Methamphetamine Dependence Treatment Rehabilitation in Thailand: A Model Assessment

Usaneya Perngparn PhD*, Bhassorn Limanonda PhD**,
Apinun Aramrattana MD, PhD***, Catherine Pilley PhD*,
Chitlada Areesantichai PhD*, Surasak Taneepanichskul MD****

** Drug Dependence Research Center, College of Public Health Sciences, Chulalongkorn University, Bangkok, Thailand*
*** College of Population Studies, Chulalongkorn University, Bangkok, Thailand*
**** Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand*
***** College of Public Health Sciences and Faculty of Medicine, Chulalongkorn University, Thailand*

Objective: *Assess the process and outcome of the treatment rehabilitation program in Thailand by comparing out-patients and in-patients from drug dependent treatment centers (DDTCs) under Matrix and FAST Models.*
Material and Method: *In the DDTCs, male in-patient and out-patient volunteers aged 15-35 years were randomly selected to assess demographic characteristics, socio-economic status, history of substance use, and other behavior related to their health. Observations of the process of therapy and assessment of patients' improvement were made. After completing the rehabilitation, which lasted four months, trained field workers visited the patients at 1-, 3- and 6-month intervals. Analyses of rehabilitation focused on cognitive and behavioral changes at one and three months. Regarding the follow-up outcomes, comparison of Matrix and FAST Models relapse was analyzed by survival graph and Cox-regression of the days since stopping illegal substance use.*
Results: *Ninety-two in-patients and forty-three out-patients were recruited. No significant difference was found in the characteristics of the patients between the two models or in the treatment centers. After assessing patients at 1-, 3-, and 6-month, more improvement was noted among those in the FAST model than in the Matrix model.*
Conclusion: *This research confirmed improvement in attendees at the in-patient treatment model and the effectiveness of rehabilitation.*

Keywords*: Methamphetamine dependent, Treatment rehabilitation, Assessment*

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Historical documentation indicates that opium smoking was a major national problem in the 16th century in Thailand. Since then, opium use continues to represent a recurrent national crisis into the early 20th century[1]. In 1960, the first heroin epidemic spread countrywide after the enactment of the law banning opium in 1959[2,3]. In the early 1960s, concurrent with the heroin epidemic, a few cases of illicit stimulant indictments appeared in the law enforcement statistics. Later, the use of methamphetamine or "yaba" among truck drivers or laborers was known[4,5]. Since 1995, the epidemic of illicit stimulant use has become a serious problem as yaba is available everywhere[6-9]. The extent of HIV infection among drug users has been linked to the rapid change of substance abuse patterns. Yaba users were found to have 5-8% of HIV[10]. In addition, other health problems, such as high rates of sexually transmitted infection have been found among yaba users[11,12]. The majority of treatment services during the 1960s to 1990s were designed for heroin users. The process of treatment, both in-patient and out-patient included preparation, detoxification, rehabilitation and follow-up. The rehabilitation stage was intended to change the patients' behavior after they became drug free. Most rehabilitation programs in the treatment centers provided a variety of therapies, such as cognitive behavior therapy, and others. At the beginning period of in-patient therapy, most used a therapeutic community model (TC) adopted from the USA approach as a model of rehabilitation[13]. Since 1997, the treatment system has changed to serve the

Correspondence to:
Perngparn U, Drug Dependence Research Center, College of Public Health Sciences, Chulalongkorn University
Phone: 0-2218-8200
E-mail: usaneya.p@chula.ac.th

yaba dependents by adopting a Matrix model, originally developed by UCLA, USA to treat drug dependents[14]. While the Matrix model was being adopted, Thanyarak Institute adjusted the TC's, called the FAST model expected duration from 12-18 months to four months serving a large demand for yaba in-patients. However, at present, there is no an evaluation or assessment of yaba treatment rehabilitation among those models in Thailand.

Objective

The present project was designed to assess the process and outcome of the treatment rehabilitation program run by the Drug Dependence Treatment Centers (DDTCs) comparing in-patients who attended the FAST model (F – Family, A – Alternative treatment activities, S – Self-help and T – Therapeutic community) and out-patients who received the Matrix model. Furthermore, it was expected to monitor and evaluate the patients' progress after leaving the programs. It was intended that service providers will be able to pinpoint where available rehabilitation is ineffective and/or inappropriate and develop their services accordingly. Thereafter, patients will benefit from a more efficient program which will lead to improvements, such as longer relapse free periods and better quality of life.

