

## AUTHOR QUERY FORM

*Journal title:* APJPH

*Article Number:* 404396

Dear Author/Editor,

Greetings, and thank you for publishing with SAGE. Your article has been copyedited, and we have a few queries for you. Please respond to these queries when you submit your changes to the Production Editor.

Thank you for your time and effort.

Please assist us by clarifying the following queries:

No	Query
1	Please verify if the declaration of conflicting interests statement and funding statement are accurate and correct.

---

# Two-Year Outcomes of Methadone Maintenance Therapy at a Clinic in Malaysia

Asia-Pacific Journal of Public Health  
XX(X) 1–7  
© 2011 APJPH  
Reprints and permission: <http://www.sagepub.com/journalsPermissions.nav>  
DOI: 10.1177/1010539511404396  
<http://aph.sagepub.com>



Ramli Musa, MD, MMed<sup>1</sup>,  
Ahmad Zafri Abu Bakar, MBBS, MMed<sup>2</sup>,  
and Umeed Ali Khan, MBBS, MCPS<sup>1</sup>

## Abstract

*Background.* The commencement of methadone maintenance therapy (MMT) in 2005 represents a quantum leap in the management of heroin dependence in Malaysia. *Objective.* To examine the 2-year outcomes of this modality in the treatment of heroin dependence with respect to the quality of life (QOL), heroin abstinence, and rate of employment among heroin dependants attending the Tengku Ampuan Afzan Hospital (HTAA) MMT clinic. *Method.* This was an experimental study in which the second QOL assessment was conducted 2 years after treatment initiation. *Results.* A total of 172 patients enrolled at the point of entry to the MMT program. The authors examined 107 patients who remained in the program 2 years later (62.6% retention rate). A paired *t* test demonstrated significant improvements in all 4 domains of QOL (physical, psychological, social relationships, and environment;  $P < .001$ ). The most marked improvement was noted in the psychological domain. *Conclusion.* The MMT program at HTAA is effective in improving the QOL among heroin dependants.

## Keywords

heroin dependence, methadone, outcomes, quality of life, retention rate

## Introduction

Drug abuse is increasingly prevalent in Malaysia, and it has currently become a major burden to our society. Regional statistics on drug abuse are alarming, especially its complication rates such as HIV infection, hepatitis, psychiatric comorbidities, psychosocial effects, and criminal involvement.<sup>1</sup> Many Malaysian drug users engage in needle sharing, unprotected sex, and criminal activities, subsequently contracting HIV (23%) and hepatitis (96%).<sup>2</sup>

---

<sup>1</sup>International Islamic University Malaysia, Pahang, Malaysia

<sup>2</sup>Hospital Tengku Ampuan Afzan, Pahang, Malaysia

## Corresponding Author:

Ramli Musa, Department of Psychiatry, Kulliyah of Medicine, International Islamic University Malaysia, Bandar Indera Mahkota, 25200 Kuantan, Pahang, Malaysia  
Email: [ramlidr@yahoo.com](mailto:ramlidr@yahoo.com)

Before the advent of methadone therapy, heroin users were detained by administrative action in rehabilitation centers. Rehabilitation centers have been set up since 1976 to cope with the scourge of drug use.<sup>3</sup> Compulsory detention proved to be ineffective, with high relapse rates among heroin dependants.<sup>4</sup> This poor success rate was probably a result of rebelliousness against the compulsory detention and perhaps related to the ineffective use of counseling and family support to address relevant psychological and spiritual issues. Since 2005, methadone maintenance therapy (MMT) has played a central role in the government's effort in combating drug use. Until now, the effectiveness of MMT in fighting chronic opioid dependence has been strongly debated. The reduction in the number of cases detected over the last 2 years is a possibly promising indicator of the program's effectiveness.<sup>5</sup> Preliminary local anecdotal data show favorable treatment outcomes of the MMT program.<sup>6,7</sup> However, more studies are required to further analyze this form of treatment and the ways in which it could be improved, such that relapse rates among attendees could be reduced.

