The Effects of the Addiction Programme of Probation on Treatment Motivation, Abstinence and Quality of Life: a Comparative Study with Motivational Interviewing and Individual Intervention

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ABSTRACT

Introduction: The aim of this study is to evaluate the effectiveness of Addiction Programme of Probation (APP) created by the Substance Abuse Treatment Commission of Ministry of Health.

Methods: The sample was consisted of probationers who were referred to Ege University by probation offices in February 2010. Literate probationers aged above 18, who fulfilled the SCID-I criteria for substance dependence, or had positive urine sample for illegal drugs were included. The probationers were allocated respectively to three treatment groups: APP (n=28); Motivational Interviewing (MI; n=30); Individual Intervention (II; n=30). The effectiveness of the treatment modalities was assessed by the State Anxiety Inventory; the WHO Quality of Life-Brief form; the Treatment Motivation Questionnaire. Visual analogue and Likert-type scales were used to assess the sense of the importance and the readiness of quitting drugs also the levels of craving.

Urine toxicological analyses were performed fortnightly.

Results: The APP increased the readiness of quitting drugs. The MI increased both the sense of importance and readiness of quitting drugs, decreased the frequency and severity of craving. The II improved the mental and physical health, increased the confidence in treatment also readiness of quitting drugs. Additionally, II decreased the level of anxiety, the severity, frequency and duration of craving. There was a significant decrease in positive urine samples of all groups.

Conclusion: Because of changing only "the level of being ready to quit substance abuse", APP is considered as an inadequate program compared with MI and II.

Keywords: Probation, substance dependence, motivational interviewing

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INTRODUCTION

The increase in illegal drug trade and trafficking within the 20th century has also caused an incline in the number of illegal drug users. As penal sanctions determined by legislations that aimed to prevent drug use have started to be implemented, number of individuals that have been referred to department of corrections has increased immensely (1, 2). The increase in the number of detainees and convicted individuals made the perspective arisen that these individuals are needed to be rehabilitated in community by attending their mandatory treatment programme rather than being sentenced by law. As in many countries, such like The United States of America and most European countries, legislators have tried to build up a system where illicit substance users would be followed up within the context of a supervision plan, in turn, reporting the results and outcome to relevant court system; all for maintaining the treatment and rehabilitation of the individual within community (1).

In the first study from Turkey conducted in 2002, where prevalence of substance use was explored, 7681 individuals in total were interviewed and point estimated use of substances causing dependency apart from alcohol and cigarettes was found to be 0.3% (n=25); while lifetime

prevalance of using any substance at least once was determined as 1.2% (n=97) (3). In a 2011 dated study conducted by Turkish Monitoring Centre for Drugs and Drug Addiction (TUBİM) to determine prevalence of substance use in general population, 8135 households from 25 separate cities were evaluated, with the result of lifetime prevalence of substance use as 2.7 % (4). A recent study conducted with face-to face 8045 households from 25 cities formed to reflect a national representative sample has yielded a lifetime prevalence of substance use of 2.8% (5). Given the upward trend in illicit substance use in Turkey, a similar approach with the other countries has been adopted to prevent and overcome both substance use and criminal acts related to substance use. The "Probation and Supervised Released" (SR) procedure was implemented into Turkey's Law System in 2005. With this probation system it is aimed to monitor and treat affected individuals in community rather than in prison. Supporting their treatment and rehabilitation by providing information and advice regarding substance use and its impact on life, resolving their psychosocial problems, promoting their re-integration with the community was aimed.

According to the Turkish Criminal Law, an individual that buys, accepts or carries an illicit substance for usage or uses any illicit substance is to be found guilty of this felony that would require 2-5 years of incarceration. The individual is subjected to an inquiry for this felony where the opening of a public prosecution is postponed for 5 years. The public prosecutor warns the individual about the consequences that he would face personally within this time in case he fails to comply with his responsibilities or performs an illegal conduct by any means. Through this time of 5 years, at least one year of probation precaution process is performed for the particular individual. The time of this process could be extended to another maximum of 1 year divided into periods of 3-months each, upon the decision of the public prosecutor. The individual that is legally obliged to probation precaution process might be referred to treatment in case required by the authorities, within the time frame of the process (6). The individual subjected to treatment is referred to hospitals where a psychiatry specialist and a clinical psychologist exist. Individuals that meet the criteria for any substance dependence through the evaluation of structured clinical interviews and toxicology analyses are then included in a 6-week "Probation Dependency Programme" by the psychiatrist that carried out the assessment and toxicology analyses. Individuals that are not diagnosed with a substance dependence with negative toxicology screen results continue to be monitored by legal authorities without being obliged to mandatory treatment. As for those who have managed to finish the programme with a positive outcome, they continue to be monitored by legal authorities solely, while those who have received a negative outcome from the programme are referred to centers that specialize in the treatment of substance dependency. Repeated offences and problems in conduct related to failing to comply responsibilities or disrupting treatment requirements throughout the time of the probation process, buying, accepting or possessing an illicit substance for personal consumption and using illicit substances within this time frame indicate a reopening of public prosecution (6).