Material and Method

Participants

One hundred and thirty five yaba dependent patients at Thanyarak and Chiang Mai DDTCs volunteered to take part in the present study. The sample was all male, between 15 and 35 years of age. Only male patients were selected as the percentage of female drug treatment patients is small (10%) and the treatment is separate for them (National treatment statistics. 2004-2008). Thanyarak and Chiang Mai DDTCs were selected because they are the centers where most drug dependents in the northern and central regions attend.

Data collection procedures

Patients gave verbal informed consent to be interviewed by trained field workers at pre-admission or on the first few days of treatment. If their age was lower than 18 years, consent from parents was obtained. Observation of the treatment therapy and assessment of any improvement was made using an adjusted model derived from the Texas Christian University (TCU) treatment process model[15], which offers a thorough assessment from needs, to motivation for treatment, to treatment outcome. Data used for analysis included baseline, in-treatment assessments (one and a half months and three months after entry to the programs) and follow-up interviews 1, 3 and 6 months post-discharge. The follow-up duration was based on a previous study[16] reporting that after the six-month follow-up, the rate of relapse was almost constant for all treatment programs.

Statistical issues

Quantitative analysis of rehabilitation focused on changes in patients' behavior both cognitively and behaviorally. Descriptive statistics used to summarize the contents of baseline data and follow-up outcomes (*e.g.* population characteristics, socio-economic characteristic, history of methamphetamine use and other behaviors. In addition, t-test and Chi-square analyses were used to test significant associations between FAST and Matrix models, and difference of outcomes. Regarding follow-up outcomes, comparison of Matrix and FAST models relapse was analyzed by survival graph and Cox-regression on number of days since stopping illegal substance use. A p-value of less than 0.05 was considered statistical significant difference.

Results

Baseline characteristics

The sample consisted of 92 in-patients and 43 out-patients. Out patients (Matrix model) tended to be younger than in patients (FAST model) (median = 21 and 24 years respectively). However, the mean age of the two groups was similar (23.9 and 23.2 years among FAST and Matrix models respectively). The mean ages of first yaba use of in-patients and out-patients were 17.2 and 18.8 years respectively. The duration of drug use among in-patients consequently had a statistically significant difference at $p = 0.01$. The amount of drug use was three tablets per day and cost about 314-378 baht/day (about 9.5-11.5 US$). Their income per month was about 8,500-9,000 baht/month (263-278 US$) (Table 1). Comparing their income to the money spent on drugs, they did not earn enough money to pay for yaba.

Most patients were Thai and more than 94% were Buddhist, the majority had finished secondary school, more in-patients were married than out-patients (26.1% and 23.3% respectively), about 29% of in-patients were unemployed whereas 37.2% of out-patients were students. Overall, there were no

significant differences when mean and general characteristics *i.e.* mean age, race, religion, marital status, occupation, and income were compared. Therefore, the outcome from the two models should be attributable to the process of treatment rehabilitation (Table 2).

Evaluation of self and treatment

After attending FAST and Matrix models for one and a half months and at three months, observation and evaluation forms on self and treatment of the Texas Christian University (TCU) treatment process model were used to compare their

Table 1. Baseline characteristics of in-patients and out-patients by t-test (two sided)

	Model	n	Mean	Std. deviation	t-test
Age on admission	FAST model (in-patient)	92	23.90	5.59	0.658
	Matrix model (out-patient)	43	23.21	5.95	
Age first methamphetamine use	FAST model (in-patient)	92	17.29	4.48	-1.878
	Matrix model (out-patient)	43	18.77	3.70	
Duration of using methamphetamine	FAST model (in-patient)	92	6.61	4.39	2.664**
	Matrix model (out-patient)	43	4.44	4.43	
Quantity of use per day	FAST model (in-patient)	92	3.22	2.24	0.389
	Matrix model (out-patient)	43	3.07	1.58	
Money spent on drug/day	FAST model (in-patient)	92	377.60	434.32	0.887
	Matrix model (out-patient)	43	314.42	248.24	
Income/month	FAST model (in-patient)	60	8,668.00	5,083.40	-0.392
(excluding unemployed & student)	Matrix model (out-patient)	20	9,168.80	4,487.10	

** Significant at p = 0.01, n = response number

Table 2. Baseline characteristics of in-patients and out-patients by Chi-square test (two sided)

