

The effects of Buprenorphine/Naloxane Maintenance Treatment on the Quality of Life, Substance Use and Functionality in Opiate Dependence: A Follow-Up Study

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ABSTRACT:

The effects of Buprenorphine/Naloxane maintenance treatment on the quality of life, substance use and functionality in opiate dependence: a follow-up study

Objective: Abstinence is not the only goal of the current drug addiction treatment modalities. New modalities focus rather on improvement in physical and mental health, personal and social functionality. It has been found that opioid maintenance treatment reduces the rates of illicit drug use, crime and sexual transmitted diseases in addition to increasing psychiatric, somatic and social functionality. In this study, we examined the effects of Buprenorphine/Naloxane (BN) maintenance treatment on substance abuse, quality of life and functionality.

Method: The sample contained 50 opiate-dependent individuals who were hospitalized at the inpatient psychiatric unit for opioid detoxification and then followed at the addiction outpatient clinic of Istanbul University, Faculty of Medicine after their discharge from the hospital. The first interview was conducted at the inpatient unit and other interviews were conducted at the addiction outpatient clinic. The Addiction Severity Index and The Short-Form 36 were administrated to the patients at first interview, and then at the end of the third and sixth months while Visual Analog Scale and Perceived Stress Scale were administrated once a month.

Results: Nineteen patients completed six month treatment period. However, all patients have been evaluated by using the last observation carried forward (LOCF) method in order to objectively measure the effect of treatment. Opioid maintenance treatment provided statistically significant decreases in opiate and non-opiate substance abuse, stress level and craving and there was significant improvement in all domains of SF-36 between baseline, 3th and 6th months. Significant improvements were found in employment, drug use, alcohol use, legal status, family/social status and psychiatric status which were assessed with ASI while there was no improvement in medical status. Significant improvements were recorded during the first three months and these improvements were maintained at the end of sixth month.

Conclusion: BN maintenance therapy is potentially effective in ameliorating some of the adverse effects of opioid dependence on quality of life and functionality while reducing the rate of substance use.

Keywords: opiate dependence, quality of life, SF-36, functionality, Buprenorfin/Naloksan, craving, stress, addiction severity, heroin, opioid

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INTRODUCTION

Opiate addiction, which is caused by continuous and sustained use of opiates despite the significant adverse consequences, is a set of behavioral, physiological, and cognitive symptoms. Opiate addiction can lead to significant health and social problems. Opiate use is found to be associated with increased rates of HIV, hepatitis, and somatic and psychiatric complications including depression, suicidality, and antisocial behavior^{1,2}. The number of people using opiates at least once in the world is reported to be five million. In our country, according to data obtained from inpatient addiction treatment centers, the number of inpatient admissions were 5,214 in 2011. In 2011, 66% of inpatients were treated for heroin addiction^{3,4}.

Opioid maintenance treatment is the most effective treatment for opiate dependence and is increasingly used^{5,6}. It has been demonstrated that maintenance treatment in heroin use has clinical benefits such as the reduction of risky behaviors, improvement in health status, and withdrawal from social and legal problems⁷⁻⁹. The main objective of opiate addiction treatment is a reduction or cessation of illicit opioid use. However, it is necessary to make a follow-up to these areas to assess the changes with treatment in the impairment in psychological, social, and medical areas caused by dependence¹⁰. The measure of the change in functionality and quality of life is increasingly used to assess the effects of care provided to patients with chronic disorders^{11,12}.

Buprenorphine has less side effects compared to other drugs used in the substitution treatment (methadone, etc.) but also its efficacy is similar to them^{13,14}. Its potential advantages depends on its pharmacological properties. Buprenorphine is a partial mu agonist and kappa antagonist, therefore it causes to less euphoria and depression compared to metadone which is a full mu agonist¹⁵. There are only two types available in the market including stand alone form and combined form with naloxone. The combined BN sublingual tablets, which is the only available alternative opiate

maintenance treatment in Turkey, were used. Accelerated withdrawal risk is extremely low in combined use, because bioavailability of naloxone is bad when administered as sublingual. Despite low sublingual bioavailability of naloxane, its parenteral bioavailability is high. So parenteral use of naloxone can lead to opiate withdrawal in people with opiate dependent¹⁶. Thus, combined tablet reduces the likelihood of parenteral abuse of buprenorphine.