Probation/supervised release practices might turn out to be a therapeutic step as well as a strong and efficient motivational source to initiate treatment interventions and maintain long-term recovery in individuals that have substance abuse problems (7,8). Moreover, these practices might contribute to an improvement in psychosocial conditions of these particular individuals while decreasing financial burden caused by legal, health and employment related problems (7). Additionally, some studies have also indicated these practices had just as positive outcome as observed in voluntarily-applied treatment (8). However, inavailability of a standard treatment approach throughout the practice of probation seems to be one of the most significant problems that might cause a failure to reach targeted treatment outcomes. Possible difficulties in treatment of probationers could easily be foreseen as many of them would not have a full insight into their substance use related problems despite ongoing legal ones. They also might have a conceptualization of being forcefully admitted to treatment rather than having an inner motivation and initiative to get help. In other studies conducted among individuals referred to mandatory treatment, it was observed that these individuals were not able to discriminate their problems related to their substance abuse, felt they were forcefully sent to treatment and completed treatment less than their voluntarily admitted counterparts (9,10). It was also found that regardless of an insight of a problem that might be focused during treatment present or not, individuals that were obliged to participate in a psychoeducational or a treatment programme benefited less from treatment, had more resistance to treatment and dropped out much sooner during the course of the treatment (11). As a result, we might underline the necessity of forming and generalizing standard and efficient treatment methods that would target increasing motivation and voluntary participation to treatment for substance abuse, specifically for individuals referred to obligatory treatment.

Within the direction of the abovementioned necessity, aiming to offer a standard treatment programme to probation convicts nationwide, a 6-week treatment programme that comprises psychoeducation, cognitive-behavioral approaches as well as motivational interview techniques prepared by the Substance Abuse Treatment Modalities Commission of Ministry of Health, under the name of Addiction Programme of Probation was formed. The programme was decided to be utilized with the perspective that it might provide grounds to practice with its general outlines as accepted in 26th Meeting of the Substance Abuse Treatment Modalities Commission that was held on 01.07.2009.

The aim of this study is to assess the effectiveness of the Addiction Program of Probation, which is designed to provide probationers with information and motivation to quit substance abuse and encourage them to take part actively and voluntarily in an standardized and structured treatment approach.

METHOD

Sample

This study that was approved by Ethics Committee of Ege University comprised of a sample that included literate individuals of ages 18 years and older that subjected to probation precaution and treatment processes, that were referred to Ege University's Substance Dependence Outpatient Unit in February 2010, by Izmir Probation and Aid Department Office. Upon collecting informed consent from all subjects, individuals that met the criteria for substance dependence according to SCID-I or cases that screened positive for illicit substances following mandatory urine testing though did not meet the criteria for substance dependence were included in the study. Cases that had severe cognitive impairment that might hinder the execution of the treatment process, patients diagnosed with severe personality disorder, active psychotic disorder, active mood disorder (mania or severe depressive disorder, suicidal ideation), clinically prominent intellectual disability and severe physical disorders were excluded. According to the inclusion and exclusion criteria three illiterate participants, one participant with severe antisocial personality disorder and one participant with severe hearing impairment were excluded from the study. Treatment of these individuals were continued with individual sessions.

As there has been no study in the literature so far regarding the treatment processes of probation cases, our required sample size was calculated by considering sample sizes of studies conducted with substance-dependent individuals that were not subjected to probation processes (12). According to these calculations, it was found that each treatment group must have consisted of at least 30 individuals at an alpha value of 0,05 significance level with a statistical power of 0.80.

Cases that met the inclusion criteria of the study were consecutively allocated in the three treatment groups by the psychiatrist that would also be carrying out the interviews, in an orderly design as such: the first assessed individual being assigned to motivational interviewing group: "MI group"; second assessed individual being assigned to Addiction Programme of Probation: "APP group"; and the third being assigned to individual intervention group: "II group". From the total sample size of 88 individuals, 28 were in APP group while 30 individuals were included in MI and II group, each. All treatment sessions were carried out by the same psychiatrist.

Data Collection

The cases that were divided into separate treatment groups were given out a written programme that contained the initiation date of the 6-week treatment programme and the days that they were each expected to attend. On the day that the II and group treatments began - just before the session - State Anxiety Inventory, Treatment Motivation Questionnaire

(TMQ) and World Health Organization's Quality of Life Scale-Brief Form (WHOQOL-Bref) were given to the participants and were asked to fill in. Individuals from whom urine samples were collected on the first day of their treatment programme were requested to attend their treatment on the same day and at the same hour, once a week, for 6 weeks. Throughout the 6-week treatment process, toxicology analyses were repeated twice in fortnightly, State Anxiety Inventory and Assessment Form were applied twice, at the end of third and sixth sessions, while TMQ and WHOQOL-Bref were reapplied only once, at the end of sixth session.

Assessment Tools

Case Assessment Form

Sociodemographic data and descriptive features of the group were collected via a case report form that was prepared by the study researchers. The form included information regarding descriptive features of participants such as age, gender, marital status, academic degree, occupation, substance use, legal condition, physical, mental and social condition.

Structured Clinical Interview for Axis- I Disorders (SCID-I)

SCID-I is a semistructured clinical interview tool developed to screen diagnostic criteria of Axis I disorders according to DSM-IV (13). Turkish validity and reliability study have been assessed by Özkürkçügil et al. (1999) (14).

State Anxiety Inventory

State Anxiety Inventory is a scale that determines how an individual feels at a certain timepoint and within certain conditions (15). The self-report scale consists of 20 items and its Turkish validity and reliability study has been previously made (16).

Treatment Motivation Questionnaire (TMQ);

TMQ is a 26-item self report form that is organized to evaluate the reasons why individuals attend and maintain the treatment targeting alcohol/substance dependency (17). Factor analysis has shown the scale consisted of 4 definable factors: 1) internalized motivation, 2) external motivation, 3) interpersonal help-seeking and 4) confidence in treatment. Turkish validity and reliability study of TMQ has been conducted (18).

