

# Pain and other symptom severity in women with fibromyalgia and a previous hysterectomy

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**Objective:** Fibromyalgia is a troubling disease characterized by chronic pain. This study explored whether pain and other fibromyalgia symptoms are worse among women who had undergone a hysterectomy with or without an oophorectomy versus those who had not.

**Methods:** Consecutive women who were seen at the Fibromyalgia Treatment Program at a tertiary medical center between 2001 and 2004 and who completed the Fibromyalgia Impact Questionnaire (FIQ) and Short Form-36 Health Survey (SF-36) at initial evaluation were included in this study.

**Results:** A total of 813 women were included; 328 had had a hysterectomy. Total FIQ scores from women who had had a hysterectomy were higher (worse symptoms) than those who had not (58.1 vs 56.4,  $P = 0.002$ ). FIQ subscale scores of pain ( $P = 0.003$ ), fatigue ( $P = 0.030$ ), stiffness ( $P = 0.035$ ), and depression ( $P = 0.008$ ) were also worse in women who had had a hysterectomy. Similar to the FIQ, SF-36 physical component scores were worse in women who had had a hysterectomy ( $P = 0.045$ ).

**Conclusion:** Pain and other fibromyalgia symptom severity was worse in women who had had a hysterectomy with or without an oophorectomy.

**Keywords:** fibromyalgia, hysterectomy, oophorectomy, symptom severity, surgical menopause

## Introduction

Clinical observations suggest that women with fibromyalgia and a previous hysterectomy with or without an oophorectomy suffer from more pain and other disease-related symptomatology.<sup>1</sup> To date, however, this association has not been thoroughly explored.

This study further examined this association in a large group of women, some of whom had undergone hysterectomy with or without an oophorectomy and some of whom had not. Hysterectomy was chosen because it is one of the most common surgeries in women in the United States,<sup>2</sup> second only to cesarean section. Moreover, previous studies suggest interactions between the hormonal milieu and pain,<sup>3-6</sup> observations that further suggest a role for exploring the effects of hysterectomy on pain and other fibromyalgia-related symptomatology. Thus, the current study examined a large group of women with fibromyalgia with the goal of exploring whether such symptomatology is worse among those who had undergone a hysterectomy with or without an oophorectomy at some point in the past.

## Methods Overview

This study was approved by the Mayo Clinic Institutional Review Board in Rochester, MN. Thereafter, we assessed consecutive women who were seen at the

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Fibromyalgia Treatment Program at the Mayo Clinic between 2001 and 2004. All these women had consented to be part of a larger study, as previously described.<sup>7-9</sup> All had had the diagnosis of fibromyalgia confirmed using the American College of Rheumatology 1990 criteria.<sup>10</sup>

At the time of their clinic visit, all patients completed two previously validated questionnaires, the Fibromyalgia Impact Questionnaire (FIQ)<sup>11</sup> and the Short Form-36 Health Survey (SF-36).<sup>12</sup> Information on age, race, duration of fibromyalgia symptoms, and hysterectomy and oophorectomy status at the time of completion of the self-report questionnaires was subsequently abstracted from the medical record.

## Statistical analyses

Descriptive statistics were used to characterize the sample based on age, race, duration of fibromyalgia symptoms, and hysterectomy and/or oophorectomy status. Univariate comparisons between groups were performed using one-way analysis of variance or  $\chi^2$  tests, where appropriate. Multiple regression models were used to analyze the relationship between hysterectomy/oophorectomy status and fibromyalgia symptoms (FIQ and SF-36) while adjusting for potential confounding variables or statistically significant baseline differences between groups (eg, age).  $P < 0.05$  was considered statistically significant. Analyses were performed using JMP software (version 8, SAS Institute Inc, Cary, NC).

## Results

### Demographics

Patient demographics based on hysterectomy status appear in Tables 1 and 2. A total of 813 women were included in this study. Of these patients, 328 had had a hysterectomy (hysterectomy alone: 60, hysterectomy plus

unilateral oophorectomy: 24, hysterectomy with bilateral oophorectomy: 244).

Information on year of hysterectomy was available in 267 patients (81%). The median interval from hysterectomy to completion of the questionnaires was 12 years (range <1–42 years). Fifty-three women reported symptoms that preceded their surgery. Of the 214 women who reported experiencing symptoms only after surgery, the median reported that duration of ongoing symptoms at the time of questionnaire completion was 5 years (range <1–47 years).

### Symptomatology based on surgery (hysterectomy with or without a unilateral/bilateral oophorectomy)

Of incidental note, comparisons of FIQ and SF-36 summed total scores or subscale scores between the three hysterectomy groups described previously did not reveal any statistically significant differences (Table 1).