Although there is data obtained from a few randomized clinical trials related to overall effectiveness of BN tablets in the treatment of opiate dependence, there is relatively limited study related to efficiency and reliability of the maintenance treatment which reflects real world conditions¹⁷. Also, there are fewer studies which were reported the efficacy of BN on opiate dependence in Turkey^{18,19}. In this study, we aimed to determine the efficacy of BN maintenance therapy in patients with opiat dependence by evaluating the rate of treatment continuation, the perceived stress level, functionality, craving, and quality of life. Our hypothesis was that BN maintenance treatment in opiate dependence would decrease the level of craving, perceived stress level, and reduce the use of illegal substance. In addition, it will provide a significant improvement in the quality of life and functionality.

METHOD

The study was performed in Istanbul University, School of Medicine, Department of Psychiatry Inpatient Services on the patients with opiate dependence who were administrated detoxification treatment at inpatient clinic and made follow-up exams at the outpatient dependency clinic after discharging.

The study which were designed as pretest, last test, and repeated measure was conducted on the the patients with opiat dependence according to DSM-IV who were hospitalized in psychiatric ward at the time between June 2012 and December 2012, were from 18 to 65 years old and have signed the informed consent as voluntarily. Pregnant,

illiterate, breastfeeding, and patients with psychotic disorders were excluded from the study. At the time of the study, of 53 hospitalized patients with a diagnosis of opioid dependence, 2 were excluded from the study because they refused to participate in the study, when one patient was excluded due to illiteracy. The patients who agreed to participate to the study were undergone a baseline interview and evaluation by a training research asistant at inpatient clinic, other interviews (3rd and 6th month) were made at our outpatient clinic. The study protocol was reviewed and approved by the Institutional Review Board of Istanbul University, Faculty of Medicine.

The stress variable was measured by using the Perceived Stress Scale; medical condition, business support status, drug and alcohol use, legal status, family and social relationships, and psychiatric status were measured by using ASS; craving level was evaluated by using VAS; and the measurement associated with the quality of life was obtained by using SF-36. In addition, participants who continued to the treatment were administrated a substance screening in the urine.

Perceived Stress Scale (PSS): Perceived Stress Scale (PSS) is a measure scale developed by Cohen et al.²⁰. In the scale used frequently, administrator wants individuals to rate certain feelings or thoughts whom they experienced in the past month (from 0 [never] to 5 [very often]). Perceived stress level is determined by collecting the scores of the items and high scores indicate high levels of perceived stress. Turkish adaptation of Perceived Stress Scale was performed and it has been reported that it has adequate internal consistency and criterion validity²¹.

Addiction Severity Index (ASI): It consists of a scale of dependence severity that evaluates in detail the following problem areas: medical, employment, legal, family/social, alcohol, drug, psychiatric. The ASI was developed to assess patient functioning in seven problem areas commonly affected by substance use disorders. Composite scores for problems in each of these

two domains in the previous 30 days were calculated using procedures. The Psychiatric composite score includes 11 items assessing aspects of current psychiatric status and functioning such as hallucinations; “serious anxiety or tension;” and cognitive dysfunction (“trouble understanding, concentrating, or remembering”). The Family/Social composite score is primarily a measure of psycho-social functioning. It includes five items assessing the presence of conflict with family, friends, co-workers, neighbors, and others; the respondent’s satisfaction with his or her current marital/relationship status, and the degree to which the respondent was “troubled or bothered” by family problems. It is a semi-structured interview, which is completed in approximately 45 to 60 min. This scale was recently adapted and validated for use in Turkey²².

Visual Analog Scale (VAS): The visual analog scale (VAS) is a psychometric response scale which can be used in questionnaires. It is a measurement instrument for subjective characteristics or attitudes that cannot be directly measured. The authors administered this instrument on which the patient reports his or her level of subjective craving. The question that is used in the instrument “How strong is your craving for heroin?”. The patient then rates his or her craving either by selecting the most appropriate choice by indicating a position along a continuous line between two end-points (Scale=0-100; 0= not at all; 100=very much so). This continuous (or “analogue”) aspect of the scale differentiates it from discrete scales such as the Likert-type scale. There is evidence showing that visual analogue scales have superior metrical characteristics than discrete scales, thus a wider range of statistical methods can be applied to the measurements^{23,24}.

