Fibromyalgia, co-morbid psychiatric disorder and gender. *A study based on General Health Questionnaire (GHQ-12) and (GHQ-30)*

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Fibromyalgia is a chronic condition characterized by body aches, widespread pain, sleep problems, extreme fatigue, depression, anxiety, and other symptoms, in combination with tenderness of specific areas (muscles and tender points) on the body. Recently, Gormsen et al[1] reported that patients with fibromyalgia had significantly more mental distress including depression and anxiety than healthy controls both by self-rating and by a professional rating. Fibromyalgia women showed poorer performance and learning alterations than healthy women, which indicated compromised emotion-based decision making. The current study aims to investigate any correlation between fibromyalgia, mental distress, and gender using general health questionnaire GHQ-12 and GHQ-30.

Ninety-four fibromyalgia patients (74 females and 20 males) who attended Al-Yarmouk Teaching Hospital, Baghdad, Iraq from 1st January to 15th June 2009 were asked to complete the General Health Questionnaire-Arabic version of the 12-item (GHQ-12) and 30-item (GHQ-30) to measure the level of their psychological distress and to identify potential cases of mental ill health. The GHQ-12 and GHQ-30 consists of 12 and 30 items, each one assessing the severity of mental problem over the past few weeks using binary scoring (GHQ scoring 0 0 1 1) and a 4 point Likert scale (simple Likert scoring 0 1 2 3). A GHQ-12 scoring of ≥4 was used as the cutoff point to define common mental disorders, with a maximum score of 12 indicating a likelihood of psychiatric illness. A GHQ-12 scoring of ≥5 was considered as a probable case. The diagnosis of fibromyalgia was made according to the following criteria: wide spread pain in all 4 quadrants of the body for a minimum of 3 months, at least 11 of 18 specified tender points when light pressure is applied to the surface of the muscles throughout the body.[1] The 18 sites used for the fibromyalgia diagnosis cluster around the neck, shoulder, chest, hip, knee, and elbow regions. Other tender points have been found to exist, but not used for diagnostic purposes. History of diabetes mellitus, depression, myofascial syndrome, migraine, restless syndrome, hypertension, irritable bowel syndrome, temporomandibular joint syndrome, chronic fatigue, headache, fatigue, dizziness, sleep disturbances, duration of illness and current pharmacological intervention were obtained from each patient. Routine laboratory investigations and x-ray of cervical spine were carried out for each patient. Patients with normal laboratory investigations including complete blood picture, erythrocyte sedimentation rate, and negative serological tests were admitted in the study. Patients with radicular pain, neurological deficit, disc herniation, fractures, infection, malignant disease, systemic disease, and serious psychosis were excluded. The data were analyzed using Excel 2003 and student's unpaired 2 tailed "t" test taking $p \leq 0.05$ as the lowest limit of significance.

The results show a female to male ratio of 3.7:1, with no significant difference in age between genders. Hypertension (9.6%) and diabetes mellitus (2.1%) were reported in this study. Chronic fatigue (67%), irritable bowel syndrome (58.5%), and migraine headache (23.4%) were reported. The mean number of tender points was non significantly higher in females (14.59±2.71) than males (13.44±2.89). Most patients were on drug therapy in the form of simple analgesia (62.8%), non-steroidal anti-inflammatory drugs (43.6%), and antidepressants (11%). Based on GHQ-12 binary scores, there was no significant difference in mean total items or negative items (negative items of GHQ-12 include; lost much sleep over worry, felt constantly under strain, felt you could not overcome your difficulties, feeling unhappy and depressed, losing confidence in yourself, thinking of yourself as a worthless person) between males and females (**Table 1**). The GHQ-12, using the binary scoring method, did not explore psychiatric illness among the fibromyalgia patients. Also, the Likert scoring of GHQ-12 showed no significant difference in mean total items or negative items between males and females (**Table 1**). Probable psychiatric cases were reported in 63.8%, when the simple Likert scoring of GHQ-12 was used (**Table 1**). Binary scoring of GHQ-30 revealed no significant difference between males and females (**Table 2**). Probable psychiatric cases were reported in 87.2% using binary, and 100% using the simple Likert scoring. The average scores of psychiatric morbidity, anxiety, depression, and social dysfunction were non significantly higher in females than males (**Table 2**). **Table 2** showed that the findings of GHQ-30 scored by simple Likert procedure did not differ from those obtained by binary scoring (**Table 2**). Using the average of GHQ scores as cutoff points to estimate the proportions of psychiatric distress, the binary scoring of GHQ-12 and 30 detected 41.% (39 out of 94) and 47.9% (45 out of 94) of patients were psychiatric distress compared with 45.7% (43 out of 94) when GHQ-12 or GHQ-30 was scored by the Likert procedure.

Table 1 - The GHQ-12 score calculated by GHQ binary scoring and simple Likert scoring methods of fibromyalgia patients.

