Compliance Towards Methadone Maintenance Therapy and its Associated Factors in Selangor Primary Care Centers and Kuala Lumpur Hospital

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SUMMARY

This paper seeks to determine the client's compliance level towards Methadone Maintenance Therapy (MMT) and identify its associated factors. A cross sectional study was conducted from June to September 2007 where 288 samples were interviewed. The outcomes were divided into good compliance and partial compliance categories. Overall client's compliance level is good at 86.1%. There are significant difference between mean age of groups (t = -2.041, p = 0.04); and significant associations of job's status (χ^2= 9.54, p = 0.008); client's confident score (t = -3.12, p= 0.023), client'ssocial function score (t = -2.308, p= 0.002) and client's social function level (χ^2 = 5.43, p=0.02) with compliance toward program. With multivariate analysis, only client's age, client's confidence score and client's job status were related to compliance status. It was concluded that there is high compliance rate among client's who received the program. Younger clients, low scores on client's confident and social function, and clients with unsteady jobs are at risk not to comply with treatment.

KEY WORDS:
Compliance level, MMT program, Impact of MMT therapy

INTRODUCTION

The purpose of the article is to reveal the client's compliance level towards Methadone Maintenance Therapy (MMT) and to determine its associated factors. In Malaysia, MMT is the most recently program conducted by Ministry of Health (MOH) started October 2005. A synthetic drug named Methadone is used as a substitution therapy, where it can reduce the intensity of withdrawal syndrome and craving for opiate, prevent the side effect of opiate addictions and reduce risky behavior for infections which is related to sharing needles[1]. Drug Rehabilitation Centre ('Pusat Serenti') is a common program which used psycho-social therapy method to treat drug addiction. National Anti-Drug Agency[4] found that, out of those who underwent this rehabilitation program, only 10% did not relapse.

Compliance is one important element to show the successfulness of any control and therapeutic program. Definition by Haynes *et al* [5] is the most accepted. They described compliance as the extent to which a person's behaviour (taking medications, following a recommended diet or executing life-style changes) coincides with medical or health advice. One of the current definitions of compliance according to Health Forum[6] stated that 'client to follow all the orders and recommendation given by health provider in term of drug intake and others related treatment'. Currently, specific definition of compliance in MMT is still not yet widely used. The definitions used by the previous researchers were based on indicator related with pharmacological factors of Methadone itself. Here, they used direct scientific measurements to test compliance such as measurements of plasma Methadone concentration and urine test for Methadone assay[7].

According to National Methadone Maintenance Therapy Guideline[8], to address the compliance in MMT, daily Methadone administration is recommended to ensure that plasma Methadone levels are maintained and to avoid withdrawal symptoms. Nevertheless if Methadone is missed for three consecutive days or more, they are not allowed to continue the same Methadone dose and the dose could be reduced. Reduced compliance is associated with increased risk of heroin relapse. The most convenient way to assess the compliance level is through indirect method for example via questionnaires either self administered or interview with consideration of the bias involved. In this study, researcher more concentrates on compliance rather than retention. Even though these two indicators have different entity, both of them can describe the effectiveness aspect of the program. Retention in the therapy can be defined as received MMT continuously with out drop up in certain period of time (for example 12 months) from the date of entry to the program. Retention rate can be calculated based on number of clients retain in the MMT program for certain period of time (12 months) divided by total number of clients enrolled in the program since beginning[13] .

Compliance to MMT can be associated with multiple factors. Among the most important factors are sociodemographic factors, factors related to previous history of addiction, factors related to therapy process and factors related to impact of therapy. All these factors would determine the client's compliance and some of them can be related to each other.

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There was no similar previous study concerning on compliance but there are other effectiveness studies on MMT that focus on the other aspect such as retention rate. This study will also give information regarding the potential problems which could arise from program implementation and ways to manage it. Therapy processes can be studied and weaknesses based on clients perceptions, factors related to the partial compliance and impact of therapy program (risk behavior for HIV infection, crime behavior, social function and current health status) on clients identified.

Client who are older, higher education status, with full time job, less current health problems, confident with therapy process, have good rapport and retain longer with therapy process, less risk behavior for HIV infection and good social function was expected to comply with the therapy.

