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Association of Body Mass Index with Symptom Severity and Quality of Life in Patients with Fibromyalgia

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Abstract

Introduction: Fibromyalgia, which affects 3-5 per cent of the US population, is a persistent syndrome of pain characterised by generalised discomfort, tenderness and various related symptoms, including weakness, morning stiffness, unrefreshing sleep and cognitive symptoms. **Objective:** To examine the association between body mass index (BMI) and symptom severity and quality of life (QOL) in patients with fibromyalgia.

Methods: We examined the status of BMI and its relation with symptom incidence and QOL in 530 patients with fibromyalgia who were seen in a fibromyalgia care programme and who completed the clinical survey Fibromyalgia Impact Questionnaire (FIQ) and Short Form 36 (SF-36).

Results: The BMI range of patients that were not obese, overweight, mildly obese, and extremely obese was 24.8%, 23.6%, 22.2%, and 22.6%, respectively. Among the four classes, age was slightly different, with those with a higher BMI being older (P 0.004). After age change, group variations in the number of tender points (P = 0.003) and the FIQ and SF-36 scores were important. The groups with the greater BMI showed more symptoms linked to fibromyalgia with weaker overall FIQ scores (P < 0.001). Within the 4 groups, post hoc analysis found that variations were mostly in the highly obese group relative to the other groups.

Conclusion: Extreme obesity is associated with higher levels of signs of fibromyalgia, and lower levels of QOL in individuals with fibromyalgia.

Keyword: Fibromyalgia, QOL, BMI, FIQ.

Introduction

Fibromyalgia, affecting 3-5% of US people, is a chronic pain disorder characterised by generalised pain, tenderness, and symptoms such as exhaustion, weakness in the morning, non-refreshing sleep and cognitive symptoms (1).

The number of overweight and obese individuals in the United States is rising and about 1/3 of the population will be called obese. Several studies have found that obesity and quality of life (QOL) are correlated in the general population (2). In physical and emotive elements, people who had a higher Body Mass Index (BMI) reported lower QOL ratings, and the overall scale of these abnormalities was larger than the others. More physical pain has also been related to obesity. The QOL impact of obesity were shown to be more severe and extreme obesity than mild obesity (3).

A variety of chronic pain syndromes include pain in the back and spine, migraine, osteoarthritis and increased abdominal pain are correlated with obesity. Studies of the co-occurrence of chronic pain and overweight / obesity suggest that people who get overweight / obese are more at risk of chronic pain of greater severity due to elevated

joint-pressure stresses from excess weight, physiological disturbances of behavioural changes, which is considered to be linked to mechanical and structural causes (4).

In patients with fibromyalgia, higher numbers of people overweight or obese, which vary from 47% to 73%, have been recorded. An independent risk factor for fibromyalgia has been shown by a new longitudinal study, with overweight or obese women at 60-70 percent greater risk than females of average weight. Patients with fibromyalgia documented correlations with obesity, heightened pain perception and poorer physical activity and sleep. However, the association between pain and BMI did not appear in these studies (5).

Although the Fibromyalgia Effect Questionnaire (FIQ) was a standard measurement used for the result of this demographic, there were no differences between average, overweight and obese classes in populations with fibromyalgia in the self-reported scores. In QOL, the higher BMI was correlated to lower QOL levels in fibromyalgia patients, but significant differences in QOL between normal, overweight and obese groups were not shown (6).

Class I (BMI 30.0–34.9 kg / m2), Class II (BMI 35.0–39,9 kg / m2, severely obesity) and Class III (BMI 400.0 kg / m2, significantly obese) are the divisions of the World Health Organisation (WHO), because treatment choices vary among those with a BMI of 335, kg / m2, regardless of the significant comorbidities risk (7). Competitively, the risk of obesity is substantial. The prevalence of serious or extreme obesity grows faster than modest obesity among the adults. While obesity in fibromyalgia patients is normal, it has not been documented to date if fibromyalgia-connected and QOL symptoms have been impaired by obesity, especially extreme obesity (8). The purpose of the present study was to examine the association between BMI, symptom severity, and QOL in patients with fibromyalgia.

Methods

Study population consists of 6 to 12 months after a short interdisciplinary Fibromyalgia Treatment Program (FTP) from the study previously reporting by our group of researchers. The study has been approved by the institutional review board and all participants have given written consent to the study. During the course of this study, from June 2, 2018 to September 3 , 2019, our participants were seen in the FTP and had a confirmed diagnosis of the disease fibromyalgia, in accordance with the American College of Rheumatology criteria. 124 patients had insufficient BMI data and were omitted from further studies among the 688 patients seen during the observed time span. In the final population, the FIQ and short Form 36 (sF-36) health surveys were completed when the assessment was carried out in the FTP and 530 patients were aged 18 years with BMI information that was objectively measured weight and height. A comprehensive assessment was performed for all applicants, including a tender point's evaluation by a registered nurse. In the medical record demographic and social factors and the number of tender points is omitted.

