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Chapter 7

# Fibromyalgia and Backache: A Major Contributor to Non-Traumatic Backache

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## Abstract

Fibromyalgia is a complex chronic syndrome characterized by widespread mus-culoskeletal pain, fatigue, sleep disturbances, cognitive impairments, and a heightened sensitivity to physical stimuli. This study investigates the relationship between fibromyalgia and non-traumatic backache severity, aiming to identify factors predicting back pain intensity and its impact on patients. A cross-sectional design was employed, involving 100 fibromyalgia patients. Pain intensity, func-tional ability, and quality of life were assessed using the Visual Analog Scale (VAS), Roland-Morris Disability Questionnaire (RMDQ), and quality of life measures, re-spectively. The study found weak negative correlations between pain intensity, functional ability, and quality of life, indicating minimal interdependence. Regres-sion analysis showed that functional ability and pain intensity were poor predic-tors of quality of life, suggesting that other factors might play a more significant role in affecting the well-being of fibromyalgia patients.

**Keywords:** Fibromyalgia, Non-traumatic backache, Pain intensity, Functional ability, Quality of life

## Background

Fibromyalgia is a multifaceted chronic syndrome that significantly impacts pa-tients' quality of life. It is characterized by widespread musculoskeletal pain, fa-tigue, sleep disturbances, cognitive impairments, and a heightened sensitivity to physical stimuli (American Brain Foundation, 2024; Paroli et al., 2024). Despite ex-tensive research, the precise pathophysiology and etiology of fibromyalgia remain elusive. The condition is thought to involve a complex interplay of neurobiological, psychosocial, and environmental factors, which complicates both diagnosis and treatment. Recent studies suggest a possible association with inflammatory and autoimmune processes, and even latent viral infections, which may exacerbate symptoms (Paroli et al., 2024). These findings highlight the syndrome's complexity and underscore the need for a multidisciplinary approach to its management.

## Objective

The primary aim of this study is to investigate the relationship between fibromy-algia and the severity of non-traumatic backache, a prevalent symptom among fibromyalgia patients. Specifi-

cally, the study seeks to identify factors that may predict the intensity and impact of back pain in these patients. Understanding the predictors of backache severity, such as pain intensity, functional ability, and over-all quality of life, can provide critical insights into the management and treatment of fibromyalgia. By dissecting these relationships, healthcare providers can better tailor interventions to alleviate symptoms and improve patient outcomes.

## Methods

The study utilized a cross-sectional design, recruiting 100 patients diagnosed with fibromyalgia. Pain intensity was measured using the Visual Analog Scale (VAS), a reliable tool for assessing subjective pain levels. Functional ability was evaluated with the Roland-Morris Disability Questionnaire (RMDQ), which specifically ad-dresses disability related to back pain. Additionally, quality of life was assessed to provide a comprehensive understanding of the patients' overall well-being. This methodology aims to capture the multifaceted nature of fibromyalgia and its symptoms, particularly focusing on the non-traumatic backache, which remains poorly understood yet significantly impacts patients' lives.