MATERIALS AND METHODS

This is a cross sectional study started from June 2007 to September 2007. The population sample for the study was all clients who received the MMT program in Selangor and Kuala Lumpur. The study was conducted in selected public health care centers which provide MMT in Selangor and Kuala Lumpur. There are one hospital (Hospital Kuala Lumpur) and three health clinics (under Gombak and Hulu Langat District) involved in this study based on selection criteria. The inclusion criteria were centre which has more than 25 clients until March 2007. Required sample size was calculated based on prevalence of one year retention rate in MMT program evaluated by Ministry of Health in 2006. Based on this estimated proportion with an alpha of 0.05 and 95% confidence interval, 346 subjects (including 20% non-respond rate) would be required. The subject was selected universally according to inclusion and exclusion criteria. Inclusion criteria for the subject were Malaysian citizen, can understand Malay or English, consented for participation, and only client which still retain in the program will be selected. The exclusion criteria were clients with psychiatric illnesses, and who just enrolled less than two months in the program (to avoid stabilization period which take two to six weeks).

A sample of 288 clients has been interviewed successfully throughout the study period using standardized questionnaires. There are five parts of questionnaires and it takes 20-30 minutes to complete the questionnaires. These are sociodemografic data, history of addiction, client's compliance level (based on regularity of Methadone intake), process of the therapy (client's confidence, rapport with process therapy and therapeutic engagement) and impact of the program (risk taking behavior, social function, criminality and health). Since the questionnaires were modified from several set of questionnaires[9,10], a pretest study was conducted towards local MMT clients in May 2007 on a group of 30 clients in Methadone Clinic, Kuala Lumpur Hospital. In term of internal reliability, it was found that the coefficient alpha for each segment almost similar with previous study[9,10]. The value of the coefficient alpha was shown in the Table I.

The dependent variable for this study was compliance level, either good compliance or partial compliance with therapy. Operational definition was based on recommendation from National Methadone Maintenance Therapy Guideline[8]. Good compliance to therapy was defined as regular daily Methadone intake or missing drug intake less than 3 times consecutively through out the therapy. The independent variables in this study were age, sex, marital status, education level, job's status, history of previous chronic illness and distance from residence to clinic. Independent variables for history of addiction were drug addiction initiation age, duration of addiction and history of previous addiction rehabilitation or treatment. Other independent variables were client's confidence towards MMT program, client's rapport with therapy process, therapeutic engagement, current Methadone therapy duration, illicit drug used, risk-taking behavior for HIV infection, criminal behavior, health status in previous one month and social function in previous six month.

Data analysis using SPSS - 11.5 was done with outputs on descriptive and analytical analysis. Inferential analysis was done using student T- test, Mann-Whitney test and Chi-square test. Logistic regression modeling was used for the predicted model. As for the inferential analysis, the level of significant taken was $p<0.05$.

RESULTS

288 respondents from 346 were interviewed with response rate of 83%. Range of respondent's age was between 24 to 60 years. The distribution of the respondent's sociodemography was shown in the Table II.

Among clients participated in the study, median for age started addiction was 18 years old with interquantile range (17-21) years and 211 respondents (73.3%) started drugs at age less than 20 years old. Mean duration for addiction was 21.75 ± 9.26 years. 183 respondents (63.5%) had history of injectable drug use and 230 respondents (79.9%) has history of at least one previous rehabilition treatment for addiction.

This study revealed that 248 respondents (86.1%) were good compliance to therapy, whereas the remaining 40 respondents (13.9%) were partial compliance to therapy. Sociodemographic factors that significantly associated with good compliance to the therapy were older age, full time job status and stay nearer to Methadone Clinic (Table III & IV). Good compliant clients had history of shorter duration of addiction (Table III).

For factors related to process therapy, only higher score for client's confidence with therapy significantly influenced client's compliance (Table V) and as for the impact of the therapy higher social function score and good social function level was found significantly associated with compliance (Table VI & VII).

When these variables were entered into the logistic regression model with predicted dependent variable was good compliance to therapy, only three variables were significant. They are higher client's age, higher client's confidence score level and full time job status. In this study it was found that age is the most important factor with highest wald value. The model revealed that increment in one year of age lead to 6% (95% Confidence Interval 2%-11%) increment in compliance. An increment of one client's confidence score will lead to 26.5% (95% Confidence Interval 6%-51%) increment in odds to comply and lastly full time job status will lead to four times the likelihood for client to comply compared to not working at all (Table VIII).

Table I: Comparison of Coefficient Alpha Value between Previous Studies and Current Pretest

Questionnaires	Coefficient Alpha Value in Previous Study	Coefficient Alpha Value in Current Pretest.
1. Confident with therapy (5 questions).	0.72#	0.78
2. Rapport with therapy process (5 questions).	0.83#	0.79
3. Therapeutic engagement (5 questions)	0.72#	0.89
4. Social function (11 questions)	0.58*	0.54
5. Risk-taking behaviour for HIV infection (6 questions)	0.70*	0.64
6. Health Status	0.76*	0.66

*Darke *et al* 1991[9]
Joe *et al* 1998 [10]

Table II : Sociodemography distribution among respondents (n=288)

