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Original Article

Outcome Evaluation of Therapeutic Community Model in Iran

Nasrindokht Sadir[1], Mojtaba Shojaei[2], Kamaladdin Moadab[2], Reza Abbasi[2], Abbas Bahrampour[3], Nouzar Nakhaee[4,*]

[1]Research Center for Health Services Management, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran
[2]Kerman Social Security Organization, Kerman, Iran
[3]Research Center for Social Determinants of Health, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran
[4]Neuroscience Research Center, Kerman University of Medical Sciences, Kerman, Iran

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ABSTRACT

Background: Evaluation of treatment programs in addiction field is a prerequisite to improve the quality of care. This study aimed to investigate the effectiveness of Therapeutic Community (TC) program in Iran.

Methods: Individuals who had voluntarily enrolled in the TC center within a period of seven years, from early 2005 to late 2011, entered the study. Those who successfully completed the 14-week residential course were considered as 'completers'. They were subsequently called in for urine test and interviews using Maudsley Addiction Profile. Urine test was conducted to determine if they were positive for heroin, opium, methadone, methamphetamine, bupronorphine, hashish, and tramadol.

Results: A number of 378 individuals with mean (±SD) age of 32.5 ± 7.8 enrolled in the TC program during the study period, 240 individuals of whom completed the 14 weeks course (69.0%). At the end of the sixth year, 22% of the participants were in abstinence. Physical and mental health in abstainers proved to be of better conditions than those of non-abstainers ($P<0.05$).

Conclusion: Considering the TC outcome in other countries, it seems that TC maintains an acceptable effectiveness in Iran. Prospective controlled studies are warranted to investigate the outcomes in more details.

Introduction

In 1970s Iran, a country located in Southwest Asia, was one of the main opium producing countries, but its cultivation was banned after revolution of 1979 (1). It, however, remains to be among the countries with the highest prevalence of opioids abuse (2). All substance use (except for tobacco) is illegal in Iran and opioids are the major substances abused in Iran (2). For treatment and retention of opioids-dependent individuals, different modalities are adopted in Iran including, among others, outpatient drug treatment, methadone maintenance treatment, narcotic anonymous, and residential therapeutic community (TC) treatment. Although half a century has passed since the establishment of TC centers in the developed countries (3), it has aged merely a decade in Iran. TC centers across Iran are supervised and financially supported by the Social Security Organisation. TC is a non-medical residential or semi-residential treatment program consisting of a number of phases, which commences from 'orientation' and leads to the final stage of 'aftercare'. TC utilises a self-help approach and community is regarded as the unit of change rather than individual. A TC, practically, pursues psychological as well as social therapeutic objectives simultaneously. To meet this end, the residents are required to live a period of 3 months to 3 years in the therapeutic communities. As such, not only their pre-illness performance level is reacquired (rehabilitation), but also a set of new behaviours, nonexistent even prior to addiction, are acquired (habilitation) through especially tailored programs (3). This program focuses on self-help, personal growth, support from group members, and the creation of a spiritual environment within the center and it is expected that, subsequent to the course, the lifestyle and personal identity of the clients are altered. TC in Iran is abstinence-oriented and maintains a 14-week course period, with an entrance condition of having at least 18 years of age and completion of the detoxification phase. Nearly thirty TC centers are working in Iran now.

Assessment of substance use treatment programs is significantly valuable in order for the investigation of the levels of achievement of the program's objectives and promoting the quality of medical services (4). Most studies on the outcome effectiveness of TC strategy have been conducted in the developed countries (5). A recent review study showed that between 9 to 56% of the clients complete the program, and that

*Corresponding author: Nouzar Nakhaee; Email: nakhaeen@kmu.ac.ir

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many graduates attain significant recovery concerning social function and mental health (5). To the best of our knowledge, there has been no long-term study in Eastern Mediterranean countries investigating the different aspects of TC effectiveness with an adequate sample size. The present study was designed with an attempt of delineating the effectiveness of TC in terms of completion rate among its clients, and its relationship to the client characteristics which may highlight which types of drug users are best suited to therapeutic communities. Subsequent to the completion of the TC treatment, abstinence period was examined as well. Meanwhile we will compare health risk behaviour, physical and mental health, and social functioning between abstainers and non-abstainers. The validity of self-report drug use will be checked against the results of urine test too.

