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CARLOS EDUARDO CONSENTINO MACHADO

DETERMINANTES SOCIODEMOGRÁFICOS, DOR CRÔNICA E IMPACTO NA QUALIDADE DE VIDA EM FIBROMIALGIA: ESTUDO NA REGIÃO SUDOESTE DO PARANÁ

FRANCISCO BELTRÃO, PR
(AGOSTO/2025)

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DETERMINANTES SOCIODEMOGRÁFICOS, DOR CRÔNICA E IMPACTO NA QUALIDADE DE VIDA EM FIBROMIALGIA: ESTUDO NA REGIÃO SUDOESTE DO PARANÁ

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Essa dissertação foi julgada adequada para obtenção do título de Mestre em Ciências Aplicadas à Saúde e aprovada em sua forma final pelo Orientador e pela Banca Examinadora.

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DEDICATÓRIA

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Determinantes sociodemográficos, dor crônica e impacto na qualidade de vida em fibromialgia: estudo na região Sudoeste do Paraná

Resumo

A fibromialgia é uma síndrome crônica caracterizada por dor musculoesquelética generalizada, fadiga, distúrbios do sono e sintomas cognitivos, afetando significativamente a qualidade de vida dos indivíduos. Embora sua etiologia seja multifatorial, aspectos sociodemográficos e contextuais podem influenciar tanto a manifestação quanto a percepção da dor e o impacto funcional da doença. Compreender esses determinantes é essencial para o desenvolvimento de estratégias de cuidado mais sensíveis às realidades locais. Nesse sentido, a região Sudoeste do Paraná, com suas particularidades sociais e econômicas, oferece um cenário relevante para a investigação das inter-relações entre condições de vida, dor crônica e qualidade de vida em pessoas com fibromialgia. Logo, esta pesquisa quantitativa e transversal busca Analisar a associação entre determinantes sociodemográficos, presença de dor crônica e o impacto na qualidade de vida de indivíduos com diagnóstico de fibromialgia na região Sudoeste do Paraná. A partir do cálculo amostral, os dados de 85 indivíduos foram avaliados. Os resultados mostraram que a idade média dos participantes da pesquisa foi de 49,71 anos (DP = 9,50), variando de 26 a 69 anos; 96,47% eram mulheres. Observou-se maior prevalência da fibromialgia em indivíduos em união estável (71,76%) e que possuíam níveis de escolaridade mais altos (44,71% com ensino superior completo). O tempo que os participantes convivem com a dor foi de 14,82 anos (DP = 9,81) e o tempo de diagnóstico de fibromialgia variava entre 0,5 e 40 anos (DP = 9,35) com média de 11,13 anos. Quanto à severidade da dor, a maioria dos participantes relatou dor muito severa (56,47%), enquanto 28,24% classificaram a dor como moderadamente severa. A satisfação dos indivíduos em seis domínios (lazer, trabalho, bem-estar/autocuidado, habilidade em praticar exercícios, funcionalidade em geral e qualidade de vida) declinou significativamente em todos os domínios após o diagnóstico de fibromialgia ($p < 0,001$), com tamanhos de efeito mínimos acima de 0,60. A fibromialgia impacta intensamente a qualidade de vida, especialmente entre mulheres em idade produtiva. A dor crônica severa e persistente

compromete múltiplos domínios funcionais, destacando a necessidade de abordagens de cuidado integradas e sensíveis aos aspectos sociodemográficos.

Palavras-chave: Dor crônica, prevalência, qualidade de vida, saúde pública.

Sociodemographic determinants, chronic pain and impact on quality of life in fibromyalgia: a study in the Southwestern region of Paraná

Abstract

Fibromyalgia is a chronic syndrome characterized by widespread musculoskeletal pain, fatigue, sleep disturbances, and cognitive symptoms, significantly affecting individuals' quality of life. Although its etiology is multifactorial, sociodemographic and contextual factors can influence both the manifestation and perception of pain and the functional impact of the disease. Understanding these determinants is essential for developing care strategies that are more responsive to local realities. the Southwest region of Paraná, with its social and economic peculiarities, offers a relevant setting for investigating the interrelationships between living conditions, chronic pain, and quality of life in people with fibromyalgia. Therefore, this cross-sectional study seeks to analyze the association between sociodemographic determinants, the presence of chronic pain, and the impact on the quality of life of individuals diagnosed with fibromyalgia in the Southwest region of Paraná. Based on the sample size calculation, data from 85 individuals were evaluated. The results showed that the mean age of the research participants was 49.71 years (SD = 9.50), ranging from 26 to 69 years; 96.47% were women. A higher prevalence of fibromyalgia was observed in individuals in stable unions (71.76%) and high education (44.71% with completed higher education). The time that the participants had lived with pain was 14.82 years (SD = 9.81) and the time since diagnosis of fibromyalgia ranged from 0.5 to 40 years (M = 11.13; SD = 9.35). The majority of participants reported very severe pain (56.47%), while 28.24% classified the pain as moderately severe. Individuals' satisfaction across six domains (leisure, work, well-being/self-care, exercise ability, overall functioning, and quality of life) declined significantly across all domains after fibromyalgia diagnosis ($p < 0.001$), with minimum effect sizes above 0.60. Fibromyalgia severely impacts quality of life, especially among women of working age. chronic pain compromises multiple functional domains, highlighting the need for integrated care approaches that are sensitive to sociodemographic factors.

Keywords: Chronic pain, prevalence, quality of life, public health.

