Original Article

Demographic and Clinical Characteristics of Thai Patients with Fibromyalgia Syndrome

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Background: The heterogeneity in somatic and psychological symptoms of fibromyalgia syndrome [FMS] varies in prevalence and characteristics due to variations of clinical symptoms, genetics and socio-cultural behaviors in different populations.

Objective: To obtain demographic data, clinical characteristics, and to investigate the correlations of clinical characteristics in Thai patients with FMS.

Materials and Methods: Seventy-one FMS patients (based on the American College of Rheumatology [ACR] 1,990 diagnostic criteria) were enrolled and their demographic information as well as clinical characteristics were determined. Questionnaires including pain visual analog scale [PVAS], patient global assessment of disease status measured by using a visual analog scale [VAS], fibromyalgia impact questionnaire [FIQ], Jenkin's sleep scale, and Hamilton Depression rating scale [HAM-D] were recorded.

Results: Almost all subjects were female (97.20%), mean $\pm$ SD age was 44.83$\pm$10.81 years, mean $\pm$ SD duration of widespread pain was 3.43$\pm$2.92 years. Muscle pain, sleep disturbance, fatigue, and headache were the majority of reported symptoms (100%, 74.60%, 71.80% and 71.80%, respectively). The average $\pm$SD PVAS, VAS, FIQ, and Jenkin's sleep scores were 63.39$\pm$17.80, 60.53$\pm$19.64, 45.48$\pm$16.83, and 8.42$\pm$5.21, respectively. Most patients had no or mild depressive symptoms. The average $\pm$SD HAM-D score was 7.72$\pm$4.45. Correlation analysis revealed the significant relationship between various characteristics. Moderate positive correlation between PVAS score and VAS score measured patient global assessment of disease status (r = 0.609, $p<0.001$) as well as Jenkin's sleep scale score and HAM-D total score (r = 0.621, $p<0.001$) was also observed.

Conclusion: Most Thai people with FMS were middle-aged women. The main clinical problems were pain and insomnia but not depressive symptoms. Positive correlation between several clinical scores was documented.

Keywords: Fibromyalgia syndrome, Thai patients, Demographic characteristics, Clinical characteristics, Correlations

Fibromyalgia syndrome is classified as "generalized category" of soft tissue pain disorders. Pain in FMS is consistently and chronically widespread accompanied by muscle tenderness not related to inflammation[1,2]. The majority of FMS patients reported fatigue, disturbed sleep, morning stiffness, temporomandibular disorder or headache as their common co-morbid symptoms. Cognitive dysfunction, paresthesias, irritable bowel syndrome, depression, and anxiety are also common[2,3]. The multiple symptoms' domains associated with FMS affect the patient's ability to work and participate in daily life activities and

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interpersonal relationships[4] as well as substantially negative impact on the quality of life[5].

The prevalence of FMS in the population varies in different countries, ranging from 0.7% to 3.3%[6,7]. Recent study revealed that the global prevalence of FMS in 26 countries worldwide is 2.7%[8]. In Thailand, the community survey of 1,000 adults who resided in urban and suburban areas of Bangkok indicated that FMS was estimated to affect about 0.6% of this population[9]. It has been reported that FMS predominantly occurs in middle-aged people and is more prevalent in females[10].

Although exact etiology of FMS are not completely described, researches have disclosed several possible pathogenic abnormalities such as aberrant central pain processing, central sensitization, abnormal levels of biogenic amines, neuroendocrine dysfunctions, oxidative stress, and abnormal levels of cytokines or genetic predispositions which suggests a multi-factorial pathogenesis[2,11]. The general goal of FMS therapy is to develop an individualized treatment approach based on the patient's symptoms and severity, level of function, peripheral pain generators and the presence of medical and psychiatric comorbidities by using multimodal therapeutic strategies[12,13]. Pharmacologic methods and non-pharmacologic interventions such as cognitive behavioral therapy, aerobic exercise, hydrotherapy, water aerobics, strength training, flexibility training and medical massage as well as personal and family education should be used concomitantly in order to achieve the optimal therapeutic outcomes[14].

