



Multidisciplinary Group Intervention For Fibromyalgia: A Study Of Psychiatric Symptom And Functional Disability Outcomes

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Abstract

Objective: To assess psychiatric symptoms and functional impairment in patients with fibromyalgia after they participated in a 1/2 day group clinic administered by the rheumatology department at Kaiser Permanente in Colorado.

Methods: Questionnaires were given to 184 patients at the beginning of the group clinic and by telephone interview 11 to 23 months after completion of the group clinic. Questionnaires assessed demographics, psychiatric symptoms, functional impairment, work disability, and history of physical or emotional trauma and physical, emotional, or sexual abuse.

Results: Questionnaire responses indicated that patients had statistically significantly less anxiety ($p = 0.002$), depression ($p < 0.001$) and panic ($p = 0.029$), pain ($p = 0.003$), restless sleep ($p < 0.001$), stiffness ($p < 0.001$), nervousness/tenseness ($p < 0.001$) after attending the group clinic. Number of missed work days significantly decreased ($p = 0.003$), and patients' ability to do their jobs was also significantly improved ($p < 0.001$). However, neither interference in five major life domains nor instrumental activities of daily living improved. Number of visits to primary and specialty care also decreased significantly ($p < 0.005$).

Conclusions: In fibromyalgia patients referred to a rheumatology department, a multidisciplinary group clinic intervention may effectively improve outcomes in both mental health and functional status. This group clinic model may also reduce medical utilization and associated costs.

Methods

The 184 patients described previously were diagnosed with FMS by using established criteria, including a tender point examination, and were referred to the rheumatology department. The group clinic intervention consisted of one four-hour session that included an overview of the diagnosis and treatment of FMS; behavioral guidelines for restorative sleep, relaxation, and exercise; and discussion of medication as well as of physical therapy treatment for fibromyalgia. A behavioral medicine specialist regularly attended the clinic and provided intervention or referral for mental health services as necessary.

A prospective observational (ie, outcomes) study design was used. Inclusion criteria were a confirmed diagnosis of FMS, attendance at the FMS group clinic from November 1998 through August 1999, and completion of the baseline assessments. The only exclusion criterion was refusal to complete the baseline questionnaire. Comprehensive convenience sampling was used; all available patients meeting the inclusion criteria were included. No control group was used; all study participants received the intervention. Telephone follow-up data collection procedures were approved by the KP Northern California Institutional Review Board. Follow-up data

Introduction

Fibromyalgia Syndrome (FMS) is a chronic widespread pain syndrome often associated with fatigue, sleep disturbance, functional impairment and psychiatric comorbidity.

We previously described psychiatric comorbidity and functional disability in 184 patients seen in the rheumatology department's multidisciplinary group clinic at Kaiser Permanente (KP) Colorado

from November 1998 through August 1999.¹ Using an electronic questionnaire, we identified many patients with psychiatric disorders, including depressive illness, bipolar disorder, and general anxiety disorder as well as functional impairment severe enough to interfere with several major life domains. We also described the therapeutic interventions developed to address the needs documented by the questionnaire.¹

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were collected on 99 of the 184 patients (53.8%) via a telephone interview conducted by a research assistant during the period June 2000 through October 2000.

Variables collected at baseline included age and gender, employment and disability status, frequency of exercise, history of physical or emotional trauma and physical, emotional, or sexual abuse, medications used currently and in the past, and three validated self-reported measures of functional status and psychiatric disorders.

These included the Illness Intrusiveness Ratings Scale,² the Fibromyalgia Impact Questionnaire (FIQ),³ and the Quick PsychoDiagnostics (QPD) Panel.⁴ The Illness Intrusiveness Scale measures the degree to which an illness interferes with major life domains such as work, recreation, and family and social relationships. The FIQ was designed to measure the impact of FMS on instrumental activities of daily living, eg, shopping, meal preparation, walking several blocks, or driving a car;

and the common symptoms associated with FMS, such as pain and fatigue. The QPD is an automated tool for diagnosing and assessing severity of several psychiatric disorders, including major depression, generalized anxiety disorder, and bipolar disorder. Baseline questionnaires were administered via the POV Box, a handheld device, equipped with a liquid crystal display (LCD) screen displaying questions and a keypad with numeric and true/false buttons for entering responses.

