

## Association between Body Mass Index and fibromyalgia

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**Abstract:** A cross-sectional study was conducted in Baghdad, Iraq, for 50 patients with fibromyalgia. This study aims to association between body mass index and fibromyalgia. This study was designed according to a comparison work between two groups according to the values of body mass index (Underweight/normal weight for 20 patients and overweight for 30 patients). With the period of collecting samples was for a full year from 2021-2022 from different hospitals in Iraq. In this study, the results that were found were the severity of symptoms in the group of patients more than in control, and through the work of a special questionnaire to assess the general quality of life, The weight and height of the patients were recorded to determine whether they were overweight or not, taking into account in this second group those who had scores greater than 25 kg divided by twice their height (body mass index). Study, period since suffering from the syndrome. Presence of risky behaviors such as alcohol or tobacco consumption, Healthy lifestyle habits such as moderate exercise Similarly, the presence of health problems associated with fibromyalgia such as insomnia, headaches, irritability, loss of appetite, depression, memory loss, diarrhea, restlessness The results indicate that 55% of patients with fibromyalgia syndrome also suffer from obesity. Similarly, the prolongations show a significant relationship between obesity in patients with fibromyalgia and having a large body, with statistically significant differences.

**Keywords:** Body Mass, Fibromyalgia syndrome, two groups

## INTRODUCTION

Fibromyalgia syndrome (FMS) is a complex, chronic condition that causes widespread pain and extreme fatigue, in addition to a variety of other accompanying symptoms and is often described as pain from head to toe and mainly affects the soft tissues of the body [Cerón Lorente, L. *et al.*, 2019; Wolfe, F. *et al.*, 2011; Macfarlane, G.J. *et al.*, 2017].

It does not cause pain or swelling in the joints, and the mechanisms through which it occurs are not well known and; therefore, there are no changes in the analyzes or in the imaging studies that allow the diagnosis [Salaffi, F. *et al.*, 2013; Salaffi, F. *et al.*, 2009; Burckhardt, C.S. *et al.*, 1991; Strand, V. *et al.*, 2009].

At present, the causative factor that explains the pathophysiological mechanisms of fibromyalgia is unknown, and some studies suggest that fibromyalgia is caused by an alteration in the conduction pathways and pain control, while in other cases, it is believed that the cause of said pain may come from psychological trauma [Cordero, M.D. *et al.*, 2014; Kim, C.H. *et al.*, 2012; Flegal, K.M. *et al.*, 2010].

Among the most studied causes are central sensitization mechanisms that generate an amplification of the nociceptive signal [Mannerkorpi, K. *et al.*, 2010]. Other mechanisms

are neuroplasticity processes in which structures such as neurokinin receptors and glial cells responsible for the secretion of neutrophils and proinflammatory cytokines are involved. [Bjersing, J.L. *et al.*, 2013]

Obesity has implications for the quality of life of people with conditions that cause chronic pain, and a higher BMI is associated with increased chronic pain, disability, depression, and decreased physical function [Sellinger, J.J. *et al.*, 2010; Kaleth, A.S. *et al.*, 2018].

In recent years, the relationship between fibromyalgia and obesity has been investigated [Castel, A. *et al.*, 2015]. Excess weight and fat seem to play an important role in this disease [Shapiro, J.R. *et al.*, 2005]. Obesity has been associated with increased pain perception when pressing on tender points, decreased strength, loss of flexibility, and sleep disturbance [Senna, M.K. *et al.*, 2012]. Studies have concluded that obesity exacerbates the symptoms of this disease.

In one study, groups with a higher BMI show more severe symptoms of fibromyalgia and greater functional decline, which directly affects patients' quality of life. Likewise, [Thomas, J.G. *et al.*, 2014] they have been shown to have more medical comorbidities, consume more medication, and perform less physical activity, which limits them

of being able to carry out their daily activities. In another study, it was concluded that physical pain is greater in obese patients with fibromyalgia compared to those of normal weight [Ramírez, M. et al., 2015].