BMI determination and grouping

BMI is defined as the weight in kilograms divided by the square of the height in meters (kg/m2). The WHO classification criteria were used to identify patients who were underweight (BMI 18.5 kg/m2), normal weight (BMI 18.5–24.9 kg/m2), overweight (BMI 25.0–29.9 kg/m2), and obese (BMI 30.0 kg/m2). By the WHO classification criteria, the obese group was divided further into class I (BMI 30.0–34.9 kg/m2), class II (BMI 35.0–39.9 kg/m2), and class III (BMI 40.0 kg/m2) (9). The number of study patients in the underweight group was small with only 15 patients (1.7%). The class III group

was small compared with the other BMI groups, with 83 patients (9.3%). Therefore, we merged the underweight into the normal group and formed a no obese group. We combined the class II and class III groups into one severely obese group for the purpose of analysis. Our final BMI classification consisted of 4 groups: no obese (BMI 25.0 kg/m2), overweight (BMI 25.0–29.9 kg/m2), moderately obese (BMI 30.0–34.9 kg/m2), and severely obese (BMI 35.0 kg/m2).

Fibromyalgia-related symptoms and QOL assessment

At the time of their FTP review, the participants completed both the FIQ and the SF-36. FIQ was developed in 1991 and validated as an important method to measure fibromyalgia patients ' health status. It includes 20 items that determine the next 10: physical efficiency, general well-being in a prior week, workdays missing and symptoms of discomfort, tiredness, morning exhaustion, rigidity, work difficulty, anxiety and depression. This is a self-administered test that tests many domains of mysterious symptoms and functional impairment; In the last seven questions the visual analogue scale was calculated in 100 mm. Scores range from 0–100, with a high score indicating a greater impact of fibromyalgia. The FIQ was scored according to the directions outlined by Bennett.

A possible instrument for tracking patient conditions in a busy healthcare atmosphere was established as the SF-36, which tests QOL-related wellbeing (10). The questionnaire is a self-administered questionnaire which measures 8 concepts of health: general health, physical function, physical role, pain index, general health scores, vitality scores, emotional role and social function and composite physiotherapy scores. The score for SF-36 varies from 0–100, and higher health ratings (11).

Statistical analysis

Demographic and social characteristics, the scores for the FIQ and SF-36 and the count of tender points for categorical variables were measured among the BMI groups in a single way. Since the age varies considerably between the BMI classes, we have also carried out age-adjusted analyses with multiple linear regression. When statistically relevant omnibus P-value analyses in the 4 groups were done after the experiments in pairs and again with linear regression methods to account for age. For these post-hoc pair-wise experiments a Bonferroni correction was needed for multiple comparisons. The four classes had six close distinctions in all pairs and the Bonferroni P was 0.05, 0.06 or 0.008. Version 8 of JMP software was used for analyses (12).

Results

With 24.8%, 23.6%, 22.2%, and 22.6%, the BMI distribution of the non-obese and overweight and highly obese patients was relatively even. 72% were overweight or obese in patients. The mean SD BMI of our patients was 29.8 kg/m2. The mean SD age was 49 years. Group variations in age were substantial (P: 0,004), with increased age dependent BMI. There were major variations between group numbers of tenders (P = 0.04), with a higher BMI correlated with a greater number of tenders. The patient traits had no other major group variations.

Significant group discrepancies persisted after age change. In the higher BMI categories for overall FIQ scores and for FIQ sub-scales for physical functioning, work failed, work ability, pain, stealth and depression, more fibromyalgia associated symptoms and functional illness were observed. There were no major community fluctuations in feeling good, tiredness, morning tiredness and anxiety in the FIQ sub-scale (13). The lower SF-36 values in the higher BMI groups suggest weaker QOL for

the subscales of physical activity, pain predictor and overall health outlook, mental and physical portion functions overview after age adjustment. There were no significant group differences in the SF-36 scores in role physical, vitality, social functioning, mental health index, and mental component summary (14).

Ages-adjusted post-hoc analyses reveal that all factors, except emotional activity, vary considerably among highly obese and no obese classes. The extreme obese group had also substantially lower ratings for SF 36 physical operations and specific elements than the overweight and mildly obese groups. In comparison, for the overall FIQ, the sub-scale, pain sub-scale and pain index levels of SF-36, and the SF-36 general wellbeing expectations of the moderately obese classes, there have been significant variations in the extremely obese group.

