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**Original article**

# Determinants for methamphetamine abstinence of short-term and long-term inpatient treatments for methamphetamine use

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***Background:*** Drug problems in Thailand have expanded and aggravated, thus they are affecting many economic sectors. However, only a few research works have been done on the outcomes of treatment and forecast of treatment outcomes for methamphetamine addiction.
***Objectives:*** To study the capability to stop methamphetamine abuse via comparison of long-term and short-term treatments of methamphetamine addiction, and the determinants relating to the capability to stop methamphetamine usage.
***Methods:*** Retrospective study based on secondary data compiled from inpatients of methamphetamine addiction treatment at Thanyarak Institute from 2007 to 2019, using the Semi-Structured Assessment for Drug Dependence and Alcoholism (Thai version 2.0, SSADDA). Chi-Square statistics has been employed for analyzing data in this study.
***Results:*** The study has revealed that short-term inpatient treatment (up to 30 days) is more related to the methamphetamine abstinence of drug addiction treatment than long-term inpatient treatment.
***Conclusion:*** This finding suggests the important role of short-term inpatient treatment on the outcomes of drug addiction treatment which is useful for further study and future treatment planning.

***Keywords:*** Methamphetamine, inpatient treatment, outcomes, long term, short term.

Drug problems in Thailand have expanded and aggravated, thus they are affecting various systems of the society. Methamphetamine, which is an illegal drug in Thailand, has been the most important cause of drug problems in Thailand. Based on the data of the Ministry of Public Health, methamphetamine use is account for 75.0% of all illegal drugs that have been arrested, followed by cannabis (7.0%) and kratom (4.0%). [1 - 2]

In 2000, the perspective of drug treatment programs in Thailand toward persons with addiction changed from deeming them as immoral persons to considering them as patients. [3] As a result, the government has allocated considerable amount of budget for drug treatments. In the fiscal year 2019, a budget of 329.24 billion Thai Baht (THB) has been allocated for the security purpose, or 11.0% of the entire budget amount. Given their emphasis on tackling drug problem, the government has set aside a budget of 5.196 billion THB for the prevention and suppression of illegal drug use and drug treatment and rehabilitation, up by 6.1% over the 2017 budget. [4] Amid these huge budget amounts, only a few research works have been done on the outcomes of the treatment of methamphetamine addiction, and the researcher is interested in studying the outcomes of both the long-term and short-term treatments of methamphetamine addiction regarding the capability to stop using methamphetamine and the determinants related to treatment outcomes for methamphetamine.

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## Materials and methods

This research work is involved in the study of the capability to stop drug addictions in relation to the short-term and long-term inpatient treatments in

rehabilitation facilities. The previous treatment differs from the latter one only by the period of treatment which is up to 30 days. Most inpatients who received short-term treatment were forced by law. This research uses the secondary data from the research of Methamphetamine Genomes in Thailand (IRB No. 444/55), the data of which were compiled from inpatients of methamphetamine treatment at Thanyarak Institute from 2007 to the present (in 2019). This study has passed the research ethics consideration of the Faculty of Medicine, Chulalongkorn University, No. 397/61.

This study has used the Semi-Structured Assessment for Drug Dependence and Alcoholism (Thai version 2.0, SSADDA), based on the English original version by Pierucci-Lagha A, *et al*., with the inter-rater reliability at 0.77 and the test-retest reliability at 0.97. [5] The information has been compiled from inpatients of methamphetamine addiction treatment at Thanyarak Institute by means of interviews via computer system and interviews by experts who have Bachelor's Degree or higher in psychology. The SSADDA questionnaire has been used since 2007 and the information has been continually compiled up to 2019. The researchers screened 990 persons from the sample group in accordance with the inclusion and exclusion criteria. The inclusion and exclusion criteria of primary survey have included three items. Firstly, the respondents are older than 17 years old and can understand Thai language very well. Secondly, the patients ever used methamphetamine. Last but not least, they were not with medical record of schizophrenia. The present study increased three criteria of inclusion and exclusion which were; the respondents were the inpatients who ever used methamphetamine at least 11 times or higher, no medical records of schizophrenia, depression, and brain diseases or injuries. These 990 respondents include 808 inpatients of methamphetamine addiction treatment per the inclusion and exclusion criteria of the present study. There are 10 persons who used methamphetamine less than 10 times, 153 persons with medical records of schizophrenia and depression per the DSM-IV criteria, and 31 persons with medical records of brain diseases or injuries. After the screening per the exclusion criteria, the sample group includes 614 persons, representing 772 times of methamphetamine addiction treatment.

