Original Article

The Effectiveness of Methadone Maintenance Therapy Among Opiate - Dependants Registered with Hospital Raja Perempuan Zainab II Kota Bharu, Kelantan

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Abstract

***Background*: The objective of this study was to determine the effectiveness of MMT program among injecting drug users (IDUs) in Kota Bharu , Kelantan.**

***Methods:* The study was a retrospective study based on the records of injecting drug users (IDUs) involved in the MMT program from November 2005 to 31st January 2008, registered at the Psychiatric Clinic of Hospital Raja Perempuan Zainab II. Opiate Treatment Index (OTI) was used as the research instrument. Repeated measures ANCOVA was used to compare the mean scores during the entry period and after completing twelve months of MMT program after adjusted for age, marital status and level of education.**

***Results:* A total of 117 file records were reviewed. There was significant reduction in the mean scores after 12 months of heroin Q score , HIV Risk-taking Behavior Scale and health scale after adjusted for age, marital status and level of education. For Heroin Q score, mean difference was 2.01 (95% CI: 1.45, 2.56), for HIV Risk-taking Behavior Scale, mean difference was 7.64 (95% CI: 6.03, 9.26); and for health scale, mean difference was 5.35(95% CI: 3.90, 6.79).**

***Conclusion:* This study supports the evidence that MMT program is effective in treating heroin and opiate dependence.**

Keywords: *Methadone, intravenous drug users, Opiate Treatment Index, Kelantan*

Introduction

According to the World Health Report 2002, 8.9% of total burden of disease worldwide is due to psychoactive substance abuse, which includes tobacco, alcohol and illicit drugs (1). The World Drug Report 2006 revealed that almost 16 million or 0.4% of the world population age 15 to 64 years old is abusers of opiates. Opiates continue to be the main problem drug worldwide, accounting for almost two thirds of all treatment demand in Asia and also 60% of treatment demand in Europe (2).

The harm associated with high-risk injected opiate use and the threat of HIV epidemic among injecting drug users has become a worldwide problem (3). The number of injecting drug users (IDUs) worldwide was estimated at approximately 13.2 million. Over ten million (78%) live in developing and transitional countries. HIV prevalence among IDUs of over 20% was reported for at least one site in 25 countries and territories (4).

Twenty years ago, due to a rapid increase in mortality rates among injecting drug users and the upcoming threat of HIV, the first harm-reduction program was implemented in the Western world (3). Harm reduction can be defined as any effort that attempts to minimize the negative consequences associated with substance use (either to the individual, their families, their communities, or society as a whole) without requiring the cessation of such use. It provides an alternative to the moralistic and medical models of drug and alcohol treatment, acknowledging that some individual may be unable or unwilling to refrain from its use (5). Methadone maintenance treatment is an important component of harm-reduction approach because it is the largest drug

treatment modality for heroin addiction that has been proven effective in reducing injection drug use. The general objective of Methadone Maintenance Therapy (MMT) is to improve the quality of life of persons with opiate dependence by reducing relapse, improving their physical and mental condition, reducing the spread of infection among IDUs and those sharing needles as well as improving their psychosocial functioning (6).

Methadone is a potent synthetic opiate agonist. It is administered orally in daily doses and quickly achieves steady-state plasma levels after repeated administration (7). Its effects are qualitatively similar to morphine and other opiates (6). Prescribing methadone at adequate therapeutic doses would reduce craving. It prevents the onset of withdrawal. It is not intoxicating or sedating, and its use does not interfere with normal activities of daily living (8,9). In addition, MMT significantly lowers illicit opioid drug use, reduces crime, and enhances social productivity (10).

In Malaysia, drug addiction has been declared as the nation's number one enemy since 1983. Geographically close to the Golden triangle (Myanmar, Laos, Thailand), rapid progress and urbanization contributed to substantial rise in the number of new and relapsing drug users although there have been draconian punishments (11). Currently it has been estimated that about 400 000 to 800 000 drug users in Malaysia. However, the issue of HIV and a failure of recent modalities such as regimental detention in rehabilitation centers were the reasons why the government and public realize the seriousness of the situation. The HIV epidemic has been affecting IDUs in Malaysia for many years (11) as a result of high risk behaviors such as needle sharing and unsafe sex (12). It was estimated that 75% and 80% of new HIV cases were IDUs in Malaysia and Kelantan respectively (13,14).