Methods

As an effectiveness outcome study, the present research was conducted in the city of Kerman, center of the largest province of Iran, using a pragmatic approach. The center under discussion, admits male clients only. Every single individual who enrolled in the TC center from the beginning of 2005 through to the end of 2011 was entered the study, therefore, the follow-up duration ranged between 10 months to 7 years. Considering the fact that most individuals suffer a relapse within the first three to six month of the follow up interval, the minimum follow up period is recommended to be designated at 6 months (6). Those who completed the 3 and a half-month period were known as 'completers' and those who failed were considered as 'noncompleters'. The planned duration of treatment in TCs is 3 and a-half months, according to the national protocol. The demographic information including age, level of education, as well as substance use-related variables such as the age of drug abuse commence, and the number of previous withdrawal attempts was questioned in this phase. In the second phase, those who had completed the course were invited for interviews by phone, for which, each one received 100,000 Iranian Rials, equivalent to $10 USD. Those not accessible by phone were excluded (n=16). The primary outcome of the study was the establishment of abstinence. Individuals with positive urine test or self report, concerning drug use were considered as 'non-abstainers', and those negative in both cases were regarded as 'clean' subjects (4). Urine test was conducted to determine if they were positive for heroin, opium, methadone, methamphetamine, bupronorphine, hashish, and tramadol (Behmedico, Tehran, Iran). For self report examination, Maudsley Addiction Profile (MAP) questionnaire was adopted which questioned opioids abuse during the past 30 days. This questionnaire is recognised as a proper instrument for collecting the desirable data in research and treatment services on opioids and alcohol dependent subjects, and investigates problems of patients from four aspects: opioids and alcohol use, health risk behaviours, physical and mental health check up, examination of personal and social functioning (7). The main use of MAP is for outcome research purposes (7). Its application in addiction-related healthcare evaluation studies is approved by UNODC (4). Completing the questionnaire took about 15 minutes. Reliability and validity of the Persian version of MAP has been approved (8).

Independent *t*-test or Mann-Whitney U test were adopted in order to compare the quantitative variables of the two groups. Comparison of the categorical variables of the two groups was carried out using Chi-Square test, and to discover the relationship between the variables and the completion of the TC program, multivariate logistic regression was employed. Survival analysis was, finally, used for the calculation of the proportion of subjects who remained abstinent.

Results

A number of 378 subjects (out of 395 individuals who were invited, yielding a response rate of 95.7%) entered the present study, with mean (±SD) age of 32.5 (±7.8), who referred to the TC center and enrolled in the program during a period of seven years. Of them, 240 subjects completed the 3 and a half-month period (69.0%). All the subjects were opioids dependent. Less than 10 percent of the subjects had college education and more than one third of the subjects were unemployed (Table 1).

The likelihood of TC completion increased in those with higher education, employed, and among those with history of incarceration (Table 1).

Out of the 237 subjects who completed the course, 55 cases showed positive urine test concerning at least one of the five substances of morphine, methadone, methamphetamine, tramadol, and hashish (Table 2). As shown in Table 2, sixteen respondents who self-reported no opium/heroin use in the past 30 days tested positive, corresponding to an underreporting of 38 percent. Based on self report and urine tests, the number of positives totaled 102 cases (44.9%) (Table 2).

Both physical and mental health demonstrated more desirable conditions in the 'abstainer' group (Table 3). The personal/social functioning variables of MAP showed no significant differences in the two groups (Table 3).

At the end of the first, fourth, and sixth year, 87, 58, and 22% of the cases were abstinent, respectively (Figure 1).

Discussion

Currently, outcome effectiveness of TC is still a matter of debate (9) since some review studies concluded that evidence for its effectiveness is relatively poor (10), while, some other have approved its effectiveness (5). And as a result of unavailable conclusive results concerning TC outcome effectiveness (9), pertinent studies are highly warranted especially in developing countries. The present study employed a practice-based evidence approach in which, through data collection from routine practice, the authors give "a voice to practitioners and service users, recognising that they have first-hand knowledge and experience of what works, what needs to change and how it may change" (9). In total, 69 percent of the subjects voluntarily completed the TC program. In Peru, 21% of clients dropped out the TC program before completing the 30 days of treatment (11). In a recent meta-analysis it was shown that the completion rate ranged from 9 to 56 percent (5). One of the reasons to high success rate seems to be the shortness of the program duration, as, in traditional therapeutic communities, only around 15 to 25 percent of the participants completed the program, with the majority of dropouts in the first three months (9). In a study on 140 subjects in Tehran in a three-year period (2003 to 2005), 38% of the participants completed the program (12). The duration of the mentioned program was six months. In another study in Australia on 191 subjects, 34% successfully completed the treatment program, and the majority of completers were males, however, most client characteristics (such as age and level of education) showed no relationships with treatment completion

