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Quality of life, distrust in health care system and adherence to medical recommendations in patients with fibromyalgia: a latent profile analysis

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Abstract

Introduction: Fibromyalgia is a very heterogeneous disorder. This heterogeneity is one of the reasons why researchers have tried to analyze different patient profiles and their relationship with quality of life. The aim of the present study was to identify: (1) latent profiles based on the Revised Fibromyalgia Impact Questionnaire's scores, and (2) possible differences between them in quality of life, distrust in healthcare system, and adherence to medical recommendations.

Methods: 707 FM patients (aged 18-85 years, 95% women) completed the Revised Fibromyalgia Impact Questionnaire, the 12-Item Short Form Health Survey, the Patient Adherence Scale, and the Health Care System Distrust Scale. Data were analyzed using latent profile analysis.

Results: Three profiles were identified: (1) *Low fibromyalgia impact* profile (2) *Moderate fibromyalgia impact* profile, and (3) *High fibromyalgia impact* profile. Significant differences between these profiles were found in quality of life, adherence to medical recommendations, and distrust in healthcare system. Poor-sleep quality emerged as a significant high important symptom in the three profiles.

Conclusion: The greater the fibromyalgia impact, the lower the quality of life, and the adherence to medical recommendations and the greater the mistrust in the healthcare system. Self-perceived sleep quality in fibromyalgia patients should require special attention from clinicians.

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1. Introduction

Fibromyalgia (FM) is a chronic disorder characterized by widespread musculoskeletal pain, which is accompanied by various symptoms such as fatigue, poor-quality sleep, stiffness, and physical symptoms (e.g., headaches, extreme sensitivity, irritable bowel syndrome) (Arnold et al., 2019; Bazzichi et al., 2020; Fitzcharles et al., 2013). FM is a very heterogeneous disorder that mainly affects women and FM patients report poor quality of life-related to physical and mental health (Campos et al., 2020; Lee et al., 2017). Indeed, the complex clinical profile observed in patients with FM indicates a very heterogeneous disorder (Wang et al., 2015). This heterogeneity is one of the many reasons why researchers have tried to analyze different patient profiles and their relationship with quality of life (Angarita et al., 2020; Braun et al., 2020; Luciano et al., 2016; Terol Cantero et al., 2020; Vita et al., 2020). Also, the heterogeneity of FM symptoms explains in part the differential impact of the disease on the individual's life. For instance, using latent profile analysis on data obtained from a sample of FM patients, Luciano et al. (2016) found three profiles: (1) a "functional" profile, characterized by moderate distress, sensitivity, and pain catastrophizing; (2) a "dysfunctional" profile, defined by high distress, sensitivity, and pain catastrophizing; and (3) a "highly dysfunctional and distressed" profile, characterized by high sensitivity and extremely high distress and pain catastrophizing. Thus, identifying specific homogeneous patient profiles among heterogeneous FM patients may lead to some important improvements in their understanding, and hence to more effective treatments aimed at reducing emotional distress.

The concept of fibromyalgia and its diagnosis are recent (Raspe & Croft, 1995), and remain the subject of medical debate (Häuser & Fitzcharles, 2018). While the scientific debate and controversy about diagnostic criteria for FM are still ongoing (Galvez-Sánchez & Reyes Del Paso, 2020; Stewart et al., 2019), patients are suffering terribly and some of them are struggling to be taken seriously (Boulton, 2019; Cooper & Gilbert, 2017; Undeland & Malterud, 2007). As stated by Häuser and Fitzcharles (2018),

"*despite the participation of neurologists and mental health care specialists and their scientific societies in recent interdisciplinary evidence-based guidelines on FM, the diagnostic label FM remains contested by some mental health care specialists who hold to an obsolete psychiatric or psychosomatic concept of 'medically unexplained somatic syndromes' such as masked depression and somatoform pain disorder*" (Häuser & Fitzcharles, 2018, p. 60).

