

Systematic Review

# Religious Beliefs and Attitudes in Relation to Pain, Pain-Related Beliefs, Function, and Coping in Chronic Musculoskeletal Pain: A Systematic Review

Charbel Najem, DPT<sup>1,3</sup>, Naziru Bashir Mukhtar, MSc<sup>1,3,4</sup>, Farah Ayoubi, PhD<sup>2,5</sup>,  
Jessica Van Oosterwijck, PhD<sup>1,3,6,7</sup>, Barbara Cagnie, PhD<sup>1</sup>, Kayleigh De Meulemeester, PhD<sup>1,3</sup>,  
and Mira Meeus, PhD<sup>1,3,6</sup>

From: <sup>1</sup>Department of Rehabilitation Sciences, Spine, Pain and Head Research Unit Ghent, Ghent University, Belgium; <sup>2</sup>Department of Physiotherapy, Antonine University, Lebanon; <sup>3</sup>Pain in Motion International Research Group, Belgium; <sup>4</sup>Department of Physiotherapy, Bayero University, Kano, Nigeria; <sup>5</sup>Department of physiotherapy, Lebanese University, Lebanon; <sup>6</sup>MOVANT Research group, Department of Rehabilitation Sciences, University of Antwerp, Belgium; <sup>7</sup>Research Foundation - Flanders (FWO), Belgium

Address Correspondence:  
Charbel Najem, DPT  
Department of Physiotherapy,  
Antonine University, Lebanon  
E-mail: charbel.najem@ua.edu.lb

Disclaimer: There was no external funding in the preparation of this manuscript.

Conflict of interest: Each author certifies that he or she, or a member of his or her immediate family, has no commercial association (i.e., consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted manuscript.

Manuscript received: 04-22-2021  
Revised manuscript received:  
07-15-2021  
Accepted for publication:  
08-16-2021

Free full manuscript:  
[www.painphysicianjournal.com](http://www.painphysicianjournal.com)

**Background:** The biopsychosocial-spiritual model recognizes the impact of religious factors in modulating the experience of pain. Religious beliefs are factors that can influence perceptions, emotions, and behavior, all of which have important implications on health, pain experience, and treatment outcomes.

**Objectives:** The aim of the present study was to identify if and how religious beliefs and attitudes can influence pain intensity, pain interference, pain-related beliefs and cognitions, emotions, and coping among patients with chronic musculoskeletal pain.

**Study Design:** Systematic review.

**Methods:** This systematic review was conducted and reported, following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines (PRISMA). An electronic search was conducted in 4 online databases (PubMed, Embase, Web of science, and PsychArticles) and complemented with a hand search (PROSPERO registry: CRD42020161289). Two reviewers independently performed eligibility screening, risk of bias assessment, and data extraction. The risk of bias of the included studies was assessed using the Newcastle Ottawa Scale.

**Results:** Nine cross-sectional studies and one case-control study were included in the review. The methodological quality of the included studies ranged from low to high. The results gathered regarding the association between religiosity and pain intensity, disability, or pain interference were found to be conflicting. Limited evidence suggests that religiosity is positively associated with worse pain-related beliefs and cognitions, worse pain-related emotion, and better pain acceptance. There is insufficient data available to support the claim that religiosity is negatively associated with physical functioning and pain-related self-efficacy in people with chronic musculoskeletal pain.

**Limitations:** The number of included studies was small, with a low level of evidence, and a possible risk of bias.

**Conclusion:** This systematic review shows low evidence and conflicting results for the presence of associations between religiosity and different pain domains such as pain intensity, disability, and pain-related cognitions or emotions in people with chronic musculoskeletal pain.

**Key words:** Chronic pain, musculoskeletal pain, religiosity, pain beliefs, pain cognitions, pain emotion, coping

**Pain Physician 2021; 24:E1163-E1176**

**P**ain is defined by the International Association for the Study of Pain (IASP) as an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage (1). Now more than ever, there is growing recognition that chronic pain is a complex and multidimensional experience, stemming from the interrelationship between biological, psychological, and social factors (2). Factors such as age, gender, genetics, and tissue health combined, not only with beliefs, expectations, and emotions, but also with socio-economical and interpersonal elements, may influence the way patients experience or express their pain (3). This biopsychosocial model provides a framework to understand and treat people with chronic pain (4,5). Previously, the need for a model that incorporates spirituality in the biopsychosocial framework has been expressed (6). The biopsychosocial-spiritual model recognizes the impact of religious factors in modulating the biology of pain. Such factors include organizational and non-organizational religious activities, as well as intrinsic religious factors that measure personal religious commitment and motivation (7).

Neurotheology, also known as spiritual neuroscience, is an emerging field of study that seeks to understand the relationship between religion and brain science. It could also help in understanding the link between religiosity and health, suggesting that religious and spiritual practices, such as prayer, may create feelings of relaxation that directly alter the physiological experience of pain (8). Moreover, the potential impact of spiritual and religious beliefs/practices on the treatment of individuals with chronic pain has been recognized by recent research. Hatefi and colleagues (9) suggest that appropriate religious interventions for patients with chronic low back pain should be undertaken to reduce pain and to improve their quality of life. Inversely, experiencing pain seems to be a factor that enhances religiosity, given the fact that 40% of individuals report being more religious/spiritual following the development of a chronic pain condition, compared to 4% reporting to be less religious/spiritual (10).

Religious beliefs are factors that can influence perceptions, emotions, and behavior, all of which have important implications on health, pain experience, and treatment outcomes (11,12). Patients might interpret the possible causes of chronic pain based on their own religious beliefs and, as a result, develop different pain behaviors to cope with their illness (13,14). Their

pain behavior may be conditioned or learned from their cultural experience, which provides them with either verbal or non-verbal ways to express their pain (15,16). In this way, religious coping strategies may help individuals find meaning, hope, and purpose in their illness (10), which is why health practitioners have been incorporating principles of spiritual coping into medical and research interventions (17,18). Larimore and colleagues (19) stated that patients should not be deprived of the spiritual support and comfort on which their hope, health, and well-being may hinge. Religious coping is a unique dimension since it may differ from one religion to another. This diversity poses a challenge to healthcare providers to deliver culturally competent medical care (20).

Therefore, the primary aim of the present study is to systematically review the scientific literature to identify how religious beliefs and attitudes may influence pain intensity, pain interference, pain-related beliefs and cognitions, emotions, and coping as well as disability among patients with chronic musculoskeletal pain (CMSKP). The secondary aim of the study is to identify the differences in pain intensity, pain interference, pain-related beliefs, cognitions, emotions, and coping as well as disability between different religious affiliations.

## **METHODS**

This systematic review is conducted and reported following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines (PRISMA) (21). The protocol of the systematic review was prospectively registered on PROSPERO (Registration number: CRD42020161289).

