Relationship between religiosity, spirituality and physical and mental outcomes in fibromyalgia patients

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Received on May 13, 2020; accepted in revised form on July 17, 2020.

Clin Exp Rheumatol 2021; 39 (Suppl. 130): S48-S53.

Key words: fibromyalgia, chronic pain, pain, religiosity, spirituality

Competing interests: none declared.

ABSTRACT

Objective. *The coping mechanisms utilised by patients with the fibromyalgia syndrome (FM) pose a crucial focus of treatment. Previous research points to the positive effects of religiosity and spirituality (R/S) as tools for coping with illness. The role of these factors in coping with chronic pain in FM has not previously been studied. The aim of this study was to evaluate the link between R/S and FM outcomes.*

Methods. *Fifty-five FM patients (ACR criteria) attending a tertiary rheumatology clinic completed a packet of questionnaires assessing demographic data, levels of religiosity and spirituality (SpREUK) and locus of control (LOC). These variables were then individually assessed for influence on FM outcome measures, using the Fibromyalgia Impact Questionnaire (FIQ), the SF-36, and the Beck Depression Index (BDI).*

Results. *A high score on SpREUK I (search for meaningful support) was negatively correlated with the Role-Physical ($p=0.032$) and Role-Emotional ($p<0.005$) scales on SF-36. Secular patients scored higher on SF-36 domains of "Role limitation due to emotional health" and "General health" ($p<0.05$). Employment demonstrated a positive correlation with the FIQ ($p<0.01$), the BDI ($p<0.001$), and the SF-36 ($p<0.05$). Physical activity correlated positively with BDI scores ($p=0.012$) and better scores on SF-36: energy/fatigue ($p=0.024$), social-functioning ($p=0.014$) and physical-functioning ($p<0.01$).*

No significant correlation was found between LOC (internal versus external) and FM outcomes. No significant correlation was found between SpREUK domains and the BDI.

Conclusion. *FM patients do not appear to benefit from high levels of R/S. Physicians should be aware of the impact of R/S on well-being in this population.*

Introduction

Religiosity and spirituality represent a prominent aspect of life in the majority of existing cultures, giving meaning to human behaviours and experiences. Religiosity is a characteristic of individuals and collectivities that display various features of beliefs about the supernatural, meaning and purpose of life and how individuals and social groups engage in behaviours related to the supernatural, including rituals and practices (1). Spirituality is a broader concept, embracing an internal experiential process. Features of spirituality include varied aspects, such as quest for meaning and purpose, transcendence, connectedness (*e.g.* with the divine or nature), and values (*e.g.* love, compassion, and justice) (2, 3). In fact, spirituality is connected to large questions about life and identity, such as our own value, the meaning of suffering, and our connection to the world, the reasons things happen and the best possible way to live our lives. Despite these separate definitions, there is considerable overlap between the two, since most individuals experience spirituality within the context of an organised religion.

Evaluation of religiosity and spirituality is increasingly common in the social and behavioural sciences, as well as within medicine and psychological sciences. Religiosity and spirituality (R/S) and their link to health have been studied in different disciplines since the beginning of the 20th century (4) and are now commonly included in a biopsychosocial model of health. Both have been demonstrated to impact health outcomes in various medical settings, including cardiovascular diseases (5-7), malignancies (8-11) and HIV (12). A greater religiosity/spirituality adherence is generally related to better outcomes, including lower blood pressure (13), better periodontal health

(14), improved immune function (12, 15) and even reduced all-cause mortality (16). In recent years, studies have shown that religiosity is positively correlated with telomere length in various populations, probably due to healthier lifestyle, including less smoking and alcohol use/abuse, both of which have been linked to telomere length (17).