In Malaysia, Harm Reduction Working group (HRWG) was established in January 2004 to advocate the implementation of Harm reduction initiatives, consisting of Needle Syringe Exchange Program (NSEP), provision of condom and methadone maintenance therapy (11).

The methadone maintenance therapy (MMT) program was launched in October 2005. There were 1241 clients registered with the MMT program clinics in December 2006. The program was implemented at hospitals, government health clinics and private clinics all over the country (14). Several criteria were set by the Ministry of Health for a person to be involved in the program. The criteria include the following: a patient must volunteer into the treatment program; dependency or addiction must be established; chronic cases of opiate addiction; a patient must abide by the program regulation and procedures and previous unsuccessful methadone or buphrenophine treatment should not exclude a patient from further methadone treatment. The exclusion criteria include the following: opiate addiction less than 2 years; age less than 18 years old; polysubstance dependence; abnormal liver function test; hypersensitivity to methadone and acute medical or psychiatric disorders (6).

Few studies conducted in other countries revealed that MMT program was effective in reducing drug use, HIV risk and crimes as well as improving societal and family functions (15-18) and decreasing mortality (19). A similar study assessing the improvement in the quality of life using WHOQOL-Bref [(a shorter/ brief 26 item version of WHOQOL-100 (WHO quality of life)] as a research tool was conducted previously in Malaysia. However, it involved only a small number of patients (20). The present study was conducted with a much bigger sample size, using the Opiate Treatment Index (OTI) as a research instrument. The OTI was reported to have facilitated the evaluation of treatment for opiate users (21). The present study supports the demand and need for MMT services particularly in Kelantan.

The objective of the present study was to determine the effectiveness of Methadone Maintenance Therapy (MMT) among IDUs registered with Hospital Raja Perempuan Zainab II Kota Bharu, Kelantan in improving their quality of life by reducing relapse, improving their health condition and psychosocial function as well as reducing the HIV infection .

Materials And Methods

This study was a retrospective cohort record review on Injecting Drug Users involved in the Methadone Maintenance Treatment program at the Psychiatric Clinic of Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan. It was conducted from November 2005 to 31st January 2008. A total of 216 cases were registered within this period of time. However, those who had completed twelve months of treatment were included. A sample size calculation was done using PS Software, version 1.0.13 (22). Taking a significance level of 0.05, a study power of 80%, Standard deviation for crime domain of 0.14 (23), a detectable difference of 0.05 (the smallest but meaningful mean difference in the criminal score before and after

twelve months of being in MMT program), the minimum sample size required was 64 subjects.

A validated research instrument, known as Opiate treatment Index (OTI) was used to assess the effectiveness of MMT. The OTI was validated in United Kingdom, New Zealand and Australia. It provides a valid and reliable instrument for assessing opiate treatment outcome across a broad range of drug related problems (20). The assessment was performed by medical doctors in charged of the psychiatric clinic at the time when patients entered the MMT program and again twelve months after they had participated in the program. The OTI consists of several domains including drug use score, HIV Risk-taking Behavior Scale (HRBS), Social Functioning Scale, Criminality Scale and health scale.

The drug use domain examines the reported recent behavior of the client, assessed based on the information collected on the last three days of drug use for heroin and opiate drug category. For each drug class, they were asked on the three most recent days that they used drug, and how much drug was used on the last two occasions (6). The HIV Risk-taking Behavior Scale (HRBS) measures the behavior of injecting drug users that puts them at risk of either contracting or passing on HIV and other blood borne viruses to other people. The information obtained includes the drug use and their sexual activities (6). The Social Functioning Scale addresses major aspects of social integration which include involvement of the individual in the drug sub-culture such as whether the person is living with or befriending current drug users, their employment status, conflict with relatives, friends or partners and friend's support. The score was calculated by simply adding up the individual scores for each of the twelve questions asked (6). The Criminality Scale attempts to assess the respondents' frequency of recent involvement in four crime areas including property crime, dealing, fraud and crimes involving violence. The total score was calculated by adding up the score for each of the four crime areas (6). The health scale is a symptom check-list that has been designed to give an indication of the subject's current state of health, especially injection-related health problems. It addresses symptoms and signs in each of the major organ systems. The score for the Health Scale was derived by adding up the total scores for each sub-section. For all domains, the lower the scores, the better the conditions are (6).