Studies from several countries revealed the demographic and clinical characteristics of patients with FMS. High levels of main FMS symptoms such as pain, sleep disturbances, depression, anxiety, and headache were reported among the enrolled patients[15-18]. One study evaluated the correlation between clinical parameters found that FIQ score was positively correlated with depression score, and the 36-item short form health survey [SF-36] score which measured quality of life. In addition, FIQ score showed positive relation to SF-36 score[16]. Another study showed that the impact of FMS measured by FIQ was directly correlated with the severity of depressive symptoms[19]. Based on ACR 2010 preliminary diagnostic criteria, the survey research in Bangkok, Thailand, reported 0.6% prevalence of FMS which is relatively low compared to global epidemiology which mostly based on ACR 1990 diagnostic criteria[8,9]. Although the report of ACR 2010 preliminary diagnostic criteria

has an increased sensitivity and decreased specificity in relation to the ACR 1990 criteria, it appeared that these differences did not result in higher prevalence rates of FMS in epidemiological surveys[20]. Regarding clinical symptoms which are the main composition of all diagnostic criteria of FMS, clinical data of patients is needed for better understanding of FMS problems in Thailand. The purpose of this study is to find the demographic and clinical characteristics of FMS patients in a specialized clinic in Thailand and to evaluate the correlations between parameters.

Materials and Methods
Study site and eligible patients
The data obtained from studied patients who are adult male or female patients, descended from Thai parents at the Department of Rehabilitation Medicine, and Pain Clinic-Department of Anesthesiology, Faculty of Medicine Siriraj Hospital, Bangkok, Thailand. The Inclusion criteria of selected studied patient were those whose clinical symptoms met the 1990 ACR Research Classification Criteria[21]. The nature and purposes of the study were explained, and written informed consents were obtained from the subjects.

Data measurements
Demographic and clinical characteristics of studied patients were collected by using questionnaires including patient global assessment of disease status [PVAS] measured by using a VAS, FIQ, Jenkin's sleep scale and HAM-D.

Data analysis
All statistical analyses were performed by using SPSS for Windows. The normality of the sample distribution of each continuous parameter was measured with the Kolmogorov-Smirnov test. The demographic and common symptoms were tabulated according to the frequency of occurrence. The clinical characteristics were presents as mean $\pm$ SD. Pearson and Spearman's rho correlation tests were used to assess the strength of associations within clinical parameters of normal distribution and non-normal distribution, respectively. For all of the planned analyses, p-values <0.05 were considered statistically significant.

Ethics consideration

Development Project for the Joint PhD Program in Biopharmaceutical Sciences, Thailand. This study was approved by the Siriraj Ethics Committee, Mahidol University; SiEC number 323/2551 (EC4).

Results
Demographic and clinical characteristics
Seventy-one FMS patients were enrolled in the study. The demographic data and clinical characteristics of patients are shown in Table 1 to 3. Majority of the studied patients were female (69 out of 71, (97.2%)), and Buddhistamine (66 to of 71, (93%)). The Common self-reported symptoms and co-morbid

Table 1. Demographic data of 71 Thai FMS patients

	Number (%)
Current smoking	1 (1.4)
Current alcohol consumption	9 (12.7)
History of physical trauma	28 (39.4)
History of psychological trauma	5 (7.04)
Current complementary therapy	58 (81.7)

Table 2. Symptoms/co-morbid diseases of 71 Thai FMS patients

	Number (%)
Muscle pain	71 (100)
Sleep disturbance	53 (74.6)
Fatigue	51 (71.8)
Headache	51 (71.8)
Arthralgia	48 (67.6)
Cognitive dysfunction	48 (67.6)
Anxiety	47 (66.2)
Paresthesia	43 (60.6)
Dizziness	43 (60.6)
Myofascial pain syndrome	38 (53.5)
Stiffness	36 (50.7)
Weakness in limbs	33 (46.5)
Vertigo	31 (43.7)
Itching	23 (32.4)
Dysmenorrhea (female n = 69)	21 (30.4)
Subjective soft tissue swelling	18 (25.4)
Osteoarthritis	18 (25.4)
Depression (self-reported)	17 (23.9)
Level of depression classified by HAM-D	
No (score <8)	38 (53.5)
Mild (score 8 to 13)	24 (33.8)
Moderate (score 14 to 18)	8 (11.3)
Severe (score 19 to 22)	1 (1.4)
Allergic rhinitis	16 (22.5)