Thus, it's sometimes an obstacle course that patients go through before their fibromyalgia is recognized and diagnosed as such, and their experiences being recognized and understood by medical professionals (Briones-Vozmediano et al., 2013; Homma et al., 2018). Indeed, some physicians are doubtful of the legitimacy of the diagnosis of FM, and thus of their patients' experiences (Homma et al., 2016). Such a mess undermines confidence in and mistrust of the healthcare system (Rowe et al., 2019). The increase of distrust in the health care system has potentially serious and negative consequences for many aspects of medical care, including patient satisfaction, patient-physician relationships, and patient acceptance and adherence to medical recommendations (Rowe et al., 2019). The qualitative analysis of participants' experiences concerning the diagnostic process of the MF performed by Boulton (2019) revealed that the FM diagnosis is felt by patients to be largely an empty promise. These patients often feel that the diagnosis is "hardly helpful" because it does not improve treatment options, or guarantee greater understanding and support from medical professionals. Moreover, this diagnosis might make doctor-patient interactions more difficult (Undeland & Malterud, 2007).

1.1. Objectives of the Study

The principal aim of this study was to analyze the profiles of FM patients based on the impact of the disease on their individual life. This impact is generated by the symptoms' intensity, principally pain, sleep disorder, and fatigue, and the interference on the patient's ability to accomplish daily living activities, such as cooking, shopping, and walking. This consequence was assessed with the Revised Fibromyalgia Impact Questionnaire (FIQR), which is one of the most used and well-validated instruments to evaluate functional (in)capacity and global impact of FM on perceived health status (Pinto et al., 2016).

The FIQR has been used to classify profiles of FM patients. Such classification provides a general description of the functional impact of FM. However, inconsistent profile solutions were reported. For instance, Salaffi et al. (2016) found three profiles in a sample of Italian FM patients based on their FIQR scores: "Mild", "moderate", and "severe". Pérez-Aranda et al. (2019) found four profiles in a sample of Spanish FM patients: "mild-moderate", "moderate", "moderate-severe", and "severe". More recently, Pérez-Aranda et al. (2020) replicated this four-profile solution in a large US sample of FM patients.

Given that our approach is exploratory, our main research questions were: (a) what FM impact profiles emerge based on FIQR patient responses, (b) are there differences in quality of life, distrust in the healthcare system, and adherence to medical recommendations across the profiles?

2. Method

2.1. Participants and procedure

Our sample of 707 fibromyalgia (FM) patients is mainly composed of females (females = 673, males = 33, unspecified = 1), aged 18 to 85 years (M = 49.65; SD = 10.03). They have been diagnosed with FM for an average of 6.97 years (SD = 6.23). Participants were recruited nationally via FM patient associations and FM patient groups present on social networks. To participate, all patients had to have been medically diagnosed and treated for FM within the French healthcare system. All the participants completed the questionnaires in April 2020. They were informed of the anonymous nature of the study. This research was conducted in accordance with the Helsinki Declaration, and approved by the institutional academic team.

Table 1 summarizes the socio-demographic characteristics of our sample.

Table 1. Socio-demographic characteristics of FMS patients (n= 707)

Variables	
Gender (n, %)	
F	673 (95.19)
M	33 (4.66)
Non specified	1 (0.14)
Age, Mean *(SD)*	49.65 (10.03)
Work status (n, %)	
Full-time job	148 (21)
Part-time job	108 (15)
Therapeutic part-time working	13 (2)
Paid employment but on sick leave	58 (8)
Paid employment but on long-term sick leave	43 (6)
Permanent disability with allowance	173 (24)
Retired	76 (11)
Unemployed	88 (12)
Covered by a supplementary mutual health insurance (n, %)	662 (94)
Years of diagnosis, Mean (*SD*)	6.97 (6.23)

2.2. Measures

In addition to informed consent, the two inclusion criteria (i.e., date of diagnosis, receiving medical treatment in France), and socio-demographic variables (e.g., gender, age), participants completed an online questionnaire that included the measures below.

The Revised Fibromyalgia Impact Questionnaire (FIQR), developed by Bennett et al. (2009) to evaluate different domains of FM, specifically function (e.g., "How much your fibromyalgia made it difficult to...prepare a homemade meal"), overall impact (e.g., "I was completely overwhelmed by my fibromyalgia symptoms") and symptoms (e.g., "Please rate your... level of depression") within a specified period (past 7 days). It is composed of 21 items (9 for function, 2 for overall impact, and 10 for symptoms) rated in an 11-point numeric scale ranging from 0 to 10, with 10 indicating the highest level of severity ("worst"). Cronbach's alpha reliability for our study was .92. The FIQR was used to identify FM impact profiles.