	FAST model (in-patient) n (%)	Matrix model (out-patient) n (%)	Chi-square
Race			0.949
Thai	90 (97.8)	43 (100.0)	
Others	2 (2.2)	-	
Religion			2.203
Buddhist	87 (94.6)	42 (97.7)	
Others	15 (5.4)	1 (2.3)	
Education level			11.462**
Primary level	26 (28.3)	2 (4.6)	
Secondary level	43 (46.7)	22 (51.2)	
Higher level	23 (25.0)	19 (44.2)	
Marital status			0.125
Never married	63 (68.5)	31 (72.1)	
Married	24 (26.1)	10 (23.3)	
Others	5 (5.4)	2 (4.6)	
Occupation			2.656
Student	4 (4.4)	16 (37.2)	
Unemployed	27 (29.3)	7 (16.3)	
Unskilled workers	37 (40.2)	9 (21.0)	
Skilled workers	24 (26.1)	11 (25.5)	
Total number	92	43	

** Significant at p < 0.01

Table 3. Evaluation of self and treatment compared between FAST and Matrix models

	FAST model (in-patient)			Matrix model (out-patient)		
	Paired differences between 1.5 and 3 months of attending model		t	Paired differences between 1.5 and 3 months of attending model		t
	Mean	Std. deviation		Mean	Std. deviation	
A. Ratings of self						
A.1 Psychological functioning scales						
1 Self esteem	-15.57	5.74	-2.71**	-27.91	7.89	-3.54**
2 Depression	24.30	7.49	3.24**	34.65	10.43	3.32**
3 Anxiety	35.06	8.61	4.07**	55.81	11.13	5.00**
4 Self efficacy	-7.85	7.07	-1.11	-30.00	9.62	-3.12**
A.2 Social functioning scales						
5 Hostility	17.34	7.74	2.24*	56.51	13.32	4.24**
6 Risk taking	-3.92	6.39	-0.61	-13.02	8.64	-1.51
7 Social conformity	-15.32	6.45	-2.37*	-17.21	9.08	-1.90
A.3 Treatment motivation scales						
8 Treatment readiness	-4.05	5.70	-0.71	5.58	7.59	0.74
9 External pressures	9.75	7.91	1.23	3.72	9.66	0.39
B. Ratings of treatment process						
B.1 Participation in treatment						
10 Therapeutic engagement	-22.78	6.44	-3.54**	-17.91	11.02	-1.62
11 Personal progress	-12.41	4.36	-2.85**	-9.07	9.04	-1.00
12 Trust group	-12.03	5.30	-2.27*	-9.77	7.71	-1.27
13 Program staff	-12.03	4.94	-2.43*	-18.14	9.45	-1.92
B.2 Counselor attitude and behavior						
14 Counselor rapport	-34.05	7.78	-4.38**	-14.65	15.76	-0.93
15 Counselor competence	-33.16	8.91	-3.72**	-10.70	16.27	-0.66
C. Ratings of program attributes						
16 Treatment service	-28.86	11.24	-2.57**	23.02	20.49	1.12
17 Peer support	-15.32	4.87	-3.14**	-6.51	8.20	-0.79
18 Social support	-46.35	10.68	-4.34**	-2.00	17.30	-0.12

* Significant at $p < 0.05$, ** Significant at $p < 0.01$

improvement before discharge at four months. The evaluation included A) ratings of self, B) ratings of treatment process, and C) ratings of program attributes. Table 3 shows the comparison of mean scores in each category of in-patients (FAST model) and out-patients (Matrix model). In-patients had a high statistical significance ($p < 0.01$) in all rating of program attributes (treatment service, peer support and social support), counselor attitude and behavior (counselor rapport and competence), and participation in treatment (therapeutic engagement and personal progress). Whereas out-patients had no significant difference between 1.5 and 3 months of Matrix model attending in rating of program attributes, counselor attitude and behavior, and participation in treatment. Out-patients had also improved in rating of self (self-esteem, depression, anxiety, and self-efficacy) while the in-patients did not improve in self-efficacy.

All of these results showed that after attending the models, both in-patients and out-patients had improved in different functions.