## Data for Cross-Sectional Study Patient Demographics

| Patient Id | Age | Gender | Duration of fibromy-algia | Pain intensity | Function-al Ability (RMDQ) | Quality of life |
|---|---|---|---|---|---|---|
| 1 | 45 | Female | 16 | 7 | 17 | 9 |
| 2 | 55 | Male | 12 | 10 | 6 | 6 |
| 3 | 35 | Female | 11 | 5 | 7 | 9 |
| 4 | 45 | Female | 10 | 1 | 14 | 10 |
| 5 | 47 | Male | 15 | 7 | 4 | 1 |
| 6 | 49 | Female | 11 | 5 | 19 | 5 |
| 7 | 34 | Female | 10 | 5 | 24 | 10 |
| 8 | 59 | Female | 8 | 2 | 13 | 7 |
| 9 | 38 | Female | 14 | 1 | 6 | 10 |
| 10 | 56 | Female | 7 | 8 | 14 | 5 |
| 11 | 42 | Male | 8 | 2 | 20 | 8 |
| 12 | 53 | Male | 6 | 9 | 22 | 5 |
| 13 | 37 | Female | 7 | 7 | 14 | 7 |
| 14 | 60 | Female | 6 | 6 | 18 | 1 |
| 15 | 41 | Female | 14 | 10 | 11 | 2 |
| 16 | 54 | Female | 13 | 2 | 4 | 8 |
| 17 | 53 | Female | 6 | 8 | 14 | 7 |
| 18 | 53 | Male | 11 | 8 | 8 | 1 |
| 19 | 35 | Female | 10 | 6 | 22 | 8 |
| 20 | 60 | Female | 11 | 8 | 1 | 10 |
| 21 | 36 | Female | 9 | 1 | 10 | 2 |
| 22 | 48 | Male | 10 | 7 | 6 | 6 |
| 23 | 44 | Female | 11 | 3 | 1 | 8 |
| 24 | 32 | Female | 9 | 7 | 2 | 5 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | 7 | 3 | |
| 25 | 39 | Female | 14 | | | 10 |
| | | | 6 | 1 | 1 | 3 |
| 26 | 31 | Female | | | | |
| | | | | 4 | | 7 |
| 27 | 42 | Male | 14 | | 10 | |
| | | | | 2 | | 1 |
| 28 | 41 | Male | 11 | | 19 | |
| | | | | 7 | 4 | 1 |
| 29 | 39 | Female | 11 | | | |
| | | | | 6 | 3 | |
| 30 | 31 | Male | 11 | | | 10 |
| | | | | | | 4 |
| 31 | 32 | Female | 14 | 10 | 20 | |
| | | | 7 | 7 | 3 | 8 |
| 32 | 52 | Female | | | | |
| | | | 7 | | | 8 |
| 33 | 45 | Female | | 10 | 12 | |
| | | | | 7 | | 8 |
| 34 | 48 | Female | 14 | | 13 | |
| | | | | 4 | 2 | 8 |
| 35 | 38 | Female | 11 | | | |
| | | | | 1 | | 8 |
| 36 | 49 | Female | 12 | | 14 | |
| | | | | 9 | 1 | |
| 37 | 46 | Female | 11 | | | 10 |
| | | | | | | 6 |
| 38 | 41 | Female | 11 | 10 | 10 | |
| | | | 8 | 1 | | 2 |
| 39 | 52 | Male | | | 13 | |
| | | | | 2 | 1 | 8 |
| 40 | 46 | Male | 13 | | | |
| | | | | 3 | 1 | 1 |
| 41 | 34 | Female | 10 | | | |
| | | | | 5 | 1 | 6 |
| 42 | 35 | Female | 10 | | | |
| | | | | 8 | | 9 |
| 43 | 53 | Female | 15 | | 20 | |
| | | | | 3 | | 3 |
| 44 | 60 | Female | 16 | | 23 | |
| | | | 8 | 1 | | |
| 45 | 54 | Female | | | 23 | 10 |
| | | | | 2 | 5 | 8 |
| 46 | 46 | Female | 10 | | | |
| | | | | 9 | | 4 |
| 47 | 37 | Male | 11 | | 17 | |
| | | | | 4 | 2 | 6 |
| 48 | 37 | Male | 10 | | | |
| | | | 8 | 5 | 7 | 1 |
| 49 | 54 | Female | | | | |
| | | | 7 | 7 | | 7 |
| 50 | 52 | Female | | | 20 | |
| | | | | 3 | | 3 |
| 51 | 47 | Female | 15 | | 17 | |
| | | | | 9 | 8 | 3 |
| 52 | 58 | Female | 10 | | | |
| | | | 9 | 9 | 5 | 9 |
| 53 | 31 | Male | | | | |
| | | | | 4 | | 2 |
| 54 | 53 | Female | 15 | | 22 | |
| | | | | 6 | | 1 |
| 55 | 33 | Female | 13 | | 19 | |

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|---|---|---|---|---|---|---|
| 56 | 54 | Female | 15 | 7 | 14 | 3 |
| 57 | 36 | Male | 9 | 5 | 17 | 6 |
| 58 | 57 | Female | 16 | 5 | 4 | 9 |

