



Research Article

Psychological and attitudinal assessment of patients with Fibromyalgia undergoing antalgic management: a short report

Eleonora Balzani^{1*}, Andrea Fanelli², Ilaria Tarricone³,
Roberto Muratori⁴, Manuela Campesato², Carmela Tatiana
Picone⁵ and Rita Maria Melotti^{2,5}

¹Department of Medicine and Surgery, University of Turin, Torino, Italy

²Anesthesia and Pain Medicine Unit, Department of Emergency and Urgency, Policlinico S. Orsola-Malpighi Hospital, Bologna, Italy

³Department of Medical and Surgical Science, Psychiatry Unit, Alma Mater Studiorum Università di Bologna, Bologna, Italy

⁴Department of Mental Health and Pathological Addiction, Local Health Authority, Bologna, Italy

⁵Department of Medicine and Surgery Sciences, University of Bologna, Bologna, Italy

Received: 03 November, 2022

Accepted: 13 December, 2022

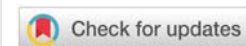
Published: 14 December, 2022

***Corresponding author:** Eleonora Balzani, MD, Department of Medicine and Surgery, University of Turin, Via Verdi, 8 - 10124 Torino, Italy,
E-mail: eleonora.balzani2@gmail.com

Keywords: Fibromyalgia; Chronic pain; Anxiety; Depression; Temperament; Character

Copyright License: © 2022 Balzani E, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

<https://www.peertechzpublications.com>



Abstract

Objectives: Fibromyalgia (FM) is a widespread condition that is difficult to manage medically. Often algologists are faced with patients who are poorly compliant with pharmacological treatment or with concomitant mood problems. There are treatments tailored to temperament and character patterns. In this study using the division into pain persistence and pain avoidance patterns, a stratification was hypothesized to facilitate its medical management using self-administered questionnaires.

Methods: We screened the population consisting of FM patients to four different questionnaires, namely the Temperament and Character Inventory (TCI), Hospital Anxiety and Depression Scale, Short form 36 and the INTERMED- Self Assessment.

Results: A total of thirty-two patients were enrolled. The analyzed population showed preponderant pain avoidance characteristics (90.7%). The persistence pattern proved to be present in only 9.3% of the population. The FM patients examined also reported an incidence of anxiety disorder of 71.9% and depressive disorder of 75%.

Conclusion: Dividing the population with FM into patterns yielded uniform results. This justifies a multidisciplinary approach in these FM patients. The high incidence of anxiety and depression from the test results is an outcome that suggests the adoption of the HADS tool in the antalgic evaluation of FM patients.

Introduction

Fibromyalgia (FM) is a broad-spectrum syndrome characterized by a wide range of symptoms (Table 1) [1]. FM has a prevalence between 2%-3% and 8% [2]. Between 10% and 30% of FM, patients declare themselves impaired in work, which is a higher proportion compared to chronic pain patients [3].

Because FM's underlying pathophysiology is not yet

well understood, there are currently no effective treatments for the complete remission of FM symptoms [4]. Due to its symptoms variability, a purely clinical diagnosis, and the lack of agreement on treatment, a specific care pathway was not yet defined leading to a discontinuity in FM patients' treatment [5]. A multidisciplinary therapeutic approach is therefore suggested, based on an individualized program including pharmacological and non-pharmacological interventions, involving general practitioners, algologists, psychiatrists, and physiatrists, coordinated by rheumatologists [6].