### **Research Question**

The research question is formulated by using The Patient, Exposure, Comparison, Outcome, and Study design (PECOS) approach; it is determined as: "How do religious beliefs and attitudes, such as ceremonial behavior, prayer, and forgiveness (E = exposure) may affect pain intensity, pain-related beliefs and cognitions, emotions, function, and coping (O = Outcome) in patients with CMSKP pain (P = Patient or population)?"

### **Information Sources and Search Strategy**

To identify relevant articles concerning the relationship between religiosity and pain in people with chronic musculoskeletal pain, an electronic search of the online databases PubMed, Web of Science, Embase, and PsychArticles was conducted on March 7, 2020. The

search terms were predefined from the PECOS question, as shown in Table 1. Synonyms from P, E, and O were combined using the Boolean operator “Or.” The Boolean operator “AND” was used to combine the terms of P and E or P and O with each other. Search strategies were customized to suit each database and could be found in a supplementary document (online supplementary material). In addition, a hand search was performed of the reference lists of included articles to identify potentially eligible articles that might have been missed during the electronic search. Furthermore, the Journal of Religion and Health was also screened by hand, the content tables of all editions between 1961 and March 2020, to identify possible eligible articles. Predefined inclusion and exclusion criteria were used to assess whether retrieved articles on the topic were eligible, as shown in Table 1. No restrictions on publication dates were made.

### Study Selection

Screening of the eligibility criteria was performed using the online research tool RAYYAN (<https://rayyan.qcri.org>). The first screening was conducted based on the title and abstract. If none of the predefined inclusion criteria were met, the study was excluded.

Articles that seemed to fulfill the inclusion criteria were screened a second time based on the full text. The screening (title/abstract and full text) was performed in an independent and blinded way by the first author (CN) and a second author (NBM), who are both PhD researchers in the field of chronic pain. The second author has experience with conducting systematic reviews. Disagreements were resolved by discussion between the first 2 authors, and when consensus could not be reached, discrepancies were solved by the decision of a third author (KDM), who is a post-doctoral researcher in the field of chronic pain and experienced with systematic review methodology.

### Risk of Bias Assessment, Evidence Levels and Strength of Conclusion

Based on the type of design, the included articles were screened for risk of bias with the Newcastle Ottawa Scale (NOS) adapted for cross-sectional studies (22) or the NOS adapted for case-control studies. The NOS uses a star rating system which is applied to 3 dimensions, including selection, comparability, and outcome or exposure. The dimensions selection for the NOS cross-sectional study included 4 items that rated the representativeness of the sample, the size of the sample, the

Table 1. Eligibility criteria within the PECOS framework.

PECOS	Inclusion and Exclusion Criteria, Search terms
Patient or Population	Inclusion Criteria: Human adults ( $\geq 18$ years of age), suffering from chronic musculoskeletal pain according to the definition of the ICD-11 (45) (including chronic primary musculoskeletal pain, chronic widespread pain, chronic primary headache, and chronic secondary musculoskeletal pain associated with structural changes). Exclusion Criteria: Animal studies, study samples of patients $< 18$ years of age, (sub)acute pain, and non-musculoskeletal pain. Search terms: Chronic pain, persistent pain
Exposure	Inclusion: Articles assessing spiritual and religious beliefs. Exclusion: Studies related to yoga practices, meditation, and religious philosophies. Search terms: Religion, religious, religiosity, pray*, faith, spiritual*, ceremonial behavior, religious beliefs, Christian*, Catholic*, Protestant* Orthodox*, Jewish, Judaism, Mohammedanism, Muslim*, Ethic*, Islam, Church, Jesus, Saints, Jehovah, God, Allah, atheist*, Saint, Judaism, Hindu*, Buddhi*, Catholic, Islam, Sunni, Shia, Protestant, Roman Catholic, Orthodox, Monotheism, Muslim, Christian*, Hinduism, Buddhism.
Outcomes of interest	Inclusion: Outcomes that are related to pain intensity, pain interference, pain-related beliefs and cognitions, emotions, disability, physical functioning, and coping. Exclusion: Outcomes that are related to the quality of life. Search terms: Attitude, self-efficacy, cognition*, catastrophe*, locus of control, pain perception, fear, stress, anxiety, depression, function, disability, functionality, activities of daily living, behavior, self-efficacy, catastrophizing, fear-avoidance, coping, avoidance, adaptation, behavior*, behavior*, acceptance, kinesiphobia, avoidance learning, behavior and behavior mechanisms.
Study design and report	Inclusion: Articles should be full-test reports of original studies providing information about the association between religiosity and chronic pain. Exclusion: Short reports (e.g., conference abstracts or posters, study protocols, etc.), non-original studies (e.g., opinion letters, reviews, meta-analysis, etc.), interventional studies.
Language	Inclusion: Articles written in English or French. Exclusion: Articles written in languages other than English or French.

nonresponder characteristics, and the ascertainment of exposure. This dimension for the NOS case-control study included 4 different items, i.e., adequacy of the case definition, representatives of the cases, selection of controls, and definition of controls. A maximum of 5 stars can be scores on this dimension on the NOS cross-sectional study and 4 stars in the NOS case-control study. The dimension comparability could achieve a maximum of 2 stars based on one item, which rated the comparability of the outcome groups based on the outcome factors for the NOS-cross sectional study or comparability of cases and controls based on the design or the analysis for the NOS case-control study. The NOS cross-sectional study included the dimension outcome with 2 items that rated the assessment of outcomes and statistical test characteristics and could achieve a maximum score of 3 stars. The NOS case-control study included the dimension exposure with 3 items which rated the method of ascertainment of the exposure, similarity in the method of ascertainment for cases and controls, and non-responder rates, and could achieve a maximum score of 3 stars. The NOS cross-sectional study assigns a maximum of 10 stars, while the NOS for case-control assigns a maximum of 9 with high scores corresponding to a low risk of bias. When criteria were not met, no stars would be awarded. To facilitate the comparability between studies, the total number of stars for each study was converted to number scores.

The former EBRO method (Evidence-Based Rich-tlijn Ontwikkeling), as shown in Table 2, was used to designate the study design and corresponding level of evidence of each study.

Studies were clustered according to outcome measure and religious affiliation, and the strength of

conclusion for each cluster was determined using the former EBRO method listed in Table 2. Strength of conclusion levels ranges from 1 to 4: level 1 indicating high evidence, level 2 indicating moderate evidence, level 3 indicating low evidence, and level 4 corresponding with no evidence.

The risk of bias and the level of evidence assessments were performed in a blinded and independent way by the first author (CN) and the second author (NBM). The authors compared and discussed the results. In case there were disagreements, these were resolved through discussion between the first 2 authors, and when consensus could not be reached, the third author (KDM) resolved the conflict by making the final decision.

### Data Extraction

Relevant Information from each included article was extracted independently and fitted by (CN) and (NBM) into an evidence table that includes the following information: 1) Publication (author name and year of publication); 2) Study design and place of the study; 3) Population (sample size, mean age, gender, type of CMSKP); 3) Aim of the study; 4) Outcome measurements (scales or questionnaires for religiosity, pain-related beliefs, and cognitions, emotions, coping and disability); and 5) Main results (the relation between religiosity and pain outcomes).