Table 1. Change in Fibromyalgia Impact Questionnaire items (FIQ) (n = 99)

Changes in	Baseline mean	Follow-up mean	Absolute change	Relative change	(5%, 95%) quartiles	Wilcoxon signed rank p value
Ability to: ^a						
do shopping in last week	1.3	1.1	-0.2	-14.0%	(-2,2)	0.064
do laundry in last week	1.0	0.9	-0.1	-11.1%	(-1,1)	0.169
prepare meals in last week	1.1	1.0	-0.1	-10.1%	(-1,1)	0.208
wash dishes in last week	1.1	1.0	-0.2	-13.5%	(-2,2)	0.120
vacuum in last week	1.7	1.6	0.0	-2.0%	(-1,2)	0.710
make beds in last week	1.2	1.2	-0.1	-7.0%	(-1,1)	0.401
walk several blocks in last week	1.7	1.7	0.0	0.6%	(-2,1)	0.893
visit friends and relatives in last week	1.3	1.2	-0.1	-5.8%	(-2,2)	0.411
do yard work in last week	2.2	2.0	-0.2	-9.8%	(-2,1)	0.017 ^b
drive car in last week	0.9	0.9	0.0	-3.7%	(-1,1)	0.539
Number of:						
days felt good in last week	2.1	2.7	0.6	26.6%	(-3,4)	0.017 ^b
nights restful sleep in last week	2.0	2.8	0.9	43.3%	(-3,6)	0.009 ^b
days of missed work due to fibromyalgia symptoms in last week	1.3	0.7	-0.7	-49.2%	(-3,2)	0.003 ^b
Amount: ^c						
fibromyalgia interfered with ability to do job	5.3	2.1	-3.2	-59.5%	(-10,4)	<0.001 ^d
of pain	7.0	5.9	-1.1	-15.0%	(-7,4)	0.003 ^b
of tiredness	7.8	7.3	-0.6	-7.4%	(-6,4)	0.022 ^b
of how rested felt in morning	7.8	7.0	-0.9	-10.9%	(-5,4)	0.001 ^d
of stiffness	7.7	6.6	-1.1	-13.7%	(-7,4)	<0.001 ^d
of tenseness/nervousness/anxiety	7.1	5.8	-1.3	-18.1%	(-8,4)	<0.001 ^d
of depression/feeling blue	5.6	4.6	-1.0	-17.6%	(-5,4)	0.001 ^d

^a for these 10 items, 0=always, 3=never
^b significant at < 0.05
^c for these 7 items, 0=best, 10=worst
^d significant at < 0.001



With the exception of age, gender, and medication use, the same variables were collected at follow-up. Follow-up measures were obtained 11 to 23 months after the group clinic.

All statistical analyses were performed using SAS Version 8.0. Primary analyses involved assessing changes from baseline to follow-up on the Illness Intrusiveness Ratings Scale, the FIQ, and the QPD. Because the data were not normally distributed, the Wilcoxon signed-rank test, the nonparametric test analogous to the paired t test, was used to assess change in these measures. A significance level (alpha) of 0.05 was used to analyze results shown in Tables 1 through 3. Because multiple tests were performed, a more conservative threshold for statistical significance (level of 0.01) also was used to analyze the results. All tests were two-tailed.

Results

To test for potential bias in the follow-up data, we conducted analyses comparing baseline measures for those who completed the follow-up interviews with baseline for those lost to follow-up. No statistically significant differences in the primary outcomes of psychiatric symptoms and functional status were observed, findings suggesting minimal bias in the data for patients who completed the follow-up assessment.

The pre- and postintervention means, absolute and relative changes or differences, confidence intervals, and p values for all primary endpoints are presented in Tables 1-3. Because the data were not normally distributed, the 5% and 95% quartiles are displayed in lieu of the 95% confidence intervals. The attached tables demonstrate improvement

in outcomes achieved for several of the measures.