Religious/spiritual involvement has also remarkable positive effects on mental health outcomes, including depression, anger, anxiety, life satisfaction, loneliness, and cognitive functioning (18). Various mechanisms have been postulated to explain how religious and/or spiritual involvement favour mental and physical health, including neuro-endocrine and metabolic aspects (19). Psycho-social mechanisms may also play a major role. Religious involvement is associated with larger social networks and support, and R/S is positively correlated with vital psychological resources such as self-esteem, self-control, optimism, meaning and purpose, reinforcing positive role identity and enhancing positive coping (4,18).

Nonetheless, certain forms of R/S may be maladaptive, with deleterious effects on physical and psychological well-being, when people struggle with their religious beliefs. Feeling abandoned or punished by God, questioning God's love, attributing poor health conditions to the devil, and negative social interactions with coreligionists have all been associated with worse physical and mental outcomes (20-22), including increased mortality (23).

According to the well-defined biopsychosocial model of pain, R/S is an integral component of the mosaic of biological, psychological, environmental, and behavioural factors that determine pain perception. Addressing religious and spiritual issues in the management of chronic pain in patients with cancer and other terminal illnesses is well recognised by palliative care specialists. In recent years, there is growing interest for understanding and integrating R/S in the management of patients with other chronic pain conditions. Those patients represent a specific population, dealing with different experiences than patients facing death or terminal illness. These patients, who suffer higher levels of depression and anxiety, do not struggle for cure and survival but rather for making life tolerable and worth living. In this regard, religiosity and spirituality are often used as a cognitive, behavioural, cultural and emotional coping mechanism, when confronted with chronic pain (20). Spirituality has been shown to correlate with better psychological function and coping responses of ignoring pain sensations in a population of patients with chronic musculoskeletal pain other than fibromyalgia (24). Religious prayer has been shown to alter the experience of pain, essentially through expectation mechanisms. Neuroimaging studies revealed reduced neural activity in parieto-frontal network during painful electrical stimulation when religious subjects were praying, indicating that prayer may attenuate pain through a reduction in processing of pain stimulus saliency and prefrontal control (25).

FM is a complex set of disabling symptoms including chronic pain, disturbed sleep and fatigue, as well as anxiety and depression, with an overreaching impact on quality of life. Treatment is multidimensional, focused on adopting positive cognitive and behavioural coping mechanisms. Nonetheless, FM remains a therapeutic challenge (26). Little is known regarding the role of R/S in the approach to the treatment of FM. In their study of 590 FM patients, Biccheri *et al*. showed a positive link between spirituality and coping abilities, leading to better quality of life. (27). FM represents a very particular population of patients, dealing not only with chronic pain, a high burden of functional symptoms, disability, anxiety, depression, anger, frustration, restricted familial, social and professional life, but simultaneously having to struggle for recognition and legitimation. Behavioural changes and positive coping are hard to achieve in these patients, and usually lead to modest improvement in outcomes. In this regard, we hypothesise that religiosity and spirituality may not have the same favourable effects as described in other chronic pain populations, and even may be deleterious, adding another field of struggle: the meaning of their suffering in the scope of their beliefs.

The purpose of the current study was to evaluate the nature of the link between R/S and the outcomes of FM.

Methods

Patients

Patients included in this study were attending the Institute of Rheumatology at the Tel Aviv Sourasky Medical Centre, Israel. The participants provided written informed consent for participation in the study, and it was approved by the institutional review board. To be considered for inclusion in this study, patients had to be at least 18 years of age; able to provide informed consent; diagnosed with fibromyalgia according to the ACR 2010 criteria (28) and not diagnosed with an additional rheumatologic disorder.

Study design and data collection

This was an open-label observational study. During a routine visit to the fibromyalgia clinic, patients were presented with a packet consisting of five questionnaires, designated to evaluate different aspects of disease, R/S and FM outcome measures, including quality of life. Demographic and socioeconomic parameters, including sex, age, education level, religious sector, employment status and marital status were documented, as well as medical history, current use of medications and physical exercise.