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Table 1. Baseline characteristics and their association with completion of Therapeutic Community (TC) residential program (n=378)

Characteristic	TC completion (%)		Total (%)	Adjusted odds ratios	95% confidence intervals	*P*
	Yes (n=227)	No (n=151)				
Age (yrs)						
≤25	33(14.5)	29(19.2)	62(16.4)	Ref	--	--
26-45	170(74.9)	118(78.2)	288(76.2)	0.80	0.40-1.60	0.53
≥46	24(10.6)	4(2.6)	28(7.4)	3.64	0.95-13.96	0.06
Education						
Illiterate/Primary school	29(12.8)	29(19.2)	58(15.3)	Ref	--	--
Incomplete secondary	94(41.4)	55(36.4)	149(39.4)	1.57	0.77-3.23	0.21
Complete secondary	79(34.8)	55(36.4)	134(35.5)	1.33	0.64-2.74	0.44
College	25(11.0)	12(8)	37(9.8)	3.12	1.16-8.41	0.02
Marital status						
Single	90(39.6)	91(60.3)	181(47.9)	Ref	--	--
Married	111(48.9)	42(27.8)	153(40.5)	1.83	1.05-2.74	0.03
Separated/Divorced	26(11.5)	18(11.9)	44(11.6)	1.19	0.54-2.62	0.68
Job						
Unemployed	53(23.3)	83(55.0)	136(36.0)	Ref	--	--
Part time	73(32.2)	47(31.1)	120(31.7)	2.35	1.35-4.08	<0.01
Full time	101(44.5)	21(13.9)	122(32.3)	6.92	3.67-13.04	<0.001
Age at onset of drug use						
≤ 18	97(42.7)	54(35.8)	151(39.9)	Ref	--	--
> 18	130(57.3)	97(64.2)	227(60.1)	0.61	0.36-1.04	0.07
No. of detoxification attempts						
≤ 2	48(21.1)	47(31.1)	95(25.1)	Ref	--	--
3-5	66(29.1)	44(29.1)	110(29.1)	1.39	0.73-2.65	0.31
≥ 6	113(49.8)	60(40)	173(45.8)	1.34	0.73-2.44	0.34
IV drug user						
No	183(80.6)	117(77.5)	300(79.4)	Ref	--	--
Yes	44(19.4)	34(22.5)	78(20.6)	0.64	0.35-1.19	0.16
Previously imprisoned						
No	145(63.9)	125(82.8)	270(71.4)	Ref	--	--
Yes	82(36.1)	26(17.2)	108(28.6)	3.13	1.73-5.65	<0.001

(13). As for the present study, the probability of TC program completion was almost three times higher in participants with academic education or history of incarceration. A nearly significant association was seen between old age and probability of TC completion (Table 1), which was in line with other studies (5). This higher success rate may be due to a stronger internal motivation to change (3). It has been observed that the criminal justice system pressure increases the probability of retention in the treatment (3). Furthermore, higher treatment success in the employed participants may be rooted in the pressure by their employers for becoming clean as a pre-requisite to be reinstated or gaining higher social support.

The point to be considered when comparing the completion rate of the present study with that of other studies, especially those conducted in the United States is that the main substance abused in the mentioned studies was cocaine (5), while no case of cocaine use was included in the present study. It has been shown that heroin and opium users portray a more probable treatment completion compared to users of other substances (5).