Factors	Number (N)	Percentage (%)	Mean ± s.d/Median (IQR)
Age (years)			
<30	37	12.8	41.43 ± 8.65
30-39	82	28.5	
40-49	111	38.5	
50 and above	58	20.2	
Sex			
Male	279	96.9	
Female	9	3.1	
Ethnic			
Malay	226	78.5	
Chinese	23	8.0	
Indian	27	9.4	
Others	12	4.1	
Education level			
Primary school	29	10.1	
Secondary school	252	87.5	
Diploma and above	7	2.4	
Marital status			
Married	128	44.4	
Unmarried	128	44.4	
Widower	32	11.2	
Job status			
Not working	49	17.0	
Part-time work	134	46.5	
Full-time work	105	36.5	
History of chronic illness			
Yes	88	30.6	
No	200	69.4	
Distance (kilometer)			10 (5-15)

Table III : Association Between Sociodemographic Factors and History of Addiction with Compliance Level (quantitative data) (n =288).

Factors	Good Compliance (n= 248) Mean± s.d/ Median (IQR)	Partial Compliance (n=40) Mean± s.d/ Median (IQR)	Test (value)	P value
Age (year)	41.84 ± 8.73	38.85 ± 7.77	Student t test (t = -2.041)	0.04*
Distance (kilometer)	10 (5-15)	10 (8-19.5)	Mann-Whitney (z = -2.258)	0.024*
Age started addiction (year)	18 (17-21)	18 (17-23)	Mann-Whitney z = -0.36	0.721
Duration of addiction (year)	21.32 ± 9.35	24.43 ± 8.23	Student t test (t = 1.98)	0.049*

*significant at p< 0.05

Table IV : Association Between Sociodemographic Data and Compliance Level Using Chi-square test (n=288)

Factors	Good Compliance (n=248)		Partial Compliance (n=40)		χ^2	P value
	No.	%	No.	%		
Sex:						
Male	242	86.7	37	13.3	1.50	0.22
Female	6	66.7	3	33.3		
Ethnic:						
Malay	195	86.3	31	13.7	0.026	0.87
Non-Malay	53	85.5	9	14.5		
Education:						
Primary school	24	82.8	5	17.2	0.07	0.78
Sec. School and above	224	86.5	35	13.5		
Job:						
Not working	37	75.7	12	24.3	9.54	0.008*
Part time work	113	84.3	21	15.7		
Full time work	98	93.3	7	6.7		
History of chronic illness:						
Yes	77	87.5	11	12.5	0.24	0.24
No	171	85.5	29	14.5		

*significant at p< 0.05

Table V : Association Between Sociodemographic Data and Compliance Level Using Chi-square test (n=288)

Factors	Good Compliance (n= 248)	Partial Compliance (n=40)	Test (value)	P value
	Mean± s.d/ Median (IQR)	Mean± s.d / Median (IQR)		
Confidence Score	18.56 ± 1.83	17.60 ± 1.74	Student t test (t = -3.12)	0.023*
Rapport Score	17.81 ± 1.93	17.75 ± 1.94	Student t test (t = -0.184)	0.852
Therapeutic Engagement Score	16 (15-20)	16 (15-20)	Mann-Whitney (z = -0.320)	0.75

*significant at p< 0.05

Table VI: Association Between Scores for Impact of Therapy with Level of Compliance (n=288)

Factors	Good Compliance (n= 248)	Partial Compliance n=40)	Test (value)	P value
	Mean± s.d/Median (IQR)	Mean± s.d / Median (IQR)		
Social Function Score	31.01 ± 4.22	29.33 ± 4.74	Student t test (t = -2.308)	0.022*
Risk-taking Behaviour Score	24 (19-24)	24 (19-14)	Mann- Whitney (z = -1.47)	0.67
Risk-taking Behaviour Score (Needle use)	16 (16-16)	16 (16-16)	Mann- Whitney (z = -1.47)	0.14
Risk-taking Behaviour Score (Unsafe sex)	8 (3-8)	8 (3-8)	Mann- Whitney (z = -0.56)	0.57
Current Health Status Score	47 (46-49)	47 (46- 48.75)	Mann- Whitney (z = -0.46)	0.64
Duration in Current Therapy (month)	14 (4-16)	15 (7-17)	Mann- Whitney (z = -1.66)	0.095

*significant at p< 0.05

Table VII: Association Between Impact of Therapy and Compliance Level (n= 288)