In addition, it has been observed that a higher body mass index (BMI) is associated with higher levels of pain and fatigue in people with fibromyalgia, which can be an aggravating condition by negatively affecting the quality of life and consequent dysfunction.

## MATERIAL AND METHOD

### DATA COLLECTION

In this article, 50 patients were collected and divided into two groups (Underweight/normal weight for 20 patients and overweight for 30 patients and the average age ranged between 40-60 years, and the body mass index of the control group was between 21-25 kg/m<sup>2</sup>, while for the patients' group, it ranged from 27-33 kg/m<sup>2</sup>

### STUDY DESIGN

Data was collected in three stages:

1. Surveying patient data.
2. Evaluation of anthropometric parameters.
3. The Fibromyalgia Effects Questionnaire (FIQ).

Erase personal data. The survey was designed by researchers to obtain personal information about the participants. It included: personal data (name, age, occupation), Personal medical history (medical diagnosis of fibromyalgia and additional diseases, history of diagnosis and consumption of medications/medical treatment), and

anthropometric data (body composition analysis score record).

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BMI is defined as a parameter that expresses the relationship between the height of the person concerned and his physical weight, the relationship of which is determined in order to determine whether the person has a weight that is considered normal or if the range of overweight or obesity.

### STUDY PERIOD

In this study, the period of collecting samples was for a full year from 2021-2022 from different hospitals in Iraq, and the required approvals were collected for the purpose of doing this study.

### AIM OF STUDY

This study aims to identify the Association between body mass index and fibromyalgia.

### RESULTS

**Table 1:** Distribution of patients according to age

Variable	Patient	Control
40-44	8	6
45-49	7	3
50-54	11	4
55-60	4	7

**Table 2:** Distribution of patients according to sex

Variable	Patient	Control
Male	11	8
Female	19	12

**Table 3:** Distribution of patients according to comorbidities

Variable	Patient	Control
Hypertension	7	9
Diabetes	8	1
heart disease	5	7
Others	10	3

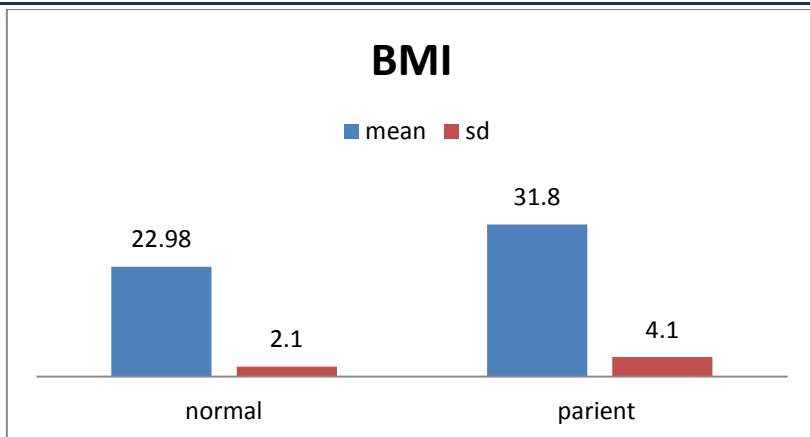


Fig 1: Outcomes of BMI

Table 4: Distribution of patient group according to symptoms

Symptoms					
		F	%	VP	CP
Valid	exhaustion	11	36.7	36.7	36.7
	Perceptual difficulties	7	23.3	23.3	60.0
	widespread pain	12	40.0	40.0	100.0
	Total	30	100.0	100.0	

Table 5: Distribution of the control group according to symptoms

VAR00004					
		F	%	VP	CP
Valid		10	33.3	33.3	33.3
	anxiety	6	20.0	20.0	53.3
	Chronic fatigue syndrome	3	10.0	10.0	63.3
	Depression	7	23.3	23.3	86.7
	Migraines	4	13.3	13.3	100.0
	Total	30	100.0	100.0	