Socio demographics of all subjects were tabulated for descriptive statistics. Paired t test was used to compare the mean scores of all six OTI domains during entry period and after completing twelve months of MMT program. Repeated measures ANCOVA within group analysis was used to compare the mean scores of all six OTI domains during entry period and after completing twelve months of MMT program after adjusted for age, marital status and level of education. Significant level for comparing the mean difference was set at 5% level. Results were analyzed using SPSS version 12.

Ethical approval was obtained from the Research and Ethics Committee, University Sains Malaysia. Approval was also obtained from the director of Hospital Raja Perempuan Zainab II, Kelantan State Health Director and Medical Research Ethics Committee (MREC), Ministry of Health.

Results

A total of 117 records were reviewed. Table 1 shows the sociodemographic characteristics of the subjects. The majority were males (99.1%), Malays (98.3%) and unmarried (74.4%). Their mean age was 31.4 years old. The age range from 20 to 51 years old. Most of them (98.3%) had education level up to secondary schools.

Table 2 shows significant reduction in the mean scores after 12 months of all domains

Table 1: Sociodemographic characteristics of Injecting Drug Users involved in the MMT program at the Psychiatric clinic, Hospital Raja Perempuan Zainab II, Kota Bharu, Kelantan[a] mean (SD)

Variables	*n* (%)	
Age	31.4	(5.35)[a]
Gender		
Female	1	(0.90)
Male	116	(99.1)
Race		
Malay	115	(98.3)
Non-Malay	2	(1.70)
Marital status		
Married	30	(25.6)
Single	87	(74.4)
Education level		
Primary school	2	(1.70)
Lower secondary school	35	(29.9)
Upper secondary school	80	(68.3)

except for the social functioning domain. For Heroin Q score, mean difference was 2.18 (95% CI: 1.72, 2.64), for Opiate Q score, mean difference was 1.02 (95% CI: 0.33, 1.72), for HIV Risk-taking Behavior Scale, mean difference was 8.25 (95% CI: 6.90, 9.60); for Criminality Scale, mean difference was 0.20 (95% CI: 0.03, 0.28); and for health scale, mean difference was 5.30 (95% CI: 4.31, 6.67).

Table 3 shows significant reduction in the mean scores after 12 months of heroin Q score, HIV Risk-taking Behavior Scale and health scale after adjusted for age, marital status and level of education. For Heroin Q score, mean difference was 2.01 (95% CI: 1.45, 2.56), for HIV Risk-taking Behavior Scale, mean difference was 7.64 (95% CI: 6.03, 9.26); and for health scale, mean difference was 5.35 (95% CI: 3.90, 6.79).

Discussion

Although MMT programs operate differently in different countries, they generally have four similar goals including reduction in drug use and addiction related to HIV risk behavior, thereby reducing HIV transmission. It is also aimed at reducing addiction related crimes and helping patients to resume their societal and familial functions (15,18). In the present study, there was an improvement in the clients' quality of life as shown by the reduction in the scores of all tested domains after undergoing 12 months of the MMT program although the significant reductions after adjusted for age, marital status and level of education were observed in a few domains such as heroin use, HIV risk-taking behavior and health scale. The improvement is consistent with the

Table 2: Mean Opiate Treatment Index (OTI) at baseline and after twelve months in the program among Injecting Drug Users involved in the MMT program at the Psychiatric Clinic in Hospital Raja Perempuan Zainab II, Kota Bharu (n = 117)

Domains	Score mean (SD)		Mean score	t-stat	*P*-value[a]
	Intake	12 months	difference (95%CI)[b]	(df)	
Drug use					
Heroin Q score	2.17 (2.51)	0.00 (0.00)	2.18 (1.72, 2.64)	9.38 (116)	< 0.001
Opiate Q score	1.18 (3.71)	0.16 (0.77)	1.02 (0.33, 1.72)	2.91 (116)	0.004
HRBS[c]	10.22 (5.61)	1.96 (4.14)	8.25 (6.90, 9.60)	12.10 (113)	< 0.001
Social function	13.72 (5.88)	13.14 (5.32)	0.51 (-8.47, 1.87)	0.75 (110)	0.456
Crime	0.21 (0.63)	0.01 (0.10)	0.20 (0.03, 0.28)	2.41 (105)	0.018
Health	7.22 (5.97)	1.92 (2.98)	5.30 (4.31, 6.67)	9.20 (105)	< 0.001

