	1.80	0.43 - 1.90
Unemployed: 58 (23.7)		1.60			0.94	
GHQ [e]	0.017	1.05	1.01 - 1.09	0.026	1.16	1.10 - 1.12
Alcohol use						
No: 161 (63.4)						
Yes: 93 (36.6)	0.540	1.70	0.70 - 1.95	-	-	-
Rate of alcohol use	0.065	1.08	0.98 - 1.19	0.230	1.07	0.90 - 1.20
Left drug by methadone						
No: 110 (42.8)	0.460	1.00				
Yes: 147 (57.2)		1.40	0.84 - 2.30	-	-	-
Previous addiction						
Hashish						
No: 153 (59.3)		1.00				
Yes: 105 (40.7)	0.810	1.06	0.65 - 1.75	-	-	-
Opium						
No: 166 (64.3)		1.00				
Yes: 92 (35.7)	0.280	0.72	0.43 - 1.20	-	-	-
Benzodiazepines						
No: 213 (82.6)		1.00				
Yes: 45 (17.4)	0.250	1.50	0.77 - 2.80	-	-	-
Heroin						
No: 175 (67.8)		1.00				
Yes: 83 (32.2)	0.910	1.00	0.67 - 1.70	-	-	-
Current addiction						
Hashish						
No: 221 (87.7)		1.00			1.00	
Yes: 31 (12.3)	0.130	0.29	0.60 - 1.60	0.210	0.34	0.06 - 1.90
Opium						

No: 242 (96.4)		1.00			1.00	
Yes: 9 (3.6)	0.028	0.40	0.18 - 0.90	0.330	0.58	0.19 - 1.70
Ecstasy						
No: 207 (82.1)		1.00				
Yes: 12 (4.8)	0.910	1.10	0.34 - 3.50	-	-	-
Benzodiazepines						
No: 207 (82.1)		1.00				
Yes: 45 (17.9)	0.890	1.04	0.55 - 1.90	-	-	-
Heroin						
No: 69 (27.4)		1.00			1.00	
Yes: 183 (72.6)	0.002	2.50	1.40 - 4.50	0.050	2.10	1.10 - 4.20
Type of previous addiction						
Single drug: 196 (76.3)		1				
Multiple drugs: 61 (23.7)	0.370	1.30	0.73 - 2.30	-	-	-
Type of current addiction						
Single drug: 185 (73.4)						
Multiple drugs: 67 (26.6)	0.540	0.84	0.48 - 1.50	-	-	-

^a Using codeine and ecstasy have been deleted automatically by software from the model due to low number of the observations.
^b Odds ratio.
^c Confidence interval.
^d Drop-in centers.
^e General Health Questionnaire.

5. Discussion

In the present study, over 85% (248) of the drug abusers did not have a mental well-being. This rate was 72% in American intravenous drug abusers and 61.3% in Australian intravenous abusers (4, 19). Overall, the low rate of mental well-being was compatible with other similar studies (1-5, 20). According to the results of some other studies, about 50% of the USA population had comorbid mental disorder and drug abuse (21, 22). Furthermore, about 30 - 50% of psychiatric patients in clinical centers were also drug abusers (23).

Almost half of intravenous drug abusers had a self-reported history of crime. This result was similar to performed studies in this field (3, 7, 8). Furthermore, concomitant addiction to both narcotics and alcohol did not increase the chance of criminal activity. On the other hand, some studies (14, 15) reported that the probability of criminal activity is higher in the case of multiple drug use. Chaiken et al. (24) also reported that the rate of criminal activity in multiple drug users in the USA was 10 - 20 times higher than the rest of drug abusers (15). In addition, Bennett and Holloway showed that abusers who used either cocaine or crack in Los Angeles had a lower criminal activity rate than abusers who used both cocaine and crack. Furthermore, in a study by Bennett et al. in the UK (14), drug abusers who used both heroin and cocaine had higher levels of illegal income than others but, in the present study, multiple drug use in the presence of confounding variables was not related to the his-

tory of criminal activity. Probably this inconsistency is due to differences in culture and lifestyle of the various communities.

In the present study, after control of confounding variables, heroin addiction always increased the chance for criminal activity. The findings of available studies also show that the particular drug type combinations are also influential in criminal activity (14, 15), and research reports show that investigation of the relationship between crime and particular drug type combinations provides valuable information for anti-drugs strategies and treatment services (15).

In this regard, the most important factors are economic factors (cost of drugs), lifestyle, and psychopharmacological factors (14). It has been reported that various pharmaceutical combinations may cause higher levels of violence due to their chemical nature (14). In this study, in the presence of confounding variables drug abusers with the lowest level of education had higher chances of committing crimes than drug abusers with higher levels of education. According to the study by Icli et al. (22) low education, and lack of occupational skills, and drug abuse have a direct correlation with criminal activity (22). It seems that high educational level has been associated with the high of awareness of the obscenity crime consistently.

This study due to strength of interviewer's good communication (cooperation with psychologists and reha-

bilitated ex-addict), had a high accuracy. Modeling and control of confounding variables was of strength of the study, but low number of the participants and restriction in generalizability are limitations of this study.

This study depicted heroin as a dangerous abuse substance that has a strong relationship with the chance of committing a criminal activity. Heroin abusers in DIC centers had higher levels of mental illnesses, while psychiatric distress had no relationship with criminal activity. As a result, it seems that psychiatric distress is an interaction factor in the effect of heroin on criminal history. This implies a probability of psychopharmacological effect of heroin in the occurrence of mental disorders and the likelihood of criminal activity.

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Authors' Contributions

Leyla Sahebi conceived and designed the study and drafted the manuscript. Mohammad Asghari Jafar Abadi helped in statistical analysis and project. Seyed Hosein Mousavi cooperated in data collection and communication with the Welfare Organization. Majid Khalili helped to draft the manuscript and English editing. Maryam Seyedi helped to revise the manuscript. All authors read and approved the final manuscript.

Declaration of Interest

None declared.

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