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# PREVALENCE OF FIBROMYALGIA AMONG SCHOOLCHILDREN AND ADOLESCENTS IN IRAQ

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## ABSTRACT

**Purpose:** To determine the prevalence of fibromyalgia syndrome (FMS) in school children and adolescent.

**Methods:** The two stage classifications process proposed by the 1990 American college of rheumatology (ACR) multicenter criteria committee on fibromyalgia was applied**.**

**Stage 1:** A pain questionnaire to a sample of (6471) students (2846 girls,3625 boys) mean age (13.1 yrs) range (9-17).

**Stage 2**: Two rheumatologists examined all students with diffuse pain for 18 tender points and 4 control non tender points another 200 students without pain were examined as controls.

**Results:** There were 236 children (197 girls, 39 boys) with diffuse pain, (99) of them (83 girls, 16 boys) fulfilled the (ACR) diagnostic criteria for (FMS), so the prevalence of (FMS) in the study is 1.529% (2.916% for girls and 0.490% for boys).

The mean number of tender points for (FMS) patients was 14 and for controls were 3.

**Conclusions:** The prevalence of (FMS) among school children is relatively common. It is one of the main causes of diffuse pain among this age group which needs more attention by practicing pediatricians and rheumatologists.

**Keywords: Fibromyalgia, School children, Clinical adolescents, Iraq**

## INTRODUCTION

Fibromyalgia syndrome (FMS) is a commonly encountered disorder which is characterized by a widespread musculoskeletal pain, stiffness, parenthesis, non-restorative sleep and easy fatigability along with multiple tender points are widely and symmetrically distributed. This disorder found in most countries in must ethnic groups and in all types of climates[1].

Fibromyalgia (FM) is a non-inflammatory disorder, so old term fibrositis has been abandoned. The term primary and secondary (FM) should be abandoned because no differences was noted among patients who had (FM) with or without associated rheumatic disease. Patients may have no underlying diseases or sleep apnea.

FM appears to exist in adults and in all ages with greater percentage of female cases[3].FM has been widely studied in adults, both in clinical populations[4-8]and in population based studies[9-11]. A few clinical population studies one juvenile FM [12-19]as well as five populations based studies[20-24]have been published. The prevalence of FM in children has been estimated at 1.2 to 6.2%[20, 22, and 23]. The prevalence rates are about the same in adult population[11, 25].

## AIM OF THE STUDY

To determine the prevalence of FMS in school children and adolescents.

## PATIENTS AND METHODS

This study is a cross sectional study carried out in schools of AL-Saydia district area in Baghdad from October 1999 till may 2000.

A sample of 6471 Iraqi student recruited from 13 schools, (there were 5 schools mixed for boys and girl, 5 boy schools and 3 schools for girls only), in the geographical area where one of the rheumatologist is the living, entered a study that was approved by the local administration authority and the school board of advisers in AL-Karkh educational directorate to determine the prevalence of FM These schools give free formal primary and secondary education to the community of AL-Saydia district. The ages of children attending these schools range from 6-17 years. The sample included all students aged 9-17 years of those schools.

Absent students were seen on other fixed days. Students before the age of 9 years were excluded from the study because of lack of understanding of the questionnaire.

Two physical education teachers of each school was chosen to conduct stage1 of the study. The survey team consisted of the 2 rheumatologists and 2 physical education teachers from each school studied. A meeting was held for all of them to explain the purpose of the survey and the way to conduct it.

The board of teachers of each school was informed about the aim and details of the survey by physical educations teachers representing their schools in that meeting. Full instructions were given to them on how to fill the pain questionnaire. The pain questionnaire used in this survey consist of simple few questions about the presence and site of musculoskeletal pain by pointing on a front and back human body chart. Duration and diurnal variation of pain, symptoms which include fatigue, sleep and mood disturbances. A pilot study using this questionnaire by teachers of physical education was carried out on patients and healthy students and the results were discussed during the second meeting. Full history was taken and complete clinical examination was performed on all students whom they reported diffuse pain on the questionnaire form. Two rheumatologists examined those students for 18 tender points and 4 control non tender points which are middle of forehead, volar aspect of mid forearm, thumbnail and muscles of anterior thigh.

Students fulfilling the 1990 ACR criteria for classification of FM [(26)] were included in this study.

To meet the diagnostic criteria, musculoskeletal aching or stiffness must be present for at least 3 months and pain must be present in 11 or more out of 18 specific tender point sites on digital palpation with approximate force of 4 kg (the amount of pressure required to blench the nail)[(27)].

Only a response to severe (compared with mild or moderate) pain, physical withdrawal of the local part, characteristic body recoil or fascial expression of pain qualified as a tender point.