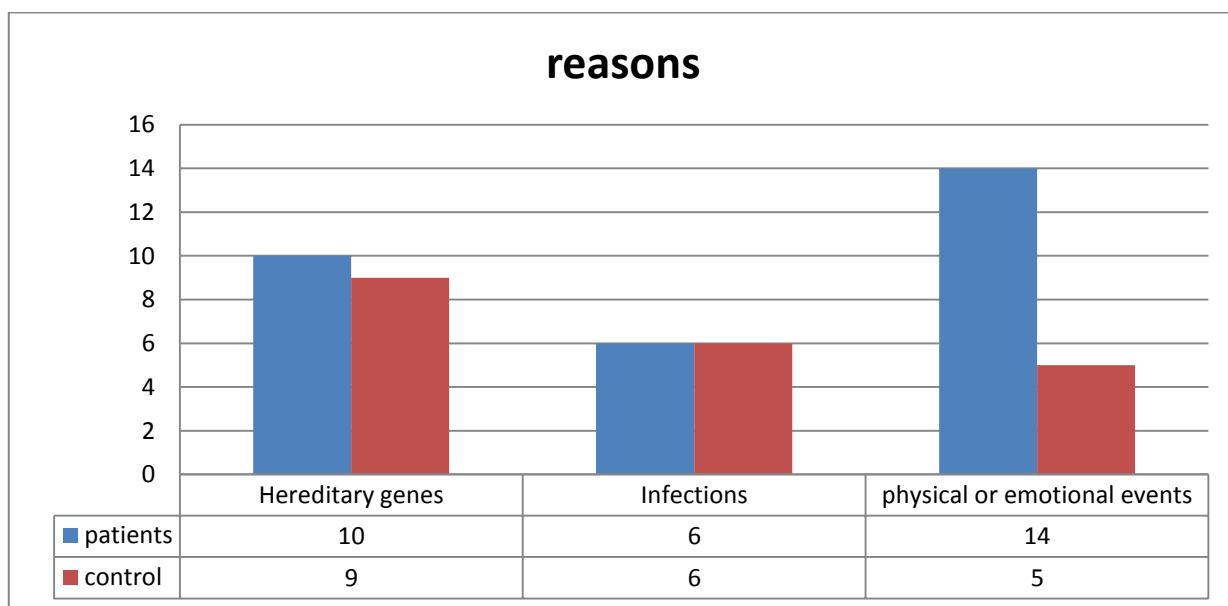
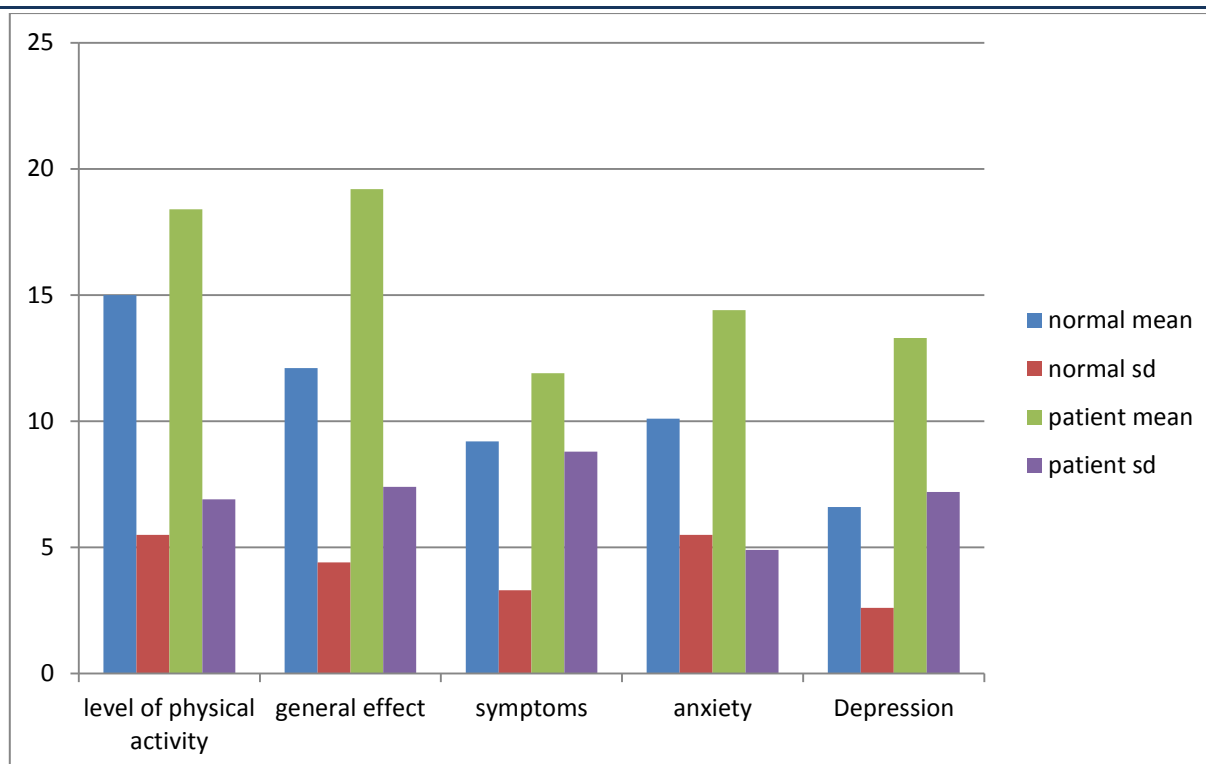