Level of spirituality/religiosity was estimated by the validated Hebrew version of the Spiritual and Religious Attitudes in Dealing with Illness (SpREUK) Questionnaire for Religiosity, Spirituality and Health, which contains 5 domains (29). Locus of control (LOC) was evaluated by the locus of control questionnaire. FM-related outcome measures included the Fibromyalgia Impact Questionnaire (FIQ) (Validated Hebrew version), the SF-36, and the Beck's Depression Index (BDI), assessing depression and anxiety.

Instruments

As noted above, five questionnaires were used to assess the variables investigated in the study:

- Independent variables

1. The Spiritual and Religious Attitudes in Dealing with Illness (SpREUK) questionnaire was designed to estimate the attitudes of patients with chronic diseases towards R/S. The SpREUK is composed of five domains, examining different aspects of R/S, namely (30, 31):
   I. Search for meaningful support: it represents patients' interest in using R/S in coping with their disease.
   II. Reflection: positive interpretation of the disease: it relates to the cognitive reappraisal of life triggered by illness, and subsequent attempts to change.
   III. Trust in higher guidance: a measure of intrinsic religiosity. This domain deals with the patients' wish to be connected with a higher source and guided or sheltered by it.
   IV. Support in relations with the external life through spirituality.
   V. Support of the internal life through spirituality.
   Domains IV and V are reflections of the external vs. internal locus of control in the R/S context.

The questionnaire consists of 29 items using a 5-point Likert scale. For each of the 5 sub-scales, scores were summed and dichotomised according to the median into "low" or "high".

2. The locus of control questionnaire measures generalised expectancies for internal versus external control of reinforcement. Scores range from zero to 13. A low score indicates an internal locus of control while a high score indicates an external control.

- FM outcome measures

3. The SF-36 evaluates patient-perceived health status across broad physical and emotional health (32, and is considered one of the most widely used health status inventories (33).
4. FIQ was developed to evaluate fibromyalgia-specific symptoms' severity and response to treatment (34). The FIQ is composed of 10 questions relating to the ability to perform large muscle tasks (item 1), the ability to work (items 2-3), severity of pain, fatigue, morning tiredness, stiffness, anxiety and depression (items 4-10). The FIQ is scored in such a way that a higher score indicates a greater impact of the syndrome on the person. The validated Hebrew version was used (35).
5. The BDI is a 21-item self-reporting questionnaire for evaluating the severity of depression in normal and psychiatric populations (36).

Statistical analysis

Descriptive statistics were calculated for all variables. Continuous variables were presented as mean and range, categorical variables were presented by (n, %). Patients' LOC score was presented using a histogram. ANOVA and Spearman correlations were used to assess the effect of categorical and continuous patients' characteristics, respectively on FM outcome measures. The relationship between SpREUK scores and LOC was evaluated using a logistic regression analysis. JMP (SAS Institute, Cary, NC) was employed in the statistical analyses.

Results

Fifty-five patients completed the questionnaires. All patients fulfilled the criteria for diagnosis of FM according to the ACR 2010 criteria (28). A summary of patients' characteristics is presented in Table I. Most patients were female (n=45), with a mean age of 48. The majority of participants (n=51) were Jewish and secular (n=34). Secular Jews are individuals born to the Jewish people but not involved in any religious practice or belief.

Scores on the LOC questionnaire demonstrated a normal distribution with a mean score of 5±2 (Fig. 1).

Twenty-five patients reported a high level of search for meaningful support (domain I of the SpREUK). A high score on SpREUK I was negatively correlated with the Role-Physical scale on SF-36, predicting a higher degree of limitation due to physical health (p=0.032) (Fig. 2A).

A high score on SpREUK I was also negatively correlated with the Role-Emotional scale of the SF-36, focusing on role limitation due to emotional health (p<0.005) (Fig. 2B).

Nineteen patients scored high on SpREUK III, trust in higher guidance. SpREUK III showed a trend towards a similar inverse correlation (p=0.054) when plotted against the Role-Emotional scale (Fig. 3).