**Table 1:** Main symptoms in patients with fibromyalgia.

Pain	Represents the cornerstone of FM. In the literature, it is reported as widespread pain, however, patients localize it in different parts of the body. It is a chronic pain, continuous but fluctuating in intensity with periodic exacerbations frequently related to stress levels, climatic conditions, and sleep patterns [8].
Fatigue	Occurring in at least 75% of patients, fatigue appears to be a highly invalidating symptom. Fatigue is described as varying throughout the day and appears to be the result of the interaction of physical, emotional, and cognitive factors. Reduced physical endurance, even at minimal exertion, is a common feature of Chronic Fatigue Syndrome, with which a particular association has been shown [8].
Sleep disturbances	Approximately 90% of patients with FM have poor sleep quality: frequent nocturnal awakenings and non-restorative sleep, and difficulty falling asleep. At polysomnography, the "alpha-delta" abnormality is considered specific to FM: a pattern of alpha wave intrusion on a delta rhythm that corresponds to an abrupt return to superficial sleep as soon as deep non-REM sleep is achieved. The lack of REM sleep, during which muscles relax, would explain many symptoms of FM.
Cognitive impairment	At least 76% of patients report difficulty concentrating, attention deficit, short-term memory loss, and mental confusion. This picture is referred to as fibro-fog. It appears more severe in patients with other rheumatic diseases or chronic pain.

Furthermore, depression affects 28%-70% of FM patients, while anxiety disorders have a prevalence approximately of 32.3% [7]. Psychic disorders affect physical activity, work, and quality of life by favoring disadaptive psychological mechanisms, such as catastrophizing [8]. Besides, they can affect the quality of life, conditioning social and work activity, and hinder therapeutic success. Personalized treatment may benefit from the characterization of patients in specific cognitive-behavioral patterns, contributing to the maintenance and exacerbation of painful symptoms and related disabilities [9,10]. Van Koulil, et al. provided a cognitive-behavioral characterization for FM patients: Pain Persistence Pattern (PPP) with poor acceptance of the limits imposed by chronic pain, associated with a worsening of symptoms, and Pattern Pain Avoidance (PAP) with damage avoidance, fear of pain, hypervigilance, and catastrophism. These cognitive-behavioral traits seem to be associated with the maintenance and exacerbation of pain and their early detection could influence algological management [11].

Our study aimed to describe the incidence of depression, anxiety, PPP, and PAP in patients with FM, to evaluate whether particular patterns prevailed over others, establishing a viable tool to facilitate patients' pain management and evaluation within a multidisciplinary pathway.

Materials and methods

Study design and participants

This exploratory retrospective cohort study was drawn up following the Strengthening the Reporting of Observational Studies in Epidemiology checklist [12]. The study was approved by the Ethics Committee of the Sant'Orsola-Malpighi Hospital of Bologna (169/2019/Oss/AOUBo) and by clinicaltrials.gov (NCT04623827).

This is a retrospective, monocentric, non-pharmacological study evaluating the incidence of depression, anxiety, and PPP and PAP through the use of self-administered questionnaires in FM patients referring to the Pain Therapy unit of Policlinico Sant'Orsola-Malpighi of Bologna and aged from 18y in the period from January 2018 to January 2019.

All subjects provided informed consent. Anonymized data were used to fill in a standardized template. Participation in the study did not interfere with the normal treatment for

each patient, as the therapeutic plan represented normal daily clinical practice and was carried out regardless of patient enrollment.

Psychometric instruments and statistical methods

Participants were asked to complete the following instruments:

- 1) Temperament and Character Inventory (TCI) [13]
- 2) Hospital Anxiety and Depression Scale (HADS) [14]
- 3) Short form 36 (SF-36) [15]
- 4) INTERMED- Self Assessment (IMSA) [16]

A total average time of 40 minutes was required to complete the tests. Being completely self-administered, after receiving the appropriate instructions, the patient was invited to compile tests autonomously or, if requested, was helped by a healthcare professional or family members.

Being completely self-administered, after receiving the appropriate instructions, the patient was invited to compile tests autonomously or, if requested, was helped by a healthcare professional or family members.

The temperament and Character Inventory (TCI) is a self-administrable questionnaire developed to quantify individual differences within temperament and character domains. Each of the main components consists of various subdimensions, which are probed by specific items. This test is validated and has also been used in cohorts of patients with FM [17].

The Hospital Anxiety and Depression scale (HADS) is a questionnaire used in clinical practice to identify mood disorders, namely anxiety, and depression. Its use has been validated in a population with FM [18].

Short Form 36 (SF-36) is a tool used to detect a patient's health-related quality of life (HRQoL). This test is validated in the Italian language for FM [19].