World Health Organization's Quality of Life Scale-Brief Form (WHOQOL-Bref)

WHOQOL-Bref is a 4 dimensional scale with 26 items that was developed to measure physical, psychological, social and environmental health of the individual by our country contributing as well (19). Its Turkish validity and reliability study has also been previously carried out (20,21,22).

Assessment Form

Assessment form is a measurement tool designed by study researchers that evaluates how important it is for an individual to quit substance use and the level of readiness to quit substance use via a visual analogous scale with points rated between 1-10. Meanwhile, level of craving experienced by the cases is also evaluated by 5-point likert type questions based on severity, frequency and duration, with the same form. Questions are listed below:

1. Please identify the level of importance to quit substance use for you.
2. Please identify the level of readiness to quit substance use.
3. Please identify the level of severity of your craving experience for the substance of your choice during the day (wanting to use, yearning)
4. Please identify the level of frequency of your craving experience for the substance of your choice during the day (wanting to use, yearning).

5. Please identify the duration of time you spend regarding your craving (wanting to use) experience for the substance of your choice during the day.

Toxicology analyses

Urine analyses of illicit substances were carried out in ZAUM laboratory of Ege University. Participants initially underwent an enzymatic card test that determined drug metabolites in urine on a single step and rather quickly. Samples that tested positive with card test were confirmed via using immune-assay method (CEDIA). Among samples that were analysed, results obtained at the beginning, third week and fifth week of the treatment programmes were included in our study data.

Treatment

Motivational Interviewing Group (MI)

As part of this study, semi-structured sessions that comprised motivational principals and techniques were applied to 3 groups that consisted of 10 individuals each, for 6 weeks; one session each week and each session lasting for 45 minutes. The practitioner had participated in Motivational Interviewing Lectures that were a part of Ege University Institute on Drug Abuse, Toxicology and Pharmaceutical Science Master Degree Programme (30 hours of theoretical seminars and 30 hours of practice), prior to initiating interviews. Motivational interview plans, information handouts and reflective practice forms were created based on and inspired by studies of "Motivational Interviewing Network Trainers" group (23). Sessions were supported by handing out information and application forms during the sessions took place. The topics covered in these sessions are set out in Table 1.

Addiction Programme of Probation Group (APP)

As part of this study, Addiction Programme of Probation was applied to 3 groups that consisted of 10 individuals each, for 6 weeks; one session each week and each session lasting 45 minutes, by the same practitioner that performed MI Groups. One individual in the group had to be excluded from the study following the first session as he did not have literacy skills enough to follow instructions within the information and reflective practice forms that were being used in the session as well as the need to be assisted through the process of filling out the assessment scales. In addition, limited data of one individual that failed to participate in the treatment programme starting from the initial session was also excluded (n:28). In this study, information and reflective practice forms that existed within the programme were handed out to subjects in each session and while some were collected at the end of the session, some were left to be continued as homework assignments. The topics covered in these sessions are set out in Table 2.

Individual Intervention Group (II)

Individual interventions were executed by the same psychiatrist with a total number of 30 individuals for 6 weeks, with weekly sessions and a total of 10 individual sessions planned for each day. Each session was structured in the direction of the individual's substance use and the latest period he has related to substance use, his problems and needs. It was aimed to determine the triggers of substance abuse for each individual, based on the themes they have brought to their session. Financial and professional problems, interpersonal and sociocultural problems and their connection to substance abuse were aimed to be enlightened with the cooperation of the participants. Interventions to improve their insight into how substance abuse affected their lives were carried out. Attempts to increase insight were made through feedback, interpretation and confrontation far from didactic expressions within the natural flow of the sessions. Similarly, as the occasion has arisen, inappropriate coping methods were stressed out, in turn, making room for a discussion of better functional coping skills. Main difference of individual intervention method from the other two treatment modalities was the fact that neither

Table 1. Session plans of motivational interviewing group

Sessions	Content of Sessions
1 st Session	Introduction Explanation of Motivational Interviewing(MI) objectives Explanation of Group MI Session rules Collecting the expectations of participants from this treatment Summary of the session
2 nd Session	"Change talk" session Discussion on "Change" and its meaning Sharing participants' experiences regarding change Introducing participants with the idea of "change can be achieved" Identifying the participants' reasons for substance use Working on improving the awareness of "the good parts" and "the not actually good parts" of substance use (evaluation of pros and cons) Letting the group to work with the ambivalence that appears during the sessions Discussion on opening the "windows of awareness" and filling in forms regarding this Summary of the session
3 rd Session	Encouraging participants to think and plan for their near and far future Supporting them to create an inner sense of hope for the future despite their current conflicts and hopelessness Discussing the advantages and the disadvantages of "Change" and encourage them to use "Decisional Balance technique" to foster "Change Talk" Summary of the session
4 th Session	Exploration of personal values Discussion on how their behavioral patterns match or unmatch with their personal values. Identifying previous achievements and supporting them to feel that sense of power that makes them enable to create change Summary of the session
5 th Session	Planning change Sharing change plans with other group members and discussions on plans Summary of the session
6 th Session	Identifying the levels of willingness, importance and readiness to create change Giving positive feedbacks as they succeeded in completing this programme Collecting feedbacks

structured nor semi-structured programme was followed in this group, but rather a flexible and spontaneous interview style that prioritized the individual's emerging needs was adopted.

Statistical analysis

Data analyses were carried out by Statistical Package for Social Sciences (SPSS) 16.0 package programme. Categorical variables were evaluated by chi-square test. For the evaluation of numeric variables, data were analysed via Shapiro-Wilk test to evaluate whether they were normally distributed or not, and data that were not normally distributed were analysed by Mann-Whitney U test. To assess within-group variance of the variables, Friedman test and Wilcoxon Signed Ranks test among non-parametric tests were used. Kruskal Wallis test was used to assess the differences between groups of within-group variances. Statistical significance level was determined as $p < 0.05$.

