

## **REPORT**

# **Demographic profiles and sleep quality among patients on methadone maintenance therapy (MMT) in Malaysia**

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**Abstract:** Poor sleep quality was frequently reported by opioid dependence patients during methadone maintenance therapy (MMT). The study investigated a sample of patients on MMT to investigate the severity and prevalence of sleep problems in MMT patients. We evaluated sleep quality and disturbances of 119 Malay male patients from MMT clinics in Kelantan, Malaysia between March and July 2013 using the Pittsburgh Sleep Quality Index (PSQI)-Malay version. Patients' demographic, clinical data, past drug history and methadone treatment variables were recorded. Patients averaged 37.5 years of age (SD 6.79) and their mean age of first time illicit drug use was 19.3 years (SD 4.48). Their mean age of entering MMT was 34.7 years (SD 6.92) and the mean duration in MMT was 2.8 years (SD 2.13). The mean current daily dosage of methadone was 77.8 mg (SD 39.47) and ranged from 20 to 360 mg. The mean global PSQI score was 5.6 (SD 2.79) and 43.7% patients were identified as 'poor sleepers' (global PSQI scores >5). This study confirms the poor overall sleep quality among patients on MMT. The prevalence and severity of sleep problems in MMT patients should not be underestimated.

**Keywords:** clinical, insomnia, outcomes, response, subjective

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## **INTRODUCTION**

Opioid dependence is one of the chronic, relapsing disorders with high social, medical, and economic burdens. This problem is growing and it is also a major concern in public health throughout Malaysia. Methadone is well known in the treatment of opioid dependence. Maintenance treatments are effective in suppressing drug abuse and retaining patients in pharmacological treatment (Amato *et al.*, 2011). Research evaluating costs of healthcare associated with medications used in opioid dependence treatment found that subjects who did not receive pharmacologic therapy had higher hospital utilization and total costs than those who received medication (Baser *et al.*, 2011). However, discontinuation of methadone maintenance therapy (MMT) and continued use of illicit drugs pose challenges to the treatment of opioid dependence.

Sleep disorder has been attributed to premature exit from methadone detoxification treatment by many patients with opioid dependence (Beswick *et al.*, 2003; Gossop and Bradley, 1984; Oyefeso *et al.*, 1997). Previous work has

documented that 40 to 90% of patients reported use of medications to improve their sleep (Hsu *et al.*, 2012; Liao *et al.*, 2011; Peles *et al.*, 2006). Persistent sleep disorder might promote chronic depressive symptoms (Staedt *et al.*, 1996; Wang *et al.*, 2008). The drug-dependency sleep disturbances could have a negative impact on patients' health, quality of life, and also could lead to continued drug abuse, if sleep disorders are not treated in these patients (Hsu *et al.*, 2012; Pud *et al.*, 2012; Staedt *et al.*, 1996).

The aetiology of sleep disorder among patients in methadone treatment is often multifactorial and complex. Chronic treatment with methadone might result in sleep disturbance. Perceived (subjective) poor sleep quality or sleep problems such as inadequate quality, inadequate latency, inadequate efficiency, sleep disturbance, impaired day-time function, insomnia, excessive day-time sleepiness (Charpentier *et al.*, 2010; Hsu *et al.*, 2012; Liao *et al.*, 2011; Peles *et al.*, 2006, 2009; Pud *et al.*, 2012; Stein *et al.*, 2004; Wang *et al.*, 2008) were frequently reported by opioid dependent patients during maintenance therapy.

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Though many studies of sleep disorders in opioid dependence have been reported, studies on prevalence of sleep problems in Malaysia especially among patients receiving MMT are limited. The prevalence and severity of sleep problems in this population are underestimated by many clinicians. Besides that, one major shortcoming of sleep problems management is lack of availability of a simple, self-administered, standardized and validated questionnaire in the Malay language.

The Pittsburgh Sleep Quality Index (PSQI) is a self-administered written questionnaire. It measures subjective sleep quality and disturbances over the previous month. It also discriminates between 'poor' and 'good' sleepers with high diagnostic sensitivity of 89.6% and specificity of 86.5% (Buysse *et al.*, 1989). The scoring system ranges from 0-21. Good sleep quality is indicated by a global score of  $\leq 5$  and a score of  $>5$  is associated with poor sleep quality. The questionnaire has been validated and successfully used in ethnically different populations among patients with opioid dependence receiving MMT (Charpentier *et al.*, 2010; Hsu *et al.*, 2012; Kurth *et al.*, 2009; Liao *et al.*, 2011; Peles *et al.*, 2006, 2009, 2011; Sharkey *et al.*, 2009, 2010, 2011; Stein, *et al.*, 2004, 2012; Wang *et al.*, 2008). It has been translated into several languages including Malay language.