In the assessment of TC graduation results, abstinence was considered as the primary outcome, measured via a subjective (self report) and an objective (urine test) measure. With simultaneous consideration of the two criteria, the relapse rate was 78% in the follow up period. Moreover, the results of urinalysis failed to confirm the validity of self report, as was the case for opium and heroin, in which 26 individuals reported use based on self report, while, according to urinalysis, 42 individuals had had abused these substances. So it can be concluded that we could not rely on self reports to diagnose relapse after TC completion. A Spanish study concluded that self report maintains the required validity (14). Concerning TC outcome assessment, a number of studies have sufficed to completion rate measurement (13,15), some have relied on self report (13,15), and some other, have considered relatively short periods (about one to two years) for relapse rate measurement (16,17). The advantage of the present study is a relatively longer follow up period and also using urine test. One year subsequent to TC completion in this study, 87% of the subjects were abstinent. In a study on Israeli heroin addicts, half the participants were clean after 15 months (16). And at the end of the follow up period, 22% of the participants were abstinent. A recent systematic review showed that in studies in which participants were followed during a six-month to six-year period, 21 to 100 percent of the participants suffered relapse (5). Furthermore, in a recent study in Iran, it was concluded that approximately half the subjects who were on naltrexone maintenance after detoxification,

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Table 2. Use of different substances by 237 subjects who completed the TC course according to self report and urine test

Substance	Self report (%)	Urine test (%)
Alcohol	41(18.1)	Not tested
Opium + Heroin	12+14(11.5)	42(18.5)
Methadone (legal + illegal)	10+2(5.3)	12(5.3)
Methamphetamine (Shisheh)	11(4.8)	15(6.6)
Tranquilizers	16(7.0)	Not tested
Bupronorphine	1(0.4)	0(0.0)
Hashish	1(0.4)	1(0.4)
Tramadol	6(2.6)	3(1.3)
Naas	21(9.3)	Not tested

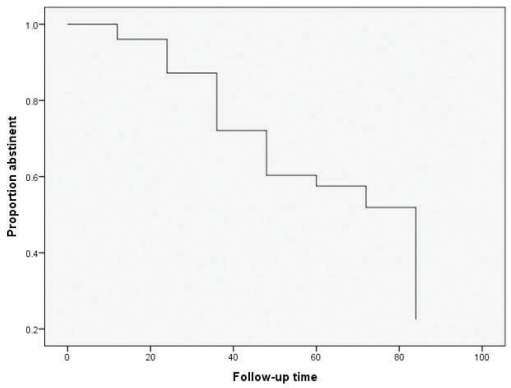

Figure 1. Survival analysis of proportion of individuals who remained abstinent

Table 3. Domains of the Maudsley Addiction (MAP) among Therapeutic Community completers (mean±SE; n=227)

Domain	Abstainers	Non-abstainers	*P*
Health risk behavior			
Injecting shared needles (episodes)	0	0	--
Unprotected sex (episodes)	0.10±0.03	0.18±0.04	0.08
Health symptoms			
Physical symptoms (score)	4.0±0.4	5.7±0.5	<0.01
Psychological symptoms (score)	4.0±0.4	6.9±0.7	<0.001
Personal / Social Functioning			
Wife conflict (days)	5.6±1.9	8.0±2.2	0.08
Family conflict (days)	5.5±1.2	6.5±1.3	0.27
Friends conflict (days)	4.2±2.4	8.0±2.4	0.21
Paid work (days)	24.7±0.8	24.7±0.9	0.98
Crime (days)	0.12±0.07	0.05±0.03	0.67
Total	55	172	--

discontinued this relapse prevention plan six months later (18) which indicates that the TC program promises a more desirable outcome than pharmacological interventions in similar cultural conditions.

The present study showed that mental and physical health in the abstainer group benefitted a better status compared to those of the participants who suffered relapse. However, personal/social functioning showed no difference in the two groups. The majority of mental and physical health improvement studies report reduced criminal behaviour in TC completers (3).

As for the limitations of the study, it is preferable for the examination of changes in mental and physical health and social functioning of the participants, that a pretreatment assessment be conducted as well. In the assessment of factors pertinent to completion rate, it is recommended that treatment characteristics such as client satisfaction be also measured.

Compared to studies conducted in other countries, it can be concluded that TC outcome effectiveness, concerning both successful completion rate and abstinence rate after leaving the program, was acceptable in general. This study revealed a better physical and mental health for abstainers comparing to non-abstainers. Another implication of this study is that practitioners may not rely on self-report of drug use in TC setting.

Ethical issues

This study was approved by the ethics committee of Kerman University of Medical Sciences.

Competing interests

The authors declare no competing interests.

Authors' contributions

NS initiated the idea for the study and led to development of the proposal and data acquisition and contributed to writing the initial draft of the manuscript. MS, KM, RA, and AB contributed to the implementation of research design, data collection, and interpretation. They participated in drafting the manuscript. NN is the study guarantor and substantially contributed to the study design, data analysis, interpretation of results and manuscript writing.

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