However, as measured by the FIQ, pain ( $P = 0.024$ ) was worse among patients who had undergone surgery in univariate analyses. Similarly, as measured by the SF-36, physical function ( $P = 0.008$ ) and pain ( $P = 0.045$ ) were also worse among women who had undergone surgery (Table 2).

In multiple linear regression analyses, total FIQ scores from women who had undergone surgery were significantly higher (more severe symptoms) than from women who had not ( $P = 0.002$ ) (Table 3). Similarly, FIQ subscale scores of ability to do work ( $P = 0.027$ ), pain ( $P = 0.003$ ), fatigue ( $P = 0.030$ ), stiffness ( $P = 0.035$ ), and depression ( $P = 0.008$ ) were also higher among women who had had surgery. Higher scores for physical impairment ( $P = 0.095$ ), and anxiety ( $P = 0.072$ ) were also observed in this group, although these differences in scores did not reach statistical significance (Table 3).

**Table 1** Descriptive characteristics of participants by hysterectomy/oophorectomy status (n = 827)

Characteristic	Hysterectomy (n = 60)	Hysterectomy + unilateral oophorectomy (n = 24)	Hysterectomy + bilateral oophorectomy (n = 244)	P value
Age at time of FIQ, mean (SD), year	50.7 (11.5)	49.3 (12.3)	54.1 (9.8)	0.014
Race, n (%)				
White	46 (76.7)	21 (87.5)	201 (82.4)	
Other/Unknown	14 (23.3)	3 (12.5)	43 (17.6)	0.44
Duration of symptoms, median (range), months	96 (6, 564)	90 (7, 240)	84 (3, 780)	0.50
FIQ total score, mean (SD)	60 (14.3)	60.2 (9.9)	57.4 (14.8)	0.35
SF-36 physical component score, mean (SD)	26.3 (7.7)	25.0 (9.0)	26.4 (7.2)	0.70
SF-36 mental component score, mean (SD)	37.7 (11.4)	43 (11.4)	40.9 (12.3)	0.11

**Abbreviations:** FIQ, Fibromyalgia Impact Questionnaire; SF-36, Short Form-36 Health Survey; SD, standard deviation.

**Table 2** Summary of univariate comparisons between hysterectomy and no hysterectomy

Characteristic	Hysterectomy (n = 328)	No hysterectomy (n = 485)	P value
Age at time of FIQ, years	53.3 (10)	44.4 (13)	<0.0001
Race, n (%)			
White	268 (82)	381 (79)	
Other/Unknown	60 (18)	104 (21)	0.27
Duration of symptoms, median (range), months	84 (3, 780)	72 (3, 720)	0.85
FIQ total	58.1 (0.8)	56.4 (0.7)	0.093
Physical impairment	4.7 (2.2)	4.6 (2.3)	0.51
Feel good	2.3 (2.3)	2.2 (2.2)	0.77
Work missed	4.1 (3.6)	4.0 (3.6)	0.59
Able to do work	7.0 (2.4)	6.7 (2.4)	0.18
Pain	7.3 (2.0)	7.0 (2.1)	0.024
Fatigue	8.3 (1.9)	8.2 (2.1)	0.48
Rested	7.8 (0.1)	7.9 (0.1)	0.66
Stiffness	7.5 (2.2)	7.2 (2.3)	0.094
Anxiety	5.2 (3.1)	4.9 (3.0)	0.14
Depression	4.3 (3.3)	3.9 (3.1)	0.075
SF-36 physical component	26.3 (7.4)	27.3 (7.7)	0.062
SF-36 mental component	40.5 (12.1)	39.7 (11.8)	0.39
Physical functioning	37.4 (21.2)	41.6 (22.5)	0.008
Role limitations – physical	7.6 (18.7)	8.6 (0.9)	0.47
Pain	24.1 (14.1)	26.2 (14.9)	0.045
General health	38.9 (20.6)	37.9 (20.8)	0.51
Energy/Fatigue	18.8 (16.8)	17.0 (16.0)	0.12
Social functioning	39.8 (24.9)	38.9 (24.6)	0.62
Role limitations – emotional	45.2 (43.1)	48.2 (42.9)	0.33
Emotional well-being	57.7 (21.6)	57.0 (1.0)	0.61

**Note:** Mean (SD) unless otherwise noted.

**Abbreviations:** FIQ, Fibromyalgia Impact Questionnaire; SF-36, Short Form-36 Health Survey; SD, standard deviation.

**Table 3** Summary of multiple linear regression models using individual FIQ and SF-36 subscales as the outcome variable<sup>a</sup>