The Tengku Ampuan Afzan Hospital (HTAA) Psychiatry Department adopted the methadone maintenance treatment (MMT) program in early 2007. Regular group counseling sessions were conducted by psychiatrists, counselors, medical officers, and pharmacists during induction and maintenance periods for all the participants as part of the whole program. To minimize noncompliance rates, we sent mailed reminders and telephone prompts to follow-up defaulters. For audit purposes, we recorded the reasons for the default among those who were absent from the program for a long period.

The objectives of this study were to determine treatment outcomes and program effectiveness, especially with regard to the aspects of quality of life (QOL), heroin abstinence, and employment status, which were followed up over 2 years. The QOL was gauged using the WHO Quality of Life Questionnaire BREF (WHOQOL-BREF).<sup>8</sup> The inferences drawn from this study are likely to have important implications for evaluation of the efficacy of the MMT in Malaysia.

## Methods

This is a within-group experimental study in which a census was used to include all the cases registered at the clinic from 2007 onward. The inclusion criteria for the participants were that they should be literate in the Malay language and able to give written consent. The study was approved by the hospital review board and ethics committee. Informed consent of the participants was obtained after the nature of the procedures was fully explained to them. The second administration of QOL BREF was done after the participants had been in the MMT program for 2 years.

The WHOQOL-BREF was used to measure the QOL. This instrument comprises 26 items, which measure the following domains: physical health, psychological health, social relationships, and environment. The WHOQOL-BREF is a shorter version of the original instrument, which is said to be more convenient for large research studies or clinical trials. The WHO Quality of Life version in Bahasa Malaysia (WHOQOL-BREF Malay) has been validated in Malaysia, with indications of good discriminant validity, construct validity, internal consistency (0.64 to 0.80), and test-retest reliability (0.49 to 0.88).<sup>9,10</sup> The progression of their employment status and the presence of illicit drugs in urine were also assessed.

## Results

A total of 107 participants enrolled in this study from 172 registered in our methadone program. All the 107 participants who remained in the program fulfilled the inclusion criteria. The rest of the participants had defaulted the follow-up or lost contact. Table 1 shows that most of the participants at our MMT clinic were males (97.2%), Malays (95.3%), single (67.3%), aged

**Table 1.** Demographic Characteristics of Patients in the MMT Program

Characteristics	Number (%)
Age (years)	
21-30	26 (24.3)
31-40	52 (48.6)
41-50	23 (21.5)
51-60	6 (5.6)
Race	
Malay	102 (95.3)
Chinese	5 (4.7)
Gender	
Male	104 (97.2)
Female	3 (2.8)
Marital status	
Single	72 (67.3)
Married	30 (28.0)
Divorced/Widowed	5 (4.7)
Educational level	
No formal education/primary school	11 (10.3)
Secondary school	94 (87.8)
College/Graduate	2 (1.9)
Employment status	
Employed	75 (70.1)
Unemployed	32 (29.9)

between 21 and 40 years (72.9%), and employed (70.1%). The highest educational level of the majority of them (89%) was secondary school.

### Quality of Life

Further analysis of each domain in BREF QOL showed that there were significant improvements in all domains QOL ( $P < .001$ ). Among all these domains, the psychological domain was the most remarkable (Table 2).

### Employment

Initially 70.1% of the participants were employed, and after 2 years, the percentage increased to 77.6%. Assessment on the 2-year outcome revealed that out of 83 participants who were employed, 48 (57.8%) of them earned less than Malaysian Ringgit (RM) 1000 per month, 28 (33.7%) earned between RM 1000 and RM 3000, and 7 (8.5%) earned more than RM 3000 per month.

### Record of Urine Analysis

Based on Table 3, from the total of 1919 urine strips used to screen for illicit drugs in urine, 244 (12.7%) strips were positive for various substances in the year 2007. However, in 2008, 129 strips out of 1543 total strips were positive (8.3%). This was a 4.4% drop as compared with the previous year. In 2008, the majority of positive cases were benzodiazepines. As regards opioid-related

**Table 2.** Differences in All QOL Domains Between Pre-MMT and Post-MMT

Variable	Mean		Improvement	Standard Deviation	P Value
	Pre-MMT	Post-MMT			
Total QOL	77.1	89.6	16.3%	17.617	.001 <sup>a</sup>
Physical domain	84.9	99.1	16.8%	20.931	.001 <sup>a</sup>
Psychological domain	71.4	85.8	20.1%	18.551	.001 <sup>a</sup>
Social relationships domain	35.5	41.5	17.1%	12.167	.001 <sup>a</sup>
Environment domain	96.7	112.6	16.5%	25.476	.001 <sup>a</sup>

Abbreviations: QOL, quality of life; MMT, methadone maintenance therapy.