Subjective sleep measured by the PSQI score reflected objective sleep as assessed by polysomnography (PSG) in MMT patients. There were relationships between subjective and objective sleep variables in patients on MMT (Sharkey *et al.*, 2011). Therefore, the sleep complaints in patients on MMT reflect pathology and not sleep misperception.

Sleep disorder data are largely unavailable in Malaysia, especially for patient on MMT. A previous study used the PSQI to examine the impacts of electroacupuncture (EA) on quality of sleep among 20 patients receiving MMT in Kajang, Malaysia (Hasan *et al.*, 2013); however, the prevalence of sleep problems had not been characterised. This study sought to fill this gap.

The present study investigated patients' demographic data, past drug history, recent drug use, and methadone treatment variables and sleep variables in patients on MMT using the Pittsburgh Sleep Quality Index (PSQI)-Malay version, to establish the prevalence and severity of sleep disorders in patients receiving MMT.

## **METHOD**

### ***Subjects***

This observational, descriptive, cross-sectional study was performed among opioid dependent patients receiving MMT at Hospital University Sains Malaysia and other MMT clinics in the Kota Bharu, Pasir Mas, Pasir Puteh

and Bachok, Kelantan from March to July, 2013 as part of an ongoing clinical study to evaluate the application of personalised methadone therapy among patients on methadone maintenance therapy.

The study included Malay male patients  $\geq 18$  years of age. They were on MMT with duration of participation more than one month with no change of methadone over the past one month. Patients with acute medical, surgical and psychiatric illness; and acutely intoxicated were excluded. Patients who had acute or chronic medical, surgical and psychiatric illness that requires concurrent medical, surgical or psychiatric therapy and use alcohol regularly were also excluded from the study. As we found that available patients receiving MMT who meet all inclusion and exclusion criteria were limited, all eligible subjects within the study period were enrolled in the study. The study protocols were approved by the Human Research Ethics Committee (HREC), Universiti Sains Malaysia (USM) in Kelantan, Malaysia (Reference number: USMKK/PPP/JEPeM (253.3 [14]) and the Medical Research & Ethics Committee (MREC) at the Ministry of Health (MOH), Malaysia (Reference number: NMRR-13-524-16614).

### ***Research instruments***

Nineteen items of the PSQI are included in scoring, while five additional items are included in the questionnaire for clinical use only. The 19 items included; 1) items 1-4 (questions 1-4) asking for usual bedtime and getting up times, number of minutes to fall asleep, and hours of sleep per night, 2) items 5-15 (question 5) and 17-18 (question 7-8) relating to frequency of specified sleep problems, 3) item 16 (question 6) relating to overall assessment of sleep quality and 4) item 19 (question 9) relating to the respondent's overall assessment of 'enthusiasm to get things done'. Seven component scores are generated from the 19 individual items: 1) subjective sleep quality, 2) sleep latency, 3) sleep duration, 4) habitual sleep efficiency, 5) sleep disturbances, 6) use of sleep medications, and 7) daytime dysfunction. Each of the seven component scores has a potential range of 0-3. A global score of subjective sleep quality with a potential range of 0 to 21 is yielded from the sum of these seven component scores. Permission for use the Pittsburgh Sleep Quality Index (PSQI)-Malay version was obtained from the author at the University of Pittsburgh. Administration and scoring of the questionnaire were done according to instructions that are available at the website of University of Pittsburgh, Sleep Medicine Institute, Pittsburgh Sleep Quality Index (PSQI) at <http://www.sleep.pitt.edu/content.asp?id=1484&subid=2316>.

### ***Data collection***

Patients were explained about the purpose and nature of the study and were asked if they would participate. A

written informed consent was obtained from each patient. Patients were then also asked to fill out the Pittsburgh Sleep Quality Index (PSQI)-Malay version. The patients were then called for interviews to obtain detailed demographic and clinical data, details relating past drug history and recent drug use, and treatment variables. The interviewing activities were done by only one interviewer, the first author.