Quality of Life Questionnaire (SF- 36): Short form 36 (SF-36) is a self-rating scale widely used to measure quality of life. In this scale, 8 dimensions of health including physical functioning, role limitations (due to physical and emotional

problems), social functioning, mental health, vitality (energy), pain, and perceived health are evaluated in 36 items. We calculated the eight SF-36 scale scores for (1) physical health: physical functioning (ten items); role limitations due to physical health problems (four items); bodily pain (two items); and general health perceptions (five items); and (2) mental health: social functioning (two items); emotional well-being (five items); role limitations due to emotional problems (three items); and energy/fatigue (four items). Twenty items use a “past 4 weeks” recall period, and 15 items do not have a recall period; the “health transition” item is not used in scoring any of the eight scales^{25,26}.

Statistical Analysis

The rates of retention and compliance in the treatment were evaluated. Nineten patients completed six month treatment period. The rate of retaining in the treatment was 52% in the 3rd month, the rate of patients who were still in treatment decreased to 38% at the end of the 6th month. However, all patients have been evaluated by using the last observation carried forward (Last Observation Carried Forward/ LOCF) method in order to objectively measure the effect of treatment²⁷.

LOCF is a method used especially in the longitudinal studies. In this method, data loss would be filled by the appointment of the last observed value before the loss instead of missing values. In this method, the previous data complete the place of the next missing data.

Statistical analysis was performed by using SPSS 19.0 statistical package program. We used descriptive statistics to describe patient characteristics at the baseline. The patients' scores of Visual Analog Scale (VAS), the Perceived Stress Scale (PSS), Addiction Severity Scale (ASI) and the SF-36 scale on the baseline, 3rd and 6th months time points were compared by using ANOVA test method for repeated measurements. *p* values less than 0.05 were considered significant (*p*<0.05).

RESULTS

Socio-demographic data of the patients was presented in Table 1. Substance screening in urine was found positive at least once on sixteen patients who came to follow up (approximately one third of all patients). Of patients with positive urine screen, six had positive in only opiate, four had only benzodiazepine, three had only cannabis positive and three patients experienced positive results in screening of both opiates and cannabis, whereas opiates and benzodiazepines were found positive in only one of them. Of 16 patients, 9 (56%) completed six months of treatment. The patients who had positive urine result for cannabis could not complete the treatment at the end of sixth month, whereas five patients with only opiat positive in the urine and four patients with benzodiazepine and opioid positive completed the maintainance treatment.

According to ANOVA results which compared the patients' scores of VAS at the baseline, third and sixth months in repeated measurements, there was a significant statistical difference between the time points (Table 2). According to multiple comparison test results, significant differences were found between the scores of VAS-beginning and VAS- 3rd month (*p*<0.01) and the scores of VAS beginning and VAS-sixth month (*p*<0.01). VAS-beginning points were greater in both conditions (Table 2).

There was a significant statistical difference between the time points, when evaluating ANOVA results which compared the patients' scores of PSS at the beginning, third and sixth months in repeated measurements (Table 3). In order to find this difference from which time points derived, multiple comparison test was made. According to this, significant differences were found between, PSS-Baseline with PSS- third month (*p*<0.01) and the scores of PSS at baseline and PSS at 6th month (*p*<0.01). PSS- Baseline scores were higher in each case (Table 3).

According to ANOVA results which compared the patients' scores of SF-36 at the beginning, third and sixth months in repeated measurements, there

Table 1: Characteristics of patients

Variable (n=50)	Mean±SD	
Age (year)	32.38±11.62	
Age of first opiate use	23.58±7.38	
Age of first illegal substance use	18.14±5.58	
Dose of Buprenorphine/Naloxane (mg/day)	11.72±4.12	
	n	%
Sex		
Female	4	8
Male	46	92
Marital status		
Married	13	26
Unmarried	37	74
Length of Education (years)		
0-5	9	18
6-8	17	34
9-11	20	40
>11	4	8
Length of work education (years)		
0	38	76
2-3	8	16
<4	4	8
Family members lived together		
All family	28	56
Parents	9	18
Spouse	2	4
Spouse and children	7	14
Other	4	8
Substance use		
Parenteral	25	50
Non-parenteral	25	50
Membership of Narcotics Anonymous		
Yes	6	12
No	44	88

SD: Standard deviation

Table 2: The scores of craving for heroin (VAS) and changes during the study, mean±standard deviation

Variable	n	Mean±SD	F	df	p
VAS - Baseline	50	79.80±19.01	45.34	2. 98	<0.001
VAS - 3 rd month	50	45.20±37.10			
VAS - 6 th month	50	44.40±37.15			