Score	GHQ binary scoring			Simple Likert scoring		
	Male (n=20)	Female (n=74)	Total (n=94)	Male (n=20)	Female (n=74)	Total (n=94)
<4 (No cases)	8 (40)	23 (31.1)	**31 (33.0)**	0	1 (1.4)	**1 (1.1)**
4-7	10 (50)	28 (37.8)	**38 (40.4)**	3 (15)	6 (8.1)	**9 (9.6)**
8-12	2 (10)	23 (31.1)	**25 (26.6)**	4 (20)	20 (27.0)	**24 (25.5)**
>12 (psychiatric cases)	0	0	**0**	13 (65)	47 (63.5)	**60 (63.8)**
Total score (GHQ-12)	4.05 ± 2.605	5.391 ± 3.272	**5.106 ± 3.177**	13.95 ± 5.155	16.648 ± 7.354	**16.074 ± 7.008**
Negative items	2.476 ± 1.848	2.918 ± 1.741	**2.819 ± 1.765**	7.25 ± 3.739	8.364 ± 4.185	**8.127 ± 4.101**

The results are expressed as number (%), and mean ± SD, GHQ - general health questionnaire

Table 2 - The GHQ-30 score calculated by GHQ binary scoring and simple Likert scoring methods of fibromyalgia patients.

Score	GHQ binary scoring			Simple Likert scoring		
	Male (n=20)	Female (n=74)	Total (n=94)	Male (n=20)	Female (n=74)	Total (n=94)
Total score (GHQ-30)	10.476 ± 6.335	12.594 ± 6.543	**12.117 ± 6.531**	35.7 ± 13.211	41.013 ± 14.571	**39.882 ± 14.391**
≥ 5	17 (85)	65 (87.8)	**82 (87.2)**	20 (100)	74 (100)	**94 (100)**
Anxiety and dysphoria	2.100 ± 1.744	2.608 ±1.645	**2.500 ±1.670**	6.250 ±3.477	7.716 ± 3.776	**7.404 ± 3.745**
Anxiety and insomnia	2.000 ± 1.521	2.418 ±1.354	**2.329 ±1.394**	5.900 ± 2.633	7.000 ± 2.813	**6.765 ± 2.799**
Severe depression	1.050 ± 1.495	1.486 ±1.241	**1.393 ±1.228**	3.850 ± 2.924	4.986 ± 3.103	**4.744 ± 3.086**
Suicidal depression	0.500 ± 0.688	0.716 ±0.785	**0.670 ±0.767**	1.750 ± 1.860	2.391 ± 1.907	**2.255 ± 1.906**
Social dysfunction	1.600 ± 1.353	1.770 ±1.557	**1.734 ±1.511**	6.050 ± 2.282	6.418 ± 3.339	**6.340 ± 3.136**

The results are expressed as number (%), and mean ± SD, GHQ - general health questionnaire

The results of this study demonstrate a high percentage of probable psychiatric illness in patients with fibromyalgia. Two instruments; GHQ-12 and GHQ-30 using different scoring procedures revealed no significant difference between male and female scores. The results indicate that fibromyalgia is more prevalent in women rather men. In one study, fibromyalgia was shown to be related to female gender (odds ratio 16.8).[2] The probable psychiatric illness demonstrated by GHQ-30 using binary or Likert scoring was higher than the corresponding binary scored GHQ-12. This difference may be related to the instrument validity. The specificity and sensitivity of GHQ-30 were 87% and 91.4% compared with 78.5% and 93.5% for GHQ-12. In this study, the average GHQ scores as cutoff points were used to estimate the lower percent of probable psychiatric illness. However, both instruments scored by different procedures gave the same results, namely, that females scored non-significantly higher than males.

Psychiatric co-morbidity scores in terms of anxiety, sleep disturbances, and depression were non-significantly higher in females than males. Previous studies showed that depression and anxiety are common and frequently severe among fibromyalgia patients. Individuals who scored above the cutoff scores for depression and anxiety had more physical symptoms and had poorer function than those below.[3] The probability of having a mental disorder, especially an anxiety disorder, is significantly higher amongst women with fibromyalgia compared with other women. Moreover, patients with fibromyalgia showed poorer quality of life than patients with rheumatoid arthritis and the general population, especially in term of mental health.

However, our findings do not agree with those of Vishne et al's study,[4] which reported that female gender is a risk factor for fibromyalgia in a depressed population, and depression is associated with fibromyalgia among women, but not men. Based on the multidimensional pain inventory and Short Form-36 Health Status Questionnaire (SF-36), women had greater life interference due to pain. Ruiz Pérez et al[5] reported that men had a poorer perception of their health, a higher percentage of psychiatric history and current mental illness, and more impact of the fibromyalgia.[5] Moreover, high psychological distress was related to higher age, more intense pain, a higher positive tender point count, and more physical disability, but not gender. Chronic pain in fibromyalgia is the cause for mental distress,[1] and hyper-responsiveness of the psycho-neuro-endocrinal system to several stressor events that lead to an increase basal sympathetic tone is shared in psychological distress in fibromyalgia. The most serious psychiatric co-morbidity detected in this study is suicidal depression, which was not reported in previous literature. The primary limitation of this study is psychiatric interview of patients to validate the GHQ.

In conclusion, the GHQ is a simple instrument used to explore psychiatric co-morbidity in patients with fibromyalgia, and clearly indicated that the existence of these co-morbidities are not influenced by female gender.

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