Follow-up outcomes

After completing both models, in-patients and out-patients were followed-up at one month (70 and 30 cases), three months (58 and 18 non-relapse cases) and six months (47 and 13 non-relapse cases) respectively (Table 4). From Table 5, 100 cases of both models were followed-up. Of these, 22 cases (18.6% of FAST model and 21% of Matrix model patients)

Table 4. Number of cases followed-up at 1, 3 and 6 months

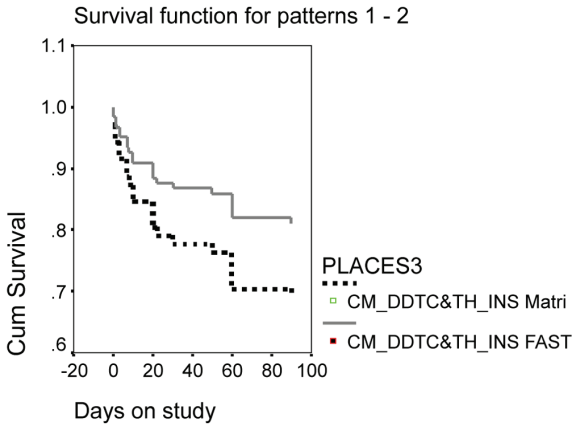
	FAST model (in-patients)		Matrix model (out-patients)	
	n	%	n	%
One month follow-up				
Did not meet patient	22	23.9	13	30.2
Met patient	70	76.1	30	69.8
Total	92	100.0	43	100.0
Three months follow-up				
Did not meet patient	24	26.1	19	44.1
Met patient	58	63.0	18	41.9
Relapse at 1 follow-up	10	10.9	6	14.0
Total	92	100.0	43	100.0
Six months follow-up				
Did not meet patient	32	34.8	21	48.8
Met patient	47	51.0	13	30.2
Relapse at 1 follow-up	10	10.9	6	14.0
Relapse at 2 follow-up	3	3.3	3	7.0
Total	92	100.0	43	100.0

Table 5. Frequency of drinking alcohol

	FAST model (in-patients)		Matrix model (out-patients)	
	n	%	n	%
One month follow-up				
None	21	30.0	8	26.7
LT 3 day/week	37	52.9	13	43.3
Everyday	12	17.1	9	30.0
Total	70	100.0	30	100.0
Three months follow-up				
None	18	26.5	5	20.8
LT 3 day/week	34	50.0	9	37.5
Everyday	16	23.5	10	41.7
Total	68	100.0	24	100.0
Six months follow-up				
None	16	26.7	3	13.6
LT 3 day/week	30	50.0	15	68.2
Everyday	14	23.3	4	18.2
Total	60	100.0	22	100.0

LT = less than

relapsed. Two cases (one from each model) reported sniffing glue while the others used yaba. With regard to drinking alcohol, more than a half of in-patients and 40-68% of out-patients drank alcohol less than three days a week.



Variables in the equation (b)

Model	B	SE	Wald	df	Sig.	Exp(B)	95.0% CI for Exp(B)	
							Lower	Upper
FAST	-0.573	0.434	1.741	1	0.187	0.564	0.241	1.321
Matrix				0(a)				

a Degree of freedom reduced because of constant or linearly dependent covariates

b Constant or linearly dependent covariates Matrix = 1 - FAST

Fig. 1 Survival rate compared between FAST and Matrix models

After completing follow-up at 6-month, the survival rate of FAST and Matrix models showed no statistical difference between the two models (Fig. 1).

Discussion

The present study has shown the different outcomes of patients who attended FAST and Matrix models. There were no differences in characteristics of patients being admitted to either model. After attending the models, FAST model patients improved in many aspects by observation and TCU evaluation of self and treatment scales. Taking ratings of program attribution as an example, the patients' ratings regarding treatment services, peer support and social support were highly significant ($p < 0.01$). FAST model patients are in-patients in the treatment centers where they have an opportunity to discuss their problems with their counselors and peers. Should there be any queries, they would seek consultation from the staff. Even more, they would easily share their problems with their peers. In addition, participation in treatment *i.e.*

therapeutic engagement, personal progress, trust group, and program staff could not be avoided. Group counseling, a part of therapeutic engagement, enabled them to learn self-reflection and develop thoughtfulness towards others. Patients could improve their behavior using a carrot and stick. Program and treatment staff are effective as they assist the patients in preparing for treatment.

Regarding the 6-month follow-up, improvement during their attendance in the models did not show any significant difference in non-relapse as the statistics showed no significantly lower rate of relapse in either FAST or Matrix model. The in-patient treatment led to slightly longer abstinence periods.

However, despite their drug abstinence, they sought other addictive substances such as alcohol. Therefore, it cannot be claimed as a success in the treatment for the two models.