diseases found in these FMS patients were muscle pain, sleep disturbance, fatigue, headache, arthralgia, cognitive dysfunction and anxiety. The use of complementary therapies such as Thai massage, yoga and acupuncture were reported in most of the patients.

The mean $\pm$ SD age were 44.83$\pm$10.81 years old, the duration of widespread pain were 3.43$\pm$ 2.92 years and the average body mass index were 21.91$\pm$2.96 kg/m^2. PVAS scores and patient global assessment revealed moderate level of pain and disease severity. The average $\pm$SD FIQ total score was 45.48$\pm$16.83 with the high sub-scale scores of pain, feeling good, doing job, rest and fatigue dimensions. The lowest sub-scale score was demonstrated in the work missed dimension. The mean $\pm$ SD Jenkin's sleep scale score was 8.42$\pm$5.21. Among 4 sleep sub-scale scores, the highest score was found in question number 4 (feeling tired and worn out when waking up after usual amount of sleep).

Regarding depressive symptoms, the results of HAM-D total scores indicated that the incidence of depression was low. The most common depressive symptoms based on HAM-D scores detected in the present study were found in the categories of insomnia and general somatic symptoms, including heaviness in limbs, back, or head. Patients also experienced common

Table 3. Clinical characteristics of 71 Thai FMS patients

	Mean $\pm$ SD
PVAS score (0 to 100)	63.39$\pm$17.80
Global assessment of disease status	
VAS score (0 to 100)	60.53$\pm$19.64
FIQ subscale score (0 to 10)	
Physical impairment	2.69$\pm$2.28
Work missed	1.11$\pm$1.88
Feeling good	6.36$\pm$3.26
Pain	6.41$\pm$1.86
Doing job	5.99$\pm$2.75
Rest	5.70$\pm$2.78
Fatigue	5.52$\pm$2.66
Anxiety	4.97$\pm$2.75
Stiffness	4.01$\pm$3.11
Depression	2.70$\pm$2.64
Jenkin's sleep subscale score (0 to 5)	
Trouble falling asleep	1.93$\pm$1.72
Trouble staying asleep	1.93$\pm$1.79
Waking up several times	2.10$\pm$1.76
Being tired and worn out	2.46$\pm$1.75
HAM-D total score (0 to 53)	7.72$\pm$4.45
HAM-D sleep subscale score (0 to 6)	2.08$\pm$1.86

backaches, headache, muscle aches, loss of energy and fatigability. Low sub-scores of HAM-D were found in the categories of suicidal ideation, psychomotor retardation, agitation and depressed mood (data not shown).

Correlations of clinical characteristics

Table 4 summarized the correlation coefficients of various clinical characteristics in Thai patients with FMS participating in the present study. Duration of widespread pain was poorly correlated with PVAS score (r = -0.264, $p<0.05$) and Jenkin's sleep scale score (r = -0.273, $p<0.05$). Good positive correlation was observed between PVAS score and VAS score which indicated patient global assessment of disease status (r = 0.609, $p<0.001$) as well as between Jenkin's sleep scale score and HAM-D total score (r = 0.621, $p<0.001$). In addition, PVAS score also had a poor positive correlations with FIQ total score (r = 0.307, $p<0.01$), Jenkin's sleep scale score (r = 0.325, $p<0.01$) and HAM-D total score (r = 0.280, $p<0.05$). VAS scores for global assessment were positively related with FIQ total scores (r = 0.412, $p<0.001$), and HAM-D total score (r = 0.311, $p<0.01$). FIQ total scores showed positive relationship with Jenkin's sleep scale score (r = 0.372, $p<0.005$) and HAM-D total scores (r = 0.437, $p<0.001$).