The 12-Item Short-Form Health Survey (SF-12; Gandek et al., 1998; Ware et al., 1996) is a self-reported outcome measure assessing the impact of health on an individual's quality of life. The items of the SF-12 were selected to reproduce the two summary measures, Physical Component Summary (PCS) and Mental Component Summary (MCS), of the SF-36. The PCS and MCS scores were used in this study. Cronbach's alpha reliability for our study was .82.

The Medical Outcomes Study (MOS) Measures of Patient Adherence is a 5-item scale developed to evaluate the patient's tendency to adhere to medical recommendations (item example: "I followed my doctor's suggestions exactly"). The higher the scores, the higher the level of adherence to medical recommendations. Cronbach's alpha reliability for our study was .74.

The Health Care System Distrust Scale is a 10-item instrument developed by Rose et al., (2004) to measure distrust in the healthcare system. It contains items assessing the primary domains of distrust (i.e., competence, confidentiality, honesty, and fidelity). Also, the scale evaluates beliefs about specific practices in the healthcare system (e.g., doing blood tests), as well as general beliefs about the motives of the healthcare system (e.g., holding costs down). Scores on the Health Care System Distrust scale ranged from 12 to 36, with higher scores indicating more distrust. Cronbach's alpha reliability for our study was .75.

2.3. Data Analyses

Latent profile analysis was conducted in M*plus* 7.4 (Muthén & Muthén, 1998-2010) to identify profiles of patients impacted by FM using the 21 FIQR items as indicators (i.e., clustering variables). Latent profile analysis is an exploratory person-centered approach used to identify latent homogenous subgroups based on their similarity on scores of a set of observed indicators through robust maximum likelihood estimation (MLR). Since it is an exploratory approach, the following criteria were used to identify the best solution (Nylund et al., 2007; Tein et al., 2013). First, Bayesian information criterion (BIC) and sample-size-adjusted BIC (saBIC): models with lower BIC/saBIC values are preferred. Second, Lo–Mendel–Rubin (LMR) likelihood difference test, and bootstrapped likelihood ratio test (BLRT): for both LMR and BLRT, a significant *p*-value indicates that a model fits the data significantly better than a model with one less class. And finally, an important criterion used here is the coherence and the interpretability of the identified profiles (e.g., avoiding very small class size). Next, MANOVA and ANCOVA analyses were conducted to examine differences in external variables (i.e., quality of life, distrust in the healthcare system, and adherence to medical recommendations) across profiles. Years of diagnosis and age were used as covariates in ANCOVA analyses. Data supporting the findings of this study are available from the corresponding author on request.

3. Results

3.1. Correlational Analysis

Correlations between the measures used in this study are summarized in Table 2. As shown in this table, FM impact is negatively correlated with both components of quality of life as well as with adherence to medical recommendations (r = -.264, p <.01), and positively related to distrust in the healthcare system (r = .184, p <.01). Adherence to medical recommendations was negatively correlated with distrust in the healthcare system (*r* = -.263, p <.01), and positively related to both components of quality of life.

Table 2. Correlations between the measures used in this study (N = 707)

	1	2	3	4	5	6
1.FIQR	1.00					
2.PCS	-.400*	1.00				
3.MCS	-.449*	-.298*	1.00			
4.Adherence	-.264*	.101*	.211*	1.00		
5.Distrust	.184*	-.080**	-.178*	-.263**	1.00	
6.Age	-.075**	.036	.069	.049	-.089**	1.00
7. Years of diagnosis	-.003	-.014	.071	.008	-.112*	.377*

Note. FIQR = Fibromyalgia Impact Questionnaire–Revised; Adherence = Patient Adherence to medical recommendations; Distrust=distrust in the healthcare system as measured by Health Care System Distrust Scale; PCS= physical component of quality of life (SF-12); MCS= mental component of quality of life (SF-12). * p < .01, ** p <.05