Other SpREUK domains did not demonstrate a statistically significant association with the examined outcome measures.

Thirty-one patients stated to participating in physical activity lasting for a minimum of 20 min practiced at least once a week. These patients were found to have higher BDI scores, i.e. less anxiety and depression (p=0.012), and higher scores in the following SF-36 scales: energy/fatigue (p=0.024), social functioning (p=0.014) and physical functioning (p<0.01).

Twenty-six patients reported on being currently employed. Employment status demonstrated a significant positive correlation with the FIQ (p<0.01), the BDI (p<0.001), and with all eight domains of the SF-36 (p<0.05).

Table I. Patients' characteristics.

Characteristic		
Age, mean (range)	49	(23-70)
Marital status, n (%)		
1. Single	9	(17)
2. Married	32	(59)
3. Divorced	12	(22)
4. Widowed	1	(2)
Education years, mean (range)	14	(10-20)
Employed, n (%)	26	(48)
Smoking, n (%)	16	(30)
Sports, n (%)	31	(57)
Cancer	0	
Medications n (%)		
Analgesics	28	(51)
Narcotics	10	(19)
Antidepressants	16	(31)
Sleeping pills	13	(26)
Anxiolytics	11	(22)
Religion, n (%)		
Jewish	51	(94)
Muslim	0	
Christian	1	(2)
Other	2	(4)
Religious sector, n (%)		
Orthodox/religious	7	(13)
Conservative	12	(23)
Secular	34	(64)
Turning religious post diagnosis of FM, n (%)	5	(10)

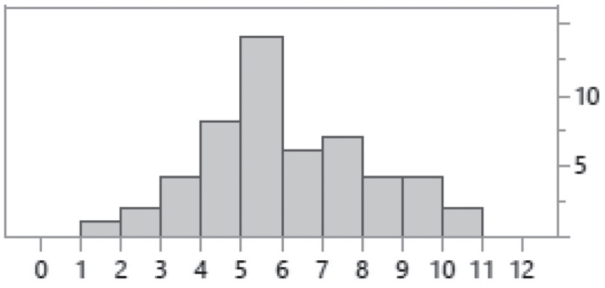

Fig. 1. Patients' distribution according to LOC.