The INTERMED-Self Assessment questionnaire (IM-SA) is the self-administrable version of INTERMED. This type of test has also been shown to be valid in patients with chronic painful conditions, and psychiatric settings [20].

The sociodemographic characteristics of our population such as gender have been synthesized using mean and standard deviation for continuous variables.

Due to the descriptive nature of the study, scores were reported for each test using mean, median, interquartile range, and standard deviation.

Statistical analysis

The sociodemographic characteristics of our population such as age and gender have been synthesized using mean and standard deviation for continuous variables (mean or median, standard deviation or interquartile range according to the Shapiro-Wilk normality test).

Due to the descriptive nature of the study, we reported the mean and the respective score for each test.

Results

In the cohort of the population studied ($n = 32$), 5 were males and 27 were females.

All the patients completed the TCI questionnaire, which scores were examined and compared with the median of the healthy population given by Cloninger [21]. The distribution of

our population was examined by dividing it into quartiles for each domain.

Based on the results of the median of the general population 9.3% ($n = 3$) had values below the baseline for the Harm Avoidance (HA) domain. On the other hand, considering the Persistence (P) domain 59.4% ($n = 19$) patients had values below the general median (Figure 1).

Thus, compared to the general population 100% of our population had results above the median in the Novelty Seeking (NS) domain, 91% in the HA domain, 28% in the Reward Dependence domain, 41% in the P domain, 3% in the Self-Directedness domain, 0% in the Cooperativeness domain, and 94% in the Self Transcendence domain.

Regarding the HADS questionnaire, according to the results of the HADS questionnaire, 71.9% ($n = 23$) of our population would have anxiety disorders, while 75% ($n = 24$) would have depressive disorders (Table 2).

Considering the IMSA questionnaire, 65.6% ($n = 21$) had a total score ≥ 18 indicative of high complexity and need for integrated biopsychosocial care. However, when evaluating the various domains divided over time, only 6.3% ($n = 2$) scored ≥ 18 in the past and present, and 0% in the future. According