## RESULTS

### Study Selection

A flowchart of the selection process is represented in Fig. 1. An identified total of 1473 hits were retrieved

Table 2. Levels of evidence and strength of conclusion following the former EBRO method ([www.cbo.nl](http://www.cbo.nl)).

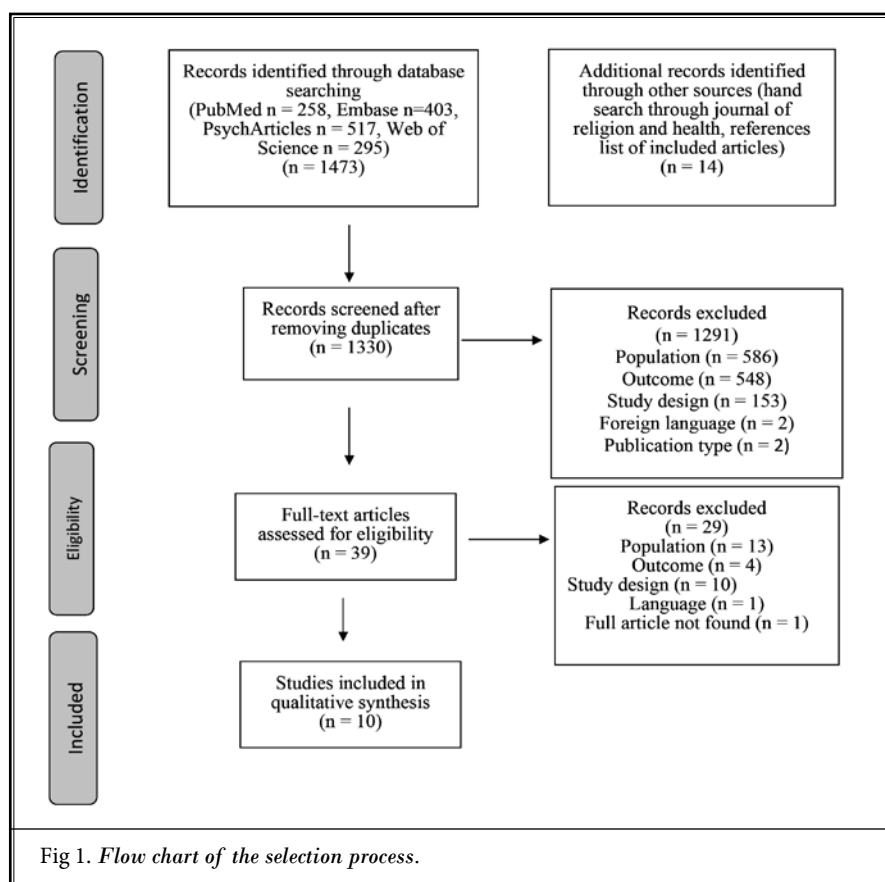
Level of evidence	Intervention
A1	Systematic reviews and meta-analyses, based on minimally 2 independent A2 studies
A2	RCT's: double-blinded; with sound methodology and with sufficient sample size
B	Comparative studies but lacking the quality criteria of A2 (including cohort studies and case-control studies)
C	Non-comparative studies
D	Expert opinion
Strength of conclusion	
Level	Strength of Conclusion per Outcome
1	1 A1 or at least 2 independent A2 studies
2	1 A2 or at least 2 independent B studies
3	1B or C study or conflicting evidence
4	Expert opinion

through the electronic database search. Data were transferred to Zotero to remove all duplicates. The hand search provided an additional 14 articles.

All data were transferred to Rayyan (<https://rayyan.qcri.org>), and a total of 1330 non-duplicate citations were screened for study eligibility. Of these, 1291 articles were excluded during the first phase of screening on title and abstract. The reasons for exclusion were that the studies did not include the population or outcomes relevant to this review. From the remaining 39 articles, 29 more papers were eliminated after the full-text screening. The main reasons for exclusion were the study design, not defining pain-related outcomes, or addressing another population. Finally, 10 articles were found to be eligible and included in this systematic review.

### Study Characteristics

The study characteristics of each included study can be found in the data extraction table (Table 3). In summary, 9 of the 10 included articles were cross-sectional studies investigating the relation between religiosity and different outcomes linked to pain-related beliefs and cognitions, emotion, coping, and disability. One article reported on a case-control study that evaluated the use of religiosity in patients with CMSKP and healthy individuals (23). The results of the studies were clustered according to outcome measures and religious affiliation. The sample sizes of the included studies varied from 42 (23) to 590 patients (24) with CMSKP, who had a mean age ranging between 44.4 (25) and 75.14 years (9). One study (23) recruited only female patients, whereas all other studies included both genders. Some studies involved patients with a specific diagnosis, such as chronic low back pain (CLBP) (9,26-28) or fibromyalgia (FM) (23,24); other studies included a mix of different diagnoses of CMSKP (25,29-31). Only 4 studies



(9,23,27,31) mentioned the religious affiliation of the patients. While in one study (27), all patients were Buddhist, in another study (9), all the patients were Muslims. In the 2 remaining studies, most of the patients were Christian, 69 % in (23) 72 % in (31).

### Measures of Religiosity

Several self-report questionnaires were used to measure religiosity/spirituality among the included studies. The Praying/Hoping subscale of the Coping Strategies Questionnaire (CSQ) was the most frequently used assessment (25,26,28,30). All other outcome measures were only used once in single studies and included the Evaluation de La Spiritualité scale (ESL) (24), the Religious Beliefs and Practice of Buddhism Questionnaire (27), the 5-item Spirituality Scale (SS) (28), which has a Spiritual Beliefs domain and a Hope/Optimism domain, the Religion Coping Questionnaire (RCQ), the Attachment to God Questionnaire (9), the Religious Spiritual Coping Questionnaire (RSCQ) (23), and the Brief Multidimensional Measure of Religiosity/Spirituality (BMMRS) which assesses 12 different

Table 3. Data extraction table.