## STATISTICAL ANALYSIS

Numerical variables were reported as mean and standard deviation (SD), and categorical variables were reported as frequency and percentages. All analyses were performed using the SPSS version 20.

## RESULTS

### *Subject characteristics*

Of 123 eligible patients, 119 (96.7%) agreed to participate in this study. Table 1 shows descriptive statistics of demographic data and clinical variables. Age ranged from 25-57 with a mean of 37.5 years. Most were in work and equal numbers were single and married. Most lived with family members and only four patients lived alone so their sleep disturbance could affect many others.

Table 2 showed that the majority of the patients used more than one illicit drug in their lifetime with marijuana and amphetamines being most widely used. Only nine (7.6%) patients reported only morphine and related substances as past illicit drug use. The majority declared using tobacco, a comparatively smaller number of patients (n=21, 17.7%) admitted illicit drug use, in the 30 days prior to study.

### *Descriptive statistics of Malay version of the Pittsburgh Sleep Quality Index PSQI*

Table 3 presents descriptive statistics for the seven PSQI components and the global PSQI. The mean actual sleep time per night in these patients was 7.03 hours, which is much the same as the widely accepted norm of  $\geq 7$  hours of sleep per night. A majority of the patients (n=101, 84.9%) reported going to bed after 11PM and most of them reported (105 patients, 88.2%) getting up at or after 6 AM. Patients also reported insomnia symptoms such as difficulty initiating sleep (DIS) and difficulty maintaining sleep (DMS). The prevalences of DIS and DMS in these patients were 86.6 and 94.1%, respectively. Also it is also interesting to know that most of these patients (81.5%) had daytime dysfunction.

The mean global PSQI score was 5.62 (SD 2.79) ranged from 0 to 14, slightly above a cut-off score of 5. This indicated poor overall sleep quality among patients. In addition, 52 patients (43.7%) were classified as 'poor sleepers' (global PSQI scores  $> 5$ ) and 67 (56.3%) had

PSQI scores  $\leq 5$ , indicating 'normal sleepers'. The detailed descriptive statistics for the seven PSQI components and score distribution are shown in Table 3. In describing the PSQI components,

- Twelve (10.1%) patients rated the 'sleep quality' as 'fairly bad' and 'fairly good' was rated by 84 (70.6%) patients.
- Sixty-eight (57.1%) patients scored '1' ( $> 15$  and  $\leq 30$  minutes) for the 'sleep latency' and four (3.4%) patients scored '3' (worst).
- Seventy-two (60.5%) patients had normal 'sleep duration' ( $\geq 7$  h) and five (4.2%) patients had poor ('3') ( $< 5$  h).
- Ninety-eight (82.4%) patients had normal 'habitual sleep efficiency' ( $\geq 85\%$ ) and four (3.4%) patients had poor ('3') ( $< 65\%$ ).
- Seventy-two (60.5%) patients scored '1' (less than once a week) for the 'sleep disturbance' component and a score '3' was given by four (3.4%) patients. Seven patients scored '0' (no sleep disturbances).
- Ninety-eight (82.4%) patients reported as '0' (none) for the 'use of sleep medication' (prescribed or 'over the counter') component and three (2.5%) patients reported frequent ( $\geq 3$  times a week).
- Seventy-nine (66.4%) patients scored '1' (less than once a week) for the 'daytime dysfunction' component over the last month was scored and two (1.7%) patients scored '3'.

## DISCUSSION

Data analysis of this study showed some important sociodemographic and clinical data on the characteristics of the opioid-dependent patients in Malaysia. These information are valuable for physicians, nurses, pharmacists, psychologists and other staffs or caregivers who involve in MMT. The nature of the population of our study was similar to patients enrolled at other MMT clinic in Malaysia such as MMT clinic in Klang, Malaysia (Manan *et al.*, 2013). Manan *et al.* (2013) found a mean age (41.90 (SD 9.61) years) in a sample of 40 patients on MMT, which was similar to ours (37.48 (SD 6.79) years). The mean age of starting illicit drug use of our patients (19.3 (SD 4.48) years) was also similar to theirs (22.22 (SD 6.81) years). In both studies equal numbers of the patients were single and married and most were employed. Both studies had patients who were mostly had history of intravenous drug use.