3.2. FM Impact Profiles

Three latent profile analyses were conducted. Our large sample was randomly partitioned into two sub-samples. The first sub-sample served to the initial analysis and a replication (cross-validation) of this analysis was performed in the second sub-sample. Because the two analyses yielded the same results, the third analysis was based on the entire sample. Table 3 shows model fit statistics for one to five-class solutions based on the entire sample. The significant BLRT *p*-values did not provide clear indications for the best solution. The BIC and the saBIC values plead in favor of the five-class solution. However, nonsignificant LMR *p*-values indicated that the four-class model did not significantly improve over the three-class model, and the five-class model did not significantly improve over the four-class model. A significant LMR *p*-value, as well as lower BIC and saBIC values, indicated that the three-class model fitted the data better than did the two-class model. Thus, the three-class solution was retained for further analyses and is described in more detail hereafter. A graphical depiction of the three-profile solution is reported in Figure 1. Profile 1 represented 14% of the total sample who had low scores across almost all FIQR items. It was thus labeled *Low FM Impact* and considered as a comparison group for the other profiles. Profile 2 consisted of 43% of the total sample who showed high scores in almost all FIQR items. Thus, it was labeled *High FM Impact*. Profile 3 represented 43% of the total sample who had moderate scores across almost FIQR items and thus was labeled *Moderate FM Impact*. A close examination of Figure 1 and Table 4 shows that in all three profiles, the highest scores are for items FIQR-15 (rating sleep quality) and FIQR-16 (rating environmental sensitivity). Profiles 2 and 3 share the highest scores in FIQR-5 (“ability to lift and carry a bag full of groceries”).

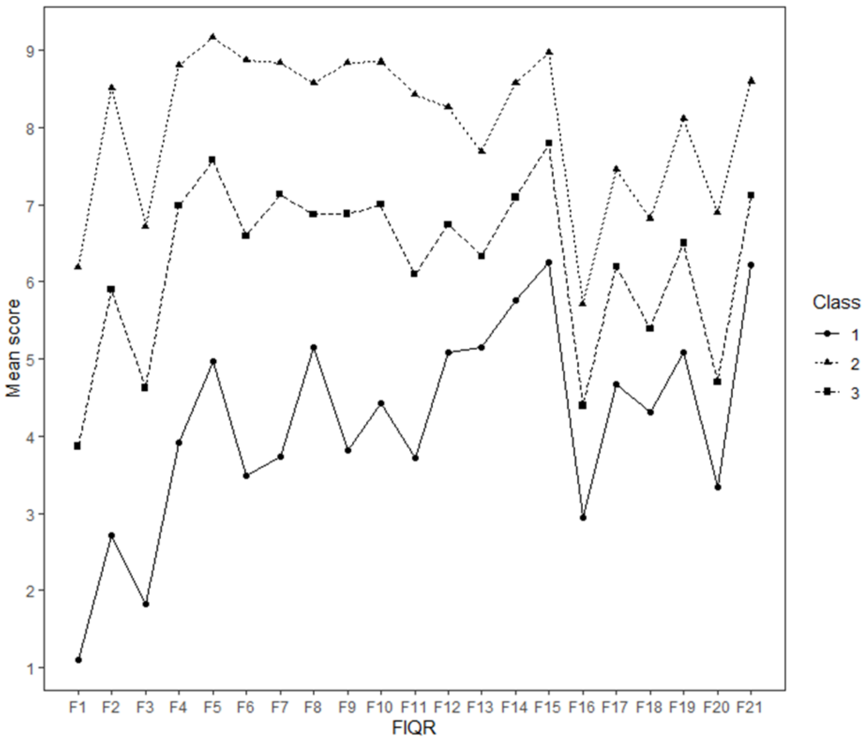

Figure 1. Cluster profiles based on the Fibromyalgia Impact Questionnaire–Revised (FIQR)

Item 1 (F1) – Item 9 (F9) = Physical dysfunction; Items 10-11 = Overall impact; Item 12- Item 21 = Symptoms (see Table 4).