Fig 2: The reasons for the occurrence of fibromyalgia



**Fig 3:** Results evaluated according to the FIQR fibromyalgia effect questionnaire

**Table 6:** Logistic analysis of outcomes study

Dependent variable	
Failed (= 1)	
(1)	(2)
Age	0.155*** (0.323, 0.11)
Sex (female)	0.558*** (0.434, 0.621)
BMI	0.811*** (0.753, 0.894)
History family	1.173*** (1.110, 1.240)

## DISCUSSION

This study discussed that fibromyalgia is more severe in people who are overweight. Previously, it was believed that obesity only increased the risk of developing this disease, but now it is known that being overweight exacerbates the manifestations of fibromyalgia, such as chronic bone and muscle pain, fatigue, and sleep disturbances. [WHO, 2020].

In previous studies, an association was established between body mass index and severity of symptoms and quality of life in patients with fibromyalgia. The specialists took into account the body mass index (BMI) of 888 patients with fibromyalgia. Half of the volunteers had a BMI of 30 or more, which is considered obesity, and 50% are obese. The daily physical activity of patients and the severity of fibromyalgia symptoms were also taken. It turned out that the higher the body weight, the more often and severely the manifestations of the disease, the lower the quality

of life, and the greater the pain syndrome. [Suarez-Carmona, W. *et al.*, 2017].

Usually, there are some factors causing this can be spine problems, arthritis, injury, or any other physical stress. Emotional stress can also cause illness. The result is a change in the way the body "communicates" with the spinal cord and brain. Levels of proteins and chemicals in the brain can vary. Fibromyalgia is not an autoimmune disorder or an inflammatory or joint or muscle problem. Certain genes may make people more likely to develop fibromyalgia and other associated health problems. However, genes alone are not the cause of fibromyalgia.

Although fibromyalgia can affect the quality of life, it is still considered medically benign. It does not cause heart attacks, strokes, cancer, physical deformities, or death.

Nowadays, obesity is a very common condition and has been associated with various diseases.

Similarly, a worse prognosis is observed in people who are obese than those who do not suffer from it.

In this research, the relationship between fibromyalgia symptoms and body composition was studied considering anthropometric parameters such as body mass index as well as the percentage of fat and muscle in the female population with fibromyalgia [de la Salud, O.P. et al., 2017].