SD: Standard Deviation

Table 3: Perceived Stress Scale (PSS) total scores and their changes during the study, mean±standard deviation

Variable	n	Mean±SD	F	ss	p
PSS - Baseline	50	46.96±7.38	17.728	2. 98	<0.001
PSS - 3 rd month	50	42.48±8.79			
PSS - 6 th month	50	41.52±9.52			

SD: Standard Deviation

Table 4: SF-36 domain scores, component summaries, changes during the study, mean±standard deviation

Variable	Baseline Mean±SD	3 rd month Mean±SD	6 th month Mean±SD	F	p
SF-36–Physical Functioning	68.20±24.37	73.10±19.77	78.60±18.10	8.091	0.001
SF-36–Role physical	16.00±26.13	38.50±40.47	40.50±39.09	11.302	<0.001
SF-36–Role emotional	25.33±31.99	38.00±38.69	46.00±39.78	9.535	<0.001
SF-36–Vitality	42.70±19.95	49.30±21.88	51.90±21.52	11.30	<0.001
SF-36–Mental Health	47.44±18.00	51.68±19.96	53.36±21.10	5.172	0.007
SF-36–Social functioning	40.70±20.78	47.05±22.15	47.65±22.37	4.705	0.011
SF-36–Bodily Pain	50.75±20.82	59.05±23.36	61.10±24.06	10.08	<0.001
SF-36–General health	37.90±15.98	42.30±17.62	43.30±17.19	3.56	0.032

SD: Standard Deviation

Table 5: Addiction Severity Index (ASI) domain scores, component summaries, changes during the study, mean±standard deviation

ASI VARIABLE	Baseline Mean±SD	3 rd month Mean±SD	6 th month Mean±SD	F(2,98)	p
Medical Status					
Composite	0.19±0.31	0.19±0.31	0.18±0.30	0.013	0.987
Severity	1.98±1.27	1.82±1.19	1.84±1.20	1.167	0.316
Employment support status					
Composite	0.58±0.25	0.61±0.23	0.62±0.23	4.758	0.011
Severity	3.66±1.08	3.04±1.31	3.02±1.30	14.281	<0.001
Legal status –Severity	2.28±1.39	1.78±1.11	1.72±1.13	14.840	<0.001
Alcohol drug status					
Composite	0.07±0.01	0.06±0.02	0.06±0.02	30.877	<0.001
Severity	4.66±0.52	3.64±1.17	3.62±1.13	34.694	<0.001
Family and social relationships					
Composite	0.63±0.23	0.44±0.25	0.44±0.27	26.837	<0.001
Severity	4.00±0.90	3.16±1.24	3.04±1.31	23.394	<0.001
Psychiatric status					
Composite	1.52±0.22	1.34±0.27	1.31±0.28	19.340	<0.001
Severity	2.90±0.95	2.46±1.07	2.32±1.04	10.161	<0.001

SD: Standard Deviation

were significant statistical differences between the time points in the scores of Physical, Role Boundary Physics, Role Boundary Emotion, Fatigue, Mental Wellness Social Wellness, Pain, and General Health dimensions of SF-36 (Table 4). In order to find these differences from which time points derived, multiple comparison tests were made. According to test results, significant differences were found between the scores of baseline and third month ($p<0.01$) and between the scores of baseline and sixth month ($p<0.01$) in all subscales of SF-36 except of General Health dimension. In General Health dimension, significant differences were ASI at the baseline, third and sixth months in repeated measurements, there were significant statistical differences

between the time points in the scores of ASI-“Business and Support Status” composite and severity, “Legal Status” severity, “Alcohol and Drug Status” composite and severity, “Family and Social Relationships” composite and severity and “ASI-psychiatric status composite and severity ($p<0.001$). Multipl comparison tests revealed found only between the scores at baseline and sixth month.

According to ANOVA results which compared the patients' scores of that significant differences were found between the scores at baseline and third month ($p<0.01$) and between the scores at baseline and sixth month ($p<0.01$) in all subscales of ASI except of “Business and Support Status” composite score. In the Business and Support

Status” composite score, significant differences were found only between the scores at baseline and 6th month ($p < 0.001$). When evaluated all patients, significant improvement was observed in all areas of ASI except of “Medical Status” subscale at the end of sixth month (Table 5).