ARTIGO CIENTÍFICO 01

The impact of fibromyalgia: a cross-sectional examination across different life domains

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The impact of fibromyalgia: a cross-sectional examination across different life domains

Abstract

Fibromyalgia is a complex, multifactorial chronic pain syndrome characterized by widespread musculoskeletal pain. These symptoms significantly impact patients' quality of life, functional capacity, autonomy, and the ability to work and engage in leisure activities. Due to the numerous hypotheses about the cause of fibromyalgia, the difficulties healthcare professionals encounter in diagnosing and treating it, and the substantial negative impact on the quality of life of those affected, this study seeks to characterize the sample and the impact of the condition across various life domains. This was a cross-sectional study including participants of both sexes, with an achieved power of 99%. A higher prevalence of fibromyalgia was observed in individuals who reported being in a stable union (71.76%) and who possessed higher education (45.78%). The majority (56.47%) reported "very severe" pain. Significant differences were found in all evaluated domains: leisure, work, self-care, ability to exercise, functionality, and quality of life, meaning a significant deterioration between the period "before" and "after" the fibromyalgia diagnosis. The pattern of functional decline across various domains lends robust support to the allostatic load model of chronic pain and offers empirical evidence for the fear-avoidance model. Integrated treatment methods addressing physical and psychological aspects simultaneously may be, therefore, more effective.

Keywords: Epidemiology; Chronic pain; Quality of Life; Public Health.

Introduction

Fibromyalgia is a complex, multifactorial chronic pain syndrome primarily characterized by widespread musculoskeletal pain without evidence of inflammation in the painful areas [1–3]. Beyond pain, fibromyalgia is associated with fatigue, sleep disturbances, and cognitive dysfunction, all of which significantly impact patients' quality of life [4–6]. These symptoms often lead to a decline in self-care, functional

capacity, autonomy, and the ability to work and engage in leisure activities, thereby exacerbating the overall burden on patients [7–9]. To date, no objective test or specific biomarker with sufficient diagnostic accuracy has been identified; however, proteomic research and gene expression profiling show potential for developing novel diagnostic methods [10].

Traditionally, pain was categorized as either nociceptive, triggered by the activation of free nerve endings, or neuropathic, directly linked to damage to somatosensory nerves. This framework was insufficient for conditions like fibromyalgia, prompting the development of a new subclassification: nociplastic pain [11]. Nociplastic pain arises from altered nociception, even when there is no clear evidence of actual or threatened tissue damage activating peripheral nociceptors, or of disease or lesion in the somatosensory system causing the pain [12,13]. Nociplastic pain is generally associated with the mechanism of central sensitization [12,14]. Central sensitization is a comprehensive term encompassing mechanisms such as altered sensory processing in the brain, leading to enhanced nociceptive processing and a failure in endogenous analgesia [15–17]. This dysregulation in pain processing and inhibition results in increased responsiveness to various sensory stimuli, which can lead to hypersensitivity to both musculoskeletal and non-musculoskeletal stimuli [13]. According to the International Association for the Study of Pain (IASP), pain is defined as an unpleasant sensory and emotional experience associated with actual or potential tissue damage [18]. It is a complex and distressing phenomenon that significantly impacts society and the individual [19,20]. Pain can be classified according to its duration as acute or chronic. Acute pain is generally related to a warning sign for the body and tends to disappear as the causal mechanism is removed, with a duration that can range from minutes to less than 6 months; chronic pain is that which persists or recurs for more than 3 months, or beyond the normal expected recovery period for the underlying condition [21]. While often associated with injury or disease, chronic pain is increasingly recognized as a distinct condition, possessing its own taxonomy and medical definition [21]. Fibromyalgia, in turn, is characterized by classic nociplastic pain, manifesting as a persistent pain syndrome marked by widespread musculoskeletal pain, fatigue, and sleep problems. This often culminates in hyperalgesia (an exaggerated perception of pain to stimuli that should be perceived as mildly painful) and allodynia (the perception of pain from non-painful stimuli) [12–14,20].

Fibromyalgia affects an estimated 2% to 10% of the global population, with a higher prevalence among women [2,20,22]. In Brazil, the general population prevalence is reported to be 2.5% [1]. Data on chronic pain prevalence across Brazilian regions indicate the South at 47%, followed by the Southeast at 44%, North at 42%, Northeast at 32%, and Central-West at 25% [23]. Economically, the burden of fibromyalgia is substantial and mosty due to indirect costs. Indeed, chronic musculoskeletal pain is widely acknowledged as the primary cause of functional disability worldwide, impacting roughly 22% of the global population, as stated by the World Health Organization [24]. The personal burden of chronic musculoskeletal pain is substantial, with many individuals experiencing moderate to severe disability, a decline in quality of life, and an increased risk of chronic diseases, including cardiovascular diseases, diabetes, and cancer [19,25].

The onset of fibromyalgia symptoms marks a significant shift in individuals' functional, social, and emotional lives [26]. Research employing health questionnaires repeatedly shows that people with fibromyalgia suffer considerable disadvantages across multiple domains of health status (i.e., physical ability, social interaction, physical discomfort, overall well-being, energy levels, social functioning, and mental health) compared to the general population and other long-term pain conditions [4]. Fibromyalgia patients typically receive lower scores by one standard deviation for mental health and by two standard deviations for physical health compared to the general population, highlighting the significant effects on both physical and mental health [4,5].

Symptoms such as fatigue, muscle stiffness, and cognitive dysfunction further impair functional capacity, making it difficult for patients to carry out daily tasks and hold down a job [5,7]. The occupational adaptation of individuals with fibromyalgia is substantially impacted by the severity of their symptoms and the support systems available to them in the workplace [7]. Fibromyalgia patients, contending with chronic pain, fatigue, and cognitive difficulties, often struggle to fulfill their professional responsibilities, resulting in decreased output, higher rates of absenteeism, and presenteeism [2,7,9]. The intensification of symptoms directly correlates with decreased work productivity [27]. A study in Australia found that among women with fibromyalgia, 54.2% worked full-time and 21.5% part-time at symptom onset, but five years later, only 15.6% worked full-time, and 44.8% were no longer engaged in paid employment [28]. Leisure activities are also adversely affected, as patients often

lack the energy or physical capacity for recreational pursuits, leading to social and emotional isolation [8,29]. Research has found that the majority of women experienced pain and fatigue for more than 90% of their waking hours, which reduced their enjoyment of leisure activities [29].