Illicit drug use among their patients was much more prevalent than ours. But it is difficult to compare their data with ours since their patient's data (six months prior to study) were based on urinalysis reports and our patient's data (use in the 30 days prior to study) were self-reported (Manan *et al.*, 2013). For example, only 17.7% of our patients self-reported illicit drug use, while 42.5% of their patients had positive urine tests. Our patients' self-reports on illicit drug use would introduce a

considerable element of doubt. Weekly observed and random urine checks during the month prior to study could have helped as urine tests provide objective data about illicit drug use.

**Table 1:** Demographic and clinical patient characteristics (N=119)

Variable	Frequency (%)	Mean (SD)	Range
Age (years)		37.5 (6.79)	25-57
<30	14 (11.8)		
30-40	73 (61.3)		
>40	32 (26.9)		
BMI (kg/m <sup>2</sup> )		22.28 (3.79)	14.9-36.3
Education level			
Primary School	6 (5.0)		
Secondary school	104 (87.4)		
College/ University	9 (7.6)		
Marital status			
Single	56 (47.1)		
Married	54 (45.4)		
Divorced	9 (7.6)		
Living arrangement			
Spouse/partner and children	45 (37.8)		
Parent(s)	55 (46.2)		
Other (alone, spouse/partner or alone with children)	19 (16.0)		
Monthly income (Ringgit Malaysia (RM))		849.6 (505.54)	0-3000
≤1000	89 (74.8)		
>1000	30 (25.2)		
Employment status			
Unemployed (dependant on others or no income)	13 (10.9)		
Employed (part or full time)	106 (89.1)		
Cigarettes/ day <sup>a</sup>		13.0 (6.67)	2-40
Smoking status			
Ex-smoker	2 (1.7)		
Smoker	117 (98.3)		
Alcoholic status			
Non-alcoholic	51 (42.9)		
Ex-alcoholic	66 (55.5)		
Alcoholic <sup>b</sup>	2 (1.7)		
Age of first illicit drug use (years)		19.3 (4.48)	12-33
≤20	80 (67.2)		
>20	39 (32.8)		
Age of first opioid abuse (years)		22.2 (5.12)	12-41
<20	35 (29.4)		
20-25	57 (47.9)		
>25	27 (22.7)		
Type of previous opioid abuse			
Heroin	54 (45.4)		
Morphine	51 (42.9)		
Both heroin and morphine	14 (11.8)		
Route of using previous opioid			
Ingest (eat, drink, swallow)	3 (2.5)		
Smoke	39 (32.8)		
Inject	45 (37.8)		
Both smoke and inject	32 (26.9)		

Continue...

**Table 1:** Continued...

Variable	Frequency (%)	Mean (SD)	Range
Duration of opioid exposure (years)		15.3 (7.77)	1-37
<10	32 (26.9)		
10-20	61 (51.3)		
>20	26 (21.8)		
Duration of illicit drug use prior to joining MMT (years)		15.37 (7.55)	0.5-34
≤20	91 (76.5)		
>20	28 (23.5)		
Age of entering MMT (years)		34.7 (6.92)	20-53
Duration in MMT (years)		2.81 (2.13)	0.3-9
<2	51 (42.9)		
2-3	32 (26.9)		
>3	36 (30.3)		
Methadone dose (mg)		77.77 (39.47)	20-360
<80	74 (62.2)		
80-99	10 (8.4)		
100-119	22 (18.5)		
120 and above	13 (10.9)		
Conflict with your partner/spouse (3-months)			
No	56 (47.1)		
Yes	16 (13.4)		
Not applicable	47 (39.5)		
Conflict with your employer (3-months)			
No	104 (87.4)		
Yes	7 (5.9)		
Not applicable	8 (6.7)		
Conflict with your relatives (3-months)			
No	106 (89.1)		
Yes	13 (10.9)		
Money problems (3-months)			
No	56 (47.1)		
Yes	63 (52.9)		

<sup>a</sup> Two patients were ex-smokers, <sup>b</sup> Patients reported drinking of the total amount of 350 to 1500 ml of beer in the last 30 days

**Table 2:** Past drug history and recent substance use (N=119)

Variable	Frequency (%)
<i>Past history</i>	
Type of previous illicit drug use <sup>a</sup>	
Marijuana	84 (70.6)
Mitragyna speciosa (kratom)	28 (23.5)
Benzodiazepines and other psychotropic drugs	31 (26.1)
Amphetamine/methamphetamine and related	88 (73.9)
Codeine and related	77 (64.7)
Miscellaneous	8 (6.7)
<i>Recent illicit drug use (last 30 days)<sup>a</sup></i>	
Tobacco	117 (98.3)
Alcohol	2 (1.7)
Heroin	10 (8.4)
Another opioid-based drug	6 (5.0)
Cannabis/ marijuana	2 (1.7)
Amphetamine/methamphetamine and related drug	12 (10.1)
Benzodiazepines and other psychotropic drugs	1 (0.8)