Subscale	Estimated mean change for having hysterectomy (95% CI)	SE	P value
FIQ total	3.35 (1.24, 5.46)	1.07	0.002
Physical impairment	0.28 (−0.05, 0.62)	0.17	0.095
Feel good	−0.11 (−0.44, 0.23)	0.17	0.53
Work missed	0.45 (−0.09, 0.99)	0.28	0.11
Ability to do work	0.40 (0.05, 0.76)	0.18	0.027
Pain	0.45 (0.15, 0.76)	0.15	0.003
Fatigue	0.33 (0.03, 0.63)	0.15	0.030
Rested	0.23 (−0.10, 0.57)	0.17	0.17
Stiffness	0.37 (0.03, 0.70)	0.17	0.035
Anxiety	0.41 (−0.04, 0.86)	0.23	0.072
Depression	0.65 (0.17, 1.13)	0.24	0.008
SF-36 physical component score	−1.15 (−2.28, −0.02)	0.57	0.045
SF-36 mental component score	−0.31 (−2.06, 1.45)	0.90	0.73
Physical functioning	−3.02 (−6.29, 0.24)	1.66	0.069
Role limitations – physical	−0.73 (−3.65, 2.19)	1.49	0.62
Pain	−2.76 (−4.92, −0.59)	1.11	0.013
General health	−2.53 (−5.52, 0.46)	1.52	0.097
Energy/Fatigue	−0.32 (−2.71, 2.06)	1.22	0.79
Social functioning	−2.65 (−6.26, 0.95)	1.84	0.15
Role limitations – emotional	−2.49 (−8.88, 3.91)	3.26	0.45
Emotional well-being	−0.57 (−3.71, 2.58)	1.60	0.72

**Note:** <sup>a</sup>Age is included as a covariate in all models.

**Abbreviations:** CI, confidence interval; FIQ, Fibromyalgia Impact Questionnaire; SF-36, Short Form Health Survey 36; SE, standard error.

The SF-36 physical component score ( $P = 0.045$ ) and pain subscale ( $P = 0.013$ ) were also worse for women who had had surgery compared with women who had not. Trends toward poorer scores among women who had undergone surgery were also observed in the physical functioning ( $P = 0.069$ ) and general health ( $P = 0.097$ ) subscales.

## Discussion and conclusion

The current study explored the effect of hysterectomy on pain and other fibromyalgia symptoms. Our results indicate that a history of having had this procedure is associated with worse symptomatology. To our knowledge, the current study is the largest US study to describe such findings and underscores the importance of probing further into how this association might be explained.

Our study raises a major concern that patients with chronic pain (such as those with fibromyalgia) may be undergoing surgery, such as a hysterectomy, in the hope of mitigating pain when, in fact, the cause of some of this discomfort may be an underlying chronic pain disorder, such as fibromyalgia. Indeed, Wolfe et al<sup>10</sup> reported that women with fibromyalgia are likely to have more lifetime surgical procedures compared with women with other rheumatologic disorders. Similarly, Langenberg et al<sup>13</sup> reported that prior chronic pelvic pain is an independent risk factor for pelvic surgeries in patients with interstitial cystitis and painful bladder syndrome.

The studies from Wolfe et al and Langenberg et al, coupled with the findings reported here, suggest that hysterectomy should be preceded by a thoughtful assessment of pain and some consideration of the possibility that the fibromyalgia itself might at times be the cause of chronic pelvic pain. Certainly, many patients with fibromyalgia need to undergo hysterectomies, but the fact that some of these patients continue to manifest troubling symptoms even after such a procedure underscores the point that a thoughtful preoperative evaluation is indicated. Thus, surgeons should consider an underlying diagnosis of fibromyalgia prior to undertaking a hysterectomy in patients with chronic pain.

It also remains possible, however, that this type of surgery may alter pain sensitivity. Pain modulation related to estrogen has also been partially demonstrated in other disorders such as migraines and temporomandibular disorder.<sup>4,14</sup> More germane to our findings, previous reports suggest that various other surgical procedures and/or trauma might predispose to the development of fibromyalgia.<sup>1,15,16</sup>

Our study has both limitations and strengths. Inevitably, the retrospective aspects of data collection led to lapses

in information. For example, the medical indications for hysterectomy and oophorectomy were unavailable, as were details on the exact surgical procedure undertaken and use and duration of hormone therapy. Despite such limitations, our large sample size, high questionnaire completion rate, and consecutive recruitment approach allow us to report on findings that are truly provocative.

In conclusion, this study represents a systematic assessment and comparison of symptoms on the basis of prior hysterectomy with or without a unilateral/bilateral oophorectomy in a large group of women with fibromyalgia. These results suggest a need for further investigation of the underlying mechanisms in women with fibromyalgia, particularly in respect of hysterectomy.

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## Disclosure

The authors report no conflicts of interest in this work.

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