Beyond what are often considered core symptoms, nociplastic pain, characteristic of fibromyalgia, is frequently associated with other comorbidities, including sleep disturbance, fatigue, memory difficulties, and mood disorders [30]. Further, there is recent evidence pointing to the role of neuroinflammation in fibromyalgia [31].

Psychological factors, including anxiety, depression, and coping mechanisms, are significant contributors to the deterioration of quality of life and physical functioning in individuals with fibromyalgia [8,9]. Depression and anxiety are frequent co-occurring conditions that worsen pain perception, fatigue, and sleep problems, thereby making it even more difficult for patients to participate in self-care and maintain their independence [8,9]. Factors such as pain catastrophizing and self-efficacy (that is, one’s perceived ability to cope with stressful situations) affect the impact of pain on daily activities, regardless of perceived pain severity. Specifically, research among females with fibromyalgia found that catastrophizing about pain is linked to a larger detrimental effect on daily life tasks [32]. Worsening symptoms, including pain, sleep quality, and mood changes, consistently exert a negative impact on patients' quality of life [26].

Engaging in physical activity and exercise is widely acknowledged as a vital component in managing fibromyalgia's impact on health [33,34]. Individuals with fibromyalgia frequently exhibit avoidance behaviors, prioritizing pain prevention over the pursuit of physical activity and exercise objectives [39,40]. Avoidance of movement (kinesiophobia) is negatively associated with self-efficacy, partly mediated by general fatigue and the functional impact of fibromyalgia [35,36]. Over time, this behavior can lead to impaired functionality, physical disability, and a rise in negative mood, contributing to a psychological feeling of helplessness that, if prolonged, may result in depression [37,38]. Conversely, maintaining physical activity is associated with a lower perception of functional limitation in the face of pain [36]. Despite these obstacles, physical activity is a recommended treatment option for individuals with fibromyalgia, even though pain, fatigue, and decreased mobility frequently limit patient participation [6,39].

Studies have repeatedly demonstrated that physical activity is a vital element in the

management of fibromyalgia. A review of 18 studies involving 1184 people found that physical exercise, especially when customized to an individual's requirements, has positive effects on pain, depression, and quality of life [40]. Research has demonstrated that customized exercise plans, comprising aerobic exercises, strength training, and mind-body disciplines such as yoga and tai chi, can boost functional ability, alleviate suffering, and enhance Quality of Life (QOL) [6,39,41]. Typically, an optimal exercise routine comprises moderate-intensity, tailored plans that balance physical activity with periods of rest to prevent the worsening of symptoms [6,42]. In addition to physical activity, psychological treatments play a crucial role. Cognitive-behavioral therapy (CBT), mindfulness-based stress reduction (MBSR), and acceptance and commitment therapy (ACT) have been shown to be effective in enhancing psychological well-being and quality of life in fibromyalgia patients [43]. These interventions empower patients with coping strategies to control pain and enhance their capacity for daily tasks, thereby promoting self-care and independence, and should be delivered by well-trained, multidisciplinary teams [5].

Despite the South of Brazil being a significant hub for healthcare development, the state of Paraná specifically exhibits a scarcity of research in this area [44]. Understanding diseases and dispelling misconceptions about them requires a comprehensive epidemiological profile, which in turn enables the development of informed public policy [45]. Although not a transmissible condition, fibromyalgia represents a relevant challenge for public health due to its high prevalence, functional impact, and high indirect costs, justifying epidemiological surveillance strategies and specialized care [46]. Due to the numerous hypotheses about the cause of fibromyalgia, the difficulties healthcare professionals encounter in diagnosing and treating it, and the substantial negative impact on the quality of life of those affected, this study seeks to collect epidemiological data about fibromyalgia patients in a particular Health Region in Brazil. The aim is to characterize the sample and its impact across various life domains, which could be justified by the scientific and social relevance of generating knowledge about the local reality of fibromyalgia. This could increase the visibility of this condition, thus contributing to the improvement of healthcare and quality of life for affected individuals.

Materials and methods

Study design and setting

This was a cross-sectional study, part of a broader project titled 'Biopsychosocial Aspects of Individuals Diagnosed with Fibromyalgia'. The study population was drawn from the 8th Health Regional of the State of Paraná, a region with approximately 350,000 inhabitants. Following a sample size calculation, as detailed in the data analysis section, the study included 85 participants of both sexes. Of these, 84.71% were from the city of Francisco Beltrão, 8.24% from Barracão, and 7.06% from other municipalities. The average income was R$ 4,439.10 (SD = R$ 3,695.77).

Procedures

The study rigorously adhered to all ethical principles recommended by relevant regulatory bodies. Data collection commenced only after participants signed the Free and Informed Consent Form, which received approval from the Research Ethics Committee of the Western Paraná State University (CAAE: 73259023.6.0000.0107). All participants were informed about the study's objectives, potential risks, and benefits, as stipulated by current legislation. Each participant was also aware of the option to request individual feedback on their results. Furthermore, it was explained that all participants could, at any time, withdraw from participation or request the removal of their information from the study. The sample was selected by convenience, through contacts with institutions serving the target population. Data were collected between 2023 and 2025.

Inclusion criteria required participants to report a medical diagnosis of fibromyalgia, with the majority (78.8%) having received their diagnosis from a rheumatologist. Exclusion criteria included age (under 18 years) and non-residence within the jurisdiction of the 8th Regional Health Department of Paraná, Brazil. Moreover, participants who were illiterate were excluded from the investigation, as the study relied on self-reported measures.