Discussion

Our research indicates that in patients with fibromyalgia, obesity is prevalent; about half of our patients were obese and about a quarter were seriously obese. Obesity was observed to grow with age and was associated with increased severity of the symptoms of fibromyalgia, lower levels of QOL, loss in physical capacity, and increased number in tender points. The severity of the symptoms becomes more pronounced as the obesity is more extreme (15). The category variations were observed mainly in contrasts between extremely obese patients with no obese patients and patients with overweight as well as patients with mild obesity. The severely obese patients had significantly higher FIQ pain scores and SF-36 pain index than the no obese and overweight patients (16). When comparing the moderately obese patients with the overweight patients and with the no obese patients, the significant differences were limited to physical functioning and stiffness; no differences were found between the overweight and the no obese patients.

The 45 percent prevalence of obesity in our patients with fibromyalgia is more than one-third of the US population's obesity rate, based on quantitative weight measured for the US as a whole. In comparison, one-half of our fat population (17).

Severely obese patients (BMI 35kg / m2) were present. Our levels of obesity was comparable to other recent fibromyalgia research (45-50 percent), which were performed without the subdivision of obese groups (18). However, our prevalence of obesity was higher than the Yunus et al recorded incidence of 32 per cent (19). Their research divided obesity into three classes (I, II, and III), and 13 percent were in classes II and III (i.e., highly obese). Our findings report not only a higher rate of obesity generally, but also a higher rate of severe obesity among the obese patients.

A new research of 215 fibromyalgia patients has shown that fibromyalgia's obesity adversely affects pain pressure intensity and alters sleep quality and quantity, physical strength and flexibility, particularly in the lower corporal (20). However, no similarities between self-reported and BMI effects were found and there were no major variations between FIQ score categories and pain numerical ratings. Likewise, a substantial correlation between BMI and pain has not been observed in other research. This trials were not focused on obesity scores for obese patients. Note the variation in self-reported symptoms came mainly from the extreme obese group in our sample, and the variations in other group comparisons were not as evident. As we have already noted, the higher BMI was correlated with an increasing number of tender points, which indicates greater pain sensitivity. Only in the highly obese group was the disparity in the number of tender points found relative to the no obese (21).

Our large sample size helped us to identify and evaluate the excess weight, moderate obesity and severely obese

groups separately, perhaps because in other studies in patients with fibromyalgia our research showed no clear differences. A significant value of our research is the ability to explore variations in obesity.

Our results in QOL were comparable to reports from general population research in terms of extreme obesity having significantly lower QOL scores, notably affecting summary scores of physical components, than behavioural, social and emotional aspects. In patients with fibromyalgia, QOL has been found to be significantly less in contrast with the US general population and our SF-36 values are less in all subscales than in the general population. Symptom gravity was also correlated in other cases of extreme or morbid obesity (22). In morbidly obese patients, the incidence of low back and other musculoskeletal discomfort was substantially higher than in lean patients, and in morbidly obese patients, the lowest QOL scores existed relative to other BMI strata. In morbidly obese people, gastrointestinal symptoms, including stomach pain, have also been observed to be more severe.

We observed group differences in the FIQ depression subscale that were noted only between the severely obese patients and the non-obese patients in post hoc analysis. Although we found group differences in depression, our study was not designed to adequately assess depression (23). Our measure of depression was the FIQ depression subscale, rather than an independently validated depression specific questionnaire, and its association needs further study.

With weight reduction steps, musculoskeletal complications, physical weakness and QOL linked with morbid obesity, as well as overweight and obese fibromyalgia complications have been seen to be changing. A fibromyalgia therapy regimen also needs to integrate weight management techniques include improvements in the environment including healthy diet and improved physical exercise. For patients with a BMI that reaches 35.0 kg / m2, referrals to medicinal and therapeutic weight management services will need to be addressed.

Limitations

There are several limitations to this project. Second, the definition we used for obesity was based on BMI. To estimate abdominal fat, the waist-to - hip ratio will provide the best anthropometric test. Second, pain sensitivity was assessed by a manual examination of the tender point, and no quantitative pain sensitivity test was provided. Third, the FIQ depression subscale was our indicator of depression, without using a validated depression-specific questionnaire, and our research was not intended to properly assess depression. Fourth, 15 patients who were underweight were placed in the no obese category. The findings, however, were the same when we removed them and so we included them in the report. Finally, this study was only based on patients with fibromyalgia. Future studies should also include comparison groups without fibromyalgia to evaluate any differences or similarities.

Finally, obesity is widespread in fibromyalgia patients. A bigger BMI is associated with higher levels of fibromyalgia symptoms and pain and lower levels of QOL, particularly those over 35.0 kg / m2 (serious obesity).

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