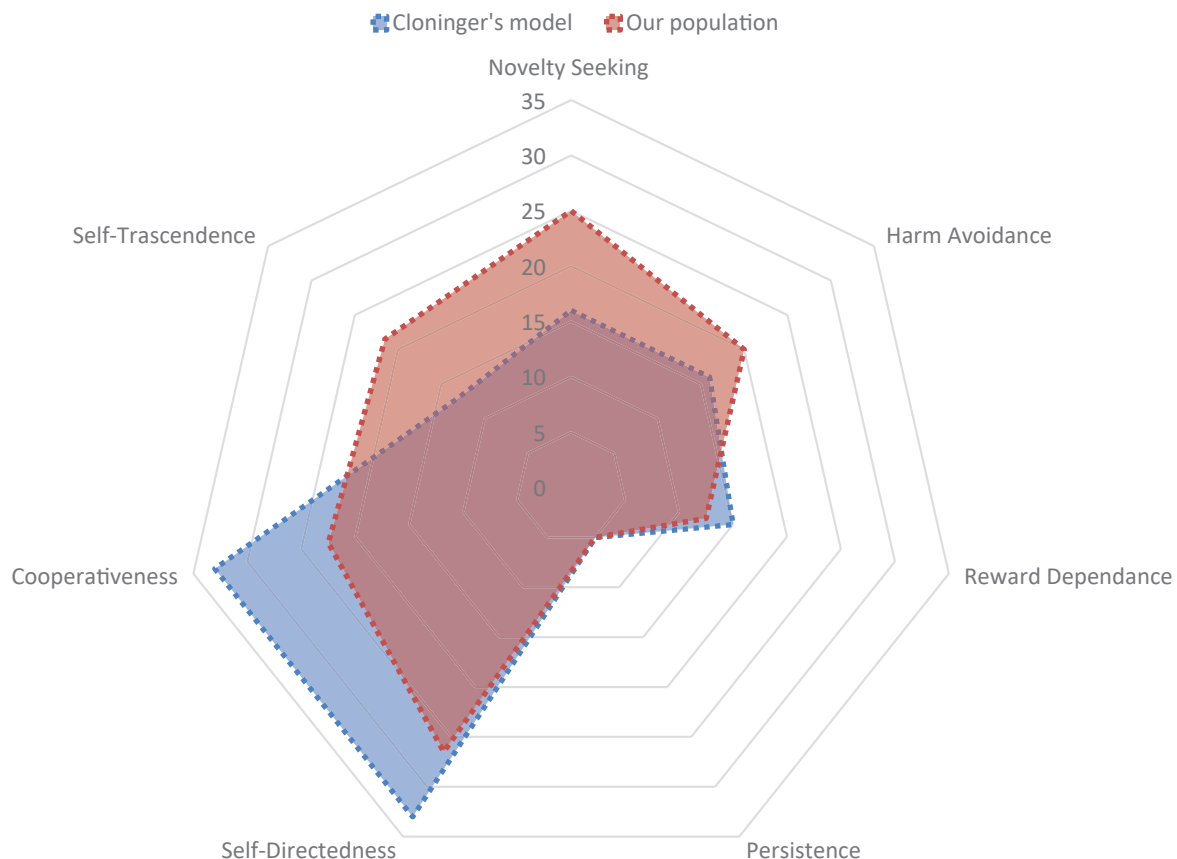


Figure 1: Temperament and Character Inventory (TCI) domains' scores. The comparison was performed between the medians of the scores provided by the Cloninger model and those obtained from our population [21].



Table 2: Descriptive statistics of test scores.

TCI, median (IQR)	N	Median (IQR)	
Novelty Seeking	32	25.0 (22.0-27.3)	
Harm Avoidance	32	20.0 (18.0-21.3)	
Reward Dependence	32	12.5 (11.0-15.3)	
Persistence	32	5.00 (4.00-6.00)	
Self Directedness	32	26.5 (23.0-29.0)	
Cooperativeness	32	22.5 (19.0-24.3)	
Self Transcendence	32	21.5 (20.0-23.0)	
SF-36	N	Our population mean (SD)	Global population reference values
Physical Activity	31	45.8 (21.5)	84,52
Role and physical health	31	17.0 (42.0)	81,2
Physical Pain	31	25.7 (18.0)	75,49
Global Health	31	29.0 (20.2)	72,21
Vitality	31	31.8 (19.4)	61,05
Social Activities	31	37.7 (23.2)	83,6
Role and Emotional State	31	41.9 (47.2)	81,29
Mental Health	31	51.5 (21.8)	74,84
Change in Health Status (CS)	31	3.61 (1.31)	3
Physical Component Summary (PCS)	31	29.1 (6.66)	50
Mental Component Summary (MCS)	31	38.3 (11.5)	50
IMSA	N	Mean (SD)	
Total Biopsychosocial	29	8.83 (2.59)	
Total Psychological	29	5.62 (3.18)	
Total Social	29	5.83 (3.81)	
Total Assistance	29	3.83 (3.04)	
Total 1	29	24.2 (9.90)	
Past Biopsychosocial	29	4.41 (1.24)	
Past Psychological	29	2.97 (1.78)	
Past Social	29	2.34 (1.72)	
Past Assistance	29	1.21 (1.47)	
Total 2	29	10.9 (4.45)	
Present Biopsychosocial	29	4.03 (1.48)	
Present Psychological	29	2.52 (1.60)	
Present Social	29	2.17 (2.07)	
Present Assistance	29	1.93 (1.39)	
Total 3	29	10.7 (4.73)	
Future Biopsychosocial	29	0.379 (0.677)	
Future Psychological	29	0.172 (0.468)	
Present Social	29	0.345 (0.721)	
Future Assistance	29	0.655 (0.897)	
Total 4	29	1.55 (1.70)	
HADS, mean (SD)	N	Mean (SD)	
Anxiety	32	11.5 (5.33)	
Depression	32	10.7 (4.77)	
		Mild (score 8-10), N (%)	
	Anxiety	15.7 (5)	

	Depression	28.1 (9)	
		Moderate (score 11-14), N (%)	
	Anxiety	12.5 (4)	
	Depression	21.9 (7)	
		Severe (score ≥ 15), N (%)	
	Anxiety	43.8 (14)	
	Depression	25 (8)	

to the SF-36 questionnaire, the mean for our population was always below that of the overall mean [22] (Table 2).