Table 2. Session plans of addiction programme of probation group

Sessions	Content of Sessions
1 st Session	Introduction Briefing regarding Probation and Addiction Programme Describing the concept of dependence Summary of the session Delivering information leaflets Giving homeworks
2 nd Session	Evaluation of homeworks Information delivery about illicit drugs and their effects Summary of the session Delivering information leaflets Giving homeworks
3 rd Session	Evaluation of homeworks Working on improving motivation for quitting illicit drug use by using motivational interviewing techniques such as decisional balance, planning future, identifying level of willingness, importance and readiness of quitting drugs Summary of the session Delivering information leaflets Giving homeworks
4 th Session	Evaluation of homeworks Describing the relation between thoughts, feelings and behaviours In line with cognitive behavioural therapy techniques working on unfunctional thoughts, feelings and behaviours that lead to substance use Summary of the session Delivering information leaflets Giving homeworks
5 th Session	Evaluation of homeworks Explaining the notions "reinstatement" and "lapse" and exploring the relevant thoughts and feelings that trigger reinstatement and lapse. Working on preventing reinstatement and coping with lapse. Summary of the session Delivering information leaflets Giving homeworks
6 th Session	Evaluation of homeworks Describing the concepts of remission and full remission Delivering information about the necessary things/ways required for maintaining remission Summary of the session Delivering information leaflets Giving homeworks

RESULTS

Sociodemographic characteristics

All individuals included in the study were male, with a mean age value of 32.5 ± 9.8 . Forty-two percent ($n=37$) were married; 47.7% ($n=42$) were single and 9.1% ($n=8$) were divorced. Among the whole sample, 43.2% ($n=38$) had graduated from primary school, 26.1% ($n=23$) from secondary school while 21.6% ($n=19$) were high school graduates. Of the whole sample, 56.8% ($n=50$) were self-employed; 13.6% ($n=12$) were labourers and 29.5% ($n=26$) were unemployed. Sociodemographic characteristics of treatment groups were presented in Table 3. There was no statistically significant difference between treatment groups regarding sociodemographic characteristics of participants.

Characteristics of Substance Use

The most commonly used substance was cannabis (83%, $n=73$). Mean age of first substance use was 20.5 ± 7.1 , duration of substance use was 137.5 ± 129.9 months while the longest time of sobriety was 6.8 ± 9.6 months. All of the sample consisted of individuals that had probation

Table 3. Sociodemographic characteristics of treatment groups

	APP Group n=28	MI Group n=30	II Group n=30	Statistical Analyses
Age (mean±sd)	31.5±8.23	32.8±11	33.4±10.2	p: 0.78
Marital Status n (%)				
Married	17 (60.7)	12 (40)	8 (26.7)	p=0.12
Single	8 (28.6)	15 (50)	19 (63.3)	
Divorced	3 (10.7)	3 (10)	2 (6.7)	
Widowed	-	-	1 (3.3)	
Education status n (%)				
Primary school	18 (64.3)	12 (40)	8 (26.7)	p=0.11
Secondary school	6 (21.4)	8 (26.7)	9 (30)	
High school	2 (7.1)	7 (23.3)	10 (33.3)	
University	1 (3.6)	-	-	
Uneducated	1 (3.6)	3 (10)	3 (10)	
Occupational status n (%)				
Self-employed	15 (53.6)	17 (56.7)	18 (60)	p=0.52
Labourer	6 (21.4)	2 (6.7)	4 (13.3)	
Government employee	-	-	-	
Unemployed	7 (25)	11 (36.7)	8 (26.7)	

APP: Addiction Programme of Probation, MI: Motivational Interviewing, II: Individual Intervention.

Numerical variables were evaluated by Kruskal Wallis test and categorical variables were evaluated by chi-square test.

precautions due to cannabis use and all used to use cannabis by smoking. Number of individuals that had previously applied to a treatment facility in order to get help for their substance use was 13 (14.8%). Among cases, 72.7 % had alcohol abuse (n=64) and 96.6% (n=85) were smoking cigarettes. Characteristics related to substance use of treatment groups have been presented in Table 4. No significant differences were found regarding these variables among groups.

When legal processes were evaluated, it was seen that the cases had 1.5±0.9 times received a probation sentence on average. Of the whole sample, 46.4% (n=41) had committed different crimes and 43.2% (n=38) received prison sentences. The groups did not differ in relation to number of probation sentences, presence of other crimes or history of conviction and prison sentence (p=0.26, p=0.27, p=0.18; respectively).

When psychosocial and environmental factors were evaluated in relation to substance use, it was found that 10.2% (n=9) of the cases had a physical condition, 31.8% (n=28) had interpersonal (familial) problems, 34.1% (n=30) had work-related problems and 45.5% (n=40) had financial problems. The history of substance use within the first degree relatives was 22.7% (n=20), 95.5% (n=84) had individuals using substances in their close social network and 26.1% (n=23) had a history of a psychiatric disorder in the family. No difference was found among groups regarding these variables (p=0.73, p=0.46, p=0.75, p= 0.70, p=0.61, p=0.33, p=0.24; respectively).

