Predictors of length of abstinence among drug abuse patients of a behavioral modification program in specialized center in Saudi Arabia

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ABSTRACT

Background: Long-term abstinence in substance abuse patients is a great clinical challenge. A novel behavior modification program (BMP) for ensuring abstinence in substance abuse patients was being run in a tertiary care hospital in Jeddah, Saudi Arabia. The aim of this study was to evaluate the factors associated with the length of abstinence in substance abuse patients who were enrolled in this BMP. **Methods:** This was a record-based study, where patients were identified from the records of Al-Amal hospital. The study group consisted of adult male patients suffering from drug addiction, exposed to an initial detoxification treatment program and subsequently enrolled into BMP during the year 1424 Hijri, the reason of period selection that it was before the modification of inpatient BMP in the facility toward more outpatient one. Multiple stepwise regression with backward elimination was done to identify factors independently associated with length of abstinence in the BMP program. **Results:** Mean (SD) age of the participants was 31.9 (8.4) years and a majority had 6–9 years of education (65%), were single (63%), and unemployed (72%). Presence of mood disorder (b = 111.3; 62.3–160.3), good program attendance score (b = 33.2; 21.0–45.4), and higher total number of previous hospital admissions (b = 6.4; 3.1–9.6) were associated with a longer length of abstinence in the BMP program. **Conclusion:** A number of factors as described above can be utilized to modify the BMP and target different groups of patients who are less likely to stay abstinent for a longer duration, ensuring greater effectiveness of the BMP.

Keywords: Behaviour modification program, length of abstinence, mental health, Saudi Arabia, substance abuse

Introduction

Substance abuse is a global public health problem. It refers to the usage of psychoactive substances, including alcohol and illicit drugs, in a manner that is harmful or hazardous to the recipient.[1] Two terms that are erroneously used interchangeable with reference to substance abuse are dependence and addiction.

Dependence is a state in which a person requires a steady concentration of a particular substance to avoid experiencing withdrawal symptoms.[2,3] On the other hand, addiction, as defined by the National Institute on Drug Abuse (NIDA), is a chronic, relapsing brain disease that is characterized by compulsive drug seeking and use, despite harmful consequences.[4]

Addiction is a condition that has received worldwide attention, which demands disease prevention at all levels of healthcare provision.[5] Arab countries as part of the world need to adjust their strategy to minimize addiction problem.[6] It is a primary, chronic disease of brain which involves interactions of reward, motivation, memory and related circuitry.[4] A person suffering

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from drug addiction suffers from repeated failures to refrain from use of drugs, such as alcohol, despite prior resolutions to do so. This repeated usage of the drug in addicts reaches a point where the person develops a physical or psychological need for the constant presence of the drug.[6,7]

Treatment approaches of drug addiction generally involve drug therapy to prevent relapse, supported by different forms of psychotherapies such as individualized counselling, supportive–expressive psychotherapy, motivational enhancement therapy, behavioral therapy, cognitive behavioral therapy (CBT), multidimensional family therapy (MDFT), and multisystemic therapy (MST).[8-11] Such treatment programs may be offered in an outpatient set up, short-term inpatient setup, or as a long-term residential program. The treatment goal of such therapy is mainly to provide the specific services needed by each patient, at the appropriate level of intensity, and within the appropriate setting. After the treatment for addiction has ensured a safe and successful withdrawal from substance use, the next aim is to help the patient to avoid returning to substance use. Since the addictive drugs produce immense psychological and physical dependency, a large number of drug addicts relapse after treatment for withdrawal and detoxification. The relapse rate within the first year after detoxification can be as high as 80–95%.[12] A high relapse rate after detoxification among addicts directly translates to poor effectiveness of the anti-drug addiction therapy. Thus, measures should be taken to reduce the relapse rate. Longer the period of abstinence, the greater is the success of addiction therapy.

A behavioral modification program (BMP) units has been adopted in Al-Amal hospital in Jeddah since its start in 1987. In BMP, patients who have received detoxification treatment and are motivated for long-term abstinence through behavioral modification are provided psychiatric, psychological, social, and spiritual counselling, as well as family therapy, in addition to sports activities and work therapy. It is considered as one of the most crucial interventions undertaken in the treatment of drug abusers. A previous publication by the present authors explored the sociodemographic characteristics of adult drug users in Saudi Arabia.[3] The objective of the present study was to identify the predictors of length of abstinence among patients who underwent BMP. The findings of this study may help primary care physicians recognizing the risk factors for early relapse of drug addiction and also encourage policy makers for the development of a standard protocol or procedure to identify patients at risk of early relapse in primary care settings and provide special care and treatment or referral to specialized services.