Factors	Good Compliance (n=248)		Partial Compliance (n=40)		χ^2	P value
	No.	%	No.	%		
Social Function						
Good	136	90.7	14	9.3	5.43	0.02*
Not Good	112	81.2	26	18.8		
Risk-taking Behaviour						
Less Risk	145	85.1	25	14.9	0.33	0.56
More Risk	105	87.5	15	12.5		
Risk-taking Behaviour (needle use)						
Less Risk	247	86.4	39	13.6	0.208	0.64
More Risk	1	50.0	1	50.0		
Risk-taking Behaviour (unsafe sexual)						
Less Risk	144	84.7	26	15.3	0.68	0.41
More Risk	104	88.1	14	11.9		
Current Health Status						
Good	163	87.2	24	12.8	0.496	0.48
Not Good	85	84.2	16	15.8		
Duration in Current Therapy (month)						
< 12	115	87.5	17	12.9	0.208	0.64
12-20	133	85.3	23	14.7		
H/o illicit other drug (previous 1 month)						
No	158	85.9	26	14.1	0.025	0.86
Yes	90	86.5	14	13.5		

Table VIII : Multivariate Analyses Using Logistic Regession for Significantly Associated Factors for Compliance

Factors	B	Standard Error	Wald	Adjusted Odds Ratio	95% Confidence Interval	P value
Age	0.058	0.022	7.109	1.06	1.02-1.11	0.008*
Confidence Score	0.235	0.090	6.794	1.27	1.06-1.51	0.009*
Social Function Score	0.046	0.043	1.135	1.05	0.96-1.14	0.287
Job			7.183			0.028*
Part time job	0.305	0.438	0.484	1.35	0.57-3.19	0.487
Full time job	1.453	0.572	6.455	4.27	1.39-13.10	0.011*
Constant	-6.728	2.160	9.699	0.001		0.002

*significant at p< 0.05

DISCUSSION

MMT is one of the current programs in this country to control the widely drug addiction menace. Evaluation of the program by MOH itself already shown the effectiveness where retention rate is 84% after six months post enrollment[11] and 75% after one year post enrollment[12]. This achievement was considered above the percentage targeted by WHO which is 55% to 60%. In this study the prevalence of clients with good compliance to the program was 86.1%. This finding can be a baseline study for future comprehensive study on MMT effectiveness. This study focussed on compliance rather than retention, even though these two variables has different entity, both of them would reflect the effectiveness of the program.

Sociodemography factors that are associated with good compliance in this study were older age group, full time job and nearer distance to clinic. Joe *et al*[10] and Matthew and Dennis[13] also found that age significantly influenced retention. Older clients were found to be more responsible, received more support from family and obviously less active in criminal activities. In terms of job status, the researcher found that full time job influenced good compliance four times compared to no job status.

In terms of factor related to the process of the therapy, this study revealed that higher client's confidence score is associated with good compliance to the therapy. If the client is confident with treatment, they will comply with treatment instructions to achieve an efffective outcome. According to Simpson *et al*[14] program's environment, client's needs and quality of services are the most important elements that affects the outcome of the program.

On impact of the program, only client's social function was found to be associated with compliance to program. Social function studied, involved major though not all aspects of client's life. According to McKay *et al*[15] to achieve continuous

rehabilitation treatment and effectiveness of the treatment, social support, good relationship and intergration with surrounding people can help client to remain successfully in the program. Variables related to the impact of the program that is not significantly associated with compliance are usage of illicit drug, risk-taking behavior, health status and duration in the therapy. In other studies, they were shown to have association with program effectiveness [16,17,18] . Limitations in this study such as selection bias and information bias could result in distortion in association between these variables and compliance.

CONCLUSION AND RECOMMENDATION

In general it can be concluded from the study that there is high level of good compliance toward the program (86.1%). This positively support our goverment plan to expand the program in the future with a target of 25,000 drug addicts to receive this program by year 2010. This study also concluded that clients with older age, with full time job and confident with the program will comply with the treatment. Besides that, client's social function is also considered as an important aspect in relation with good compliance to the program. Based on the above conclusions, improvement on the program can be done through multiple approaches from all levels of management.

For instance, to ensure readiness of that younger group to accept the MMT program, motivation program can be conducted prior to enrollment. In addition, multiple activities related to this age group can be implemented to attract them to be continuously in the program, whereby these might need collaboration and coorperation from multilpe agencies. Currently the National Anti-drug Agency is one of the main agencies involved directly with the program. In addition to that, the program promotion should be widened with the support from family institution, peers and surrounding community. Approaches towards unemployed group also important since this group was found to be partially comply to the therapy. Multiple skills training and support from health care provider might help them to be employed and indirectly will keep them remain in the program. To increase the client's confident level that influence their compliance, involvement of upper level management (policy maker) is also important for example provision of more centers that provide the services especially at primary level to increase the accessibility. At the institutional level, continuous education and training program for the staffs and quality improvement activities should be implemented in order to ensure quality services is provided.

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