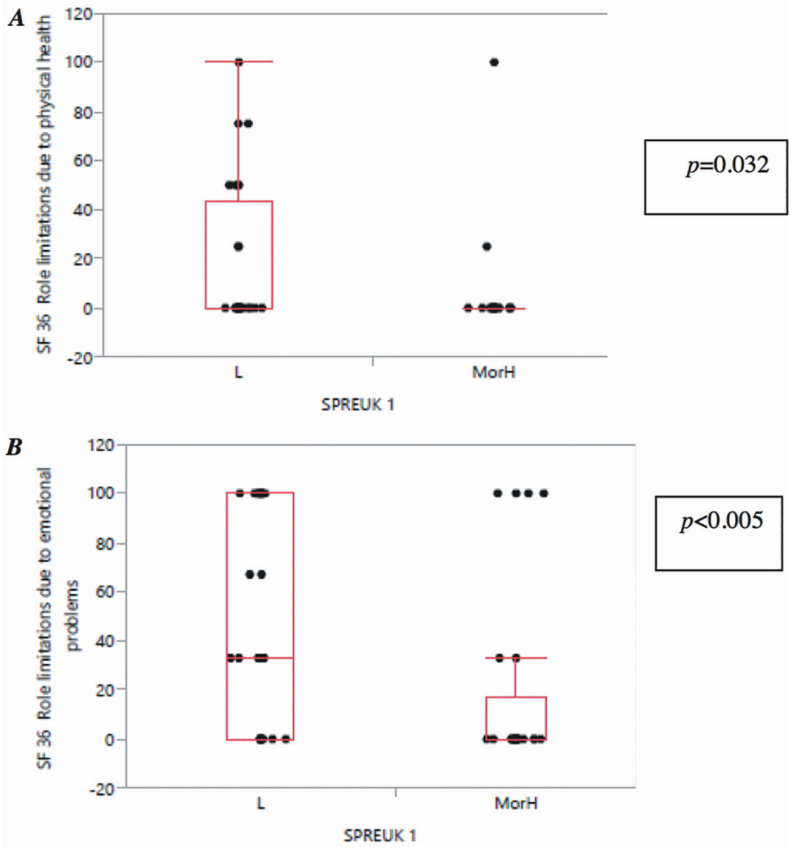

Fig. 2. Role limitation due to physical health (A) and emotional health (B) by SpREUK I.
SpREUK: spiritual and religious attitudes in dealing with illness questionnaire; L: low; M: medium; H: high.

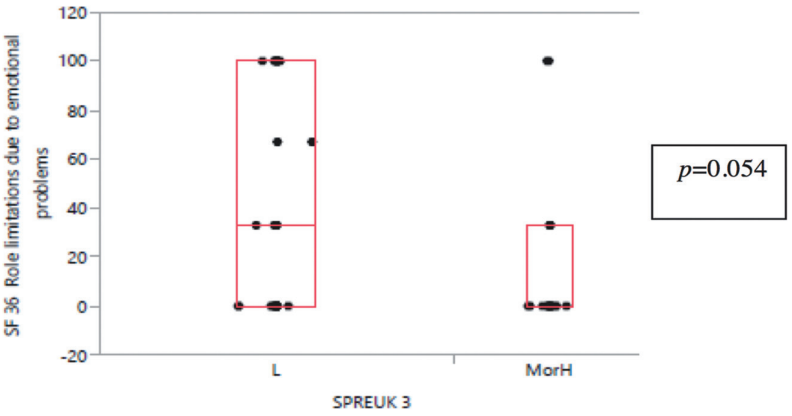

Fig. 3. SF-36 Role limitations due to emotional health by SpREUK III.
SpREUK: spiritual and religious attitudes in dealing with illness questionnaire; L: low; M: medium; H: high.

No significant correlation was found between LOC (internal versus external) and FM outcome measures.
Similarly, no significant correlation was found between the LOC and the five subsets of the SpREUK, indicating a lack of association between LOC and R/S in the study participants.
BDI scores were not found to have an association to SpREUK measures.

Discussion

In this study, we aimed to systematically examine the nature of the association between levels of R/S and mental and physical outcomes in FM patients. In this respect, our most noteworthy finding was the lack of a positive (or protective) relationship between R/S levels and FM outcomes, a finding which is in discordance with other chronic medical conditions (20, 21, 37, 38). Our results demonstrated that higher rates of religiosity – specifically, the search for meaningful support and trust in higher guidance – correlated with a poorer quality of life in FM patients, with no effect on depression and anxiety.
This detrimental effect was not meditated by an external locus of control, usually attributed to increased religiosity, which was not found to correlate with SpREUK scores in our patients (39, 40). Thus, the mechanism underlying this negative correlation between R/S and FM outcomes remains unclear.
FM is a complex constellation of symptoms, involving many spheres of patients' everyday life, and remains a therapeutic challenge, demanding creative strategies from patients and physicians alike. Treatment relies on adopting positive and sustainable coping mechanisms to alleviate pain and maintain personal, familial, social, and professional functioning. Mind-body movement therapies, cognitive-behavioural therapy as well as regular physical exercise have all been acknowledged as essential parts of therapy. Spiritual and religious support have been reported by patients to reduce pain and improve well-being, and survey studies have shown that prayer was either the first or second most frequently used coping strategy to deal with physical pain (20, 41). A recent review

has shown that active prayer to God emerges as the preferred beneficial intervention for religious patients undergoing surgery or a painful procedure (42). On the other hand, studies have repeatedly shown that a significant percentage of chronic pain patients have unmet spiritual needs (43).