Students were excluded from the study if there is:

1- History of obvious trauma.
2- Evidence of synovitis.
3- Evidence of muscle weakness or neurologic abnormalities.
4- Evidence of collagen diseases.

A sample of 200 healthy students without diffuse pain matched for age and sex were examined for tender point served as a control group.

Statistical analysis was done by using chi-square test.

**RESULTS**

There were 6471 (2845 female and 3625 male) students. there were more male than female students studied due to presence of 2 more boy schools by comparison to the number of girl schools in AL-Saydia district aria. The age range was 9-17 year and the mean age was 13.1, 2.55 year.

There were 236 students (197 girls & 39 boys) with diffuse pain, 99 of them fulfilled ACR criteria for the diagnosis of FM, so the prevalence of FM in our study was 1.529%.

The distribution of FM according to age groups is shown in table 1.

**Table 1: Shows distribution of FM according to age group**

| Age group (yr.) | Total males No. | Males with FM. No, | Total females No. | Females with FM No. | Total no. OF both sexes | Both sexes with FM NO. |
|---|---|---|---|---|---|---|
| 9-11 | 1752 | 13* | 960 | 21 | 2712 | 34 |
| 12-14 | 487 | 0 | 368 | 28 | 855 | 28 |
| 15-17 | 1386 | 3 | 1518 | 34** | 2904 | 37** |
| All ages | 3625 | 16 | 2846 | 83 | 6471 | 99 |

***p<0.03 (significant)**

****p<0.001 (highly significant)**

**There were significantly more female students with FM compared to male students as shown table 2**

**Table 2: Shows distribution of patients with FM according to the sex**

| Sex | Sample no. | Patients with diffuse pain no. &(%) | Patients with FM no. &(%) |
|---|---|---|---|
| male | 3625 | 39(1.07) | 16(0.44) |
| female | 2846 | 197(6.92)** | 83(2.91)** |
| Both sexes | 6471 | 236(3.64) | 99(1.52) |

****p<0.0001(Highly significant)**

**The frequency of factors reported to aggravate a diffuse pain and stiffness in 99 FM students are shown in table 3. It has been shown that physical overacting and poor sleep are the most common tow-aggravating factors.**

**Table 3: Shows the frequency of aggravating factors**

| Aggravating factors | Frequency & (%) |
|---|---|
| Physical over activity | 83(83.8) |
| Physical inactivity | 32(32.3) |
| Poor sleep (not sleep well) | 73(73.7) |
| Humid / Cold whether | 64(64.6) |
| Anxiety / Stress | 35(35.3) |

**The frequency of symptoms manifested in 99 with FM and 200 matched normal controls are shown in table 4.**

**Table 4: frequency of symptoms manifested in 99 students with FM and 200 matched normal controls**

| Variable | FM students (99) NO & (%) | Controls (200) NO &(%) |
|---|---|---|
| **History of wide spread pain** | | |
| **Left side** | **(100) **** | **17(8.5)** |
| **Right side** | **(100) **** | **12(6)** |
| **Above waist** | **(100) **** | **8(4)** |
| **Below waist** | **(100) **** | **6(3)** |
| **Axial-skeletal** | **(100) **** | **3(1.5)** |
| **> 11 tender points** | **(100) **** | **0** |
| **Range of tender points** | **12-16** | **0-5** |
| **Musculoskeletal manifestations** | | |
| **Generalized ache and pain** | **99(100) **** | **2(1)** |
| **Stiffness** | **67(67.6) **** | **9(4.5)** |
| **Subjective** | **37(37.3) **** | **5(2.5)** |
| **Non – musculoskeletal Manifestation** | | |
| **General fatigue** | **81(81.8) **** | **17(85)** |
| **Sleep disturbance (wake up tired)** | **92(92.9) **** | **21(10.5)** |
| **Headache** | **42(42.4) **** | **8(4)** |
| **Irritable bowel** | **18(18.1) **** | **1(0,5)** |

****p<0.0001(Highly Significant)**

## DISCUSSION

In this survey, the general prevalence of FM among school children and adolescents was 1.5% which is in agreement with other studies showing a prevalence rate of 1.2% [(22)], 1.2% [(23)] and 1.3% [(28)] but the prevalence was low in comparison to another study showed a prevalence of 6.2% [(20)].

Difference in prevalence figure is not restricted to children. Several surveys of FM prevalence in North America and Europe report estimates ranging from 1.1, 11.2% [(29)]. The wide range reflects the difficulties in performing such studies.

It's recognized that there was almost certainly referral bias and probably identification and/or misclassification bias. Another problem is that diagnosis of symptoms still relies solely on "self – reported symptoms ", commonly pain and tenderness. People's sensitivity to pain and tenderness is subjective, reflecting many factors the ethnicity, age, sex, psychological distress and social backgrounds [(22)].