Author (Year)	Study design, Country	Study population: Type: n (gender distribution) Age: mean/median $\pm$ SD, Religion	Aim of the study: Relation between...	Religiosity (type, measure)	Outcome measures Pain intensity, Pain interference, Coping, Cognitions, or Emotions	Results
Woby et al (2005) (28)	Cross-sectional, UK	CLBP: 84 (38♀, 46♂) 39 (3 - 42) Not mentioned	Coping - pain intensity and disability	CSQ, prayer subscale	Pain intensity: VAS Disability: RDQ	Prayer - VAS: $\beta = 0.24, P = 0.04$ Prayer - RDQ: $\beta = 0.09$ ns
Rippentrop et al (2005) (31)	Cross-sectional, USA	CMSKP: 122 (68♀, 54♂) 52.7 $\pm$ 16.3 y 72% Christian	Religiosity -physical health, and mental health	BMMRS 9 domains: DSE, V/B, FG, PRP, +CO, -CO, SUP, OR, SRI	Pain intensity: SF-MPQ Pain interference: WHYMPI Physical functioning: SF-36 PCS Disability/compensation status.	DSE - SF-MPQ: $r = -0.05$ ns V/B - SF-MPQ: $r = -0.02$ ns FG - SF-MPQ: $r = -0.25, P < 0.01$ PRP - SF-MPQ: $r = -0.01$ ns +CO - SF-MPQ: $r = -0.03, P > 0.05$ -CO - SF-MPQ: $r = 0.27, P < 0.01$ SUP - SF-MPQ: $r = -0.11$ ns OR - SF-MPQ: $r = 0.02$ ns SRI - SF-MPQ: $r = -0.01$ ns DSE - WHYMPI: $r = -0.05$ ns V/B - WHYMPI: $r = 0.02$ ns FG - WHYMPI: $r = -0.24, P < 0.01$ PRP - WHYMPI: $r = -0.08$ ns +CO - WHYMPI: $r = 0.09$ ns -CO - WHYMPI: $r = 0.15$ ns SUP - WHYMPI: $r = 0.01$ ns OR - WHYMPI: $r = -0.02$ ns SRI - WHYMPI: $r = -0.03$ ns DSE - SF-36 PCS: $r = -0.13$ ns V/B - SF-36 PCS: $r = -0.16$ ns FG - SF-36 PCS: $r = -0.04$ ns PRP - SF-36 PCS: $r = -0.28, P < 0.05$ +CO - SF-36 PCS: $r = -0.18$ ns -CO - SF-36 PCS: $r = 0.04$ ns SUP - SF-36 PCS: $r = -0.16$ ns OR - SF-36 PCS: $r = -0.16$ ns SRI - SF-36 PCS: $r = -0.16$ ns DSE - Disability: $r = -0.14$ ns V/B - Disability: $r = -0.05$ ns FG - Disability: $r = -0.26, P < 0.1$ PRP - Disability: $r = -0.08$ ns +CO - Disability: $r = 0.05$ ns -CO - Disability: $r = 0.22, P < 0.1$ SUP - Disability: $r = -0.14$ ns OR - Disability: $r = -0.15$ ns SRI - Disability: $r = -0.05$ ns

Table 3 (cont.). Data extraction table.

Author (Year)	Study design, Country	Study population: Type: n (gender distribution) Age: mean/median $\pm$ SD, Religion	Aim of the study: Relation between...	Religiosity (type, measure)	Outcome measures Pain intensity, Pain interference, Coping, Cognitions, or Emotions	Results
Andersson, (2008) (25)	Cross-sectional, Sweden	CMSKP: 118 (76♀, 42♂) 44.4 $\pm$ 10.4 y Not mentioned	Prayer - pain interference, pain-related beliefs, and emotions	Prayer: CSQ-50/ praying	Pain interference: MPI Pain beliefs: PAIRS Emotions: HADS	CSQ/praying - MPI: $r = 0.22 P < 0.05$ CSQ/praying - PAIRS: $r = 0.19 P < 0.05$ CSQ/praying - HADS/Anxiety: $r = 0.20 P < 0.05$ CSQ/praying - HADS/Depression: $r = 0.19 P < 0.05$
Pizutti et al (2012) (23)	Cross-sectional-case control Brazil	FM: 42 (42♀) 52.83 $\pm$ 10.66 y 28 Christian*, 14 others Control Pathologies with no chronic pain N:90 (90♀) 42.30 $\pm$ 11.98 y 59 Christian, 31 others	Religiosity - emotions	RSCQ	Pain- related emotions: BDI	Positive RSC - BDI in FM: $r = 0.36 P = 0.019$ Negative RSC - BDI in FM: $r = 0.579 P = 0.000$
Sooksawat et al (2013) (27)	Cross-sectional, Thailand	CLBP: 463 (350♀, 113♂) 38.5 $\pm$ 10 y Buddhist	Religiosity - disability, and psychological stress	Religious beliefs and practice of Buddhism questionnaire	Disability: RDQ	Religious beliefs and practice of Buddhism $\rightarrow$ RDQ
Ferreira-Valente et al (2014) (30)	Cross-sectional, Portugal	CMSKP: 324 (214♀, 110♂)* 60.97 $\pm$ 15.40 y Not mentioned	Coping strategies - pain intensity, pain interference, and functioning.	CSQ-14 Praying/ Hoping subscale	Pain intensity: NRS Pain interference: P-BPI Physical functioning: PCS-SF-12 Pain beliefs: P-PSEQ	P/H CSQ-14 - NRS: $r = 0.08$ ns P/H CSQ-14 - P-BPI: $r = 0.29 P < 0.001$ P/H CSQ-14 - PCS-SF-12: $r = -0.34 P < 0.001$ P/H CSQ-14 - P-PSEQ: $r = -0.30 P < 0.05$
Bicchieri et al (2016) (24)	Cross-sectional, France	FM: 590 (541♀, 49♂) 48.5 $\pm$ 10.31 y Not mentioned	Spirituality - coping strategies	Spirituality: EDLS	Coping: WCC-R	EDLS - Problem focused coping: $r = 0.25 P < 0.1$ EDLS - Coping through social support: $r = 0.10 P < 0.05$ EDLS - Emotion focused coping: $r = 0.1$ ns
Le Borgne et al (2018) (26)	Cross-sectional, France	CLBP: 256 (136♀, 120♂) 41.74 $\pm$ 8.94 y. Not mentioned	Religious beliefs - pain intensity and disability	F CSQ-21	Pain intensity: VAS	F CSQ-21/Prayer- VAS: $\beta = 0.205 P = 0.002$
Hatefi et al (2019) (9)	Cross-sectional, Iran	CLBP: 300 (107♀, 193♂) 75.14 $\pm$ 8.19 y. Muslim	Religiosity - pain intensity and pain acceptance	RCQ, Attachment to God questionnaire	Pain intensity: VAS Pain-related coping: CPA	RCQ - VAS: $\beta = -0.138 P = 0.02$ . Attachment to God - VAS: $\beta = -0.484 P < 0.001$ RCQ - CPA: $\beta = 0.119 P = 0.04$ . Attachment to God - CPA: $\beta = 0.227 P < 0.001$

Table 3 (cont.). Data extraction table.