[a] paired t test
[b] 95% Confidence Interval
[c] HIV Risk-taking Behavior Scale

Table 3: Mean Opiate Treatment Index (OTI) at baseline and after twelve months in the program among Injecting Drug Users involved in the MMT program at the Psychiatric Clinic in Hospital Raja Perempuan Zainab II, Kota Bharu after adjusted for age, marital status, and level of education (n = 117)

Domains	Mean score difference	95% Confidence Interval	*P*-value[a]
Drug use			
Heroin Q score	2.01	1.45, 2.56	< 0.001
Opiate Q score	8.74	-0.030, 1.78	0.059
HRBS[c]	7.64	6.03, 9.26	< 0.001
Social function	0.16	-1.48, 1.81	0.843
Crime	0.09	-0.06, 0.24	0.242
Health	5.35	3.90, 6.79	< 0.001

[a] Repeated measures ANCOVA within group analysis was applied. Potential covariate (age) and categorical confounders (marital status and level of education) were controlled by repeated measures ANCOVA.
[b] HIV Risk-taking Behavior Scale.

results from other studies as well (15–17,20,24). However, among the studies (15–17,20,24) only one study (23) used the OTI as their research tool while the others used WHOQOL-Bref. The WHOQOL-Bref consists of four domains which assess the physical, psychological, social relationships and the environment (19). To our knowledge, our study is the first published study in Malaysia that assessed the improvement in the quality of life of the injecting drug users using OTI. Indeed it is proven that the tool is sufficiently comprehensive to evaluate the outcomes of treatment for opiate users in which drug use constitutes the major outcome domain followed by a measurement of current HIV risk-taking behavior (21).

The upcoming threat of HIV among injecting drug users has been the main reason for the implementation of MMT program. The reduction in heroin and opiate use revealed by this study may be taken as an indication that the MMT program helps to reduce drug use thus reducing injecting behavior. These results are in keeping with some other studies (15,17,25). The significant reduction in HIV risk behavior supports other study as well (26). Further, long term follow up study needs to be conducted to evaluate the effectiveness of the program in reducing the incidence of HIV.

Although statistically insignificant, our study also revealed that MMT reduces crime as shown in the case of Australia. When given in adequate therapeutic doses, methadone blocks the euphoric effects of injected heroin, thereby providing an opportunity for the individual to improve his or her social functioning (27).

This study shows no significant improvement in the social function domain. Similar to other studies (17,20) the finding could be due to the social stigma faced by the clients thus preventing them from improving their social life including their family relationship. Indeed, family relationship has an impact on the quality of life of patients involved in the MMT program (28). In contrast with our finding, however, another study (18) reported that there was an improvement in family relationship of the patients involved.

We acknowledge some limitations in this study despite the apparent improvement in the mean scores of some OTI domains. The scoring system in the records is based on self reports and this may lead to either an overestimation or underestimation of the benefits. For instance, the reduction in drug use may have been overestimated, while the extent of criminal activities may have been underestimated, thus exaggerating the benefits of the program.

Interviewer bias may pose a problem as the clients were interviewed by different medical officers. The quality of the information obtained depends on the rapport established between the interviewer and the clients. To some extent, the findings may not portray the true effectiveness of the program as there was no controls (IDUs who were not in the MMT program) involved for comparison.

Generally, this study finding supports the evidence from other studies that MMT program is an effective treatment for injecting drug users especially in reducing HIV risk behavior which may help to reduce the spread of HIV. However, the finding might not be able to be generalized to all clients of MMT because only those who completed twelve months of treatment were included in the study. It is important to revise and relook at the present program as other services such as support and counseling including family counseling (29) should be added in order to improve the quality of life of opiate dependants as well as to ensure the improvement is sustained.

Authors' Contribution

Conception and design, analysis and interpretation of the data, drafting of the article, critical revision of the article for important intellectual content, and collection and assembly of data: PDJ
Conception and design, drafting of the article, critical revision of the article for important intellectual content, final approval of the article, and statistical expertise: AAR
Critical revision of the article for important intellectual content and statistical expertise: WZWM
Provision of study materials or patients and administrative, technical, or logistic support: MAMN
Administrative, technical, or logistic support: NHA

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