Statistically significant positive changes were seen in several of the FIQ items, even when using a significance level of 0.01. The number of days of work missed in the last week due to FMS averaged⁷ fewer days, or 49% ($p = 0.003$). On a scale from 0 to 10, FMS interfered 3.2 points less, a 60% reduction, with patients' ability to do their jobs ($p < 0.001$). On the same scale, pain averaged 15% lower at follow-up ($p = 0.003$); patients' ratings on restfulness upon waking improved 11% ($p = 0.001$), stiffness decreased 16% ($p < 0.001$), symptoms of tenseness and nervousness decreased 19% ($p < 0.001$), and depression decreased 14% ($p = 0.001$). None of the instrumental activities of daily living were significantly improved.

As assessed by the QPD (Table 2), statistically significant reductions

Change in	Baseline mean	Follow-up mean	Absolute change	Relative change	(5%, 95%) quartiles	Wilcoxon signed rank p value
Anxiety score (10 = clinically significant)	14.0	12.1	-1.9	-13.6%	(-13,9)	0.002 ^a
Depression score (10 = clinically significant)	12.4	10.2	-2.3	-18.2%	(-14,8)	<0.001 ^b
Panic disorder score (8 = clinically significant)	3.8	2.6	-1.3	-33.0%	(-16,8)	0.029 ^a

^a significant at < 0.05

^b significant at < 0.001

Change in	Baseline mean	Follow-up mean	Absolute change	Relative change	(5%, 95%) quartiles	Wilcoxon signed rank p value
Physical well-being and diet ^a	4.3	4.3	0.0	-0.2%	(-3.5, 3.0)	0.845
Work and finances	4.5	4.6	0.1	1.1%	(-2.5, 3.0)	0.855
Marital, sexual, and family relations	4.0	3.7	-0.3	-8.2%	(-3.7, 2.3)	0.061
Recreation and social relations	4.4	4.1	-0.3	-7.0%	(-3.3, 2.0)	0.080
Other aspects of life	3.6	3.4	-0.2	-5.7%	(-2.3, 2.0)	0.224

^a 1 = not very much interference, 7 = very much interference

were seen in symptoms of anxiety (1.9-point decrease, or 19%; $p = 0.002$); depression (2.3-point decrease, or 23%; $p < 0.001$); and panic disorder (1.3-point decrease, or 16%; $p = 0.029$). Interference in five major life domains, assessed by the Illness Intrusiveness Ratings Scale, was not improved at follow-up (Table 3).

Although no formal cost analysis was conducted, analysis was done of primary and selected medical specialty care (eg, family practice, internal medicine, neurology, neurosurgery, gastrointestinal, physical medicine and rheumatology) utilization changes from six months before the group clinic to six months after the group clinic. Results showed a reduction in mean visits from 4.4 to 3.5 ($p < 0.005$), and a slight though non-significant increase in mental health visits (1.05 to 1.18).

Discussion

Baseline questionnaire results obtained from our sample of FMS patients showed a high prevalence of major depression and anxiety, significant functional disability, and a history of past physical or emotional trauma and physical, emotional, or sexual abuse.¹ These findings are consistent with what has been reported in the literature.⁵⁻¹⁰

The results of our follow-up assessment indicate that the FMS group clinic was associated with statistically significant improvement in symptoms of anxiety, depression, and panic as well as in pain, restless sleep, stiffness, nervousness, and tenseness. Days of work missed showed a statistically significant decrease and patients' ability to do their jobs also showed statistically significant improvement. However, neither interference in five major life domains nor instrumental activities of daily liv-

ing improved at follow-up. Finally, a statistically significant decrease in primary and specialty care visits also was observed.

Several studies¹¹⁻¹³ have evaluated educational and behavioral interventions in patients with fibromyalgia: Among them, a six-month group therapy program consisting of behavior modification, stress reduction techniques, and strategies to improve fitness conducted at the University of Oregon showed improvement in tender points and fibromyalgia impact questionnaire items.¹¹ A study at the University of California at San Diego found improvement in depression scores, self-reported and observed pain behaviors, and myalgia scores in FMS patients as a result of behavioral and educational interventions.¹² A 1.5-day interdisciplinary program conducted at the Mayo Clinic showed improvement in FIQ and Multidimensional Pain Inventory scores.¹³

Limitations

Because all patients referred to the rheumatology department with a confirmed diagnosis of FMS were enrolled in the group clinic, the results are representative of the population of FMS patients referred for specialty care. However, these results may not be representative of the larger population of patients managed in primary care who have less severe FMS and who would probably be less functionally impaired and at less risk for psychiatric disorders than those referred to a rheumatologist.