To achieve the objectives of this study, participants completed a series of instruments using a digital, individual platform. For this specific investigation, we extracted data from the "Sociodemographic, Health, and Occupational Forms" section. This questionnaire gathered information such as age, sex, diagnosis and treatment of non-communicable chronic diseases, fibromyalgia diagnosis, and the duration of living with the condition. Additionally, data on profession and field of

work, working hours, marital status, and income were collected. These data points were selected based on their relevance in previous investigations with similar objectives and with international collaborators [47,48]. To facilitate interpretation and comparison with international studies, participants' responses for these measures were recorded on a 0-10 Likert scale, where higher scores indicated higher agreement. Psychometric properties revealed that participants' understanding of the questions was deemed excellent for both the "Perceived Impact of Fibromyalgia on Different Life Domains" measurements and the "Satisfaction of Individuals on Different Life Domains before and after Fibromyalgia diagnosis" measure (α = 0.90).

Statistical analysis

Responses were extracted into Microsoft Excel spreadsheets and carefully checked for potential data entry errors. Jeffrey's Amazing Statistical Program (JASP, v. 0.19) was utilized for all statistical analyses. For descriptive purposes—the primary objective of this study aimed at outlining the epidemiological profile—variables were expressed as frequencies, percentages, means, and standard deviations. Normality tests were conducted to determine the appropriateness of basic inferential statistics, revealing a non-normal distribution of the data. Consequently, non-parametric techniques were employed and are detailed in each respective table. Regarding the study's statistical power, the sample size calculation was performed using G*Power software, version 3.1.9. Inputting the smallest observed effect size along with the achieved sample size yielded a statistical power of 99.36% at an alpha level (α) of 0.05 (**Figure 1**).

Results and discussion

Sample profile

Fibromyalgia is marked by significant features that impact individuals who suffer from it, encompassing both physical limitations and various psychosocial elements. Understanding the characteristics and epidemiological profile of individuals with fibromyalgia can significantly facilitate clinical reasoning and decision-making among multidisciplinary teams. Thus, the current study reports that participants had an average age of 49.71 years (ranging from 26 to 69; SD = 9.50), with a notable majority (96.47%) being female and only 2.70% were aged over 65 years old. This demographic aligns with prior research in other areas of Brazil, such as a study in the northern region that reported 97% of patients were female [44]. Regarding chronic

pain, participants reported, on average, living with pain for 14.82 years (SD = 9.81). The time since fibromyalgia diagnosis varied widely from 7 months to 40 years (SD = 9.35), with an average of 11.13 years. The prolonged period required to receive a diagnosis is crucial, particularly concerning the associated economic burden of fibromyalgia. Studies indicate that the average interval between initial symptom onset and accurate diagnosis typically ranges from 4 to 10 years. This prolonged interval between the onset of symptoms and proper diagnosis compromises early interventions and contributes to the chronicity of pain and the development of emotional distress [16,49,50].

Table 1 provides an overview of the frequencies and percentages for each category within the analyzed variables. A higher prevalence of fibromyalgia was observed in individuals who reported being married or in a stable union (71.76%) and who possessed higher education levels, with 45.78% having completed higher education. The proportion of individuals with other comorbidities was rather high, with the most common being hypertension (19.72%), respiratory diseases (9.86%), and obesity (9.86%).

These results depicted in Table 1 show some differences when compared to previous research by Rezende *et al*., which analyzed 500 women diagnosed with fibromyalgia. In that study, 59.4% of women reported being married, a finding consistent with our sample. However, unlike the present study, Rezende *et al*. found a higher prevalence of women with complete elementary education, totaling one-third of their sample (37%), with only 8% having completed higher education. This discrepancy in educational attainment might be attributed to differences in sample size, inclusiong and exclusion criteria, as well as demographic characteristics between the studies [1].

Fibromyalgia and its impacts

Regarding the severity of pain experienced by participants in the last 30 days, the majority (56.47%) reported "very severe" pain, while 28.24% classified their pain as "moderately severe." Approximately 13% considered the pain "a little severe," and only 2.35% reported "not severe at all." Furthermore, nearly half of the participants (47.62%) reported that pain had a "very great" impact on their lives, and an additional 28.57% considered the impact "extremely great." Another 11.9% felt a "moderate" impact, and 10.71% stated that pain had "a little" impact. Only 1.19% of

participants reported no impact from pain on their lives. These findings align with previous research pointing to existing links between pain severity and impacts on quality of life. In that study, 69.6% of participants rated their pain subjectivity between 8 and 10 points, and the Fibromyalgia Impact Questionnaire score was 82.46% ± 2.9, collectively indicating a poor quality of life due to the symptomatic profile of the sample [41].

Table 2 and **Table 3** provide data on the Perceived Impact of Fibromyalgia on Different Life Domains and Satisfaction of Individuals on Different Life Domains before and after Fibromyalgia diagnosis. In **Table 4**, inferential statistics are presented. Significant differences were found in all evaluated domains. Across all assessed dimensions – leisure, work, self-care, ability to exercise, functionality, and quality of life – there was a significant difference between the period "before" and "after" the fibromyalgia diagnosis, with p-values < 0.001 in all cases. This indicates that all observed changes have strong statistical evidence and are highly unlikely to have occurred by chance. The W-test value, related to the non-parametric Wilcoxon analysis, further reinforces the existence of these differences in each domain, especially in conjunction with effect size analysis. Indeed, the magnitude can be considered high for all comparisons (point-biserial correlations above 0.60). The Hodges-Lehmann estimate indicates the median change in participants' evaluations between the pre- and post-diagnosis periods.

