Current Status of Spirituality in Cardiac Rehabilitation Programs

A REVIEW OF LITERATURE

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■ **PURPOSE:** Strong spiritual experiences in life are a protective, positive, prognostic factor in cardiovascular diseases. However, spirituality is often neglected in cardiac rehabilitation (CR) programs. The purpose of this article was to review studies that investigated spirituality in CR programs.

■ **METHODS:** The electronic databases PubMed, CINHAL, PsycINFO, and Cochrane Library of Systematic Reviews were searched for studies that measured spirituality in a CR population. The search included studies with and without spiritual interventions in CR settings.

■ **RESULTS:** Five quantitative studies and 1 qualitative study that enrolled a total of 1636 patients in phase 2 CR programs were reviewed. The spiritual interventions found were relaxation responses and spiritual classes. Two studies showed preliminary evidence that supports the further exploration of spiritual interventions in CR programs.

■ **CONCLUSIONS:** Evidence supporting the use of spiritual interventions for medical and psychological outcomes in CR programs is very limited because of a lack of controlled clinical trials. However, the descriptive and observational studies provide some empirical support to further explore spiritual interventions in CR programs, with the goal of enhancing the psychosocial and emotional status of CR participants. Further rigorous research design and procedures are needed to establish the contribution of spirituality in CR programs for cardiac patients.

K E Y W O R D S

cardiac

rehabilitation

relaxation response

spiritual

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The authors declare no conflicts of interest.

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DOI: 10.1097/HCR.0b013e318291381e

Cardiovascular disease is the leading cause of death in both men and women in the United States. More than 82 million people in the United States have 1 or more types of cardiovascular disease. About 811 940 people died of heart disease in 2008 (approximately 32.8% of all deaths). The direct and indirect medical cost of cardiovascular disease alone was $263.4 billion in 2008.[1] Cardiac events increase stress from facing mortality, from dealing with family, work, and financial situations, and from trying to find meaning in all of these situations.[2-6] In addition, cardiac events affect patients physically, emotionally, socially,[7] and spiritually.[8] Thus, cardiac events affect the whole person, not only the physical body.

Secondary prevention programs, such as cardiac rehabilitation (CR) programs, promote cardiac recovery by reducing morbidity, mortality, and disability, as well as improving quality of life.[9-12] Components of CR include the following: (1) clinical evaluation, (2) optimization of pharmacotherapy, (3) physical training, (4) psychosocial rehabilitation, (5) evaluation and reduction of coronary risk factors, (6) lifestyle modifications, (7) patient and family health education, (8) educational counseling, and (9) behavioral interventions.[13]

Despite these significant benefits, in the United States and Canada, only 25% to 31% of eligible patients participate in CR.[14] Approximately 30% to 50% of CR participants withdraw from CR programs.[10,15-17] Lack of participation in CR programs is attributed to various factors or barriers at different levels, including the patient, provider, system, and community levels.[18-20] For example, psychological barriers that affect patients include depression, anxiety, and social isolation.[21] Despite the fact that psychological barriers have been identified, many CR programs are focused primarily on exercise and often other core components are neglected. Importantly, spirituality and religion are not mentioned in CR program guidelines.[13,22]

Spirituality and religion are used as coping mechanisms when individuals face life-threatening situations, such as an acute cardiac event.[23] However, there is no single definition of spirituality. In this review, *spirituality* is defined as "the aspect of humanity that refers to the way individuals seek and express meaning and purpose, and the way they experience their connectedness to the moment, to self, to others, to nature, and to the significant or sacred."[24] Spiritual coping can be positive or negative, on the basis of individual experiences.[25,26]

Positive spiritual coping is described as "the redefinition of the stressor as the opportunity for spiritual growth."[27] Positive spiritual coping mechanisms include the reappraisal of the *higher power* (redefining the higher power to influence stressful situations), collaborative religious coping (making a partnership with a higher power), and benevolent religious coping (redefining stressors as potentially beneficial).[26] *Negative spiritual coping* is described as "efforts to conserve or transform a spirituality that has been threatened or harmed."[26] Forms of negative spiritual coping include redefining stressors as punishment from the higher power for sins, spiritual discontent coping (expression of confusion and dissatisfaction with the higher power), and plead coping (questioning and bargaining with the higher power to obtain a miracle).[26]

Positive spiritual coping is often associated with self-empowerment, finding meaning, and growth,[28] decreased psychological distress,[29] and increased quality of life.[30] Conversely, negative spiritual coping is associated with increased psychological distress,[31] and decreased hope, optimism, and social support.[29] Distressed spouses of cardiac patients were found to use negative spiritual coping (associated with less marital intimacy and poorer family functioning) more frequently than nondistressed spouses.[6]

For many cardiac patients, spiritual well-being provided peace and comfort during the acute cardiac event[8,23] and reduced psychological distress.[32] Spiritual retreats increased hope and spiritual well-being in cardiac patients.[33,34] Because spirituality was found to provide comfort and peace and influenced coping during cardiac recovery in these studies, we conducted a systematic review to explore the status of the literature related to the influence of spirituality in the CR population.

METHODS

A systematic review on spirituality in CR was guided by the processes outlined in *Evidence Based Practice Centers* by the Agency for Healthcare Research.[35] Processes were developed to identify and select relevant studies, review and rate the individual studies, synthesize results, and evaluate the evidence.