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|---|---|---|---|---|---|---|
| | | | | 8 | 9 | 2 |
| 59 | 59 | Male | 12 | | | |
| | | | | 3 | | 9 |
| 60 | 31 | Female | 15 | | 24 | |
| | | | 7 | | | 1 |
| 61 | 44 | Female | | 10 | 16 | |
| | | | 9 | 4 | | 6 |
| 62 | 44 | Female | | | 23 | |
| | | | 6 | 6 | | 4 |
| 63 | 52 | Female | | | 16 | |
| | | | | 3 | 4 | 5 |
| 64 | 31 | Female | 13 | | | |
| | | | 8 | 2 | 8 | 4 |
| 65 | 40 | Female | | | | |
| | | | | 8 | | 6 |
| 66 | 33 | Female | 10 | | 18 | |
| | | | | | | 9 |
| 67 | 37 | Male | 16 | 10 | 15 | |
| | | | 9 | 2 | 3 | 9 |
| 68 | 57 | Female | | | | |
| | | | 9 | 9 | 4 | 3 |
| 69 | 59 | Female | | | | |
| | | | 6 | 5 | 2 | 9 |
| 70 | 58 | Female | | | | |
| | | | | 6 | 2 | 9 |
| 71 | 57 | Male | 13 | | | |
| | | | 7 | 6 | | |
| 72 | 41 | Female | | | 13 | 10 |
| | | | | 6 | | 4 |
| 73 | 35 | Male | 11 | | 17 | |
| | | | | 8 | 5 | 1 |
| 74 | 42 | Female | 12 | | | |
| | | | | 8 | 4 | 1 |
| 75 | 55 | Female | 16 | | | |
| | | | | 3 | | 3 |
| 76 | 57 | Female | 16 | | 15 | |
| | | | 7 | 1 | 7 | 4 |
| 77 | 47 | Female | | | | |
| | | | | 5 | 8 | 4 |
| 78 | 34 | Female | 13 | | | |
| | | | | 8 | 9 | 8 |
| 79 | 41 | Female | 13 | | | |
| | | | | | 2 | 4 |
| 80 | 46 | Female | 13 | 10 | | |
| | | | | 9 | | 6 |
| 81 | 44 | Female | 16 | | 15 | |
| | | | 9 | 2 | | 1 |
| 82 | 50 | Male | | | 19 | |
| | | | | 2 | 9 | 9 |
| 83 | 55 | Female | 14 | | | |
| | | | | 8 | 1 | 6 |
| 84 | 40 | Female | 14 | | | |
| | | | | 8 | 5 | 2 |
| 85 | 44 | Female | 14 | | | |
| | | | 9 | 3 | 1 | 2 |
| 86 | 42 | Female | | | | |
| | | | | 2 | 7 | 3 |
| 87 | 36 | Female | 12 | | | |
| | | | 7 | 4 | | 2 |
| 88 | 37 | Male | | | 24 | |
| | | | | 1 | 2 | |
| 89 | 32 | Female | 15 | | | 10 |
| | | | | 1 | | |
| 90 | 33 | Female | 11 | | 10 | 10 |
| | | | 8 | 8 | | 1 |
| 91 | 57 | Female | | | 14 | |
| | | | | 5 | | 6 |
| 92 | 36 | Female | 12 | | 24 | |

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|---|---|---|---|---|---|---|---|
| | | | | 9 | 6 | | |
| 93 | 59 | Female | 15 | | | | 10 |
| | | | 8 | 7 | | | 6 |
| 94 | 37 | Female | | | 11 | | |
| | | | | 3 | | | 8 |
| 95 | 33 | Female | 10 | | 23 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 96 | 34 | Male | 15 | 2 | 14 | 1 | |
| 97 | 32 | Male | 12 | 7 | 2 | 1 | |
| 98 | 57 | Male | 15 | 4 | 8 | 1 | |
| | | | | 9 | 2 | 3 | |
| 99 | 40 | Female | 14 | | | | |
| | | | | 3 | | | 5 |
| 100 | 32 | Male | 11 | | 10 | | |

> **Summary Statistics**\## AgeMean: 44.44 years

Standard Deviation: 9.13 years

**Gender Distribution**

Female: 75%

Male: 25%

**Duration of Fibromyalgia**

Mean: 11.09 years

Standard Deviation: 2.96 years

**Pain Intensity**

Mean: 5.46

Standard Deviation: 2.85

**Functional Ability (RMDQ Score)**

Mean: 10.62

Standard Deviation: 7.24

**Quality of Life**

Mean: 5.51

Standard Deviation: 3.12

## Analysis

*Correlation Analysis:*

## Pain Intensity and RMDQ Score

| | Pain intensity | Functional Ability (RMDQ) |
|---|---|---|
| | 1 | |
| Pain intensity Functional Ability (RMDQ) | -0.050048908 | 1 |