***Statistical analyses***

The analysis has been based on descriptive statistics to explain the general characteristics of the sample group. The frequency, percentage, mean and standard deviation (SD) have been created and the inferential statistics have been used in the univariate analysis to explore the correlation of variables, including the capability to stop using methamphetamine, which is determined when the person has not used methamphetamine for at least 3 months after treatments according to original survey. The period of stop using methamphetamine were mentioned by the respondents during the interviews by experts. Chi-square statistics were used and $P < 0.05$ was considered to be statistically significant.

**Results**

Table 1 shows demographic data of the sample group who were inpatients of methamphetamine addiction treatment at Thanyarak Institute. Most of the subjects were females (57.0 %), aged between 21 - 30 years old (51.5 %), with highest education of junior high school (37.6 %). Most of the subjects were single (77.5 %), having permanent jobs (83.9 %), with average monthly income of the family at more than 30,000 THB (21.3 %). In addition, most of them have undergone addiction treatment more than one time, as shown in (Table 2). The total treatment times of the overall sample group stands at 772, including 143 short-term treatments (less than or equal to 30 days) and 629 long-term treatments, not including the current admission at Thanyarak Institute (Table 3).

When testing the association between the treatment duration and outcomes of treatment (capability to stop using drugs for more than 3 months after treatment), it was found that short-term treatment of methamphetamine addiction is significantly related to that person's capability to stop using drugs for more than 3 months in a lifetime (Table 4).

However, (Table 5), involving the test of correlation between the determinants related to the capability to stop using the drugs for more than 3 months, at least once in lifetime, it has been found that there are 3 determinants who were related to the capability to stop using drug for more than 3 months after treatments. The first determinant is the educational level–drug users with university educational background are related to the capability to stop using drugs for more than 3 months. The second determinant is the impacts from drug use – drug users whose jobs or studies have been affected by their addiction (according to their addiction, they could not go for

work, study or doing tasks under responsibilities at least three times in one year) are related to the capability to stop using the drug for more than 3 months. The third determinant is the average number of treatment days–drug users having the average number of treatment days higher than or equal to 30 days are related to the capability to stop using the drugs for more than 3 months ($P < 0.05$).

**Table 1.** Socio-demographic of the samples (n = 614).

| Variables | Number | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 264 | 43.0 |
| Female | 350 | 57.0 |
| **Age** (years) [mean 27.44 (SD 7.070) min = 18, max = 53] | | |
| 20 years old or lower | 117 | 19.1 |
| 21 - 30 years old | 316 | 51.5 |
| 31 - 40 years old | 147 | 23.9 |
| > 40 years old | 34 | 5.5 |
| **Years of schooling** [mean of schooling years 8.05 (SD 2.965) min = 0, max = 16] | | |
| 0 - 6 years | 230 | 37.8 |
| 7 - 12 years | 355 | 57.8 |
| 13 - 16 years | 29 | 4.7 |
| Over 16 years | 0 | 0.0 |
| **Marital status** | | |
| Single | 476 | 77.5 |
| Married | 87 | 14.2 |
| Widowed/divorced or separated | 51 | 8.3 |
| **Employment** | | |
| Employed | 515 | 83.9 |
| Unemployed | 99 | 16.1 |
| **Household income** | | |
| 0 - 1,000 baht per month | 7 | 1.1 |
| 1,001 - 2,500 baht per month | 15 | 2.4 |
| 2,501 - 5,000 baht per month | 30 | 4.9 |
| 5,001 - 7,500 baht per month | 68 | 11.1 |
| 7,501 - 10,000 baht per month | 93 | 15.1 |
| 10,001 - 15,000 baht per month | 112 | 18.2 |
| 15,001 - 20,000 baht per month | 85 | 13.8 |
| 20,001 - 30,000 baht per month | 73 | 11.9 |
| > 30,000 baht per month | 131 | 21.3 |