Table 3. Latent profile fit statistics for models based on the 21 indicators of the FIQR

	Classes			
	2	3	4	5
Free parameters	64	86	108	130
LL	-32164.47	-31513.11	-31306.14	-31148.13
BIC	64748.86	63590.48	63320.87	63149.20
saBic	64545.64	63317.41	62977.95	62736.42
LMR *p*-value	0.000	0.000	0.303	0.512
BLRT *p*-value	0.000	0.000	0.000	0.000
Class size				
Minimum, n (%)	225 (32)	96 (13.57)	39 (5.5)	38 (5.37)

Note. LL = model log-likelihood; BIC = Bayesian information criteria; saBIC = sample-size adjusted BIC; LMR =Lo-Mendell-Rubin likelihood ratio test; BLR = bootstrap likelihood ratio.

3.3. Profile Comparisons

Results of the between-profiles analyses are displayed in Tables 4 and 5. As shown in Table 5, there were no differences in years of diagnosis across the three profiles. There were significant age differences, such that participants in the *Low FM Impact* profile were older than participants in the *High FM Impact* profile. Participants in profile 1 had the lowest FIQR total scores, whereas participants in the *High FM Impact* profile had the highest FIQR total scores. Regarding the physical component of quality of life (PCS), participants in the *Low FM Impact* profile reported higher scores than participants in the two other profiles. Participants in the *Moderate FM Impact* profile reported higher scores on PCS quality of life than participants in the *High FM impact* profile. Regarding the mental component of quality of life (MCS), participants in both *Low FM Impact* and *Moderate FM impact* profiles reported higher scores than participants in *High FM impact* profile. Concerning the tendency to adhere to medical recommendations, participants in the *Low FM Impact* profile reported high scores than the participants in the two other profiles. There were no differences between participants in *Moderate* and *High FM Impact* profiles. Finally, participants in the *High FM Impact* profile reported more distrust of the healthcare system than participants in the two other profiles.

ANCOVAs for each outcome showed that profile membership main effect remains statistically significant (p <.05) controlling for years of diagnosis, and age.

Table 4. Mean and standard deviation (SD) of each item of the FIQR across profiles (Figure 1)

Item n°	Item description	Profile 1 (n= 96)		Profile 2 (n=305)		Profile 3 (n= 306)	
		Mean	*SD*	Mean	*SD*	Mean	*SD*
1	Brush or comb hair	1.06	1.60	6.19	2.68	3.85	2.68
2	Walk continuously for 20 min	2.69	2.34	8.54	1.64	5.83	2.43
3	Prepare a homemade meal	1.78	2.00	6.70	2.17	4.60	2.17
4	Vacuum, scrub, or sweep floors	3.85	2.25	8.83	1.15	6.95	1.83
5	Lift and carry a bag full of groceries	4.91	2.19	9.18	1.02	7.55	1.63
6	Climb one flight of stairs	3.45	2.29	8.90	1.20	6.52	1.96
7	Change bed sheets	3.66	2.29	8.85	1.12	7.11	1.56
8	Sit in a chair for 45 minutes	5.05	2.67	8.57	1.92	6.87	2.19
9	Go shopping for groceries	3.71	2.24	8.85	1.91	6.86	1.47
FIQR physical function (0-30)		10.00	3.28	24.88	2.45	18.72	2.64
10	Cannot achieve goals	4.37	2.75	8.83	1.23	7.00	1.64
11	Feel completely overwhelmed	3.75	2.61	8.40	1.54	6.07	2.22
FIQR overall impact (0-20)		8.12	4.72	17.24	2.40	13.07	3.41
12	Pain	5.07	1.83	8.27	1.09	6.72	1.33
13	Fatigue	5.13	1.91	7.65	1.87	6.36	1.84
14	Stiffness	5.75	2.06	8.57	1.16	7.08	1.52
15	Sleep quality	6.17	2.56	8.98	1.68	7.78	2.13
16	Level of depression	2.92	2.64	5.68	3.02	4.40	2.70
17	Memory problems	4.70	2.59	7.49	2.11	6.14	2.23
18	Level of anxiety	4.34	2.91	6.79	2.74	5.39	2.69
19	Level of tenderness	5.10	2.53	8.12	1.62	6.46	2.12
20	Balance problems	3.37	2.53	6.90	2.24	4.66	2.41
21	Environmental sensitivity	6.21	2.42	8.60	1.50	7.10	2.28
FIQR symptoms (0-50)		24.40	6.26	38.54	5.08	31.06	5.06
FIQR total (0-100)		42.60	10.90	80.67	6.99	62.87	7.03