Author (Year)	Study design, Country	Study population: Type; n (gender distribution) Age; mean/median $\pm$ SD, Religion	Aim of the study: Relation between...	Religiosity (type, measure)	Outcome measures Pain intensity, Pain interference, Coping, Cognitions, or Emotions	Results
Ferreira-Valente et al (2019) (29)	Cross-sectional, Portugal	CMSKP: 62 (39♀, 23♂) 60.45 $\pm$ 16.22 y Not mentioned	Spirituality - pain intensity, function, and coping	SS Hope/Optimism Beliefs	Pain intensity: NRS Pain-related coping: CSQ-14 Pain-related coping: CPCI-16 Pain functioning: PCS SF-12	SS hope optimism - NRS: r = 0.17 ns SS beliefs - NRS: r = 0.03 ns SS hope optimism - CSQ-14 Diverting attention: r = 0.05 ns Reinterpreting pain sensations: r = 0.16 ns Catastrophizing: r = -0.23 ns Ignoring pain sensation: r = -0.30 P < 0.05 praying/hoping: r = 0.01 ns Coping self-statements: r = 0.43 P < 0.001 Increasing behavioral activities: r = 0.07 ns SS beliefs - CSQ-14 Diverting attention: r = -0.08 ns Reinterpreting pain sensations: r = -0.15 ns Catastrophizing: r = -0.03 ns Ignoring pain sensation: r = 0.11 ns praying/hoping: r = 0.18 ns Coping self-statements: r = 0.18 ns Increasing behavioral activities: r = -0.10 ns SS hope optimism - CPCI-16 Guarding: r = -0.20 ns Resting: r = 0.11 ns Asking for assistance: r = -0.02 ns Relaxation: r = 0.05 ns Task persistence: r = 0.04 Exercise/stretch: r = -0.20 ns Seeking: r = 0.02 ns Coping self-statements: r = -0.06 ns SS beliefs- CPCI-16 Guarding: r = -0.05 ns Resting: r = -0.07 ns Asking for assistance: r = 0.02 ns Relaxation: r = -0.04 ns Task persistence: r = 0.30 P < 0.05 Exercise/stretch: r = -0.05 ns Seeking: r = -0.01 ns Coping self-statements: r = -0.07 ns SS hope optimism- PCS SF-12: r = 0.07 ns SS beliefs- PCS SF-12: r = -0.004 ns

\*: percentage was converted to the real number.  $\rightarrow$ : no relationship

BDI, beck depression inventory; BMMRS, brief multidimensional measure of religiosity and spirituality; CLBP, chronic low back pain; CSQ, coping strategies questionnaire; CMSKP, chronic musculoskeletal pain; -CO, negative religious coping; + co, positive religious coping; CPA, chronic pain acceptance; CPCI-16, chronic pain coping inventory 16 items; CSQ-14, coping strategy questionnaire 14 items; DSE, daily spiritual experience; EDLS evaluation de la spiritualite; FABQ, fear-avoidance belief questionnaire; FG, forgiveness; F CSQ-21, French coping strategy questionnaire 21 items; FMS, fibromyalgia syndrome; FR, functional repercussion; HADS, hospital anxiety and depression scale; QOL, quality of life; MCS SF-12, mental component summary short form-12; MPI, multidimensional pain inventory; NRS, numeric rating scale; ns, non-significant; OR, organizational religiosity; PAIRS, pain and impairment relationship scale; P-BPI, Portuguese brief pain inventory interference; PCS SF-12, physical component summary short form-12; PCS, pain catastrophizing scale; P-PSEQ, Portuguese pain self-efficacy questionnaire; P SF-12, Portuguese short form 12; PRP, private religious practice; RC, religious coping; RCQ, religious coping questionnaire; RDQ, roland disability questionnaire; RSCQ, religious and spiritual coping questionnaire; SF-36 PCS, short form 36 health-related quality of life physical component summary; SF-MPQ, short-form McGill pain questionnaire; SRI, self-ranked religious and spiritual intensity/strength; SS, spirituality scale; SUP, religious support; USA, United States of America; UK, United Kingdom; VAS, visual analog scale; V/B, values/beliefs; WCCCR, ways of coping checklist; WHYMPI, West Haven-Yale multidimensional pain inventory.



spiritual domains including Daily Spiritual Experience (DSE), Forgiveness (FG), Private Religious Practice (PRP) and positive/negative religious/spiritual coping (31).

### **Outcome Measures of Pain Intensity**

To assess pain intensity, 3 studies used a Visual Analog Scale (VAS) (9,26,28), 2 studies used a Numeric Pain Rating Scale (NPRS) (29,30), and one study used the Short-Form McGill Pain Questionnaire (SF-MPQ) (31).

### **Outcome Measures of Pain Interference, Disability, and Physical Functioning**

Pain interference was evaluated using the Multidimensional Pain Inventory (MPI) (25,31) or the Brief Pain Inventory Interference (BPII) (30). Pain-related disability was assessed using the Roland Morris disability questionnaire in 2 studies (27,28), and one study (31) used a self-composed questionnaire about the involvement in disability/compensation programs. The impact of pain on physical functioning was evaluated in 2 studies with the Physical Component Summary of the 36-item Short-Form Health Survey (PCS SF-36) (31) or the Physical Component Summary of the Portuguese Short-Form 12 (PSF-12 PCS) (30).

### **Outcome Measures of Coping Response**

Studies assessing coping responses used scales and questionnaires, such as the Chronic Pain Acceptance scale (CPA) (9), the Portuguese Chronic Pain Coping Inventory (PCPCI-16) (29) which groups 16 coping responses into 8 domains (i.e., Guarding, Resting, Asking for Assistance, Relaxation, Task Persistence, Exercise/Stretch, Seeking and Coping Self-statements), the Portuguese Coping Strategies Questionnaire (PCSQ-14) (29), and the Ways of Coping Checklist (WCC-R) which differentiates between problem-focused coping, emotion-focused coping, and coping through seeking social support (24).

### **Outcome Measures of Pain-related Beliefs and Cognitions**

Self-efficacy was measured in only one study (30) using the Portuguese Pain Self-efficacy Questionnaire (P-PSEQ). The Pain and Impairment Relationship Scale (PAIRS), which assesses beliefs and attitudes, was used in one study (25).

### **Outcome Measures of Emotions**

One study (25) evaluated depressive and anxiety symptoms using the Hospital Anxiety and Depression

Scale (HADS). Another study used the Beck Depression Inventory (BDI) to evaluate depression (23).

### **Risk of Bias and Levels of Evidence**

The risk of bias and the level of evidence of each study are shown in Table 4 in the case of a cross-sectional study and in Table 5 in the case of a case-control study. Out of the 81 risks of bias criteria that were assessed, the first 2 authors agreed on 69 items (85%). For the remaining 12 items, an agreement was attained for 10 items during a consensus meeting, and disagreements on the 2 remaining items were resolved by the third author who took the final decision. Of the assessed studies, one scored 1/10, 3 reached a score of 4/10, 3 scored 5/10, and one attained a score of 8/10. The risk of bias of the cross-sectional studies ranged from low to good. The studies mostly lost credibility because the sample size was not justified (100%), the sample was not representative of the general population (44.4%), or because the non-respondents' characteristics or rates were not mentioned (77.7%). Each of the cross-sectional studies was classified with a level of evidence C. One case-control study had a total risk of bias score of 6/9 and was classified with the level of evidence B. The assessment of the level of evidence showed a 100% agreement between both assessors.