It was found that the prevalence of overweight and obesity in patients with fibromyalgia was 29.6% and 40.7%, respectively, which coincides with other studies in which the prevalence of obesity was 32 to 50%, and overweight was 21 to 30%. 6,7 The mean BMI was 28.9 kg/m<sup>2</sup>, similar to that found by Correa Rodríguez et al., which shows an average of 29.11 kg/m. 2, 24

On the other hand, the drug group with the highest consumption in the studied sample was non-steroidal anti-inflammatory drugs (NSAIDs). As is known, this type of medicine is useful in reducing peripheral pain or inflammation. In one study, it was reported that there was not yet sufficient evidence of the benefits of NSAIDs. However, it is known to be the most recommended drug for treating the disease. It is stated that it is likely due to his use of sub-therapeutic doses, acting as a sedative.

## CONCLUSION

In this study, a positive relationship was found between the group of patients and the negative results that were obtained, and body mass index was one of the main factors, and a statistically significant relationship was found between body composition and fibromyalgia symptoms, given that the prevalence of obesity and overweight is high in patients with myalgia fibrosis was sufficient to prove the relationship between these two cases.

## REFERENCES

1. Cerón Lorente, L., García Ríos, M.C., Navarro Ledesma, S., Tapia Haro, R.M., Casas Barragán, A., Correa-Rodríguez, M. and Aguilar Ferrándiz, M.E. "Functional status and body mass index in postmenopausal women with fibromyalgia: a case-control study." *International Journal of Environmental Research and Public Health* 16.22 (2019): 4540.
2. Wolfe, F., Clauw, D.J., Fitzcharles, M.A., Goldenberg, D.L., Häuser, W., Katz, R.S., Mease, P., Russell, A.S., Russell, I.J. and Winfield, J.B. "Fibromyalgia criteria and severity scales for clinical and epidemiological studies: a modification of the ACR Preliminary Diagnostic Criteria for Fibromyalgia." *The Journal of rheumatology* 38.6 (2011): 1113-1122.
3. Macfarlane, G.J., Kronisch, C., Dean, L.E., Atzeni, F., Häuser, W., Fluß, E., Choy, E., Kosek, E., Amris, K., Branco, J. and Dincer, F.Í.T.N.A.T. "EULAR revised recommendations for the management of fibromyalgia." *Annals of the rheumatic diseases* 76.2 (2017): 318-328.
4. Salaffi, F., Franchignoni, F., Giordano, A., Ciapetti, A., Sarzi-Puttini, P. and Ottonello, M. "Psychometric characteristics of the Italian version of the revised Fibromyalgia Impact Questionnaire using classical test theory and Rasch analysis." *Clin Exp Rheumatol* 31. 79 (2013): S41-9.
5. Salaffi, F., Sarzi-Puttini, P., Girolimetti, R., Gasparini, S., Atzeni, F. and Grassi, W. "Development and validation of the self-administered Fibromyalgia Assessment Status: a disease-specific composite measure for evaluating treatment effect." *Arthritis Research & Therapy* 11 (2009): R125.
6. Burckhardt, C.S., Clark, S.R. and Bennett, R.M. "The fibromyalgia impact questionnaire: development and validation." *J rheumatol* 18.5 (1991): 728-33.
7. Strand, V., Crawford, B., Singh, J., Choy, E., Smolen, J.S. and Khanna, D. "Use of "spydergrams" to present and interpret SF-36 health-related quality of life data across rheumatic diseases." *Annals of the Rheumatic Diseases* 68.12 (2009): 1800-1804.
8. Cordero, M.D., Alcocer-Gómez, E., Cano-García, F.J., Sánchez-Domínguez, B., Fernández-Riejo, P., Moreno Fernández, A.M., Fernández-Rodríguez, A. and De Miguel, M. "Clinical symptoms in fibromyalgia are associated to overweight and lipid profile." *Rheumatology international* 34 (2014): 419-422.
9. Kim, C.H., Luedtke, C.A., Vincent, A., Thompson, J.M. and Oh, T.H. "Association of body mass index with symptom severity and quality of life in patients with fibromyalgia." *Arthritis care & research* 64.2 (2012): 222-228.
10. Flegal, K.M., Carroll, M.D., Ogden, C.L. and Curtin, L.R. "Prevalence and trends in obesity among US adults, 1999-2008." *Jama* 303.3 (2010): 235-241.