Table 4. Substance use characteristics of treatment groups

	APP Group	MI Group	II Group	Statistical Analyses
	n (%)	n (%)	n (%)	
Currently used substances				p=0,18
"I don't use."	5 (17.9)	3 (10)	3 (10)	
Cannabis use	23 (82.1)	24 (80)	26 (86.7)	
Heroin use	-	-	1 (3.3)	
Multiple substance use	-	3 (10)	-	
Frequency of substance use				p=0.48
More often than once a day	8 (28.6)	17 (56.7)	10 (33.3)	
Once a day	3 (10.7)	2 (6.7)	4 (13.3)	
Less often than 3 times a week	9 (32.1)	5 (16.7)	8 (26.7)	
Less often than 3 times a month	5 (17.9)	3 (10)	8 (26.7)	
Less often than once a month	1 (3.6)	1 (3.3)	-	
Tried for a few times	-	1 (3.3)	-	
Never used	1 (3.6)	-	-	
Regular user abstinent for the last 6 months	1 (3.6)	1 (3.3)	-	
Age of onset of substance use (mean±sd)	21.7±8.1	18.9±6.6	21±6.3	p=0.22
Duration of substance use (month) (mean±sd)	101.2±108.7	156.6±143.2	152.2±131.3	p=0.17
Longest time of sobriety (month) (mean±sd)	10.1±13.6	5.5±6.1	5±7.2	p=0.11
Previous treatment application				p=0.29
Yes	5 (17.9)	2 (6.7)	6 (20)	
No	23 (82.1)	28 (93.3)	24 (80)	
Alcohol use				p=0.75
Yes	19 (67.9)	23 (76.7)	22 (73.3)	
No	9 (32.1)	7 (23.3)	8 (26.7)	
Smoking cigarette				p=0.32
Yes	26 (92.9)	29 (96.7)	30 (100)	
No	2 (7.1)	1 (3.3)	-	

APP: Addiction Programme of Probation, MI: Motivational Interviewing, II: Individual Intervention.

Numerical variables were evaluated by Kruskal Wallis test and categorical variables were evaluated by chi-square test.

Table 5. Results of scales used in assessment of treatment response

	Results of the 1 st assessment mean±sd	Results of the 2 nd assessment mean±sd	Results of the 3 rd assessment mean±sd	Statistical Analyses
WHOQOL-Bref-Physical health				
APP Group	15.8±2.3	16±2.5	-	p=0.97
MI Group	13.7±3.6	14.1±2.7	-	p=0.66
II Group	15±3.2	16.4±2.9	-	p=0.005
WHOQOL-Bref-Psychological health				
APP Group	15.4±3.2	15.6±2.2	-	p=0.86
MI Group	14.3±3.3	14.5±2.5	-	p=0.89
II Group	14.2±3.3	15.4±3.6	-	p=0.029
WHOQOL-Bref-Social health				
APP Group	14.1±3.5	14.8±3	-	p=0.2
MI Group	14.2±3.4	13.6±3	-	p=0.53
II Group	13.8±2.9	14.2±3.8	-	p=0.86
WHOQOL-Bref-Environmental health				
APP Group	13.5±2.1	13.3±2.2	-	p=0.39
MI Group	12.8±2.7	12.2±2.3	-	p=0.28
II Group	13.5±3.2	13.9±3	-	p=0.89
TMQ-Internalized motivation				
APP Group	39.3±7.6	40±6.6	-	p=0.85
MI Group	38.4±9.4	41.5±8.5	-	p=0.06
II Group	40.3±9.8	41.8±8.8	-	p=0.35
TMQ-External motivation				
APP Group	13.7±2.6	13.4±2.9	-	p=0.95
MI Group	12.6±3.1	13.4±2.9	-	p=0.34
II Group	14.1±2.7	14.1±3.1	-	p=0.89
TMQ- Interpersonal help-seeking				
APP Group	17.4±5.1	18.4±4.3	-	p=0.27
MI Group	19.2±5.5	19.4±4.8	-	p=0.94
II Group	18.5±6.1	17.6±5.8	-	p=0.62
TMQ- Confidence in treatment				
APP Group	18.1±3.7	18.4±2.8	-	p=0.75
MI Group	17.4±4	18.3±3.5	-	p=0.65
II Group	18.1±3.7	20.1±3.9	-	p=0.034
Craving-Force				
APP Group	2.1±1.1	2±1	1.9±1.1	p=0.5
MI Group	2.8±1.2	2.1±1.2	1.9±1.1	p=0.016
II Group	2.2±1.1	1.9±1.2	1.6±0.9	p=0.016
Craving -Frequency				
APP Group	2.5±1.1	2.1±1	2.1±1.2	p=0.34
MI Group	2.9±1.3	2.4±1.2	2±0.9	p=0.018
II Group	2.4±1	2±1.1	1.8±0.9	p=0.008
Craving -Duration				
APP Group	2.7±1.2	2±1.2	2.1±1.4	p=0.12
MI Group	2.9±1.3	2.5±1.3	2.2±1.2	p=0.096
II Group	2.5±1.1	1.8±0.9	1.9±1	p=0.032
State Anxiety Inventory				
APP Group	35.1±9.5	33.5±9.8	32.4±8.7	p=0.561
MI Group	41.6±12.9	39.2±11.2	36.5±9.5	p=0.839
II Group	38.8±10.3	34.2±10.6	34.4±13	p=0.014
Readiness to stop substance use				
APP Group	7.5±2.7	8.4±1.6	8.6±2.1	p=0.030
MI Group	6.1±3.3	7.2±2.9	8±2.4	p=0.036
II Group	7.8±2.7	9.4±1	9.4±1.5	p=0.021
Attributed importance to stop substance use				
APP Group	8.1±2.5	8.6±1.9	8.8±1.8	p=0.28
MI Group	7.1±3.3	7.8±3.1	8.3±2.7	p=0.046
II Group	8.6±2.6	9.5±1	9.6±1	p=0.09

APP: Addiction Programme of Probation, MI: Motivational Interviewing, II: Individual Intervention, WHOQOL-Bref: World Health Organization's Quality of Life Scale- Brief Form
 TMQ: Treatment Motivation Questionnaire.