Discussion

This study reported a high prevalence of PAP among patients with FM, detected through four questionnaires.

The clear preponderance of the PAP could predispose patients to poor collaboration with healthcare providers and low compliance in the long term.

Overall, the questionnaires proved to be user-friendly, inexpensive, and well-accepted tools by patients (99% of patients completed them).

TCI questionnaire's findings pointed out a tendency to avoid stressors, anticipatory anxiety, and a negative thought propensity in response to chronic pain, emphasized by an impulsive and unregulated attitude [23].

Regarding the Character results, we highlighted a fragile character, characterized by aimlessness, ineptitude, and lack of self-control [22] associated with traits of hostility and poor empathy [24]. High scores in the Self-Transcendence domain were associated with borderline, narcissistic, and paranoid personality disorders [25]. Based on our results, the persistence (P) domain represents an exception. In the context of a chronic disease such as FM, P is a fundamental trait for adequate compliance and patient management.

Specific approaches based on psycho-attitudinal characteristics and cognitive-behavioral therapy are tailored to improve pain symptoms, treatment compliance, and anxiety-depressive disorder in PAPs [11].

HADS questionnaire evaluation revealed a high percentage of patients with scores compatible with an anxiety-depressive disorder. This finding confirms the high prevalence reported in the literature and imposes the need for specialized psychiatric evaluation of FM patients within multidisciplinary management [8].

SF-36 test results showed that the patients had a lower quality of life than the average of the healthy population, both from the physical and mental points of view [23]. Lastly, the IMSA test remarked the need for integrated biopsychosocial care: most of the patients in our sample had scores indicative of high management complexity.

These findings suggest a polarization in the character,



temperament, and mood of our population. As chronic conditions such as chronic pain were often associated with mood disorders [26], we question whether these alterations are characteristic of our population or the general chronic pain population.

Moreover, these comorbidities are associated with greater disability one year after the onset of chronic pain, making early detection critical for the algologist [27].

A potential limitation of the study we conducted is the small sample size examined, which could influence this result.

In conclusion, this study confirms the usefulness of using these self-administered questionnaires. Our results showed a consistent trend toward the PAP for which cognitive-behavioral therapy proved usefulness, improving poor cooperativeness behaviors, and enhancing patients' compliance.

The high association between FM and anxiety-depressive disorders is confirmed by using the HADS questionnaire, which has proven to be a useful tool to identify pathological traits of mood that, however, require a specific diagnosis. Consequently, our results confirm the need for a multidisciplinary approach tailored to the patient.

Further studies may consider this type of assessment in patients with chronic pain. If the results were like those in our FM population, early detection of mood disorders and behavioral characteristics would lead to the identification of those most susceptible to poor compliance with analgesic therapy and those who should be started on an early psychiatric evaluation. The role of PPP in the FM and chronic pain population should also be clarified.