11. Mannerkorpi, K., Nordeman, L., Cider, Å. and Jonsson, G. "Does moderate-to-high intensity Nordic walking improve functional capacity and pain in fibromyalgia? A prospective randomized controlled trial." *Arthritis research & therapy* 12 (2010):R189.
12. Bjersing, J.L., Erlandsson, M., Bokarewa, M.I. and Mannerkorpi, K. "Exercise and obesity in fibromyalgia: beneficial roles of IGF-1 and resistin?." *Arthritis research & therapy* 15.1 (2013): R34.
13. Sellinger, J.J., Clark, E.A., Shulman, M., Rosenberger, P.H., Heapy, A.A. and Kerns, R.D. "The moderating effect of obesity on cognitive-behavioral pain treatment outcomes." *Pain Medicine* 11.9 (2010): 1381-1390.
14. Kaleth, A.S., Slaven, J.E. and Ang, D.C. "Obesity moderates the effects of motivational interviewing treatment outcomes in fibromyalgia." *The Clinical journal of pain* 34.1 (2018): 76-81.
15. Castel, A., Castro, S., Fontova, R., Poveda, M.J., Cascón-Pereira, R., Montull, S., Padrol, A., Qanneta, R. and Rull, M. "Body mass index and response to a multidisciplinary treatment of fibromyalgia." *Rheumatology international* 35 (2015): 303-314.
16. Shapiro, J.R., Anderson, D.A. and Danoff-Burg, S. "A pilot study of the effects of behavioral weight loss treatment on fibromyalgia symptoms." *Journal of psychosomatic research* 59.5 (2005): 275-282.
17. Senna, M.K., Sallam, R.A.E.R., Ashour, H.S. and Elarman, M. "Effect of weight reduction on the quality of life in obese patients with fibromyalgia syndrome: a randomized controlled trial." *Clinical rheumatology* 31 (2012): 1591-1597.
18. Thomas, J.G., Bond, D.S., Phelan, S., Hill, J.O. and Wing, R.R. "Weight-loss maintenance for 10 years in the National Weight Control Registry." *American journal of preventive medicine* 46.1 (2014): 17-23.
19. Ramírez, M., Martínez-Martínez, L.A., Hernández-Quintela, E., Velazco-Casapía, J., Vargas, A. and Martínez-Lavín, M. "Small fiber neuropathy in women with fibromyalgia. An in vivo assessment using corneal confocal bio-microscopy." *Paper presented at the Seminars in Arthritis and Rheumatism*. (2015).
20. WHO O M. d. I. S. "Obesidad y sobrepeso." *Centro de prensa*. (2020). <https://www.who.int/es/news-room/fact-sheets/detail/obesity-and-overweight>.
21. Suarez-Carmona, W., Jesus Sanchez-Oliver, A. and Antonio Gonzalez-Jurado, J. "Fisiopatología de la obesidad: Perspectiva actual." *Revista chilena de nutrición* 44.3 (2017):226–233.
22. de la Salud, O.P. "Sobrepeso afecta a casi la mitad de la población de América Latina y el Caribe. Noticias." (2017). [https://www.paho.org/costa-rica/index.php?option=com\\_content&view=article&id=348:sobrepeso-afecta-poblacion-america-latina-y-caribe&Itemid=314](https://www.paho.org/costa-rica/index.php?option=com_content&view=article&id=348:sobrepeso-afecta-poblacion-america-latina-y-caribe&Itemid=314).

**Source of support:** Nil; **Conflict of interest:** Nil.

**Cite this article as:**

Al-Qubaeissy, K.Y.C., Kadhim, K.G. and Yahya, R.D. "Association between Body Mass Index and fibromyalgia." *Sarcouncil Journal of Biomedical Sciences* 2.3 (2023): pp 34-39.