<sup>a</sup>The total exceeded 100% since some patients used more than one drug

**Table 3:** Descriptive statistics of scores of PSQI component, global PSQI and other sleep variables (N = 119)

Variable	Mean (SD)	Range		
Component scores (0 – 3 possible)				
1. Subjective sleep quality	0.91 (0.54)	0 – 2		
2. Sleep latency	1.19 (0.70)	0 – 3		
3. Sleep duration	0.61 (0.87)	0 – 3		
4. Habitual sleep efficiency	0.30 (0.73)	0 – 3		
5. Sleep disturbances	1.31 (0.63)	0 – 3		
6. Use of sleep medication	0.31 (0.73)	0 – 3		
7. Daytime dysfunction	0.98 (0.62)	0 – 3		
Global PSQI (0 – 21 possible)	5.62 (2.79)	0 – 14		
Minutes to fall asleep	21.46 (11.36)	1 – 60		
Actual sleep time per night (h)	7.03 (1.64)	1 – 12		
Score distribution	Scored '0'	Scored '1'	Scored '2'	Scored '3'
	N (%)			
1. Subjective sleep quality	23 (19.3)	84 (70.6)	12 (10.1)	0 (0.0)
2. Sleep latency	16 (13.4)	68 (57.1)	31 (26.1)	4 (3.4)
3. Sleep duration	72 (60.5)	26 (21.8)	16 (13.4)	5 (4.2)
4. Habitual sleep efficiency	98 (82.4)	10 (8.4)	7 (5.9)	4 (3.4)
5. Sleep disturbances	7 (5.9)	72 (60.5)	36 (30.3)	4 (3.4)
6. Use of sleep medication	98 (82.4)	8 (6.7)	10 (8.4)	3 (2.5)
7. Daytime dysfunction	22 (18.5)	79 (66.4)	16 (13.4)	2 (1.7)
No missing values				

We found that most patients did not live alone (n=115, 96.6%). They lived with family members including spouse, children and parents, so the consequences of sleep disorders were not restricted to affected individuals. Their sleep disturbance could affect health and well-being of sleep partners and/or other family members.

Physiologic and behavioral aspects of substance dependence may be affected by sleep problems. Nearly half of the alcohol and narcotics abusers with sleep problems as subjectively measured via sleep disorder questionnaires tend to self medicate to promote sleep (Mahfoud *et al.*, 2009).

Despite these findings, research into sleep disorder and its impact on methadone treatment retention and outcomes has been limited. In an earlier study, the results of regression analysis demonstrated a significant relationship between sleep problems during the detoxification phase and retention in methadone treatment. They found that patients with a higher sleep time were less likely to leave treatment early (Beswick *et al.*, 2003). Studies also found that patients in initial methadone detoxification treatment frequently request medications for amelioration of sleep problems (Oyefeso *et al.*, 1997), and premature exit from treatment were attributed to sleep problems in many of these patients (Beswick *et al.*, 2003; Gossop and Bradley, 1984; Oyefeso *et al.*, 1997).

Our results show that the prevalence of sleep disorders (global PSQI scores >5) was 43.7% (n=52) among male

MMT patients and 67 (56.3%) had PSQI scores ≤5 (i.e. 'normal sleepers'). Our sample showed higher prevalence of sleep disorders than the general population where prior research reported that the prevalence of sleep impairment was 15% and that 10 to 15% had insomnia of moderate-to-severe degree (Mahfoud *et al.*, 2009). A study reporting on a German Health Survey (n=4181) found that 35.2% of normal adults in the community reported current sleep problems (Stein *et al.*, 2008).

The mean global PSQI score in our methadone population was 5.62 (SD 2.79), slightly above a cut-off score of 5 (i.e. poor overall sleep quality). Previously published studies on the prevalence of sleep disorder among patients on MMT found higher rates of sleep disorder (Hsu *et al.*, 2012; Liao *et al.*, 2011; Peles *et al.*, 2006; Stein *et al.*, 2004). For example, in a study that systematically studied the prevalence of sleep disorders among 135 Chinese heroin-dependent on MMT in Hunan Province, China found a majority of the patients (n=134 subjects, 99.23%) had a total PSQI score of >5, suggestive of sleeping problems. The overall mean score of PSQI was 12.68 (SD 3.03) (Liao *et al.*, 2011).