Decline in scores across leisure activities, work functioning, exercise capacity, and functional capacity indicates a significant deterioration in physical functioning domains. These findings align with research by Pérez-Aranda *et al.*, who documented similar functional declines among patients with fibromyalgia [51]. The consistency across domains suggests a systemic rather than domain-specific pattern of deterioration, as evidenced previously [52]. The effect sizes observed across all domains (ranging from 0.60 to 0.70) are particularly noteworthy as they exceed what is considered as clinically significant changes in fibromyalgia-related functioning measures [30]. The changes likely indicate genuine reductions in participants' everyday functioning abilities beyond mere statistical significance. The largest effect size was found for the quality of life and overall functionality domains, suggesting that overall life satisfaction is notably susceptible to decline in this population, in line with research highlighting the pervasive effects of chronic pain on quality of life outcomes [53]. Reduced physical activity aligns with the deconditioning

cycle model, leading to physiological deconditioning and further limiting function in a self-perpetuating cycle that involves parallel declines in exercise capacity and functional ability [13,54]. Additionally, Macfarlane *et al*. found similar patterns of activity restriction and functional decline in their study of fibromyalgia patients, attributing these changes to both biological processes and psychological factors, namely fear-avoidance behaviors [55].

Our findings, however, reveal significant declines in several areas, despite the long-standing nature of participants' pain conditions (lasting an average of 14.82 years), indicating that adaptation mechanisms may be inadequate to sustain psychological well-being over prolonged periods. Fibromyalgia patients experience a worsening psychological distress trajectory, which aligns with Clauw *et al*.'s observations, even for those with long-standing diagnoses [56]. Our sample's significant decline in both self-care and quality of life implies that these interactions could be especially damaging for fibromyalgia patients with long-standing conditions [57]. Also, the substantial decline in work performance ratings has considerable economic and social consequences.

Our study corroborates the findings of Palstam and Mannerkorpi, highlighting significant work-related difficulties experienced by those with chronic pain conditions [58]. The large effect size in work functioning deterioration aligns with López-Solà et al.'s sample, in which nearly 52% patients had substantial impact on overall funcionality [59]. Our findings also support research by Basu *et al*., demonstrating that work disability in fibromyalgia often follows a progressive trajectory rather than stabilizing after initial diagnosis [60]. The results also align with findings showing cumulative deterioration in occupational functioning among fibromyalgia patients even after controlling for disease duration [61]. Declines in work functioning and other areas are occurring in conjuction, implying interconnected factors influencing various aspects of life at the same time. The pattern supports an integrated biopsychosocial model put forward by Edwards *et al*, which stresses the interconnected relationships between physical symptoms, psychological well-being, self-care, and social/occupational functioning in chronic pain conditions [62]. Therefore, a significant reduction in self-care scores indicates deterioration in participants' ability to maintain personal care routines. This finding corresponds with research documenting progressive limitations in activities of daily living among fibromyalgia patients. Indeed, evidence suggests that self-care activities are often

compromised as pain conditions progress, partly due to increased fatigue, reduced physical capacity, and cognitive difficulties [42,63,64].

Limitations and implications for theory and practice

The pattern of functional decline across various domains lends robust support to the allostatic load model of chronic pain initially proposed by Borsook *et al*., in which persistent pain imposes progressively heavier physiological and psychological loads on adaptive systems, ultimately resulting in accelerated deterioration of multiple functional areas [65]. Our results show substantial effect sizes across all functional domains, even though participants had longstanding pain conditions, consistent with this theoretical framework. These findings also question specific elements of adaptation theory in chronic illness. This study's findings suggest that psychological adaptation may not occur sufficiently over time in chronic conditions, with a continued decline in self-care observed in individuals with long-standing diagnoses. The proposed adaptation mechanisms in this model may not be sufficient to sustain function in scenarios with ongoing symptomatology, such as fibromyalgia [65]. Our study's results offer empirical evidence for the fear-avoidance model, a theoretical concept that suggests a fear of pain causes individuals to shun physical activity, resulting in physical deconditioning and subsequent functional deterioration [66,67]. Our findings showing deterioration across different areas of physical activity (leisure, exercise) and functioning (work, self-care) are consistent a cyclical pattern of decline. Furthermore, our results enhance the theoretical understanding of the link between physical functioning and psychological well-being in chronic pain individuals. The similarity in decline across these domains suggests the applicability of integrated biopsychosocial models that highlight reciprocal relationships over one-way causality. Physical and psychological deterioration, as suggested by Edwards *et al*. are likely to influence each other interdependently, rather than one domain being the primary driver of changes in the other [62].

For treatment implications, decline seen in both physical and psychological domains occurring in parallel suggest that integrated treatment methods addressing these aspects simultaneously may be more effective than single-domain interventions. Studies confirm the effectiveness of multimodal treatment programs that combine physical and psychological interventions, resulting in superior outcomes compared

to single-modal approaches in managing fibromyalgia, as documented [33,68,69]. A significant decrease in work performance underscores the necessity for vocational rehabilitation and workplace adaptation plans. Palstam and Mannerkorpi found that targeted occupational interventions can maintain work capacity while other areas deteriorate, offering a significant path for functional preservation [58]. Our research suggests that enhancing work functioning should be a top priority for intervention due to its substantial decline and associated socioeconomic consequences.

The decline in self-care capacity implies that practical support strategies and adaptive equipment may become more necessary over time. Targeted self-management programs that focus on daily activities can help people maintain independence even when their condition worsens. Programs designed for continued self-care may need to be implemented regularly, rather than as a single intervention [82]. In clinical practice, these findings underscore the necessity of establishing reasonable expectations about disease progression while also putting in place strategies to slow down functional deterioration. Notable among our findings is the necessity for preventive approaches focusing on areas with the greatest effect sizes in our study — specifically quality of life and self-care — which should incorporate psychological support alongside physical management techniques as advised by clinical guidelines [55].