### **Synthesis of Results**

#### ***Association Between Religiosity and Pain Intensity***

The association between religiosity and pain intensity was explored in 6 of the 10 included studies (9,26,28,29,31), but conflicting results were found. While only one study (9) found a strong significant negative correlation between religiosity and pain intensity, suggesting that a higher level of religiosity is associated with pain relief, 2 other studies (26,28) found a moderately significant positive association between religiosity and pain intensity, suggesting that higher levels of religiosity are associated with higher pain intensities. Two studies (29,30) also found a positive non-significant correlation between religiosity and pain intensity.

Another study (31) found a moderate significant negative correlation between pain intensity and forgiveness, and a non-significant negative correlation between pain intensity and positive religious coping. This study also found a weak positive correlation between negative religious coping and pain intensity, suggesting that the lack of forgiveness and engaging in

Table 4. Risk of bias assessment for cross-sectional studies.

Study	Selection				Comparability	Outcome		Level of evidence
	1	2	3	4	5	6	7	
Andersson (25)	*	-	-	-	**	-	*	C
Biccheri et al (24)	-	-	-	-	--	-	*	C
Ferreira-Valente et al (30)	*	-	-	-	**	*	*	C
Hatefi et al (9)	-	-	-	**	--	-	*	C
Le Borgne et al (26)	*	-	-	**	**	-	-	C
Rippentrop et al (31)	-	-	*	-	**	*	*	C
Sooksawat et al (27)	*	-	*	**	**	*	*	C
Ferreira-Valente et al (29)	*	-	-	-	**	*	*	C
Woby et al (28)	-	-	-	-	**	*	*	C

\*: The criterion has been fulfilled, -: The criterion has not been fulfilled, 1: Representativeness of the sample, 2: Sample size, 3: Non-respondents, 4: Ascertainment of the exposure, 5: The study controls for the most important factor and any additional factor, 6: Assessment of the outcome, 7: Statistical test.

Table 5. Risk of bias assessment for case-control studies.

Author (year)	Selection			Comparability		Exposure			Level of evidence
	1	2	3	4	5	6	7	8	
Pizutti et al (23)	*	-	*	*	**	-	-	*	B

\*: The criterion has been fulfilled, -: The criterion has not been fulfilled, 1: Definition of the case, 2: Representativeness of the case, 3: Selection of controls, 4: Definition of controls, 5: The study controls for the most important factor and any additional factor, 6: Ascertainment of exposure, 7: Same method of ascertainment for cases and controls, 8: Non-Response rate.

negative religious coping seem to contribute to higher pain intensity. However, no other significant results were found between the other domains of religiosity, such as private religious practice, religious support, or daily spiritual experience, and pain intensity (31).

In conclusion, there is conflicting evidence about the relationship between religiosity and pain intensity in people with CMSKP (strength of conclusion, 3 = low evidence).

### Association Between Religiosity and Disability, Pain Interference, or Physical Functioning

Six studies assessed the association between religiosity and either disability, pain interference, or physical functioning (25,26-28,30,31). Two studies could not establish significant associations between religiosity and disability (27,28). These results are contradictory to the results of Rippentrop et al (31), who found a significant weak positive association between negative religious coping and disability, and a significant weak negative association between forgiveness and disability, suggesting that the less forgiving the person is, the more disability they will experience.

Concerning the relationship between religiosity and pain interference, 2 studies (23,29) found moderate significant positive associations between praying as a coping strategy and pain interference, while only one study (31) found a negative significant weak association between forgiveness and pain interference but no significant association with the remaining dimensions of religiosity.

Moreover, religiosity had a significant moderate to a strong negative association with physical functioning in 2 studies (30,31).

In conclusion, conflicting results were reported concerning the relationship between religiosity and disability or pain interference (strength of conclusion 3 = low evidence). Also, there is weak evidence that religiosity is negatively associated with physical functioning in people with CMSKP (strength of conclusion, 3 = low evidence).

### Association Between Religiosity and Coping Response

One study (9) showed a strong significant positive correlation between attachment to God and pain acceptance. Another study showed a significant moder-

ate positive correlation between spirituality and task persistence, ignoring pain, and coping self-statement (29). Yet, the correlations between spirituality and the remaining domains of the CSQ and the CPCI were insignificant (29). However, one study (24) showed a significant positive correlation between spirituality and problem-focused coping or coping through social support and a non-significant positive correlation between emotion-focused coping and spirituality.

In conclusion, there is low evidence that praying is positively associated with better pain acceptance and better coping in people with CMSKP (strength of conclusion, 3 = low evidence).

### **Association Between Religiosity and Pain-Related Beliefs and Cognitions**

The results of one study (30) showed a significant weak negative correlation between praying and self-efficacy. Praying was positively and significantly correlated with the Pain and Impairment Relationship Scale (PAIRS) in another study (25).

In conclusion, there is weak evidence that religiosity is negatively associated with pain self-efficacy in people with CMSKP (strength of conclusion 3). Weak evidence was found that religiosity is positively associated with worse pain-related beliefs in people with CMSKP (strength of conclusion, 3 = low evidence).

### **Association Between Religiosity and Emotions**

Religiosity was significantly positively correlated with depression in 2 studies (21,23). Religiosity showed a significant positive weak correlation with anxiety (25).

In conclusion, there is low evidence of a strong to moderate positive correlation between religiosity and pain-related emotion in people with CMSKP, suggesting that higher levels of religiosity could be associated with depression and anxiety in people with CMSKP (strength of conclusion, 3 = low evidence).

### **Differences in Pain Beliefs and Attitudes Between Different Religions and Their Influence on Pain, Function, and Coping**

None of the 10 included articles measured the differences between different religious affiliations in pain intensity, pain interference, pain-related beliefs and cognitions, emotions, function, disability, physical functioning, and coping among patients with CMSKP.

## **DISCUSSION**

The primary aim of this systematic review was to summarize the current scientific knowledge on the relationship between religious beliefs and attitudes, such as praying, forgiveness, and ceremonial behavior, and pain intensity, pain interference, pain-related beliefs and cognition, emotion, disability, physical functioning and coping among patients with CMSKP. Although some associations were found, the strength of the associations was often weak, or the results between studies were conflicting.

The evidence regarding the relationship between religiosity and pain intensity was conflicting. While most of the studies showed either weak or statistically insignificant positive correlations, only one study showed a significant negative correlation between religiosity and pain intensity, suggesting that the more religious the person is, the less he experiences pain or inversely. Conflicting results were also found regarding the association between religiosity and disability or pain interference. These results are in line with those reported by another systematic review (32) which investigated the association between measures of religiosity and measures of pain and function in individuals with chronic pain. The latter review differed from the current review on the type of chronic pain, including not only studies related to CMSKP, but also studies about other causes of chronic pain such as cancer, sickle cell disease, and multiple sclerosis.