Because we used a single cohort, pre-post design, factors other than or in addition to the group clinic, such as spontaneous symptom remission, could have been associated with the

improvement in patient outcomes. However, fibromyalgia symptoms do not typically improve with time without some type of clinical intervention,¹⁴ an observation which suggests that the group clinic did contribute to the improved outcomes.

Conclusion

Our group clinic model for the routine care of FMS in the rheumatology department appeared to be associated with improved outcomes in functional status and psychiatric symptoms while showing improved utilization of primary and specialty care services. These findings suggest that the group clinic is a potentially cost-effective model for fibromyalgia care. Important future endeavors include further follow-up data, validation of our experience in other practice settings and consideration of a more rigorous randomized controlled trial of FMS group intervention in the practice of rheumatology.

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References

1. Beck A, Breth G, Hays R, Miller C. Psychiatric disorders and functional disability in patients with fibromyalgia. *Permanente J* 2000 summer;4(3):21-8.
2. Devins GM, Binik YM, Hutchinson TA, Hollombly DJ, Barre PE, Guttman RD. The emotional impact of end-stage renal disease: importance of patients' perception of intrusiveness and control. *Int J Psychiatry Med* 1983-84;13(4):327-43.
3. Burckhardt CS, Clark SR, Bennett RM. The fibromyalgia impact questionnaire: development and validation. *J Rheumatol* 1991 May;18(5):728-33.
4. Shedler J, Beck A, Bensen S. Practical mental health assessment in primary care. Validity and utility of the Quick PsychoDiagnostics Panel. *J Fam Pract* 2000 Jul;49(7):614-21.
5. Offenbacher M, Glatzeder K, Ackenheil M. Self-reported depression, familial history of depression and fibromyalgia (FM), and psychological distress in patients with FM. *Z Rheumatol* 1998;57 Suppl 2:94-6.
6. Kurtze N, Gundersen KT, Svebak S. The role of anxiety and depression in fatigue and patterns of pain among subgroups of fibromyalgia patients. *Br J Med Psychol* 1998 Jun;71(Pt 2):185-94.
7. Walker EA, Keegan D, Gardner G, Sullivan M, Katon WJ, Bernstein D. Psychosocial factors in fibromyalgia compared with rheumatoid arthritis: I. Psychiatric diagnoses and functional disability. *Psychosom Med* 1997 Nov-Dec;59(6):565-71.
8. Walker EA, Keegan D, Gardner G, Sullivan M, Bernstein D, Katon WJ. Psychosocial factors in fibromyalgia compared with rheumatoid arthritis: II. Sexual, physical, and emotional abuse and neglect. *Psychosom Med* 1997 Nov-Dec;59(6):572-7.
9. McBeth J, Macfarlane GJ, Benjamin S, Morris S, Silman AJ. The association between tender points, psychological distress, and adverse childhood experiences: a community-based study. *Arthritis Rheum* 1999 Jul;42(7):1397-404.
10. Alexander RW, Bradley LA, Alarcon GS, Triana-Alexander M, Aaron LA, Alberts KR, et al. Sexual and physical abuse in women with fibromyalgia: association with outpatient health care utilization and pain medication usage. *Arthritis Care Res* 1998 Apr;11(2):102-15.
11. Bennett RM, Burckhardt CS, Clark SR, O'Reilly CA, Wiens AN, Campbell SM. Group treatment of fibromyalgia: a 6 month outpatient program. *J Rheumatol* 1996 Mar;23(3):521-8.
12. Nicassio PM, Radojevic V, Weisman MH, Schuman C, Kim J, Schoenfeld-Smith K, et al. A comparison of behavioral and educational interventions for fibromyalgia. *J Rheumatol* 1997 Oct;24(10):2000-7.
13. Worrel LM, Krahn LE, Sletten CD, Pond GR. Treating fibromyalgia with a brief interdisciplinary program: initial outcomes and predictors of response. *Mayo Clin Proc* 2001 Apr;76(4):384-90.
14. Wolfe F, Anderson J, Harkness D, Bennett RM, Caro XJ, Goldenberg DL, et al. Health status and disease severity in fibromyalgia: results of a six-center longitudinal study. *Arthritis Rheum* 1997 Sep;40(9):1571-9.