Ethnic background appear to be a major determinant of how one communicates and expresses pain [(30, 31)], experimental studies of pain have shown similar results [(32)], besides that, responses to pain differ not only between but also within ethnic group, two, important predictors of intra – ethnic variation are the degree of acculturation to the society's forms for health and illness, and the

socioeconomic class. Also there is some familial evidence of susceptibility to FM and this may be partly genetic [33].

It has been shown that the prevalence of FM in female students is seven folds higher than in male students [2.91% compare to 0.44%] and this comparable to the prevalence of FM in adult population in USA using 1990 ACR classification criteria which was reported in 3.4% of females and 0.5% of males [1] .

Sleep disturbance (wake up tired or need for period of sleep during the day) is one of the commonest non-musculoskeletal manifestations [92.9%] while a poor sleep by itself is an important aggravating factors [73.3%] in students with FM. Patients with FM sleep poorly and they describe themselves as being light sleepers and awakened frequently [26] .

Sleep disturbance is reported higher among our patients (92.9%) compared to another Iraqi study on patients with adult FM (82%) [34], ($p<0.01$), but it is in agreement with another children and a adolescents FM study [35] which stated that patient with FM who referred to a pediatric – rheumatology clinic are characterized by diffuse pain and sleep disturbance, the latter being more common than in adult.

FMS was once thought to be psychogenic syndrome because of the absence of laboratory or radiologic abnormalities and the lack of significant histopathologic changes in the painful tissues, yet the Reid et al [19] study provides evidence against the notion that FM is a psychogenic condition and the physiological basis of FMS remains unknown.

In general, it thought that the psychologic problems encountered by FM patients are secondary to having FM rather than vice versa [27]. This had raised the possibility that the anxiety / stress in our students may be due to FM itself rather than the other way round.

Although family background and schools with social problems may have an effect on symptoms in children [36], it has been found that children with persistent FMS showed characteristics more or less similar to those in adults with FM [11].

In conclusion common, the prevalence of FMS among school children is relatively common. It's one of the main causes of diffuse pain among schoolchildren (females > males), which needs more attention by practicing pediatricians and rheumatologists.

**REFERENCES**

**[1]** Gilliland BC. Relapsing polychondritis and arthritides. In: Fauci AS, BraunWald E, lesselbacher KJ, Wilson JD, Martin JB, Kasper DL, Hauser SL, Longo DL (eds). Harrison's principles of Internal Medicine, 5 ed. New York, McGrw – Hill Companies, 1998:1955-7.

**[2]** Freundlich B, Levethal L, Diffuse pain syndrome, In: Klippel JH, Weyand CM, Worthmann RL (eds), Primer on Rheumatic Diseases, 11 ed. Atlanta, Georgia, Arthritis Foundation, 1997: 123-7.

**[3]** White KP, Speechile M, Harth M, Ostbye T. The London Fibromyalgia Epidemiology Study: Compared Demographic and Clinical Characteristics in 100 Random Community Cases of Fibromyalgia versus Controls. J Rheumatol 1999; 26:1577-85.

**[4]** Yunus M, MasiAT, Calabro JJ, et al. Primary fibromyalgia (fibrositis): Clinical study of 50 patients with matched normal control. Semin Arthritis Rheum 1981; 11: 151 – 71.

**[5]** Campbell SM, Clark S, Tindall EA, et al. Clinical characteristics of fibrositis: I. A" blinded ", controlled study of symptoms and tender points. Arthritis Rheum 1983; 26: 817 -24.

**[6]** Clark S, Campbell SM, Forehand ME, et al. Clinical characteristics of fibrositis. II.A "blinded" controlled study using standard psychological test. Arthritis rheum 1985; 28: 132–37.

**[7]** Goldenberg DL, Felson DT, Dinerman H. A randomized controlled trial of amitriptyline and naproxen in the treatment of patients with fibromyalgia. Arthritis Rheum 1986; 29: 1371 – 7.

**[8]** McCain GA, Bell DA, Mai FM, Halloday PD. A controlled study of the effects of a supervised cardiovascular fitness training program on the effects of a supervised cardiovascular fitness training program on the manifestations of primary fibromyalgia. Arthritis Rheum 1988; 31: 1135 – 41.

**[9]** Prescott E, Kjoller M, Jacobson S, et al, Fibromyalgia in the adult Danish Population: 1. Prevalence study. Scand J Rheumatol 1993; 22: 233 – 7.

**[10]** Frescott KO, Gran JT. The prevalence of fibromyalgia amongwomen aged 20 – 49 years in Arendal, Norway. Scand J Rheumatol1992; 74 – 8.

**[11]** Wolfe F, Ross K, Anderson J, et al. The prevalence and characteristics of fibromyalgia in the general population. Arthritis Rheum 1995; 38: 19-28.