**Table 2.** Frequency of participants by prior addiction treatment (n = 614).

| Variables | Number | Percentage |
|---|---|---|
| One time | 494 | 80.5 |
| Two times | 89 | 14.5 |
| Three times | 24 | 3.9 |
| Four times | 7 | 1.1 |

**Table 3.** Frequency of short-term and long-term inpatient treatments (n = 772).

| Variables | Number | Percentage |
|---|---|---|
| Short-term treatment (30 days or lower)<br>[mean = 16.9 ± 9.2 min = 1, max = 30, mode 30] | 143 | 18.5 |
| Long-term treatment (over 30 days)<br>[mean 92.8 ± 58.2 min = 32, max = 998, mode = 120] | 629 | 81.5 |

**Table 4.** Association between types of treatment and the lifetime capability to stop using methamphetamine for longer than 3 months after treatment.

| Variables | The lifetime capability to stop using methamphetamine for more than 3 months | | | | $X^2$ | *P* - value |
|---|---|---|---|---|---|---|
| | Unable | | Able | | | |
| | Number | Percentage | Number | Percentage | | |
| Short-term treatment | 120 | 83.9 | 23 | 16.1 | 8.117 | 0.004 |
| Long-term treatment | 577 | 91.7 | 52 | 8.3 | | |

**Table 5.** Association between socio-demographic variables and the capability to stop using drugs for more than 3 months (n = 614).

| Variables | The capability to stop using methamphetamine for more than 3 months at least once in lifetime | | | | $X^2$ | *P* - value |
|---|---|---|---|---|---|---|
| | Unable | | Able | | | |
| | Number | Percentage | Number | Percentage | | |
| **Gender** | | | | | | |
| Male | 237 | 89.8 | 27 | 10.2 | 1.495 | 0.222 |
| Female | 324 | 92.6 | 26 | 7.4 | | |
| **Age** | | | | | | |
| ≤ 20 years old | 103 | 88.0 | 14 | 12.0 | 3.198 | 0.362 |
| 21 - 30 years old | 294 | 93.0 | 22 | 7.0 | | |
| 31 - 40 years old | 134 | 91.2 | 13 | 8.8 | | |
| Over 40 years old | 30 | 88.2 | 4 | 11.8 | | |
| **Years of schooling** | | | | | | |
| 0 - 6 years | 216 | 93.9 | 14 | 6.1 | 7.433 | 0.024 |
| 7 - 12 years | 322 | 90.7 | 33 | 9.3 | | |
| 13 - 16 years | 23 | 79.3 | 6 | 20.7 | | |
| **Marital status** | | | | | | |
| Single | 435 | 91.4 | 41 | 8.6 | 0.967 | 0.617 |
| Married | 45 | 93.1 | 6 | 6.9 | | |
| Widowed/separated | 81 | 91.4 | 6 | 8.6 | | |
| **Employment** | | | | | | |
| Unemployed | 90 | 90.9 | 9 | 9.1 | 0.032 | 0.859 |
| Employed | 471 | 91.5 | 44 | 8.5 | | |
| **Household income** | | | | | | |
| < 15,001 baht per month | 299 | 92.0 | 26 | 8.0 | 0.350 | 0.554 |
| ≥ 15,000 baht per month | 262 | 90.7 | 27 | 9.3 | | |
| **Severity of addiction** | | | | | | |
| Under DSM-IV one criterion | 49 | 96.1 | 2 | 3.9 | 8.057 | 0.234 |
| Under DSM-IV two criteria | 62 | 96.9 | 2 | 3.1 | | |
| Under DSM-IV three criteria | 56 | 93.3 | 4 | 6.7 | | |
| Under DSM-IV four criteria | 56 | 91.8 | 5 | 8.2 | | |
| Under DSM-IV five criteria | 106 | 89.8 | 12 | 10.2 | | |
| Under DSM-IV six criteria | 128 | 87.1 | 19 | 12.9 | | |
| Under DSM-IV seven criteria | 104 | 92.0 | 9 | 8.0 | | |
| **Impact on daily life from methamphetamine use** | | | | | | |
| No | 393 | 93.6 | 27 | 6.4 | 8.182 | 0.004 |
| Yes | 168 | 86.6 | 26 | 13.4 | | |
| **Average treatment days** | | | | | | |
| ≤ 30 days | 78 | 97.5 | 2 | 2.5 | 4.385 | 0.036 |
| > 30 days | 483 | 90.4 | 51 | 9.6 | | |