There was weak evidence that religiosity is positively associated with worse pain-related beliefs and worse pain-related emotions, but with positive coping strategies and pain acceptance. Also, weak evidence that religiosity is negatively associated with physical functioning and pain self-efficacy in people with CMSKP was found, suggesting that religious people present less pain self-efficacy and worse physical functioning. Moreover, the results showed that pain intensity was negatively correlated with forgiveness. These results are in agreement with the results of a recent systematic review (33) on forgiveness and chronic pain, which showed a relationship between lower levels of forgiveness and increased pain experience.

The large quantity of conflicting results and weak evidence can be explained by the heterogeneity regarding the use of different questionnaires to measure religiosity. Hatefi and colleagues (9) used the Religious Coping Scale (RCOPE) (34), which comprises a positive and a negative religious coping subscale. However, they did not report the correlations between religiosity

and pain intensity for each subscale separately, nor did they analyze potential differences between both subscales. This contrasts with another study (31) that used the Brief Multidimensional Measure of Religiousness/Spirituality (35), a self-report measure of different dimensions or facets of religiousness. Furthermore, some studies (26,28,30) assessed religiosity using different versions of the Coping Strategy Questionnaire (CSQ) (36). Noteworthy, only 3 items on this questionnaire assess religion. They only question the subject about the use of a specific type of prayer with answer options limited to "I pray to God it won't last long;" "I pray for the pain to stop;" and "I rely on my faith in God." This type of prayer is considered a negative type of religious coping (37). Negative religious coping has been previously linked to worse health outcomes in different health domains (38-40).

Other potential reasons for the contrasting results are differences in several other aspects between the studies, including sample sizes, age of the studied population, and country of origin. The sample sizes of the included studies showed a large range, varying from 42 to 590 patients, with none of the included studies justifying sample sizes through sample size estimations or power calculations. Furthermore, the studied samples included middle-aged or older patients, lacking results from younger adult generations. Recent evidence suggests that older persons are more religious than younger ones (41). The included studies evaluated samples from different countries, and evidence suggests that the percentage of people that consider themselves religious may vary widely from one country to another (41). For instance, the results of a survey from the Pew Research Center (42), analyzing the religious commitment in 34 different European countries, showed that 34% of Portuguese adults are highly religious compared to only 12% of French adults and 10% of Swedish adults. Sweden is one country in which the dominant culture and ways of thinking dismiss the role of religion in people's lives (43), which is in contrast to Iran, where most of the population comes from a religious family environment characterized by the belief in God (44). Thus, we can argue that the reason for some individuals to turn to religion in times of crisis is that religion is more accessible in their socio-cultural context than are other resources, and thus may possibly explain the conflicting results in our review.

### Limitations and Strengths

Some limitations should be considered when inter-

preting the results of this systematic review. First, our search was limited to the domain of religiosity alone, and it excluded all articles related to spirituality. However, the topics of the religious and spiritual domains overlap in some articles. Besides, this review could only retrieve 10 articles on the topic, of which 9 had a low level of evidence which is because of the cross-sectional type of study design. This emphasizes the need for more studies on the topic, especially using other ways to evaluate the relationship between religion and pain rather than solely self-reported questionnaires. In-depth interviews on religious beliefs and or religious manipulations could improve our understanding of the relationship between religion and pain.

However, this review also has some important strengths. To our knowledge, this is the first systematic review to examine the influence of religious beliefs on pain, function, and coping among patients with CMSKP. Additionally, this systematic review was conducted and reported following the PRISMA guidelines, and screening and bias analyzes were performed by 2 independent and blinded researchers. Also, the review could highlight important research gaps that should be addressed in future studies that explore the connection between religion and pain.

### Implications for Practice and Recommendations for Further Research

Religiosity is a large domain and is determined by 3 major dimensions. Those 3 dimensions are organizational religious activity, non-organizational religious activity, and intrinsic religiosity or subjective religiosity (7). Therefore, the results of our review suggest that a common framework and a common standardized set of religious scales, measuring not only the religiosity level of the patients but also the different domains of religiosity, should be used in future health research studying the correlation between religiosity and different domains of pain in people with CMSKP. Moreover, future research should focus on investigating "religion induced analgesia" and the possible pain control pathways behind it. Common interviewing strategies that allow identifying and challenging negative distorted religious beliefs and changing behavior related to these beliefs should be developed since thoughts, beliefs, emotional states, and behavior are all interconnected. Using pain neuroscience education programs, which have been previously used to adjust negative pain-related thoughts and cognitions, could be promising from a biopsychosocial-spiritual point of view.

## CONCLUSION

The results of this systematic review reveal that religious thoughts and attitudes, which may include prayers, forgiveness, hope, private or organizational religious practices, tend to be associated with worse pain-related beliefs, cognitions, and emotions. Yet, being religious is found to be a useful resource for better pain acceptance and coping in people with CMSKP.

Based on the current evidence, no consistent conclusions could be drawn regarding the association between religiosity, pain intensity, and disability. Because of the limited number of included studies, the high risk of bias in some studies, and the large heterogeneity in population and assessment tools between them, conclusions must be drawn cautiously.