<sup>a</sup>Paired *t* test (95% confidence interval).

**Table 3.** Total Number of Positive Urine Tests for Illicit Substances

	2007	2008
Total of urine strips used	1919	1543
Opioid group	46 (2.4%)	23 (1.4%)
Tetrahydrocannabinol (THC)	26 (1.4%)	7 (0.4%)
Amphetamines and methamphetamines	83 (4.3%)	40 (2.6%)
Benzodiazepines	82 (4.2%)	55 (3.6%)
3,4-Methylenedioxyamphetamine (MDMA)	7 (0.4%)	4 (0.3%)
Total positive	244 (12.7%)	129 (8.3%)

drugs, only 2.4% were positive in the first year, and the figure further reduced to 1.4% in the subsequent year. The urine test consisted of tests for cannabis, opioids, amphetamine, methamphetamine, and benzodiazepines.

### MMT Retention Rate

From a total of 172 MMT clinic attendees who enrolled into the program, 107 remained active after 2 years. We further analyzed the reasons for nonattendance in those who defaulted follow-up. The reasons for nonattendance were ascertained through phone calls, home visits, and liaising with several institutions such as the Malaysian National Anti-Drug Agency (AADK) and correctional institutions. Of the total number of 65 who were originally reported as defaulters, 3 had passed away, 8 were transferred out to have their MMT follow-up at other health centers, and 5 were incarcerated. Hence, the actual number of defaulters was 49 (32 were untraceable, and 17 decided to stop). The originally reported retention rate was 62.2% (107 participants out of 172), but after we excluded the cases of death, cases that were transferred to different treatment facilities, and those that were incarcerated, the actual number of defaulters was 49, which gives an adjusted retention rate of 68.6% (107 participants out of 156).

### Discussion

Before the implementation of MMT, naltrexone had been used as an opioid replacement in Malaysia since 1997. Naltrexone is an opiate antagonist, and hence, its suitability is limited to a

small number of heroin dependants. Administration of naltrexone requires heroin dependants to be highly motivated to ensure treatment success.<sup>3</sup> This factor is less pertinent to methadone because it is a long-acting opioid agonist. When methadone was introduced into clinical practice in Malaysia in early 2005, its effectiveness was doubtful. The results of this study support its beneficial role and its effectiveness, especially with respect to QOL improvement.

There is a limited number of local and international studies that we can compare in terms of their findings on QOL in this study. A study similar to our study in Malaysia was by Gong et al<sup>7</sup> at the MMT clinic of University Malaya Medical Centre. This study found significant improvements in all QOL domains, particularly in the psychological domain, which is similar to the results of our study. Nevertheless, our study has a few advantages because the follow up duration was longer and our sample size was larger. The number of participants in our study was double that in the study by Gong et al. Furthermore, this current study not only focused on QOL but it also looked at other outcome parameters, such as detection of drugs in the urine and employment profile. The nature of the participants in this study is well diversified and represents the real scenario in the local community. This is mainly because of the fact that the HTAA MMT clinic is run by the government and it imposes no costs on the patients, whereas the study by Gong et al<sup>7</sup> only concentrated on a selected urban group of the population.

A few studies in other continents revealed significant improvements in most domains in QOL.<sup>11,12</sup> In a study that compared the QOLs after methadone and buprenorphine therapies, significant improvements were noted in both forms of treatment. However, improvement was seen earlier in the methadone group.<sup>13</sup> A study done in China reported QOL improvements in attendees of 5 MMT clinics for 90 days from the time of treatment initiation.<sup>14</sup> Apart from QOL, MMT has other indirect positive effects. Other studies showed the usefulness of MMT in decreasing the rates of illegal heroin use, drug-related crimes, and risk of contracting HIV or other blood-borne diseases.<sup>15,16</sup> In certain countries, MMT was generally favorable to the improvement of health, economic, and psychosocial aspects.<sup>17,18</sup> Other studies have documented significantly fewer incarcerations and higher employment rates in those who were on methadone therapy for 10 years compared with untreated patients.<sup>19</sup>