References

- Mease PJ, Seymour K. Treatment options for fibromyalgia. *Pain Pract* 18: 26-35.
- Goldenberg DL. Clinical manifestations and diagnosis of fibromyalgia in adults. In: UpToDate, Post TW (Ed), UpToDate, Waltham, MA. 2022.
- Goldenberg DL. Initial treatment of fibromyalgia in adults. In: UpToDate, Post TW (Ed), UpToDate, Waltham, MA. 2022.
- Fitzcharles MA, Ste-Marie PA, Goldenberg DL, Pereira JX, Abbey S, Choinière M, Ko G, Moulin DE, Panopalis P, Proulx J, Shir Y. Canadian Pain Society and Canadian Rheumatology Association recommendations for rational care of persons with fibromyalgia: a summary report. *J Rheumatol*. 2013 Aug;40(8):1388-93. doi: 10.3899/jrheum.130127. Epub 2013 Jul 1. PMID: 23818709.
- Baraniuk JN. Cerebrospinal fluid levels of opioid peptides in fibromyalgia and chronic low back pain. *BMC Musculoskelet Disord*. 2004; 5: 1-7.
- Di Franco M, Iannuccelli C, Alessandri C, Paradiso M, Riccieri V, Libri F, Valesini G. Autonomic dysfunction and neuropeptide Y in fibromyalgia. *Clin Exp Rheumatol*. 2009 Sep-Oct;27(5 Suppl 56):S75-8. PMID: 20074444.
- Thieme K, Turk DC, Flor H. Comorbid depression and anxiety in fibromyalgia syndrome: relationship to somatic and psychosocial variables. *Psychosom Med*. 2004 Nov-Dec;66(6):837-44. doi: 10.1097/01.psy.0000146329.63158.40. PMID: 15564347.
- Borchers AT, Gershwin ME. Fibromyalgia: A Critical and Comprehensive Review. *Clin Rev Allergy Immunol*. 2015 Oct;49(2):100-51. doi: 10.1007/s12016-015-8509-4. PMID: 26445775.
- van Koulik S, van Lankveld W, Kraaimaat FW, van Helmond T, Vedder A, van Hoon H, Donders R, de Jong AJ, Haverman JF, Korff KJ, van Riel PL, Cats HA, Evers AW. Tailored cognitive-behavioral therapy and exercise training for high-risk patients with fibromyalgia. *Arthritis Care Res (Hoboken)*. 2010 Oct;62(10):1377-85. doi: 10.1002/acr.20268. PMID: 20521308.
- Lami MJ, Martínez MP, Sánchez AI. Systematic review of psychological treatment in fibromyalgia. *Curr Pain Headache Rep*. 2013 Jul;17(7):345. doi: 10.1007/s11916-013-0345-8. PMID: 23715945.
- van Koulik S, Kraaimaat FW, van Lankveld W, van Helmond T, Vedder A, van Hoon H, Cats H, van Riel PL, Evers AW. Screening for pain-persistence and pain-avoidance patterns in fibromyalgia. *Int J Behav Med*. 2008;15(3):211-20. doi: 10.1080/10705500802222964. PMID: 18696315.
- von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. The Strengthening of Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *J Clin Epidemiol*. 2007 Apr;60(4):344-9. doi: 10.1016/j.jclinepi.2007.11.008. PMID: 18313558.
- Garcia D, Lester N, Cloninger KM, Robert Cloninger C. Temperament and Character Inventory (TCI). In: Zeigler-Hill V., Shackelford T. (eds) *Encyclopedia of Personality and Individual Differences*. Springer, Cham. 2017. https://doi.org/10.1007/978-3-319-28099-8_91-1
- Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand*. 1983 Jun;67(6):361-70. doi: 10.1111/j.1600-0447.1983.tb09716.x. PMID: 6880820.
- Rand Corporation. 36-Item Short Form Survey (SF-36). https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form.html
- Ferrari S. the Intermed Self-Assessment questionnaire (IM-SA). https://iris.unimore.it/retrieve/handle/11380/1142963/160058/2017_IMSA_Ferrari.pdf
- Santos DM, Lage LV, Jabur EK, Kaziyama HHS, Iosifescu DV, De Lucia MCS, Fráguas R. The influence of depression on personality traits in patients with fibromyalgia: a case-control study. *Clin Exp Rheumatol*. 2017 May-Jun;35 Suppl 105(3):13-19. Epub 2016 Oct 20. PMID: 27782872.
- Işık-Ulusoy S. Evaluation of affective temperament and anxiety-depression levels in fibromyalgia patients: a pilot study. *Braz J Psychiatry*. 2019 Apr 15;41(5):428-432. doi: 10.1590/1516-4446-2018-0057. PMID: 30994852; PMCID: PMC6796816.
- Johnson P, Golden H, Katz R, Ruderman E. Convergent Validity of the SF-36 and Fibromyalgia Impact Questionnaire (FIQ) in the Measurement of Health Status in FMS Patients *Arthritis & Rheumatism*. 1998; 41(9):S257
- Stiefel FC, de Jonge P, Huyse FJ, Guex P, Slaets JP, Lyons JS, Spagnoli J, Vannotti M. "INTERMED": a method to assess health service needs. II. Results on its validity and clinical use. *Gen Hosp Psychiatry*. 1999 Jan-Feb;21(1):49-56. doi: 10.1016/s0163-8343(98)00061-9. PMID: 10068920.
- Cloninger CR, Przybeck TR, Svrakic DM, Wetzel RD. The temperament and character inventory (TCI): A guide to its development and use. St-Louis, MO: Washington University. 1994.
- Garcia-Fontanals A, García-Blanco S, Portell M, Pujol J, Poca-Dias V, García-Fructuoso F, López-Ruiz M, Gutiérrez-Rosado T, Gomà-I-Freixanet M, Deus J. Cloninger's psychobiological model of personality and psychological distress in fibromyalgia. *Int J Rheum Dis*. 2016 Sep;19(9):852-63. doi: 10.1111/1756-185X.12473. Epub 2014 Dec 5. PMID: 25483854.
- Burholt V, Nash P. Short Form 36 (SF-36) Health Survey Questionnaire: normative data for Wales. *J Public Health (Oxf)*. 2011 Dec;33(4):587-603. doi: 10.1093/pubmed/fdr006. Epub 2011 Feb 9. PMID: 21307049.
- Svrakic DM, Draganic S, Hill K, Bayon C, Przybeck TR, Cloninger CR.