Methods

This study was done in Al-Amal hospital, located in Al-Naeem district, one of the northern districts of Jeddah, in the Kingdom of Saudi Arabia. This was a record-based study, where patients were identified from the records of Al-Amal hospital. The study population included adult male patients suffering from drug addiction, exposed to an initial detoxification treatment program and subsequently enrolled into BMP during the year 1424 Hijri, the reason of period selection that it was before the modification of inpatient BMP in the facility toward more outpatient one, patients admitted to BMP who requested discharge during the orientation period (within 72 h of admission) were excluded from the study.

Data was collected using a case record form which was designed to provide data to help in the assessment of the predictors of length of abstinence among drug addiction patients who underwent BMP. DSM-IV criteria were used throughout the study. Quality control was done at the stages of coding and data entry. Descriptive analysis was done using frequencies and percentages for qualitative variables, and means (±SD) for quantitative variables. Inferential statistical analysis was performed according to the characteristics of the data. Continuous data were compared using t-test and correlation coefficient. Multiple stepwise regression with backward elimination was done to identify factors independently associated with length of abstinence in the BMP program. Statistical significance was considered at $P < 0.05$. Data analysis was done using SPSS 20.0 statistical software package.

Institutional ethics committee approval was obtained for the study protocol and access to the patient data (ethical approval No. 1424/21, year of approval: 2008). Since the study was record based, there was no direct contact with patients. All data collection was done while maintaining total confidentiality of the involved patients.

Results

About three-quarters of the participants were in the age group of 21–39 years, with a mean (SD) age of 31.9 (8.4) years. A majority of the participants had 6–9 years of education (65%), were single (63%), and unemployed (72%). [Table 1]

To determine the factors which affected the length of abstinence among the patients who underwent BMP, we used bivariate analysis. Table 2 represents the factors which significantly affected the duration of abstinence. Patients who showed higher mean number of days with abstinence were those who were unemployed, those who were smokers, addicted to heroin, having hepatitis C virus infection, having mood disorders, showing incidence of relapse during treatment, having a good program attendance score, and having an illegal involvement. Also, the length of abstinence was positively correlated with higher age, longer duration of drug use, higher number of hospital admissions, higher number of total admissions in the BMP, and a longer duration of stay in the last BMP admission.

To investigate the factors which are independently associated with the length of abstinence, we performed multiple stepwise regression with backward elimination. These results are summarized in Table 3. Presence of mood disorder, good

Table 1: Sociodemographic characteristics of patients included in the behavioral modification program (BMP) program (*n*=401)	
	No (%)
Age (years)	
<21	29 (7.2)
21-29	139 (34.7)
30-39	152 (37.9)
40+	81 (20.2)
Mean±SD	31.9±8.4
Total educational years	
<6	13 (3.2)
6-9	261 (65.1)
10-15	94 (23.4)
16+	33 (8.3)
Mean±SD	9.3±3.1
Marital status	
Single	252 (62.8)
Married	101 (25.2)
Divorced/separated/widow	48 (12.0)
Job status	
Unemployed	290 (72.3)
Working	111 (27.7)

program attendance score, and higher total number of previous hospital admissions were associated with a longer length of abstinence in the BMP program.

Discussion

The present study explores the various factors which predict the length of abstinence in patients suffering from drug addiction, and have underwent a programme of behavioral modification after undergoing a drug detoxification regimen. To the best of our knowledge, this is the first time that such a study has been done in this geographical region, though similar studies have been reported from other parts of the World, such as China,[13] USA[14-16], and Canada.[17]

In our study, we analyzed the data from a historical record of 401 male patients of substance abuse, who had been exposed to an initial detoxification treatment program, and subsequently received a program involving behavioral modification. A detailed discussion of the sociodemographic characteristics of the patients are presented elsewhere.[3] In the present paper, we focussed on the factors predicting the length of abstinence among patients who received the BMP. Many factors were found to be associated with length of abstinence in the bivariate analysis but not in the multivariate analysis. In the bivariate analysis, we found that patients addicted to heroin use have a longer mean duration of abstinence than other drugs, and the least duration of abstinence was found with those who are addicted to amphetamine and alcohol. This is because of the nature of the drugs and the strength of their withdrawal reactions. Furthermore, the presence of HCV in patients is associated with a longer duration of abstinence. This is in contrast to previous studies which have observed that

participation in a program for maintaining abstinence is protective against HCV infection.[17] Further studies are required for a deeper understanding of these factors.