## REFERENCES

- Raja SN, Carr DB, Cohen M, Finnerup NB, Flor H, et al. The revised International Association for the Study of Pain definition of pain: Concepts, challenges, and compromises. *Pain* 2020; 161:1976-1982.
- Smith RC. The biopsychosocial revolution. *J Gen Intern Med* 2002; 17:309-310.
- Meints SM, Edwards RR. Evaluating psychosocial contributions to chronic pain outcomes. *Prog Neuropsychopharmacol Biol Psychiatry* 2018; 87(Pt B):168-182.
- Dezutter J, Offenbaecher M, Vallejo MA, Vanhooren S, Thauvoye E, Toussaint L. Chronic pain care: The importance of a biopsychosocial-existential approach. *Int J Psychiatry Med* 2016; 51:563-575.
- Talo SA, Rytokoski UM. BPS-ICF model, a tool to measure biopsychosocial functioning and disability within ICF concepts: Theory and practice updated. *Int J Rehabil Res* 2016; 39:1-10.
- Sulmasy DP. A biopsychosocial-spiritual model for the care of patients at the end of life. *The Gerontologist* 2002; 42(suppl\_3):24-33.
- Koenig HG, Büssing A. The Duke University Religion Index (DUREL): A five-item measure for use in epidemiological studies. *Religions* 2010; 1:78-85.
- Wachholtz AB, Keefe FJ. What physicians should know about spirituality and chronic pain. *South Med J* 2006; 99:1174-1175.
- Hatefi M, Tarjoman A, Borji M. Do religious coping and attachment to God affect perceived pain? Study of the elderly with chronic back pain in Iran. *J Health* 2019; 58:465-475.
- Tzeng H-M, Yin C-Y. Religious activities of inpatients and their family visitors in Taiwan. *J Holist Nurs* 2008; 1:98-106.
- Agorastos A, Demiralay C, Huber CG. Influence of religious aspects and personal beliefs on psychological behavior: Focus on anxiety disorders. *Psychol Res Behav Manag* 2014; 7:93-101.
- Clark EM, Williams BR, Huang J, Roth DL, Holt CL. A longitudinal study of religiosity, spiritual health locus of control, and health behaviors in a national sample of African Americans. *J Relig Health* 2018; 57:2258-2278.
- Clark EM, Huang J, Roth DL, Schulz E, Williams BR, Holt CL. The relationship between religious beliefs and behaviors and changes in spiritual health locus of control over time in a national sample of African Americans. *Ment Health Relig Cult* 2017; 20:449-463.
- Keefe FJ. Pain behavior observation: Current status and future directions. *Curr Rev Pain* 2000; 4:12-17.
- Bonanno GA, Keltner D. Facial expressions of emotion and the course of conjugal bereavement. *J Abnorm Psychol* 1997; 106:126-137.
- Peacock S, Patel S. Cultural influences on pain. *Rev Pain* 2008; 1:6-9.
- Kremer H, Ironson G, Porr M. Spiritual and mind-body beliefs as barriers and motivators to HIV-treatment decision-making and medication adherence? A qualitative study. *AIDS Patient Care STDs* 2009; 23:127-134.
- Musgrave CF, Allen CE, Allen GJ. Spirituality and health for women of color. *Am J Public Health* 2002; 92:557-560.
- Larimore WL, Parker M, Crowther M. Should clinicians incorporate positive spirituality into their practices? What does the evidence say? *Ann Behav Med Publ Soc Behav Med* 2002; 24:69-73.
- Swihart DL, Yarrarapu SNS, Martin RL. Cultural religious competence in clinical practice. StatPearls publishing; 2020.
- Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Ann Intern Med* 2009; 151:264-269.
- Modesti PA, Reboldi G, Cappuccio FP, et al. Panethnic differences in blood pressure in Europe: A systematic review and meta-analysis. *PLOS ONE*. 2016; 11:e0147601.
- Pizutti LT, Taborda JGV, Tourinho TF. Evaluation of religious spiritual coping in patients with fibromyalgia syndrome: A case-controlled study. *J Musculoskelet* 2012; 20:194-201.
- Biccheri E, Roussiau N, Mambet-Doué C. Fibromyalgia, spirituality, coping and quality of life. *J Relig Health* 2016; 55:1189-1197.
- Andersson G. Chronic pain and praying to a higher power: Useful or useless? *J Health* 2008; 47:176-187.
- Le Borgne M, Boudoukha AH, Petit A, Roquelaure Y. Beliefs coping and chronic low-back pain: When praying did not prevent pain and disability! *J Manag* 2018; 11:381-388.
- Sooksawat A, Janwantanakul P, Tencomnao T, Pensri P. Are religious beliefs and practices of Buddhism associated with disability and salivary cortisol in office workers with chronic low back pain? *BMC Musculoskelet Disord* 2013; 2014.
- Woby SR, Watson PJ, Roach NK, Urmston M. Coping strategy use: Does it predict adjustment to chronic back pain after controlling for catastrophic thinking and self-efficacy for pain control? *J Rehabil Med* 2005; 37:100-107.
- Ferreira-Valente A, Damião C, Pais-Ribeiro JL, Jensen MP. The role of spirituality in pain, function, and coping in individuals with chronic pain. *Pain Med* 2020; 21:448-457.
- Ferreira-Valente A, Pais-Ribeiro JL, Jensen MP. Associations between

- psychosocial factors and pain intensity, physical functioning, and psychological functioning in patients with chronic pain: A cross-cultural comparison. *Clin J Pain* 2014; 30:713-723.
31. Rippentrop AE, Altmaier EM, Chen JJ, Found EM, Keffala VJ. The relationship between religion/spirituality and physical health, mental health, and pain in a chronic pain population. *Pain* 2005; 116:311-321.
  32. Ferreira-Valente A, Sharmam S, Torres S, et al. Does religiosity/spirituality play a role in function, pain-related beliefs, and coping in patients with chronic pain? A systematic review. *J Relig Health* 2019; Epub ahead of print. Erratum in: *J Relig Health* 2019; 10.1007/s10943-019-00914-7.
  33. O'Beirne S, Katsimigos A-M, Harmon D. Forgiveness and chronic pain: A systematic review. *Ir J Med Sci* 2020; 189:1359-1364.
  34. Pargament KI, Koenig HG, Perez LM. The many methods of religious coping: Development and initial validation of the RCOPE. *J Clin Psychol* 2000; 56:519-543.
  35. Masters KS. Brief multidimensional measure of religiousness/spirituality (BMMRS). In: Gellman MD, Turner JR, eds. *Encyclopedia of behavioral medicine*. New York, NY: Springer; 2013,267-269.
  36. Rosenstiel AK, Keefe FJ. The use of coping strategies in chronic low back pain patients: Relationship to patient characteristics and current adjustment. *Pain* 1983; 17:33-44.
  37. Pargament KI, Koenig HG, Tarakeshwar N, Hahn J. Religious coping methods as predictors of psychological, physical and spiritual outcomes among medically ill elderly patients: A two-year longitudinal study. *J Health Psychol* 2004; 9:713-730.
  38. Freitas TH, Hyphantis TN, Andreoulakis E, et al. Religious coping and its influence on psychological distress, medication adherence, and quality of life in inflammatory bowel disease. *Braz J Psychiatry*. 2015; 37:219-227.
  39. Hebert R, Zdaniuk B, Schulz R, Scheier M. Positive and negative religious coping and well-being in women with breast cancer. *J Palliat Med* 2009; 12:537-545.
  40. Taheri-Kharameh Z, Zamanian H, Montazeri A, Asgarian A, Esbiri R. Negative religious coping, positive religious coping, and quality of life among hemodialysis patients. *Nephrourol Mon* 2016; 8:e38009.
  41. Zimmer Z, Jagger C, Chiu C-T, Ofstedal MB, Rojo F, Saito Y. Spirituality, religiosity, aging and health in global perspective: A review. *SSM - Popul Health* 2016; 2:373-281.
  42. Eastern and Western Europeans differ on importance of religion, views of minorities, and key social issues. Pew Research Center. 2018. [www.pewforum.org/2018/10/29/eastern-and-western-europeans-differ-on-importance-of-religion-views-of-minorities-and-key-social-issues/](http://www.pewforum.org/2018/10/29/eastern-and-western-europeans-differ-on-importance-of-religion-views-of-minorities-and-key-social-issues/)
  43. Pieper JZT. Review of the book *Culture, religion and spirituality in coping: the example of cancer patients in Sweden*. Ahmadi F. 2006; *Mental health, religion & culture* 2008; 11:435-436.
  44. Maleki A, Tamimi Arab P. Iranians' attitudes toward religion: A 2020 survey report. 2020. <https://doi.org/10.13140/RG.2.2.23102.51525>.
  45. Nicholas M, Vlaeyen JWS, Rief W, Barke A, Aziz Q, Benoliel R, et al. The IASP classification of chronic pain for ICD-11: chronic primary pain. 2019 Jan; 160:28-37.