**[12]** Malleson PN, AL-Matar M, Petty RE. Idiopathic musculoskeletal pain syndromes in children. J Rheumatol 1992; 1786-9.

**[13]** Walco GA Ilowite NT. Cognitive-behavioral intervention for juvenile primary fibromyalgia syndrome. J Rheumatol 1992; 19: 1627-9.

**[14]** Bell DS Bell KM. Cheney PR. Primary juvenile fibromyalgia syndrome and chronic fatigue syndrome in adolescents. Clin. Infect Dis 1994; 18 supp 1:21-3.

**[15]** Vandvik IH Forseth KQ. Abio-psychosocial evaluation of ten adolescents with fibromyalgia. ActaPediatr 1994; 83: 766-71

**[16]** Garcia CO, Molina JF, Bradford NJ, Fibromyalgia syndrome: experience in a pediatric rheumatologic clinic [Abstract]. Arthritis Rheum., 1996; 39 suppl: 1256.

**[17]** Roizenblatt S, Tufik S, Goldeberg J, et al. Behavioral profile of patients with juvenile fibromygia [abstract] Arthritis Rheum 1996; 39 suppl 9: 1255.

**[18]** Roizenblatt S, Goldeberg J, et al. Juvenile fibomyolgia: clinical and polysomnographic aspects. J, Rheumtol 1997; 24: 579 – 85.

**[19]** Reid GJ, Lang BA, MC Grath PJ. Primary Juvenile Fibromyalgia: Psychological Adjustment, Family, Functioning, Coping and Functional. Arthritis Rheum 1997; 40: 752 – 60.

**[20]** Buskila D, Press J, Gedalia A, et al, Assessment of nonarticular tenderness and prevalence of fibromyalgia in

children. J Rheumatol 1993; 20: 368-70.

**[21]** Buskila D, Neumann L, Hershman E, et al. Fibromyalgia syndrome in children-an outcome study. J Rheumatol 1995; 22: 525-8.

**[22]** Clark P, Vargas RB, L' egamis A, et al. Prevalence of musculoskeletal complaints in school children in Mexico City. J Rheumatol 1998; 25: 2009-14.

**[23]** Sardini S, Ghirardini M, Betelemme L, et al. Epidemiological study of primary fibromylgia in Pediatric age [in Italian]. Minerva pediatr 1996; 48: 543-50.

**[24]** Mikkelsson M, Sourander A, Piha J, Salminen JJ. Psychatric symptoms in preadolescents with musculoskeletal pain and fibromyalgia. Pediatrics 1997; 100: 220-7.

**[25]** Makela M. Heliovaara M. Prevalence of primary fibromyalgia in the Finish population. BM.J 1991; 303: 216-9.

**[26]** Wolfe F, Smyth HA, Yunus MB, et al. the American College of Rheumatology 1990 criteria for the classification of fibromyalgia. Report of multicenter criteria committee. Arthritis Rheum 1990; 33: 160-72.

**[27]** Bennet RM. The Fibromyalgia Syndrome. In: Kelley WN, Ruddy S, Harris ED, Sledye CB (eds.) Text book of Rheumatology , ed . Philadelphia, WB Saunders Co, 1997: 511-9.

**[28]** Mikkelsson M. One Year Outcome of Preadolescents with Fibromyalgia. J Rheumatol. 1999; 26: 674-82.

**[29]** Wolf F. Aspects of the epidemiology of fibromyalgia. J Musculoskeletal pain 1994; 2:65-77.

**[30]** Lipton JA, Marbach JJ. Ethnicity and the pain experience. SocSci Med 1984; 19:1279-98.

**[31]** Thomas VJ, Rose FD. Ethnic difference in the experience of pain ScoSci Med. 1991; 9: 1063-6.

**[32]** Lawlis FG, Achterber J, Dinner L, Kepetz D. Ethric and sex difference in response

to clinical and induced pain in chronic spinal pain patients. Spine 1984; 9: 751-4.

**[33]** Buskila D, Neumann L. Fibromyalgia syndrome and nonarticular tenderness in relatives of patients with fibromyalgia. J Rheumatol 1997; 24: 941-4.

**[34]** Mohammed ZS, Salman S. Primary fibromyalgia syndrome in Iraq. Thesis, Rheumatology and Rehabilitation Unit Baghdad University Medical College, Baghdad, 1996.

**[35]** Siegal DM, Janeway D, Baum J, Fibromyalgia syndrome in children and adolescents: clinical features at presentation and status at follow up. Pediatrics 1998; 101: 377-82.

**[36]** Alfven G. The covariation of common psychosomatic symptoms among children from socio economically differing residential areas. An epidemiological study. Acta Pediatr. 1993; 82: 484-7.