In multivariate analysis, we found that three factors were independently associated with the length of abstinence among patients recruited in a BMP. Having a mood disorder, having a good program attendance score and higher total number of hospital admissions were significantly associated with a longer length of abstinence in the BMP. Higher number of days with abstinence was found with patients suffering from comorbid mood disorders. This may be explained on the basis that these patients have less inhibition to approach a qualified psychiatrist for help, and thus are more exposed to counselling and psychotherapy than those without mood disorders. Thus, these patients are better equipped to maintain a longer duration of abstinence. A similar explanation can be given to the finding that patients with a good program attendance score have a longer duration of abstinence than those with moderate and poor attendance scores. Repeated contacts with the hospital surroundings by getting admitted more number of times also may help in prolonging the abstinence of substance abuse patients.[18-20]

Our study did not find any statistically significant influence of factors such as age, duration of drug use, age at initiation, employment status, marital status, and other in the multivariate analysis.

Strengths and limitations

This is one of the first studies to have been carried out in the country from one of the largest substance abuse hospitals in the region. The BMP is one of the pioneer programs carried in the study hospital which has helped thousands of drug addicts to get off their drugs and engage in a socially and economically productive life. The importance of the study lies in the fact that we have now a better understanding of the factors that are associated with greater success and we can anticipate the group of patients who are less likely to remain abstinent for a longer than expected duration. This will enable the administrator of the hospital to increase the effectiveness of the BMP. However, there are some limitations in this study which have to be kept in mind during interpreting the results. A study with a larger sample size and more robust study design (such as a prospective study design) is required to confirm these findings. This study focussed on the factors predicting the duration of abstinence as recorded by the case papers of patients admitted to the BMP in our hospital. These findings may or may not reflect the patients who do not receive such a BMP outside a hospital set up. Other limitations of this study include a retrospective study design, smaller sample size, involving only males, and absence of a control group who were not enrolled in the BMP.

Conclusion

In patients who underwent a BMP after undergoing a drug detoxification regimen, a number of factors such as associated

Table 2: Factors showing significant correlation with period of abstinence (in days) among patients admitted to the BMP programme - Bivariate analysis

Factors	Count	Days of abstinence Mean±SD	P
Employment status			
Working	106	77.98±57.10	<0.001
Unemployed	295	109.22±115.71	
Smoking status			
Non-smoker	5	27.80±9.78	0.01
<5 years	34	60.29±41.51	
>6 years	362	105.80±107.94	
Main drug of abuse			
Heroin	161	132.51±138.32	<0.001
Amphetamine	132	69.80±47.67	
Cannabis	55	93.96±76.14	
Alcohol	35	76.66±64.78	
Other drugs (benzodiazepines, cocaine, etc)	18	116.06±114.83	
Comorbid HCV infection			
No	236	78.64±59.23	<0.001
Yes	165	132.90±1 40.65	
Mood disorder			
No	386	95.80±93.65	<0.001
Yes	15	233.93±224.06	
Incidence during treatment			
No	133	75.95±77.94	0.001
Yes	268	113.38±113.31	
Program attendance score			
Low	121	72.47±72.61	<0.001
Moderate	170	89.81±98.33	
Good	110	149.55±125.22	
Illegal involvement			
No	130	72.83±54.75	<0.001
Yes	271	114.46±118.88	

Continuous variables	Correlation coefficient	P
Age	0.185	<0.001
Duration of drug use	0.239	<0.001
Age at start of drug use	-0.061	0.20
Total hospital admissions	0.301	<0.001
Total admissions in the BMP	0.251	<0.001
Total admissions in the BMP in the last one year	0.085	0.09
Duration of stay in the last BMP admission	0.487	<0.001

Table 3: Independent factors associated with length of abstinence (in days) among patients admitted to the BMP programme - Multiple stepwise regression with backward elimination

Variables in the model	Coefficient	SE	P
Mood disorder	111.3 (62.3 to 160.3)	24.9	<0.001
Incidence during treatment	19.2 (-0.9 to 39.4)	10.2	0.06
Program attendance score	33.2 (21.0 to 45.4)	6.2	<0.001
Illegal involvement	19.2 (-2.1 to 40.5)	10.8	0.07
Total hospital admissions	6.4 (3.1 to 9.6)	1.6	<0.001

mood disorders and repeated but consistent engagement with the hospital services are important for ensuring long-term abstinence of substance abuse patients. The hospital administrators can utilize this information to incorporate special features in the BMP to enhance its effectiveness.

Conflicts of interest

There are no conflicts of interest.

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