> Correlation coefficient: -0.050 ## Interpretation:> There is a very weak negative correlation between pain intensity and functional ability. This suggests that, as pain intensity increases, there

is a slight tendency for functional ability to decrease, but the relationship is not strong. > > Pain Intensity and Quality of Life:

| | Pain intensity | Quality of life |
|---|---|---|
| Pain intensity | 1 | |
| Quality of life | -0.087725079 | 1 |

## Correlation coefficient: -0.088 > **Interpretation:** There is a weak negative correlation between pain intensity and quality of life. This indicates that higher pain intensity is slightly associated with lower quality of life, but the correlation is quite weak.## RMDQ Score and Quality of Life:

| | Functional Ability (RMDQ) | Quality of life |
|---|---|---|
| Functional Ability (RMDQ) | 1 | |
| Quality of life | -0.056266612 | 1 |

## Correlation coefficient: -0.056 > Interpretation: There is a very weak negative correlation between functional abil-ity and quality of life. This means that as functional ability decreases (indicating worse function), there is a slight decrease in quality of life, but the association is minimal.## Overall Interpretation:

> The correlations between pain intensity, functional ability, and quality of life are weak and negative, suggesting that these factors are only slightly related to each other in this dataset. The weak correlations indicate that changes in one variable have little impact on the others. Therefore, while there is a slight trend suggesting that higher pain intensity and reduced functional ability may be associated with a lower quality of life, the effects are not strong enough to make definitive conclu-sions based on these correlations alone.

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .107a | .011 | -.009 | 3.162 |

Regression Analysis Model Summary > a. Predictors: (Constant), FunctionalAbility, Painintensity## ANOVA

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| 1 | Regression | 11.051 | 2 | 5.525 | .553 .577b |
| | Residual | 959.676 | 96 | 9.997 | |
| | Total | 970.727 | 98 | | |

1. Dependent Variable: QualityOfLife 2. Predictors: (Constant), FunctionalAbility, Painintensity ## Model Summary> The regression model includes two predictors: Functional Ability and Pain Intensi-ty, with the dependent variable being Quality of Life. The model's R value is 0.107, > > indicating a weak linear relationship between the predictors and the dependent variable. The R Square value of 0.011 suggests that only 1.1% of the variance in the Quality of Life can be explained by the model. The Adjusted R Square is negative (-0.009), which can happen when the model does not fit the data well, particularly when the explanatory power is low. The Standard Error of the Estimate is 3.162, indicating the average distance that the observed values fall from the regression line.

## ANOVA

The ANOVA table provides a summary of the sources of variation in the data. The Regression sum of squares is 11.051 with 2 degrees of freedom, while the Residual sum of squares is 959.676 with 96 degrees of freedom. The total sum of squares is 970.727. The Mean Square for the regression is 5.525, and for the residual, it is 9.997. The F-value is 0.553, with a significance level (Sig.) of 0.577. This p-value is well above the common alpha level of 0.05, indicating that the model as a whole is not statistically significant. In other words, there is insufficient evidence to suggest that Functional Ability and Pain Intensity are useful predictors of Quality of Life in this sample.

## Overall Interpretation

The regression model indicates that Functional Ability and Pain Intensity have a very limited impact on Quality of Life, as evidenced by the low R Square and Ad-justed R Square values. The lack of statistical significance (p-value = 0.577) sug-gests that any observed relationship between these variables and Quality of Life is likely due to chance rather than a true underlying effect. As such, the model does not provide meaningful insights into the factors influencing Quality of Life in this dataset. Further investigation with more variables or a larger sample size may be necessary to identify significant predictors.

## Conclusion

The study concluded that there is a weak and negative correlation between pain intensity, functional ability, and quality of life in fibromyalgia patients. The re-gression analysis revealed that functional ability and pain intensity have a limited impact on the quality of life, explaining only a small fraction of its variance. The findings suggest that other factors not examined in this study might significant-ly influence the quality of life in fibromyalgia patients. Further research with a broader range of variables and a larger sample size is necessary to identify more accurate predictors and develop better-targeted interventions for managing fi-bromyalgia symptoms.

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