A study in United States of America (USA) involving 255 methadone maintained patients in where a majority of patients was Caucasian (n=198, 77.7%) reported 84% (n=214) of patients had a total PSQI scores of ≥6, indicative of sleep-related problems, and found a mean of global PSQI score of 10.64 (SD 4.90) (Stein *et al.*, 2004). Results of a study in Tel Aviv, Israel found that a mean

global PSQI score of 9.0 (SD 4.8) and out of the 101 MMT patients, 75.2% had PSQI scores >5, suggestive of 'poor sleepers' (Peles *et al.*, 2006). In a cohort of 121 heroin addicts under MMT from Taiwan, Hsu *et al.* (2012) found 70.2% (n=85) of patients had a sleep disorder (PSQI>5) and a mean PSQI of 9.1 (SD 5.4). Generally, sleep disorders in a sample of patients on methadone maintenance therapy (MMT) were higher than that reported in the general population.

All previous studies reported higher rates of 'poor sleepers' (global PSQI scores >5) and higher mean global PSQI scores compared to our study. These differences might be explained by differences in patients' characteristics between previous studies and ours. In our current study, patients with chronic medical and psychiatric illness such as chronic pain, depression and anxiety that are associated with sleep disorder were excluded from the study, which would be expected to decrease the prevalence and severity of sleep problems in our sample. However, although known acute or chronic medical, surgical and psychiatric illness that requires concurrent medical, surgical or psychiatric therapy was one of our exclusion criteria, no potential subjects were excluded for this criterion.

In contrast, Stein *et al.* (2004) included patients with major depression (n=96, 37.7%), general anxiety disorder (n= 122, 47.8%) and patients who had bodily pain. Peles *et al.* (2006) included patients with psychiatric axis I disorder and patients who had chronic pain and they found that patients with sleep disorder are characterized with a higher rate of chronic pain and psychiatric disorders. Liao *et al.* (2011) also included patients with depression and anxiety symptoms. Hence, their patients are characterized by patients' risk factors that by themselves are associated with sleep disorders. As hypothesized, they found high prevalence (75 to 99%) of sleep disorders in the MMT group. Furthermore, in these studies severity of sleep symptoms has been linked to psychiatric symptoms especially depression and pain (Liao *et al.*, 2011; Peles *et al.*, 2006; Stein *et al.*, 2004). The mean age of our patients, 37.48 (SD 6.79) years was similar to theirs (mean age of 36 to 40 years) (Hsu *et al.*, 2012; Liao *et al.*, 2011; Peles *et al.*, 2006; Stein *et al.*, 2004). Our group had duration in MMT (mean (SD) of 2.81 (2.13) years) shorter than theirs (mean of 3.2 to 5.0 years) (Peles *et al.*, 2006; Stein *et al.*, 2004). This sample had the average daily dosage of methadone (77.77 (SD 39.47) mg) lower than theirs (157 (52.9) mg) (Peles *et al.*, 2006). Females were included in their study cohort (Hsu *et al.*, 2012; Liao *et al.*, 2011; Peles *et al.*, 2006; Stein *et al.*, 2004). We did not include both genders in our group and only male subjects were included as this reflects the cohort population of drug abusers in Malaysia where more than 90% of them are male (Manan *et al.*, 2013).

A limitation of this study is that, the decision to include only male subjects, because this reflects our patient population and we try to remove the gender effect on sleep parameters. Therefore, the prevalence and severity of sleep problems among female patients on MMT are remains unknown.

## CONCLUSION

This study finds an important and interesting profile of Malaysian MMT users and confirms the poor overall sleep quality among patients on methadone maintenance therapy (MMT) in this group. It also shows that others are likely to be affected by their sleep problems. Poor sleep appears to be less of a problem here than in some other populations. It may be that other health factors may have influenced some other studies. These findings may help in the understanding and management of sleep problems in patients on MMT such as development of sleep-enhancement protocol. The prevalence and severity of sleep problems should not be underestimated and the screening for sleep disorders of patients at the time of admission or patients on the maintenance phase of methadone treatment, therefore, may prove to be of huge clinical benefit.

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