Statistical significance of the scores of intragroup changes were evaluated with Friedman test; differences between 1st, 2nd and 3rd assessments were evaluated with Wilcoxon Signed Ranks test; intra-group differences between the groups were evaluated with Kruskal Wallis test.

As a result of SCID-I application, no significant difference was found between groups regarding other diagnoses apart from cannabis abuse and cannabis dependence. Fifteen patients in APP group, 7 in MI group and 19 in II group had cannabis abuse while 9 patients in APP group, 22 in MI group and 9 in II group had the diagnosis of cannabis dependence. While the diagnosis of cannabis dependence was significantly higher in MI group ($p=0.002$), cannabis abuse was significantly lower ($p=0.001$) compared to other treatment groups.

At the end of the first interview, some medications were prescribed to some participants regarding their withdrawal and craving status. Recommended medications were selective serotonin reuptake inhibitors (SSRI) and quetiapine with a dose interval between 25-75 mg/day. Only twenty-five percent ($n=7$) of APP group was recommended to start a medication while 51.7% ($n=15$) of MI group and 53.3% ($n=16$) of II group were suggested pharmacological treatment. There was no significant difference regarding the recommendation of using a medication among groups ($p=0.053$). At the end of 6th week, it was found that 3.6% ($n=1$) of APP group cases, 17.9% ($n=5$) of MI group and 31% ($n=9$) of II group regularly complied their treatment, as recommended. It was also seen that cases in II group had better compliance to their drug treatment compared to those in other groups ($p=0.025$).

Evaluation of treatment response

Twenty- six cases (92.9%) in APP group, 23 (76.7%) in MI group and 29 (96.7%) in II group have participated in all sessions. Drop out rates in MI group were statistically higher ($p=0.035$).

In the initial assessments done prior to the initiation of treatment groups, no significant difference was found between groups regarding variables that determine treatment response, other than reported high levels of craving found in the MI group.

As a result of assessments, it was seen that the decrease in repeated State Anxiety Inventory measures within groups did not reach statistical significance for APP and MI group ($p=0.56$, $p=0.83$; respectively). There was a significant decrease in repeated State Anxiety Inventory measures of II group ($p=0.014$). When the difference between the 1st and 3rd measures of State Anxiety Inventory was assessed, it was observed that the difference reached statistical significance solely in II group ($p=0.025$). However, between-group difference of altering State Anxiety Inventory scores within each group (decrease) was not statistically significant ($p=0.26$). Changes in repeated measures of State Anxiety Inventory assessments for all cases were presented in Table 5.

As for their repeated measures in APP group and MI group, no statistical significance was found in any of WHOQOL-Bref subscale scores. On the other hand, there was significant improvement in physical and psychological health scores within II group ($p=0.005$, $p=0.029$; respectively). No statistical significance was found when groups were compared for difference regarding changes in WHOQOL-Bref variables within groups (physical health $p=0.15$, psychological health $p=0.31$, social health $p=0.56$, environmental health $p=0.70$). Changes in repeated measures of WHOQOL-Bref subscale scores were presented in Table 5.

Changes determined in repeated measures of TMQ subscale scores were not significant in APP and MI group. However, it was seen that confidence in treatment significantly improved in II group ($p=0.034$). between-group differences of the in-group changes were not significant (internalized motivation $p=0.55$; external motivation $p=0.77$, interpersonal help-seeking $p=0.63$, confidence in treatment $p=0.12$). Changes in repeated measures of TMQ subscale scores were presented in Table 5.

Level of attributed importance to quit substance use increased significantly solely in MI group ($p=0.046$). There was no statistical significance regarding between group differences of within-group changes ($p=0.40$).

Level of readiness to quit substance use increased significantly following treatment in all three treatment groups ($p=0.030$, $p=0.036$, $p=0.021$). There was no statistical significance in between-group differences of the changes of "readiness to quit" variable within groups ($p=0.50$).

When variables that evaluate craving by severity, frequency and duration via a likert type scale were taken into account, it was seen that the expected decrease in repeated measures of each 3 variable in APP group was not significant. There was, however, a significant decrease in the severity and frequency of craving in MI group ($p=0.016$, $p=0.018$; respectively) and a significant difference in all three variables in II group (severity $p=0.016$, frequency $p=0.008$, duration $p=0.032$). Within- group differences did not cause a difference between groups (severity $p=0.90$, frequency $p=0.27$, duration $p=0.50$). Initial measures of all scales were also compared between groups prior to the evaluation of the difference regarding craving scores of all 3 groups. Variables other than severity of craving did not cause significant difference between three groups in initial measurements. Severity of craving, on the other hand, was significantly higher in MI group at the beginning of the study in MI group, compared to others ($p=0.019$).

Changes in repeated measures of attributed importance, readiness and craving levels were presented in Table 5.

Immediately after assessment session, in their urine analyses at the time cases were not expecting to provide urine samples for screening (first toxicological analysis), traces of the illicit substance metabolite were found in 78.2% of all cases ($n=61$). There was no significant difference regarding toxicologically positive urine sample rates in initial measures, among groups ($p=0.23$).

As for samples collected right before first treatment session with the participants being fully aware that they would have to provide urine samples for screening (2nd toxicological analysis), rate of detecting a metabolite of illicit substances was 41.2% ($n=35$). Regarding these measurements carried out prior to sessions, there was no significant difference between groups in rates of positive urinary analysis ($p=0.64$).