Finally, methodological limitations should be considered when interpreting these findings. First, the design without a control group limits causal inferences about the natural progression of functional decline versus potential intervention effects or other confounding factors. Also, the reliance on individuals' report on their diagnosis might be considered a bias. Controlled longitudinal designs provide stronger evidence for disease progression patterns in chronic pain conditions. The sample demographics indicate potential generalizability limitations, with a predominance of female participants, while this gender distribution is consistent with the epidemiology of fibromyalgia. Another limitation is the reliance on self-reported measures without objective functional assessments.

Conclusion

In the present study, it was observed that fibromyalgia is a syndrome primarily affecting women of productive age, with a higher prevalence among married women or those in a stable union, and with higher levels of education. This profile stresses

a need for therapeutic approaches that consider the multiple social and emotional burdens involved. The consistent pattern of decline across physical, psychological, and social functioning domains, combined with large effect sizes, suggests a systemic rather than domain-specific deterioration process. These findings highlight the progressive nature of functional decline and emphasize the need for ongoing monitoring and intervention throughout the course of the disease. The analogous deterioration in physical and psychological domains supports integrated biopsychosocial models of chronic pain, being equally included in international guidelines. Consequently, multimodal treatment approaches (i.e., addressing multiple domains simultaneously) may be most effective for preserving functioning. Particular attention should be directed to domains showing the largest declines (i.e., quality of life and self-care) through integrated physical-psychological intervention approaches. While methodological limitations, including the lack of a control group, non-probabilistic sampling and reliance on self-reported measures, constrain causal interpretations, the consistency of the findings across domains strengthens confidence in the observed pattern of functional decline. Future longitudinal research with multiple, objetictive assessment points are needed. Moreover, mixed methodologies would further enhance our understanding of functional deterioration and fibromialgia trajectories, hence providing effective strategies for managing chronic pain.

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Figures and Tables

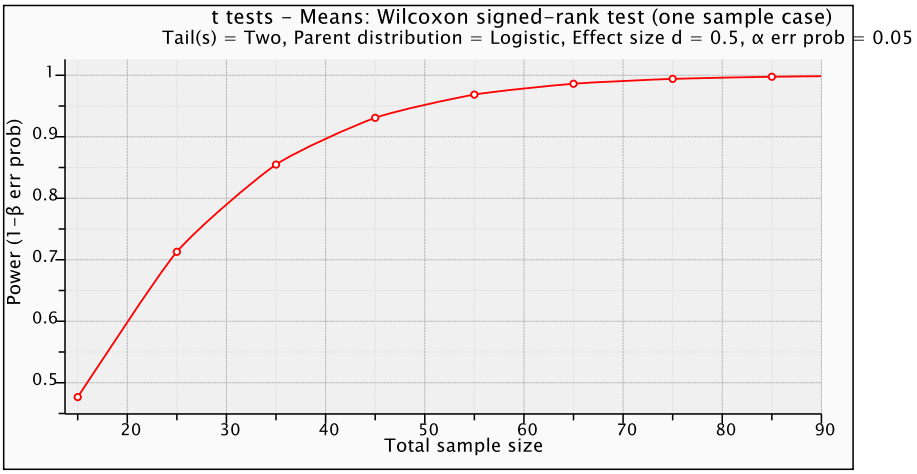

Figure 1. Power calculation plot.

Table 1. Sociodemographic variables of individuals diagnosed with fibromyalgia in the Southwest region of Paraná, 2025.

Variables		**n**	**%**
Gender	Male	3	3.53
	Female	82	96.47
Single	No	61	71.76
	Yes	24	28.24
Physically active (>150 min per week)	No	40	47.62
	Yes	44	52.38
Education	Complete primary education	16	19.28
	Complete secondary education	25	30.12
	Complete higher education	38	45.78
	Incomplete higher education	3	3.61
	Prefer not to respond	1	1.20
Children	No	7	8.24
	Yes	78	91.76
Family history of psychiatric disorder	No	37	54.41
	Yes	31	45.59
Comorbidities	No	7	8.24
	Yes	75	97.76
Diagnosis psychiatric disorder	No	43	63.24
	Yes	25	36.76
Psychiatric treatment in the past year	No	51	75.00
	Yes	17	25.00
Psychological treatment in the past year	No	41	60.29
	Yes	27	39.71
Use of psychiatric medication	No	43	63.24

	Yes	25	36.76

Table 2. Perceived Impact of Fibromyalgia on Different Life Domains.

	Mean	SD	Minimum	Maximum
Leisure	8.26	1.64	1.00	10.00
Ability to work	8.32	1.55	3.00	10.00
Self-care	8.82	1.37	5.00	10.00
Overall funcionality	8.43	1.35	5.00	10.00
Ability to exercise	8.40	1.53	4.00	10.00
Quality of life	8.83	1.54	4.00	10.00

Note. SD: standard deviation.

Table 3. Satisfaction of Individuals on Different Life Domains before and after fibromyalgia diagnosis.

	Mean	SD	Minimum	Maximum
Before fibromyalgia diagnosis				
Leisure	8.27	2.55	0.00	10.00
Ability to work	8.50	2.39	0.00	10.00
Self-care	8.46	2.48	0.00	10.00
Overall funcionality	8.59	2.45	0.00	10.00
Ability to exercise	8.40	2.64	0.00	10.00
Quality of life	8.27	2.67	0.00	10.00
After fibromyalgia diagnosis				
Leisure	6.48	3.05	0.00	10.00
Ability to work	6.55	3.10	0.00	10.00
Self-care	6.09	3.38	0.00	10.00
Overall funcionality	6.38	3.14	0.00	10.00
Ability to exercise	6.06	3.35	0.00	10.00
Quality of life	5.96	3.26	0.00	10.00

Note. SD: standard deviation.

Table 4. Comparisons of domains assessed by participants before and after fibromyalgia diagnosis.