Many centers have reported a wide range of default rates of between 61% and 32%.<sup>20</sup> The retention rates were reported to be around 40% to 63% in studies with a robust number of participants.<sup>21,22</sup> The retention rates obtained in our study are quite promising, with a default rate of 31.4% or adjusted retention rate of 68.6%. Abstinence in this study was based on negative urine test for any substance. Urine drug testing at HTAA was not done on a regular basis. The decision to conduct the urine test was made on the discretion of the medical officers after authentication of information given by the patients. In the first year of the program, the number of urine strips was high because more monitoring was needed during the induction phase. Fewer urine strips were used in the subsequent year, once the heroin dependants were more stable. Therefore, the total percentage of urine positives decreased from 12.7% in the first year to 8.3%. About half of the detected cases were positive for benzodiazepines, and only 1.4% were positive for opioids. With respect to employment, we found that there was a 7% increment after 2 years. We would like to point out that all outcome parameters in this study were quite favorable, proving that the MMT program at HTAA was effective.

Based on the report by the AADK, there has been a 20% reduction in detected cases in various ethnic groups in the 2 years since methadone was introduced in Malaysia.<sup>4</sup> This decline may be indirectly related to the methadone program. The MMT has made a quantum leap in the management of heroin dependence in Malaysia. The data in this study suggest that MMT managed to mitigate the national threat posed by heroin dependence in Malaysia. MMT also gives hope to heroin dependants and their families. Once the Malaysian government broadens the reach of the MMT program, it is essential to have a comprehensive evaluation of its effectiveness and other

crucial aspects, specifically its cost-effectiveness and pharmacoeconomics. A study on the economic impact of this program would assist policy makers in their decision making.

Heroin dependants who have undergone treatment frequently lapse into their old habits because of psychosocial conflicts—notably lack of family support and social pressures—making the psychosocial interventions an equally important part of their rehabilitation. The relatively high retention rate achieved at this center could be attributed to the fact that the MMT program was coupled with psychosocial interventions, such as group and family counseling. Many of the heroin dependants had concurrent anxiety disorders, depression, and low self-esteem.<sup>14</sup> Hence, psychotherapy and counseling are essential, in addition to methadone therapy, to address the associated psychological issues. Comprehensive and extra attention, such as motivational enhancement therapy, job placement, and spiritual enhancement, may be further required to enforce good outcomes, particularly among patients with unfavorable predictive features.

On the other hand, there were also a few reported negative effects of methadone, such as sedation, somatic distress, lethargy, and decreased motivation.<sup>23,24</sup> However, these studies are not recent, are observational in nature, and lack statistical power. There are also a few limitations to this study. The nonresponders in this study may affect the results. However, when we look at the actual rate of dropout, the rate of 31% is still in the acceptable range for a 2-year prospective study in the context of substance dependence. Another limitation is that the urine test was not done in every single follow-up at the clinic. Hence, there is a possibility of undetected cases of relapse. However, to do this test for all patients in every follow-up is rather unpractical and will result in unnecessary financial expenditure.

In conclusion, the outcomes of this study provide further evidence that the methadone program yields positive outcomes. To evaluate whether the MMT is more effective as compared with other approaches in heroin treatment, a comparison between the modalities is essential.

### Acknowledgments

We wish to thank the Research Management Centre of the International Islamic University Malaysia for providing us the research grant. We also express our gratitude to our dedicated research assistants Mr Aidil Faszrul Abdul Rahim, Mr Abdul Aziz Hamid, Mrs Norhayati Mohamed, Mr Nawawi Jantan, and Mrs Zuraidah Adnan.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

**[AQ: 1]**

### References

1. Ali H, Howard J. Prevalence of injecting drug use among youth in the Pacific Island countries and territories: what is the evidence? *Asia Pac J Public Health*. 2011;23:112-114.
2. Ramli M, Nora MZ, Ahmad Zafri AB, Junid MR, Umeed AK, Hajee MI. High-risk behaviours and concomitant medical illnesses among patients at Methadone Maintenance Therapy Clinic, Hospital Tengku Ampuan Afzan, Malaysia. *Malays Fam Physician*. 2009;4:77-82.
3. Abdul Rani K. Drug dependants' treatments and rehabilitation: from "cold turkey" to "hot turkey." *Jurnal Antidadah Malaysia*. 2007;1:193-226.
4. Agensi Antidadah Kebangsaan. Bulletin AADK. 1st ed. <http://www.adk.gov.my/download/laporan>. Accessed March 9, 2011.