Fifteen days into the second toxicological analysis as well as before the third treatment session (3rd toxicology analysis), rate of illicit substance metabolite positivity in the urine samples has dropped to 24.1% ($n=20$) in the whole group. Again, there was no significant difference between groups in rates of positive urinary analysis as determined by the results of 3rd toxicological analyses ($p=0.09$).

Table 6. Results of the urine analysis

	Positive urine samples in toxilological analyses			
	APP Group n (%)	MI Group n (%)	II Group n (%)	Statistical Analyses
1. Analysis	18 (75)	24 (88.9)	19 (70.4)	$p=0.23$
2. Analysis	13 (46.4)	12 (42.9)	10 (34.5)	$p=0.64$
3. Analysis	8 (29.6)	9 (33.3)	3 (10.3)	$p=0.09$
4. Analysis	7 (28)	8 (33.3)	6 (28.6)	$p=0.58$

APP: Addiction Programme of Probation, MI: Motivational Interviewing, II: Individual Intervention.
The differences of each analysis' outcomes between groups were assessed by chi-square test.

In final urine analyses (4th toxicological analysis) that were in conjunction with the 5th week of treatment sessions, rate of positive illicit substance metabolites in urinary samples was 26.9% (n=21). Once again, there was no statistical significance between groups, regarding the results of these final analyses ($p=0.58$). Changes in the rates of positive urine samples in toxicological analyses throughout the study process were presented in Table 6.

DISCUSSION

With this study, we have aimed to evaluate the efficiency of Addiction Programme of Probation that was prepared to provide a standard treatment process to supervised release convicts in Turkey. Results of our study indicate that Addiction Programme of Probation has some deficits compared to other techniques such as motivational interviewing and individual interventions that are frequently used in the treatment of substance abuse and dependency.

No differentiation was expected for independent variables within treatment groups where cases were randomized to, by assigning each participant to a treatment group consecutively. In this study, even though no significant differentiation was observed between three treatment groups regarding sociodemographic features, cases that had cannabis dependency were higher in number in the motivational treatment group and these individuals had higher severity levels of craving. Therefore, one should take into consideration that individuals in motivational group had higher severity of dependency when interpreting the results.

When anxiety levels of participants at the end of treatment were assessed, it was observed that there was a significant decrease in solely those that had individual interventions. We have not encountered another study that assessed the effect of individual or motivational interventions on anxiety levels of individuals that were subjected to probation processes, in relevant literature. The finding that reflects the result mentioned above via individual intervention might be related to a treatment-facilitating environment where the individual intervention is based on patient confidentiality and privacy, better establishment of patient-doctor relationship and increased confidence in treatment. Our results that were related to treatment motivation might also support this perspective. As a result of the sessions, no significant increase in internalized and external motivation as well as interpersonal help-seeking behavior was observed in none of the treatment groups. However, in cases treated with individual interventions, there was a significant increase in confidence in treatment.

When three treatment modalities were assessed for their effects on quality of life, it was seen that Addiction Programme of Probation and motivational interviewing did not cause any improvement regarding individuals' quality of life measures while individual interventions resulted in a positive improvement in physical and psychological health. So far, we have not identified another study in relevant literature that evaluated effects of treatment interventions on quality of life for individuals subjected to the probation process. This finding observed in this study might be related to the possibility where individuals were better able to identify and express their severity and abstinence regarding substance use, in turn, causing them to receive appropriate medication to aid in experiencing less severe abstinence symptoms, probably then, resulting in longer terms of sobriety. Although there was no significant difference between groups regarding recommended medications, it was determined that cases in individual intervention group had better medication compliance.

At the end of the sessions, the level of attributed importance to quit substance use increased in motivational treatment group while level of readiness to quit substance use has increased in all three treatment

groups. However, these findings were met with a certain degree of clinical doubt. Participants were obliged to have this treatment and it would be very likely that they would either be sentenced to bail or receive a prison sentence in case the process "failed to succeed". Due to possible sentences addressed above, it was striking that participants were largely trying to reflect a better picture of themselves compared to their possible actual states. This behavioral tendency might have reflected on the assessment scales resulting in higher scores, as being directly related to substance use and treatment process. The fact that there was no significant difference between treatment groups on repeated measures of TMQ's internalized and external motivation subscale scores might also support this hypothesis.

When levels of craving were taken into consideration, it was seen that there was no significant improvement in Addiction Programme of Probation group. While severity and frequency of cravings decreased in motivational treatment group; severity, frequency and duration have all decreased in individual intervention group. Improvements observed in motivational and individual intervention groups might be attributed to medication use. However, limited number of studies conducted in this field suggest using an SSRI group medication did not have any modifying effect on cannabis use (24). Open label pilot studies using quetiapine in much higher doses (200-600 mg/day) then we have in our study yield inconsistent results as some studies reported decreased rates of cannabis use when medicated with quetiapine (25) while others have reported an increase in cravings (26).