DISCUSSION

In this study, the effects of the BN maintenance treatment in opiate-dependent patients on the quality of life, functionality and the status of substance use were examined longitudinally. It is important to note that this is the first prospective study which assessed the effects of BN treatment on the quality of life in patients from Turkey. The significant decrease on the substance craving level, illicit drug use, stress level and the significant improvement of the quality of life in almost all areas and functionality were found.

In our study, the rate of retaining in the treatment was 52% in the 3rd month, BN treatment was to be found to reduce to 38% at the end of the 6th month. It is widely accepted that this syndrome is a chronic disorder characterized by recurrence (relapse), slip (lapse) and the recovery (in remission). It is seen that recurrences are frequent in the opiate dependence treatment made with classical purification and psychosocial methods. It is shown that two thirds of the recurrences usually occur in the first three months. On the other hand, it is known that most patients receiving opioid agonist treatment can remain completely or partially away from the substance. It is reported that only 20-30% of the patients on this treatment continued to use heroin regularly. However, after leaving the agonist maintenance treatment, a return to heroin use is common and there is not enough research data about in who, when and how to cut this treatment²⁸.

It is estimated that more than 50% of the patients either left or were removed from treatment in the first three weeks of the treatment²⁹. In one study, the rate of retention in treatment at the end of four months of the opiate dependent patients in buprenorphine maintenance treatment is reported

45%¹⁵, in another study, the rate of retention in treatment at the end of six months is reported 79%³⁰. Evren et al. recently reported that the rate of retention was 26.8% at the end of sixth month in their study from Turkey. In our study, the rate of retention in treatment at the end of six months has been determined to be at 38%. In the literature screening, we noticed that there were both similar results to our study and different results from our study. In maintenance treatment of opiate dependence, in addition to medical maintenance therapy, provision of Cognitive Behavioral Therapy (CBT), weekly group therapy sessions and minimum psychosocial interventions including family training intervention when necessary are convenient. The quality of the offered additional services considerably affects the effectiveness of opiate maintenance therapy¹⁶. In our study, a low rate of retention in treatment, compared to some studies, may be associated with additional services offered. On the other hand, approximately one third of the patients who came to follow during treatment ($n=16$) the substance screening in urine was positive in the present study. If these patients were excluded because of determining one illicit substance in urine, they would fail the treatment. However, 9 of the 16 patients (56%) successfully completed the 6 months of treatment. During the treatment, the rate of illicit drug use markedly decreased. These results are similar to findings in the literature^{31,32}. On the other hand, Evren et al.⁴⁷ found that most of the patients that used illicit BN had done this before their monitored use of BNX and had used it to relieve withdrawal symptoms. So that, they suggested that the main difficulty for those seeking illicit BNX in Istanbul is how to access treatment.

In our study, substance craving degrees of the patients were measured once a month. When the points of VAS at the beginning, 3rd month and 6th month were compared, a statistically significant decrease on the degree of substance needs was detected. It is reported that the replacement or maintenance treatment (buprenorphine, methadone, LAAM) reduced the substance need³³. Apelt et al.¹⁷ reported that at the beginning of the

treatment, the substance need was highest in opioid-dependent patients who they follow with the BN treatment. They reported the most significant decrease in opiate need at the end of the 12-month treatment period with BN. Decrease of the opiate need was reported to be significant for all groups including those who didn't complete the study¹⁷. In another study, in opioid-dependent patients followed by buprenorphine/ naloxone maintenance treatment, the severity of the substance need was evaluated by using heroin craving to scale at the start, the first, third and sixth month of treatment. The need for heroin patients showed very significant decrease from the first month and it was reported that this reduction continued for six months³⁴.

In our study, it is determined that the initially perceived stress level of the patients significantly decreased with the maintenance treatment. Ponizovsky et al.³⁰ notified that there is a significant positive effect on self-efficacy of buprenorphine in parallel a significant decrease in psychological stress during follow-up study they do in opioid-dependent patients. In the studies, a positive correlation between the stress and the opiate use during and after the treatment was reported. The first, third and sixth months of stress and anxiety levels of a group of opioid-dependent patients followed by BN maintenance treatment were examined at the beginning of the treatment with STAI and the Hamilton Anxiety Scale and a significant decrease was confirmed in stress and anxiety levels^{34,35}. In addition, Evren et al.⁴⁶ suggested that impulsiveness and state anxiety may be the areas to focus on in the treatment of relapsed heroin dependents.