					95%CI	
Domains	**W**	**p-value**	**Hodges-Lehmann**	**Effect [a]**	**Lower**	**Upper**
Leisure	1230.50	<0.001	3.00	0.60	0.37	0.76
Ability to work	1336.50	<0.001	3.50	0.67	0.48	0.81
Self-care	1529.50	<0.001	3.50	0.67	0.48	0.80
Overall funcionality	1356.00	<0.001	4.00	0.70	0.51	0.82
Ability to exercise	1550.00	<0.001	3.50	0.69	0.51	0.82
Quality of life	1263.00	<0.001	4.00	0.70	0.51	0.83

Notes. [a] Point-biserial correlation; CI: Confidence interval; W: Wilcoxon test.

ANEXOS

Anexo I – Normas da Revista

1. Submission Overview and General Editorial Policies

Before you decide to publish with Journal of Clinical and Translational Research (JCTR), please read the following items carefully and make sure that you are well aware of Editorial Policies and the following requirements.

1.1 Topic Suitability

The topic of the manuscript must fit the scope of the journal. Please refer to Aims and Scope for more information.

1.2 Open Access and Copyright

The journal adopts the Gold Open Access publishing model and distributes content under the Creative Commons Attribution 4.0 International License. Copyright is retained by authors. Please make sure that you are well aware of these policies.

1.3 Publication Fees

The publication fee for each submission is USD 1000. There are no additional charges based on color, length, figures, or other elements. Please find more information here. Refer to Article Processing Charges for our policy in waivers and discounts.

1.4 Language Editing

All submissions are required to be presented clearly and cohesively in good English. Authors whose first language is not English are advised to have their manuscripts checked or edited by a native English speaker before submission to ensure a high quality of expression. A well-organized manuscript in good English would make the peer review even the whole editorial handling more smoothly and efficiently.

1.5 The use of AI in manuscript preparation

Artificial intelligence (AI) and the products that come with it has seen a rising trajectory in recent years and the use of these products, mainly the software, in preparing manuscript is an area subject to dynamic changes that everyone—including publisher, editors, reviewers and authors—need to observe closely. At current stage, AccScience Publishing permits the use of AI-powered tools to polish and edit manuscripts submitted to our journals on the conditions that the changes made through the software are only confined to language polishing (including idiomacy, readability and coherence improvements) under human guidance. The core justification of this policy lies in our belief that findings, concepts, ideas and conclusions from a work, regardless of a research or a literature review, should be purely the outputs of human efforts, rather than summarizing power of AI; in short, AI is just a means to elevating your work for better readability and clarity, and should not be used to "generate new ideas and insights" and analyze data without human interventions or guidance. See section 2.3.1.13 (Further Disclosure) for the specific instructions on how to declare AI usage in submissions, and review section 7 (Policy of Use of AI and AI-assisted Technologies in Scientific Writing) for other limitations currently imposed on the use of AI or other AI-powered tools. Note that this editorial policy on AI usage is subject to change from time to time, aligning with how far the AI technology has evolved and the new regulations on AI application, by industrial standards, will be put in place in the future.

1.6 Work Funded by National Institutes of Health

If an accepted manuscript was funded by the National Institutes of Health (NIH), the authors may inform Editors of the NIH funding number. The Editors are able to upload the paper into the NIH Manuscript Submission System on behalf of the authors.

2. Submission Preparation

2.1 Cover Letter

A cover letter is required to be submitted accompanying each manuscript. It should be concise and explain why the work is significant, why it fits the scope of the journal, why it

would be attractive to readers, and so on.

Here is a guideline of a cover letter for authors' consideration:
In the first paragraph: include the title and type (e.g., Original Research Article, Review, Case Report, etc.) of the manuscript, a brief on the background of the study, the question the author sought out to answer and why;
In the second paragraph: concisely explain what was done, the main findings and why they are significant;
In the third paragraph: indicate why the manuscript fits the Aims and Scope of the journal, and why it would be attractive to readers;
In the fourth paragraph: confirm that the manuscript has not been published elsewhere and has not been under consideration by any other journal. All authors have approved the manuscript and agreed on its submission to the journal. The journal's specific requirements have been met if any.
If the manuscript is contributed to a Special Issue, please also mention the Special Issue’s title in the cover letter.
If the findings and/or ideas of the submitted work have been presented partly or entirely at a conference/seminar/congress, the authors should clearly state the background information of the event, including the event name, time and place, in the cover letter.

2.2 Types of Manuscripts

The journal publishes Original Research Article, Review, Perspective Article, Case Report, Case Series, Letter, Editorial, etc.2.3 Manuscript Structure

In addition to referring to the Instructions for Authors set out in the following, we also recommend using our templates to prepare the submission files.

Templates:

- Title page & back matter template Download

- Article template for Original Research Article Download

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2.3.1 Title Page & Back Matter

2.3.1.1 Title

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Authors' full names should be listed. Middle names can be presented as initials. Institutional addresses and email addresses for all authors should be listed while making submission via the submission platform. At least one author should be designated as corresponding author. In addition, corresponding authors are suggested to provide their Open Researcher and Contributor ID (ORCID) upon submission. Please note that any change to authorship is not allowed after manuscript acceptance, and under most circumstances, the author list and sequence is considered definitive at the time of submission.

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Formal analysis: Han Xiang
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Methodology: Dolores Hans, Tom Lewis-Hans, Han Xiang
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We strongly advise authors to adopt a concise manner in reporting scientific and academic works, while upholding utmost clarity.

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The introduction should contain background that puts the manuscript into context, allow readers to understand why the study is important, include a brief review of key literature, and conclude with a brief statement of the overall aim of the work and a comment about whether that aim was achieved. Relevant controversies or disagreements in the field should be introduced as well.

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The methodology should be reported in a way that is sufficient for others to repeat the experiments and generate the same results.