Notably, FM patients represent a unique population because of the complexity and diversity of symptoms, affecting both physical and mental health and functioning, the lack of complete understanding of pathophysiology and the lack of total legitimation from the society and health professionals alike. Positive coping in this context is challenging, leading to the hypothesis that R/S may not have the same positive effects as seen in other medical conditions; the results of our study support this assumption.

These results are in line with a previous study by Offenbacher *et al*. that investigated spiritual and religious needs of 141 fibromyalgia patients and found no association between religious needs and health associated outcomes (33). It is interesting to note this similar result, despite the difference in the population studied: Christian versus Jewish population. In fact, trusting God seems to be independent of quality of life issues, since individuals with worse health status may have trust in God (or not), and praying may be a resource for religious individuals with worse health condition. In our study, search for meaningful support as well as trust in higher guidance was associated with worse physical and emotional role functioning, underlining the potential deleterious effects of R/S. Illness disrupts the personal psychological, social and spiritual equilibria of each individual, and patients trusting God, with faith in transcendental meaning for every event in their lives, may suddenly feel abandoned by God, defer responsibility to God, and engage in a spiritual struggle that can lead to worse physical and mental outcomes (11).

An important point of discussion is the potential bi-directional pathway between R/S and illness and pain. The causal direction could not be inferred by the study's design; thus, the results could reflect a tendency towards R/S among FM patients with severe disease, as previously shown. From prospective data of a large population-based study, Tronvik *et al*. showed that suffering from headache at baseline increased by 48% the risk of being religious attendant 11 years later compared to headache free-subjects (44).

The lack of correlation between locus of control, R/S and FM outcomes is a notable finding of the current study. Locus of control /Health locus of control is a cognitive construct which has been extensively studied in the context of chronic pain. Interventions aimed at moving patients towards a more internal locus of control have usually been considered to be beneficial in this context (45, 46). This salutary effect of achieving an internal locus of control might intuitively appear to contradict the above-mentioned aspects of high levels of religiosity in which a patient might be thought of as relaying on an external force. On the other hand, R/S may also be conceptualised as a resilience – forming mechanism fostered by patients and not really reflecting an external locus of control. R/S represent a more intrinsic individual relation with God, transcendence and meaning of life, independent of psychological personality. Moreover, our study included almost exclusively Jewish patients, for whom religious attendance and prayer are an essential part of the dictated religious practice, beyond personal spiritual needs and locus of control.

We also check employment status and regular exercise as contributors to general health and fibromyalgia outcomes. Both were associated with better outcomes across FIQ and SF-36 measures, meaning a beneficial effect on mood, pain, physical and social functioning. These findings concur with an existing body of research stressing the importance of work and exercise among FM patients (47, 48). One may claim that better health leads to performing exercise and working, and not vice versa. However, exercise has been demonstrated in randomised controlled studies as an advantageous intervention when compared among patients with similarly severe disease (47).

There are several limitations to our study. First, the relatively limited number of participants. Second, the examined participants were reflective of the general population of FM patients in terms of age (23-70, mean =48) and sex (90% female), but not religion. Further studies are needed to evaluate other religion groups. Third, the look-elsewhere effect might apply to our study. The look-elsewhere effect claims that multiple comparisons on a single data set predispose to overstressing the results by generating false-positives.

Conclusions

In the current study, higher levels of R/S appeared to be inversely correlated with specific outcome measures of FM. Chronic pain, and particularly fibromyalgia, pose a unique challenge for the faith of religious individuals who are obliged to cope with their suffering in the context of a religious frame of beliefs and spiritual concepts. Physicians treating FM patients should be aware of the impact of religious belief and spirituality on the physical and mental health in these patients. We should strive to engage with our patients on topics of R/S which must be an integrative part of a patient-centered approach, according to the biopsychosocial-spiritual concept of pain, and actively encourage constructive views of R/S while gate-keeping from its potential negative effects.

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