Discussion

The present study provided the overall image of patients with FMS who visited the main tertiary-care university hospital in Bangkok, Thailand. Baseline characteristics supported the previous data which indicated that most people with FMS were middle-aged women[10]. The total of 39.4% of the patients reported a history of physical while at least 10.7% had a history of physical illness, and 10% of injuries as found in Australian patients[17]. However, the association between physical trauma and fibromyalgia was controversial[22]. Recent literature indicated no reported evidences of physical trauma such as automobile accidents, which was related to the development or exacerbation of FMS[23]. With regard to psychological aspect, previous study revealed that emotional trauma might be important factors in the development and maintenance of FMS symptoms[24]. Studies in Turkey and Australia showed a high proportion of patients who had history of psychological trauma or stress[16,17]; however, the results were not reflected in this study as the history of psychological trauma was identified in only 7.04% of the population studied. Interestingly, a high number of those utilizing complementary therapy (81.7%) was reported in Thai patients, whereas 46.3% were reported in a study conducted in Australia[17]. The differences between demographic data of this study and other studies might be influenced by the socio-cultural perspectives and characteristics of the patients.

Measurement of pain intensity by PVAS demonstrated that the patients had a moderate level of pain. The mean pain score of the patients was comparable with the information found in the study of Australian population[17] but lower in comparison to other studies[15,16,19]. Considering the evaluation of FIQ, the mean total score detected in this study (45.48) was found to be lower than that reported in the present study of Turkyilmaz et al and Guymer et al (64.8 and 62.1, respectively)[16,17]. The high FIQ subscale scores of pain, job completion, rest, and fatigue dimensions

Table 4. The Correlation coefficients of clinical characteristics of 71 Thai FMS patients

Characteristics	Characteristics				
	(1)	(2)	(3)	(4)	(5)
1) Duration of widespread pain	-				
2) PVAS scores	-0.264*	-			
3) VAS scores	0.016	0.609□	-		
4) FIQ total scores	-0.079	0.307□	0.412□	-	
5) Jenkin's sleep scale scores	-0.273	0.325□	0.158	0.372ᵃᵗ	-
6) HAM-D total scores	-0.134	0.280*	0.311□	0.437□	0.621□

Statistically significant correlations are shown, *$p<0.05$: Spearman's rho correlation, □$p<0.001$: Pearson correlation, □$p<0.01$: Pearson correlation, □$p<0.01$: Spearman's rho correlation, ᵃᵗ$p< 0.005$: Spearman's rho correlation, □$p<0.001$: Spearman's rho correlation

reported in the current study was similar to those reported in Turkish population[16]. In addition, the very low sub-scale score (1.11) was demonstrated in the work-missed dimension. This data indicated that the syndrome did not lead to missing work, including housework in most Thai FMS patients who took part in the present study.

Sleep disturbance was a crucial co-morbid symptom detected in Thai FMS subjects. Since the highest sub-scale score of Jenkin's sleep scale was found in the question number 4 (feeling tired and worn out when waking up after usual amount of sleep), the non-restorative sleep is the important problem in most FMS patients. This finding showed accordance with the well-known data in previous literatures which indicated that non-restorative sleep was the main bothersome symptom in FMS patients[25,26]. In addition to sleep problems, several common co-morbidities such as fatigue, anxiety, paresthesia, headache and stiffness found in FMS patients were consistent with those reported in many previous studies[15-18].

Major depressive disorder (MDD) is one of the most commonly found co-morbid symptoms in FMS[2]. Recent study conducted by Raphael et al identified that the prevalence of MDD were more than three times higher in the community of women with FMS[27]. However, depressive symptoms were not pivotal among Thai FMS patients since self-reported depression was shown in only 23.9% of patients in comparison to about 40% or more of depression rate in other literatures[16,17,28,29]. In the current study, a considerably low average HAM-D total score (7.72) was reported. When compared with current results from other studies of patients with FMS, it showed approximately 70% of patients had at least a moderately severe level of depression (HAM-D score >18)[30]. In addition, other FMS clinical trials showed that the baseline HAM-D scores in each treatment group were in a range of 10.3 to 11.5[31,32]. Although some studies conducted in Turkey reported that most of their FMS patients had only mild depression[16,33]. The current study showed that more than half (53.52%) of Thai FMS patients had no depression based on HAM-D score. This discrepancy of depression intensity between the patients and participants in other studies may be partly due to the distinction in the study population such as ethnic and culture differences as well as coping mechanisms.