There are many factors related to the success of treatment, not only the models but also the service provider and patients themselves in terms of their readiness for treatment and the socio-environment. Some studies[17-19] mentioned that retention rate in treatment is the main identifier for relapse or non-relapse. The two models take four months equally so, the outcomes look no different. The in-patients who attended FAST model showed more improvement during the treatment period as they were put together and close to providers. They also had friends who were in the same situation to discuss their problems with during the treatment rehabilitation period. If the FAST model had provided a longer period, the outcome may have been better than the out-patient model.

Conclusion

The present study has shown the different outcomes of patients who attended FAST and Matrix models. Mostly there were no differences in characteristics of patients being admitted to either models, except the duration of using methamphetamine and education level. After attending the models, FAST model patients improved in many aspects by observation and TCU evaluation of self and treatment scales. Taking ratings of program attribution as an example, the patients' ratings regarding treatment services, peer support, and social support were highly significant ($p < 0.01$). Group counseling, a part of therapeutic engagement, enabled them to learn self-reflection and develop thoughtfulness towards others. Program and treatment staff are effective as they assist the patients in preparing for treatment.

Regarding the 6-month follow-up, less percentage relapse was found in FAST model. The in-patient treatment led to longer abstinence periods. However, despite their drug abstinence, they sought other addictive substances such as alcohol. Therefore, it cannot be claimed as a success in the treatment for this group. Overall, FAST model still proved its effectiveness in terms of treatment rehabilitation.

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Potential conflict of interest

None.

Ethical Review

The present study was approved by the Ethical Review Committee for Research Involving Human Research Subjects, Health Science Group, Chulalongkorn University, COA No.074/2008.

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การประเมินรูปแบบการบำบัดฟื้นฟูสมรรถภาพการเสพติดยาบ้าในประเทศไทย

อุษณีย์ พึ่งปาน, ภัสสร ลิมานนท์, อภินันท์ อร่ามรัตน์, แคธารีน พิเล, จิตรลดา อารีย์สันติชัย, สุรศักดิ์ ฐานีพานิชสกุล

การศึกษานี้มีวัตถุประสงค์เพื่อประเมินกระบวนการ และผลลัพธ์การบำบัดฟื้นฟูสมรรถภาพผู้ติดยาบ้าในประเทศไทย โดยการเปรียบเทียบผู้เข้ารับการบำบัดรักษาจากศูนย์บำบัดรักษายาเสพติด ที่เข้ารับการบำบัดแบบผู้ป่วยนอกโดยใช้รูปแบบเมทริก (Matrix model) และผู้ป่วยในโดยใช้รูปแบบฟาส (FAST model) รวบรวมข้อมูลด้วยการสุ่มตัวอย่างจากผู้รับบริการบำบัดชายที่เข้ามารักษายาบ้าในศูนย์บำบัดรักษายาเสพติด อายุระหว่าง 15-35 ปี โดยศึกษาถึงลักษณะทั่วไปทางประชากรและสังคม ประวัติการเสพสารเสพติด และพฤติกรรมการเสพยาอื่น ๆ ที่มีผลต่อสุขภาพในระหว่างการบำบัดจะใช้วิธีการสังเกตและแบบประเมินพัฒนาการบำบัด หลังจากผู้เข้ารับการบำบัดได้รับการฟื้นฟูครบเป็นระยะเวลา 4 เดือน จะติดตามผลการบำบัดต่อไปด้วยการตามไปสัมภาษณ์ที่บ้าน ในระยะเวลา 1, 3 และ 6 เดือนตามลำดับ

การวัดผลการศึกษา เน้นการวิเคราะห์เชิงปริมาณเพื่อดูการเปลี่ยนแปลงของผู้ผ่านการบำบัดรักษาทั้งทางด้านพฤติกรรม และทัศนคติ เปรียบเทียบระหว่าง 2 รูปแบบ ส่วนการติดตามผลจะใช้วิธีการวิเคราะห์ผลการไม่กลับไปเสพซ้ำโดยวิธี Survival graph and Cox-regression จากจำนวนผู้ป่วยใน 92 รายและผู้ป่วยนอก 43 ราย ซึ่งพิสูจน์แล้วว่าเบื้องต้นไม่มีความแตกต่างระหว่างลักษณะทางประชากร และสังคมจึงสามารถนำมาเปรียบเทียบวิธีการรักษา 2 แบบได้ และติดตามผลในระยะ 1, 3 และ 6 เดือน การศึกษานี้ค้นพบโดยรวมว่า ผู้บำบัดแบบผู้ป่วยใน มีพัฒนาการที่ดีกว่าผู้บำบัดแบบผู้ป่วยนอก ทั้งในระยะการบำบัดและหลังการติดตามผล