2.3.2.3 Results

This section contains the findings of the study. Results of statistical analysis should also be included either as text or as figures (see section 2.4.4) or tables (see section 2.4.5) if appropriate. Authors should emphasize and summarize only the most important observations. Data on all primary and secondary outcomes identified in the section Methods should also be provided. Extra or supplementary information and technical details can be presented in the Supplementary File.

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This section should discuss the implications of the findings in context of existing research and highlight limitations of the study. Future research directions may also be mentioned.

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It should state clearly the main conclusions and include the explanation of their relevance or importance to the field.

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http://www.cms.gov/apps/media/press/factsheet.asp?Counter=4221. Accessed January 30, 2012.
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Briefly, the supplementary materials can be categorized into several types:

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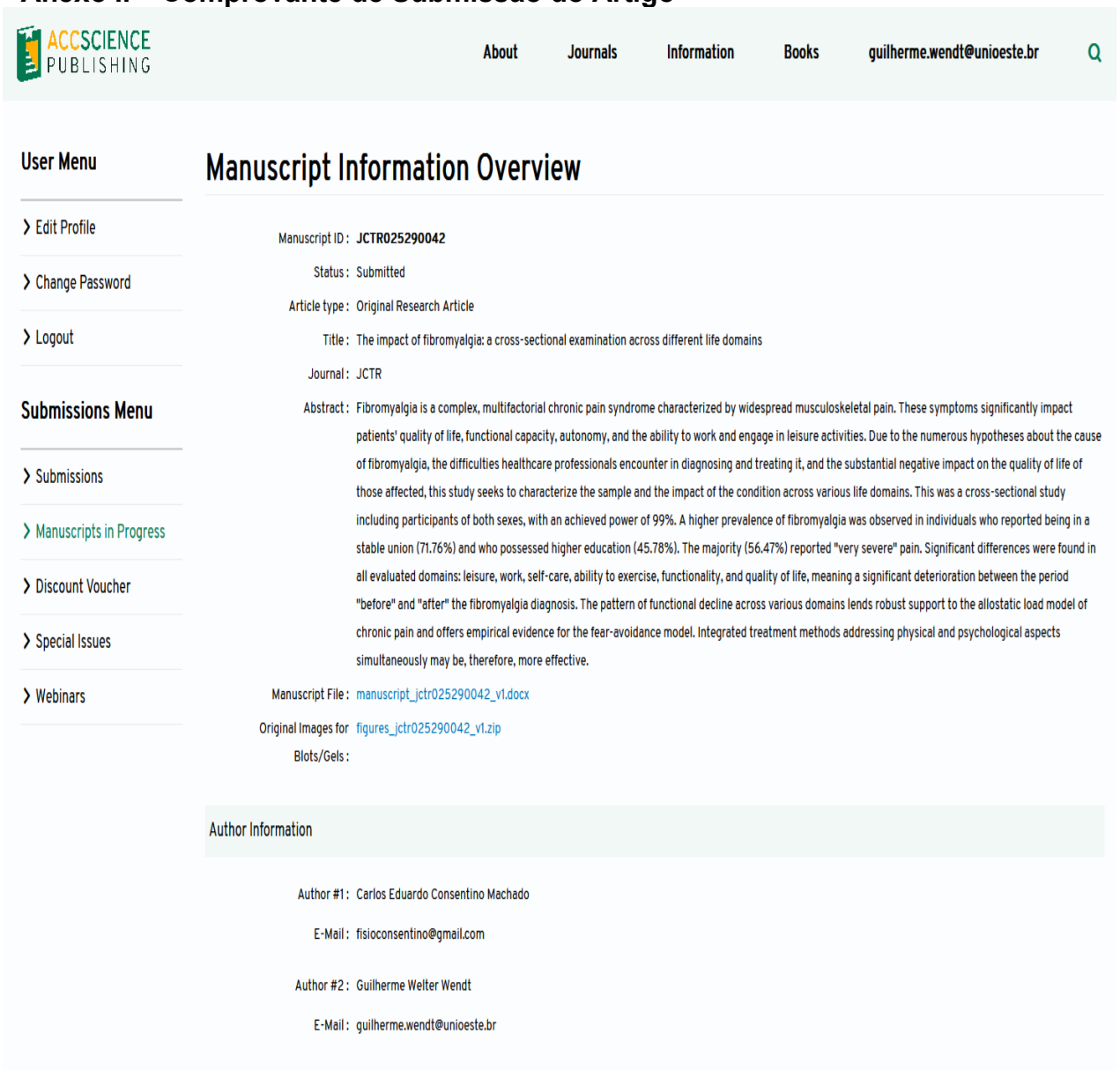

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Manuscript ID : JCTR025290042

Status : Submitted

Article type : Original Research Article

Title : The impact of fibromyalgia: a cross-sectional examination across different life domains

Journal : JCTR

Abstract : Fibromyalgia is a complex, multifactorial chronic pain syndrome characterized by widespread musculoskeletal pain. These symptoms significantly impact patients' quality of life, functional capacity, autonomy, and the ability to work and engage in leisure activities. Due to the numerous hypotheses about the cause of fibromyalgia, the difficulties healthcare professionals encounter in diagnosing and treating it, and the substantial negative impact on the quality of life of those affected, this study seeks to characterize the sample and the impact of the condition across various life domains. This was a cross-sectional study including participants of both sexes, with an achieved power of 99%. A higher prevalence of fibromyalgia was observed in individuals who reported being in a stable union (71.76%) and who possessed higher education (45.78%). The majority (56.47%) reported "very severe" pain. Significant differences were found in all evaluated domains: leisure, work, self-care, ability to exercise, functionality, and quality of life, meaning a significant deterioration between the period "before" and "after" the fibromyalgia diagnosis. The pattern of functional decline across various domains lends robust support to the allostatic load model of chronic pain and offers empirical evidence for the fear-avoidance model. Integrated treatment methods addressing physical and psychological aspects simultaneously may be, therefore, more effective.

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