Temperament, character, and personality disorders: etiologic, diagnostic, treatment issues. *Acta Psychiatr Scand.* 2002 Sep;106(3):189-95. doi: 10.1034/j.1600-0447.2002.02196.x. PMID: 12197856.

25. Gencay-Can A, Can SS. Temperament and character profile of patients with fibromyalgia. *Rheumatol Int.* 2012 Dec;32(12):3957-61. doi: 10.1007/s00296-011-2324-x. Epub 2011 Dec 27. PMID: 22200811.

26. Arango-Dávila CA, Rincón-Hoyos HG. Depressive Disorder, Anxiety Disorder and Chronic Pain: Multiple Manifestations of a Common Clinical

and Pathophysiological Core. *Rev Colomb Psiquiatr (Engl Ed).* 2018 Jan-Mar;47(1):46-55. English, Spanish. doi: 10.1016/j.rcp.2016.10.007. Epub 2016 Dec 14. PMID: 29428122.

27. Oliveira DS, Vélia Ferreira Mendonça L, Sofia Monteiro Sampaio R, Manuel Pereira Dias de Castro-Lopes J, Ribeiro de Azevedo LF. The Impact of Anxiety and Depression on the Outcomes of Chronic Low Back Pain Multidisciplinary Pain Management-A Multicenter Prospective Cohort Study in Pain Clinics with One-Year Follow-up. *Pain Med.* 2019 Apr 1;20(4):736-746. doi: 10.1093/pm/pny128. PMID: 30010966.

Discover a bigger Impact and Visibility of your article publication with Peertechz Publications

Highlights

- ❖ Signatory publisher of ORCID
- ❖ Signatory Publisher of DORA (San Francisco Declaration on Research Assessment)
- ❖ Articles archived in worlds' renowned service providers such as Portico, CNKI, AGRIS, TDNet, Base (Bielefeld University Library), CrossRef, Scilit, J-Gate etc.
- ❖ Journals indexed in ICMJE, SHERPA/ROMEO, Google Scholar etc.
- ❖ OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting)
- ❖ Dedicated Editorial Board for every journal
- ❖ Accurate and rapid peer-review process
- ❖ Increased citations of published articles through promotions
- ❖ Reduced timeline for article publication

Submit your articles and experience a new surge in publication services (<https://www.peertechz.com/submission>).

Peertechz journals wishes everlasting success in your every endeavours.