5. Haq SM. Three decades of drugs abuse on the Malaysian scene. *Penerbit UKM: Bangi. Malaysia.* 1990;22:24-25.
6. Noor Zurani MHR, Hussain H, Rusdi AR, et al. Heroin addiction: the past and future. *Malays J Psychiatry.* 2009;17:73-78.
7. Gong AWH, Ng CG, Amer SAN, et al. Quality of life assessment of opioid substance abusers on methadone maintenance therapy (MMT) in University Malaya Medical Centre. *ASEAN J Psychiatry.* 2009;10:1-11.
8. The WHOQOL Group. Development of the World Health Organization WHOQOL-BREF Quality of Life Assessment. *Psychol Med.* 1998;28:551-58.
9. Hasanah CI, Razali M. The pilot study of WHOQOL-100 (Malay version). *Malays J Med Sci.* 1999;6:21-25.
10. Hasanah CI, Naing L, Rahman AR. World Health Organization Quality of Life Assessment: Brief version in Bahasa Malaysia. *Med J Malaysia.* 2003;58:79-88.
11. Reno RR, Aiken LS. Life activities and life quality of heroin addicts in and out of methadone treatment. *Int J Addict.* 1993;28:211-232.
12. Puigdollers E, Domingo-Salvany A, Brugal MT, et al. Characteristics of heroin addicts entering methadone maintenance treatment: quality of life and gender. *Subst Use Misuse.* 2004;39:1353-1368.
13. Torrens M, Domingo-Salvany A, Alonso J, et al. Methadone and quality of life. *Lancet.* 1999;353:1101.
14. Wang L, Luo L, Zhao J. Study of mental health, social, and quality of life for drug addicts. *Psychol Sci.* 2004;27:284-286.
15. Ponizovsky AM, Grinshpoon A. Quality of life among heroin users on buprenorphine versus methadone maintenance. *Am J Drug Alcohol Abuse.* 2007;33:631-642.
16. Verster A, Buning E. *Information for Policymakers on the Effectiveness of Substitution Treatment for Opiate Dependence.* Amsterdam, Netherlands: EuroMethwork; 2003.
17. Mutasa HCF. Risk factors associated with noncompliance with methadone substitution therapy (MST) and relapse among chronic opiate users in an Outer London community. *J Adv Nurs.* 2001;35:97-107.
18. Padaiga Z, Subata E, Vanagas G. Outpatient methadone maintenance treatment program: quality of life and health of opioid-dependent persons in Lithuania. *Medicina (Kaunas).* 2007;43:235-241.
19. Connock M, Juarez-Garcia A, Jowett S, et al. Methadone and buprenorphine for the management of opioid dependence: a systematic review and economic evaluation. *Health Technol Assess.* 2007;11: 1-171.
20. Soyka M, Zingg C, Koller G, Kuefner H. Retention rate and substance use in methadone and buprenorphine maintenance therapy and predictors of outcome: results from a randomized study. *Int J Neuropsychopharmacol.* 2008;11:641-653.
21. Milby JB. Methadone maintenance to abstinence: how many make it? *J Nerv Ment Dis.* 1988;176: 409-422.
22. D'Ippoliti D, Davoli M, Perucci CA, Pasqualini F, Bargagli AM. Retention in treatment of heroin users in Italy: the role of treatment type and of methadone maintenance dosage. *Drug Alcohol Depend.* 1998;52:167-171.
23. Martin WR, Jasinski JR, Haertzen CA, et al. Methadone: a reevaluation. *Arch Gen Psychiatry.* 1973;28:286-295.
24. Angle BP, Hadley TR, Odum U. The heroin addict's view of personal change during methadone maintenance treatment. *Br J Addict.* 1979;74:208-210.