Regarding correlation analyses of clinical characteristics, the unexpected results suggested that duration of widespread pain was significantly negatively associated with PVAS scores and Jenkin's sleep scale scores. This finding contradicted the results reported by Wallace et al which stated that inflammatory responses induced sympathetic pain and hyperalgesia as well as other symptoms such as stress, fatigue, and depression which were accelerated over time in patients with FMS[34]. Moreover, one study reported that most patients reported mild FMS in the previous year after diagnosed, most patients reported mild FMS. However, if the FMS duration was more than 2 years, the majority of patients reported moderate to severe FMS[35]. This would partially explain how increased duration of disease exposure may have contributed to the severity of FMS symptoms. Another study found no association between duration of symptoms and various illness characteristics including pain and sleep problems[17]. However, the data suggested that the symptoms' intensity can be overcome by effective coping, patience, and adaptive strategies of Thai patients. The patients might become accustomed to the symptoms after long-term exposure, and thus affected their behaviors and their responses with less pain. Consequently, negative correlations were evident: the longer the duration of widespread pain, the lower the PVAS and Jenkin's sleep scale scores in this group of patients.

As expected, positive correlation was observed between PVAS score and VAS score which measured the patient global assessment of disease status. In addition, there was a significantly positive correlation between the intensity of pain and sleep disturbances. This association was well established in many clinical studies. It was found that the majority of FMS patients reported sleep problems. The relationship between pain and sleep abnormalities could explain the development of a vicious circle where a day of intense pain was followed by a night of poor sleep, and vice versa[36]. It was notable that in this current study the FIQ total scores, the specific parameter quantifying the overall impact of FMS symptomatology, displayed positive correlations with many parameters including, PVAS scores, global disease status scores, Jenkin's sleep scores, and HAM-D total scores. These results were expected as with previous data, which had firmly established that FIQ was a sensitive index of change in FMS-related symptoms which correlated with degree of disability[37]. Thus, it was a probable postulation that FIQ total scores could reflected the intensity of overall disease status as well as predominant clinical symptoms of FMS, including pain, sleep disturbance and depression.

The most common depressive symptoms based on HAM-D scores detected in these patients were found in insomnia and general somatic symptom categories. It would explain a strong positive correlation between HAM-D total scores and Jenkin's sleep scale scores. Low sub-scores of HAM-D found in suicidal ideation, psychomotor retardation, agitation and depressed mood categories revealed at least in part that the main problems in our patients were somatic symptoms and insomnia, but not mood symptoms.

Conclusion

Middle-aged Thai women were more vulnerable to be diagnosed with FMS. The main clinical problems were pain and insomnia but not depressive symptoms. Positive correlation between several clinical scores was documented. Data obtained from this study provided better understanding of the clinical natures of Thai patients with FMS. The benefits of this information are to document the relatively low prevalence and some treatment modification of Thai FMS patients. However, one of the limitations of this study was the small sample size limited by the number of patients in the study center. Therefore, further studies with a larger number of patients in various clinical settings should be done for more complete information.

What is already known on this topic?

Previous studies revealed demographic and clinical characteristics of FMS that common leading symptoms were pain, sleep disturbances, depression, anxiety and headache. There was one study reported that FIQ score had positive correlation with depression score, and quality of life score.

What this study adds?

This study added that, for Thai patients with FMS, the main clinical symptoms were also pain and sleep problems. For Thai FMS patients, depressive symptoms were not frequency found. There were also found positive correlation between score from the FIQ and score from PVAS, global disease status score, Jenkin's sleep score and HAM-D score.

Potential conflicts of interest

None.

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