## Discussion

Short-term treatment was associated with the abstinence outcomes (capability to stop using methamphetamine for more than 3 months at least once in a lifetime) at 16.1 %, while the outcomes of long-term treatment stand at 8.3 %. Regarding the short-term treatment, it was found related to the capability to stop using methamphetamine, most patients of the short-term treatment might be less severely addicted than those under the long-term treatment. Therefore, they had more opportunities to be assigned to receive short-term treatment which is related to capacity to stop using methamphetamine. In addition, our study did not show the timeline or temporal relationship between treatment and ability to stop methamphetamine and further study is needed to clarify the direct or temporal outcome of short- and long-term treatments for methamphetamine use in Thailand.

Comparing the association between the demographic factors and the treatment outcomes (capability to stop using methamphetamine for more than 3 months after treatment), it was found that the determinants related to the capability to stop using methamphetamine for more than 3 months include the educational level, the impacts of drug use on studies and jobs, and the average treatment days which were over 30 days.

Concerning the educational level, studies in foreign countries revealed that the educational level is consistent with development of correct awareness on non-addiction of patients [6 - 9], which conforms with this research work that explains that patients with higher education may gain better knowledge and understanding from their treatment than those with lower education.

As for the impacts of drug use on patients' studies and jobs, the patients might become aware of the adverse impacts of drug use and are then inspired to stop using methamphetamine after their treatment. This is consistent with previous studies that concluded that the major inspiration to stop using drugs is their awareness on the adverse impacts and sufferings of drug addiction. [10 - 11]

Concerning patient's average treatment days, contrasting to previous finding, patient's average treatment days which were over 30 days was significantly associated with the capability to stop using methamphetamine for more than 3 months at least once in a lifetime because some patients formerly received both short-term and long-term inpatient treatments for more than one times. This caused the average treatment days were over 30 days, even if short-term treatment was related to the abstinence outcomes.

Different from some previous studies [12 - 14], marital status was not significantly associated with the capability to stop using methamphetamine for more than 3 months at least once in lifetime. These may be because of marital patterns [15] or lack of relationship closeness between couple. Further study is needed to clarify the impact of marital relationship quality on the capability to stop using methamphetamine for longer than 3 months in lifetime.

Last but not least, there were two limitations from using secondary data in the present study. Firstly, it is unable to reach personal information of the respondents for doing follow-up studies. Secondly, it is difficult to identify the short-term inpatient treatment in detail, for example, it is unable to identify that the inpatients who received short-term methamphetamine treatment because they quitted and rejected further addiction treatment.

For further study, the interesting point that was out of scope in this research is about taking the frequency of addiction treatment as an intermediate variable in the relation between the treatment periods (short-term vs. long-term) and the methamphetamine abstinence outcomes of drug addiction treatment.

## Conclusion

This research work is a retrospective study, using secondary data of the Methamphetamine Genomes in Thailand research, which is based on the information compiled from inpatients of methamphetamine addiction treatment at Thanyarak Institute since 2007. In summary, the determinants related to the capability to stop using methamphetamine for more than 3 months include the educational level, the impacts of drug use on studies and jobs, and the average number of treatment days which is over 30 days. Such outcomes may be useful for drug addiction treatment planning of Thailand.

## Conflict of interest

The authors, hereby, declare no conflict of interest.

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