Substance metabolites in urine samples were detected in higher rates in toxicological analysis when samples were collected without prior notice to the participants. It is well known that individuals subjected to probation processes might resort to certain inappropriate procedures in order to provide negative toxicological screening to avoid the consequences of legal terms. Most commonly observed deceptive behavior include abstinence from the substance as the time of drug screening approaches, attempts to alter urinary pH in order to decrease the probability of detecting illicit substance metabolites in the sample. Related to this, the finding from our study that reflected 37% of the whole sample was resulted as negative for illicit substances in their second toxicological analyses, at the time no treatment had yet been offered or initiated. This finding may be indicative of the fact that regular substance users might by-pass the current legislative system without any penalty despite their ongoing substance use by taking advantage of the vulnerabilities the existing legislative system and the intensity of treatment facilities as well. We have not come across a study that assessed differences in outcome between using unexpected drug screenings and appointed drug screenings, so far. However, we think that it would be much more appropriate to determine regular users with unexpected urinary sample checks. In our study, rates of positive metabolites for illicit substances via toxicology analyses have reduced in all three groups, with no significant differences between groups. Regarding many dependent variables that measure efficacy, it was a striking finding to observe an improvement in the results of toxicological analyses while no significant improvement was actually maintained in Addiction Programme of Probation group. This discrepancy might have rooted from the fact that rather than the context of implemented treatment programme, toxicological analysis results were identified as the single quantitative measure that might provide proof for individuals to define their treatment programme as positive or negative. In routine practice, it would be impossible to positively finalize the process of an individual that had tested positive in every single screening even though he had regularly attended the treatment process just as it would not be possible to negatively finalize the process of a person that screen negative for substances since he had quit using during the time of probation but actually did not have any serious motivation to quit. Therefore, we think that this might cause many individuals subjected

to probation process attribute much more significance to providing negative drug screen rather than undergoing treatment. Additionally, it might be important not to ignore the possibility of getting false positive and false negative results with urinary toxicology analyses conducted by simple and practical immunoassay methods (27). This might serve as another confounding factor that might affect the results.

Significant differences in dependent variables mentioned above that assess the efficacy of treatment were related to differences in measures within groups. We need to identify once again at this point that no treatment modality was found to be significantly superior to any other when between-group differences of within-group differences were considered.

Drop out rates of individuals within motivational group were 23.3%, causing a significant difference when compared to those in other treatment groups. In certain studies extracted from relevant literature where rates of full attendance to treatment sessions were evaluated, regular attendance to motivational treatment was reported between 39-74% (28,29) and in another study where rates of completing treatment were evaluated, the rate was found to be lower, around 45% (30). Our finding regarding this matter might have arisen from both motivational interviewing technique and relative high number of individuals meeting diagnostic criteria for cannabis dependence present in this group.

Main strength of this study is that it being the first study, to our knowledge, that attempted to evaluate the efficacy of diverse treatment techniques used in treating substance dependency, including Addiction Programme of Probation, in particular.

Main limitation of the study was based on its open-study design. Participants and researchers not being blind to treatment might have had an impact on results of the study. Presence of a dyadic relationship that might facilitate addressing personal issues better in individual interventions as well as noticing much easier in which areas the individual needed help might have caused easier identification of risks around substance use compared to that in group sessions. Taking this limitation into consideration, efficacy of treatment techniques in this study were evaluated by using much more objective criteria such as toxicological analyses and self-report forms. On the other hand, future studies in this field adopting a double-blind experimental design and blinding researches evaluating results to implemented treatment modalities shall obviously have boosted strength and scientific power.

Throughout the study process, we have encountered many difficulties when executing this research based on voluntary participation, though the sample consisted of individuals referred to obligatory treatment. Main difficulty regarding this matter was the individuals imposing to show the highest degree of dedication and adjustment to the process since legally they would be facing serious consequences in case of failure. Studies that report higher rates of treatment completion in individuals that were referred to obligatory treatment compared to those that voluntarily apply to facilities have been present in relevant literature (31). This seemingly positive attitude has led some people to give their consent for study participation unconditionally, even without reading the informed consent form. Additionally they presented as if they put on so much importance to quit using substance or has already, completely prepared to take action to quit. We, as the research team attempted to minimize possible false measures caused by this, by frequently emphasizing the fully diverse courses of probation and study processes.

Higher number of individuals diagnosed with cannabis dependence in motivational treatment group might also be considered as a limitation. This limitation might have caused both the rates of premature drop-out

of treatment to be observed higher in motivational treatment group and also this treatment modality being less efficient when compared to treatment with individual interventions. This condition might be elucidated by similar studies conducted with individuals assigned to groups by matched diagnoses. Another limitation within the context of diagnostics is based on failure to identify personality disorders among participants. One case that was clinically believed to have severe antisocial personality disorder, with a high probability was excluded however no additional diagnostic assessment or measurement to rule out personality disorders was made. Comorbid diagnosis of a personality disorder is among the most significant factors that negatively impact adherence to treatment process of substance dependence (32). Therefore, we might suggest assessing personality disorders with clinical interviews and additional assessment tools in future studies within this field that focus on comparing different treatment modalities. Using medication in a study where treatment efficacy was assessed might also be considered as a limitation. Although groups did not differ by recommended treatment agents, better adherence to treatment in II group might have affected overall treatment-related results. However, it is also of vital importance not to rule out the fact that it would be unethical to follow up individuals that have symptoms of craving and abstinence due to substance abuse or dependence throughout an obligatory treatment process by law that has serious consequences in the end.

CONCLUSION

When its standard and practical aspects are taken into consideration, the Addiction Program of Probation, is accepted as a pioneering program for probationers prior to more intensive dependency treatments in secondary and tertiary hospitals in Turkey. However, according to our study findings, APP is found to be as an inadequate treatment programme from many aspects compared to Group Motivational Interviewing and Individual Interventions as it was solely found efficient in increasing the level of readiness to quit substance in our study sample whereas the other two treatment modalities promoted significant changes in various expected outcomes. Given the increasing number of referrals from probation offices, the most effective treatment approach for the individuals subjected to probation process appears to be the motivation based group therapies with additional individual interventions whenever required.

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Informed Consent: This study was carried out at Ege University Psychiatry Department Substance Addiction Polyclinic. Informed consent was obtained from the patients.

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