Table 5. MANOVA results

	FIQR Profiles (Figure 1)			*p*-value	Partial η^2	Group post hoc tests
	Profile 1 (n= 96)	Profile 2 (n= 305)	Profile3 (n=306)			
FIQR	42.60 (10.90)	80.67 (6.99)	62.87 (7.03)	<.001	.746	1 < 2 > 3
PCS	40.20 (7.15)	28.54 (7.01)	32.61 (7.26)	<.001	.225	1 > 2 < 3
MCS	38.88 (11.25)	32.40 (9.66)	38.88 (11.25)	<.001	.060	1, 3 > 2
Adherence	21.27 (5.23)	18.29 (4.72)	19.10 (4.50)	<.001	.041	1> 2, 3
Distrust	26.53 (7.41)	28.75 (6.97)	27.17 (6.39)	<.004	.016	1,3 < 2
Age	52.01 (9.25)	49.43 (9.11)	49.14 (11.02)	<.05	.009	1>2
Years of diagnosis	6.39 (5.23)	6.89 (6.46)	7.23 (6.28)	ns	.002	

Note. Profile1 = Low FM Impact; Profile 2: High FM Impact; F3= Moderate FM Impact; FIQR = Fibromyalgia Impact Questionnaire-Revised; Adherence = Patient Adherence to medical recommendations; Distrust=distrust in the healthcare system as measured by Health Care System Distrust Scale.

4. Discussion

The current study aimed to identify FM impact profiles in a large sample of FM patients and to determine the extent to which profile membership is associated with quality of life, distrust in the healthcare system, and adherence to medical recommendations. The main strength of the identification of FM impact profiles is that it can be used to refine intervention and patient education strategies specifically for each profile (Albajes & Moix, 2021).

Three distinct profiles were identified. The *Low FM Impact* profile was the most positive of them. It was characterized by low functional incapacity indicating more autonomy to perform daily living activities, moderate physical symptoms severity, and low levels of depressive and anxious moods. However, higher levels of sleep problems and environmental sensitivity (i.e., sensitivity to environmental stimuli such as bright lights, loud noises, odors, and cold) seem to blacken the picture somewhat. This profile displayed a better quality of life level, less distrust in the medical healthcare system, and better adherence to medical recommendations than the other profiles. Patient's trust in the healthcare system plays a pivotal role in explaining patient's access to and utilization of medical care, adherence to medical recommendations, and continuity of care. Patient's trust determines the patient-physician relationship, which plays a main role in the detection and management of any disease, particularly those relatively misunderstood, such as FM (Lobo et al., 2014). Armstrong et al. (2006) found that distrust in the health care system was associated with worse self-reported health.

A complementary regression analysis was performed to assess potential relationships between FM impact and patient's distrust in the medical health system. The 21 items of the FIQR were used as independent variables and distrust in health system scale scores as a dependent variable. Only FIQR-11 (i.e., Feel completely overwhelmed by my fibromyalgia symptoms) significantly predicted (p <.005) mistrust of the healthcare system. Neither pain, fatigue nor sleep problems have anything to do with this mistrust. It is plausible to admit that such distrust exists in some patients even before the onset of their FM and that it does not change their beliefs. Benkert et al. (2019) describe medical distrust as a negative attitude most commonly "group-based" and anchored in the person regardless of their current health status. As a negative relationship between distrust in the healthcare system and adherence to medical recommendations was identified in our results, it seems to be important to consider this distrust in FM patients' educational programs (Homma et al., 2018).