In our study, in all subscales of SF-36 scale which we evaluated the life quality at the end of the 6th month positive developments were identified. Our findings indicate that BN maintenance treatment provides positive changes in life quality of the opioid-dependent patients. In a study which is done by using the Lancashire Quality of Life Profile Scale, in a group of 30 opiate-dependent patients who completed 24 weeks of treatment with buprenorphine there

were significant improvements in life quality scores³⁶. In the study where Raisch et al.¹⁵ followed opioid-dependent patients with buprenorphine maintenance treatment for a total of 16 weeks, only 45% of 96 patients completed 16 weeks of treatment. To carry out the treatment analysis, the final value was used assuming the last life quality (SF-36) scores of the patients who dropped out the treatment before 16 weeks wouldn't change even though they continue. The SF-36 scale scores, when they are compared with the beginning, during the treatment significant improvements were detected in size of Life Quality (SF-36) Role limitations (due to physical and emotional problems), social function, mental health, vitality (energy / fatigue) and pain; but there was no significant improvement in physical function and general health¹⁵. In the study, Korthis et al.³⁷, started BN treatment in 303 HIV (+) opioid-dependent patients in the scope of study and the participants were examined SF-12 Short Form Quality of Life Scale. The average scores improved for psychiatric favor subcomponents. The Average combined physical size score didn't improve significantly over time but patients reported improvements in general health size and physical role function. The fact that most of the improvement in quality of life scores occurred in the first three months of BN and then continued during the entire follow-up period was confirmed³⁷. Apelt et al.¹⁷ followed 244 treated opioid-dependent patients and 49 not treated opioid-dependent patients for 12 months with the BN treatment and at the outcome assessment, they proved that the ones who completed the treatment have significantly higher scores at all scales and the ones who didn't complete showed insignificant improvement from start to final assessment¹⁷. The results of our study support the findings of the literature and it is important as it is the first study showing the positive impact on life quality of the opiate maintenance treatment in our country.

In our study, the BN treatment provided a significant improvement in the functionality evaluated with ASI and most of these developments

became clear in first three months and continued for six months. It is notified that Opioid maintenance treatment decreases death rates, drug use, bad results of opiate dependence, criminal behavior and blood-borne diseases; improves social functioning, physical and mental health and increases retention in treatment and employment rates³⁸⁻⁴⁰. In a study, the recovery in five of the six dimensions of ASI (Alcohol-Drug Use, Medical Conditions, Legal Status, Family Status, social relations and psychiatric status) of 80 opiate-dependent patients followed by BN maintenance treatment, excluding business-support case dimension of ASI, when considered with the beginning, first third and sixth month, was reported³⁴.

In a study conducted in our country, in a group of patients who continued the BN maintenance treatment, improvements on business-support, family and social relations, psychiatric, alcohol and substance cases of the patients were detected but no changes were detected in their medical and legal status⁴¹. In our study, in the functionality evaluated with ASI, a positive development was found in all other areas excluding the medical conditions and business-support status compound score. To not observe any improvement in general medical condition can be explained by the fact that the medical condition at the beginning of the patients wasn't usually too bad and their other diseases (Hepatitis B, Hepatitis C, Coronary Artery Disease, etc.) were chronic. In ASI business-support status compound score, the nonbeing of any improvement between the beginning and the sixth month can be related with the item of income level in the scale. In some patients engaged in the

sale of illegal substances, a decrease in their gain occurred as they stopped selling when they stopped using it.

In the present study, after the maintenance treatment of patients, it is noteworthy that there was a significant reduction in legal status severity scores. In other studies, the successful completion of the treatment of the heroin dependants brings decreasing arrest rates, less crime and less time in prison for them⁴²⁻⁴⁴. But there are also studies indicating no relationship between treatment and offenses. In a study, it was reported that treatment and control did not affect the probability of recidivism of the substance dependents under supervision⁴⁵.

Before the conclusions the present study's limitations must be considered. Firstly, our sample size was smaller when comparing to other studies in the literature. VAS scale using to measure the level of craving in this study was not adapted and validated for use in Turkey.

CONCLUSION

Despite above mentioned limitations, our study underlines the overall effectiveness of BN maintenance treatment in opiate-dependant patients. Our results show that substance desiring, illegal drug use, and stress level significantly decreased and the life quality and functionality significantly improved with the treatment. In the six-month observation period, there were significant improvements in almost all assessed areas and the change was more apparent in the first three months of the process and continued for six months.

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