Unfortunately, Profiles 2 and 3 represent 86% of our sample, equally distributed in each of the profiles. Although our sample is not representative of patients with FM, this finding shows the distress in which some of these FM patients live. The *Moderate FM Impact* profile (Class 3 in Figure 1) is characterized by a deterioration of functional autonomy (e.g., Lift and carry a bag full of groceries) and sleep quality. However, the members in this profile seem to be keeping their morale up. Indeed, they had scores in the SF-12 mental health component as high as those obtained by Profile 1 members. Their level of distrust in the healthcare system is not different from the one displayed by Profile 1. Adherence to medical recommendations is lower than that observed in Profile 1. The *high FM impact* profile (class 2 in Figure 1) is characterized by a serious deterioration of functional autonomy, higher levels of symptom severity and emotional distress, and poor quality of life. Representing 43% of our sample, this profile calls for an awareness and attentiveness of the situation in which a large number of FM patients are struggling. Their higher level of distrust in the medical healthcare system, and lower level of adherence to medical recommendations deserve special attention. Of course, one cannot establish any causal links between these phenomena. However, there is some evidence suggesting that trust is associated with better self-reported health (Mohseni & Lindstrom, 2007; Ozawa & Sripad, 2013), and with an increased likelihood of psychological distress (Ahnquist et al., 2010). Also, trust in the healthcare system is linked to the utilization of preventive health systems (Musa et al., 2009). The review of the literature concerning adherence to FM treatment conducted recently by Oliveira Junior and Ramos (2019) revealed that the patients' quality of life was always higher in those whose adherence and persistence to the treatment were higher. These authors concluded that "patients' QoL indexes may indicate the level of commitment to adhere to treatment, and vice versa". Our findings are in line with this conclusion. Indeed, we found positive bivariate correlations between adherence and both components of quality of life as assessed with the SF-12. Improvements in quality of life may improve treatment adherence in FM (Dobkin et al., 2006). And improvements in treatment adherence may improve the quality of life in FM. Patients' care should therefore take into account all the difficulties experienced by patients in complying with medical recommendations to improve both therapeutic adherence and quality of life.

The three profiles share poor-quality sleep and higher sensitivity to the environment. The assumption that sleep disturbance is a pathogenic stimulus of FM has already been raised (Choy, 2015). According to Choy (2015), sleep disturbance might have bidirectional roles in the pathophysiology of FM. Sleep disturbance might be not only a consequence of pain but also pathogenic. Sleep dysfunction and pain fuel each other. Poor quality sleep may be a cause and undoubtedly a consequence of FM (Diaz-Piedra et al., 2015). As suggested by Hamilton (2015) "identifying subgroups of patients with similar sleep complaints could be a useful first step in understanding the range of etiologies that result in an FM phenotype, which would aid in the development of more effective treatments and perhaps prevention strategies" (p. 908). However, the meta-analysis conducted by Wu et al. (2017) revealed that sleep difficulties in FM appear to be more important when reported subjectively than when assessed objectively, suggesting that FM patients are likely to overestimate their sleep problems when subjectively evaluated. Thus, self-perceived sleep quality and negative affectivity in patients with FM need further study.

Our findings have some similarities with results from previous profile analyses in patients with FM using the FIQR indicators. Indeed, Salaffi et al. (2016) identified three profiles in their Italian patients with FM (N = 353) that they had labeled: Low symptoms intensity profile (33% of the sample), Moderate symptoms intensity profile (34%), and High symptoms intensity profile (33%). However, based on the FIQR, the latent profile analysis conducted by Perez-Aranda et al. (2019) in a large sample of Spanish patients with FM (N= 947) identified 4 profiles: (1) mild-moderate FM symptoms (12.5% of the sample), (2) moderate FM symptoms (29.10%), (3) moderate-severe FM symptoms (42.40%), and (4) severe FM symptoms (16%). This four-profile solution based on the FIQR scores was replicated by Perez-Aranda et al. (2020) in a large US sample of FM patients (N = 6280).

5. Conclusion and Limitations

Although our study contributes to the classification of the FM patients based on their scores on the FIQR that may have relevant clinical implications for diagnosis and treatment response, at least, two limitations need to be noted. First of all, the non-representativity of our sample: the very small number of males in our sample may limit the generalizability of our findings to the adult French patients with FM (Conversano et al., 2019). Second, despite the multiple advantages of online survey research (Wright, 2005), internet users are not representative of the target population. In addition, and as underlined by Wright (2005), self-selection bias is a major limitation of online survey research. In any given Internet community, such as FM patient associations and networks, there are certainly some individuals who are more likely than others to complete an online survey.

Conflict of interest statement

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