A literature search was conducted, using recommendations from *Preferred Reporting Items for Systematic Reviews and Meta Analyses: The PRISMA Statement.*[36,37] Study eligibility criteria were established *a priori.* Inclusion criteria were published, peer-reviewed studies from any country, with no limits on the time of publication (Table 1). All studies that measured spirituality in CR patients, including quantitative and qualitative studies, were included. Searches were conducted using PubMed, Cumulative Index to Nursing and Allied Health Literature, PsycINFO, and the Cochrane Library databases. The search term "cardiac rehabilitation" was searched with each of the following terms: spirituality, spiritual, religion, religiosity, worship, music, yoga, prayer, relaxation response, and meditation. Letters, commentaries, and reviews were excluded. All 3 authors reviewed the articles for inclusion by reading the abstract and the full-text article for details indicating probable inclusion into the systematic review. Finally, searches were done on the reference lists of articles that were selected, but these searches yielded no additional articles.

Study Quality Assessment

The quality of the studies was analyzed by using the Qualitative Assessment Tool for Quantitative Studies.[38] The study quality was assessed on the basis of study components that included (1) selection bias, (2) study design, (3) confounders, (4) blinding procedures, (5) data collection methods, (6) withdrawals, and (7) dropouts (Table 2). Each study component received a scoring of "weak," "moderate," or "strong." A study that received 4 strong ratings with no weak ratings in any of the components mentioned earlier was rated as "strong." Ones with fewer than 4 strong ratings with 1 weak rating were rated as "moderate," and with 2 or

Table 1 • PICOTS Format of Research Questions

Category	Criteria
Population	Cardiac rehabilitation program participants
Intervention	Any spiritual intervention (meditation, relaxation response, yoga, prayer, or music) or no spiritual intervention in which the study measures the participant spirituality
Comparative group	Any group or none
Outcomes	Any outcomes
Time of publication	No limits
Setting	Any cardiopulmonary rehabilitation setting

Abbreviation: PICOTS, population, intervention, comparison, outcome, time, and setting.

more weak ratings were rated as "weak." Three reviewers analyzed the studies separately and compared their findings. Any differences in the analyses were discussed, and agreement was reached on the basis of this discussion. The quality of the qualitative study was analyzed using the critical review form for qualitative studies from the McMaster University.[39]

Data Extraction

Data extracted from the full-text articles were entered into a table for data synthesis and further analysis (Table 3). The table contained pertinent information about the study, including design, sample size, study location, intervention, outcomes, and results. Separate tables were made for quantitative and qualitative studies. A narrative synthesis approach was used to report the results because of the lack of controlled trials, heterogeneity of the studies, and paucity of articles obtained in this review.

RESULTS

The electronic search yielded a total of 125 articles. PubMed yielded 56 articles, Cumulative Index to Nursing and Allied Health Literature yielded 38 articles, and PsycINFO yielded 31 articles. The Cochrane Library database did not yield any articles. Of the total 125 articles, 31 duplicates were removed. Search summaries of the 94 articles, including the abstracts, were reviewed for possible inclusion in the study. From a total of 94 articles, 6 articles were selected on the basis of the inclusion and exclusion criteria (Figure 1). Subsequent searches conducted on the reference lists of the 6 selected articles yielded no additional articles.

Description of Studies

Five quantitative studies[40-44] and 1 qualitative study[2] were included in the systematic review (Table 3). Chang et al[41] and Casey et al[40] used a cohort design to study the influence of relaxation response on medical and psychological outcomes in 641 CR participants. Kreikebaum et al[44] used a quasi-experimental design to study the influence of a lifestyle change program that included exercise, group sessions, lectures, and music, in addition to the spirituality classes, on the overall mental and physical health status of 87 CR participants. There was also a comparison group of 63 CR participants who received a traditional CR program of monitored exercise. Miller et al[42] used a cohort design but did not use any spiritual interventions to explore whether spirituality and religion influenced quality of life and self-efficacy in 44 couple dyads in the CR program. McConnell et al[43] used a descriptive design to analyze the demographics of 105 CR participants who reported that they might use religion as a coping response for cardiac events. Medich et al[2] used a qualitative approach to study the experiences of 15 women in basic life processes, transitions, and meanings after a diagnosis of coronary artery disease.

The duration of the CR intervention in the review ranged from 12 to 24 weeks. The CR interventions in the studies of Chang et al[41] and Casey et al[40] included exercise, relaxation response, group discussion, and additional cognitive behavior therapy, in addition to classes on emotional healing, nutrition, exercise, and risk management. Kreikebaum et al[44] provided a CR intervention that included an Ornish lifestyle change program (low-fat, whole-food nutrition, stress management, monitored fitness, and group support) and

Table 2 • Summary of Analysis of Study Quality

Study	Selection Bias	Study Design	Confounders	Blinding	Data Collection Methods	Withdrawals and Dropouts	Global Rating
Casey et al[40]	Moderate	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Chang et al[41]	Moderate	Moderate	Weak	Moderate	Strong	Moderate	Moderate
Kreikebaum et al[44]	Weak	Moderate	Strong	Weak	Strong	Weak	Weak

Table 3 • Summary of the Quantitative Studies Included in the Study

Study	Design	Gender	CR Program Duration, wk	CR Program Description	Measurement of Spirituality	Spirituality Intervention	Outcome Measures/ Independent Variable	Results, *P* Value
Casey et al[40]	Cohort, N = 637	M = 459; F = 178	24	Exercise, relaxation response, and group discussion	Single question on practice of relaxation response	Relaxation response	Blood pressure, lipids, depression, anxiety	<.05
Chang et al[41]	Cohort, N = 641	Not reported	24	Exercise, relaxation response, and group discussion	HPLP II: question on practice of relaxation response	Relaxation response	Depression, anxiety	<.05
Kreikebaum et al[44]	Quasi-experimental, N = 150; LSCP, N = 87; Control, N = 63	LSCP: M = 41; F = 46; Control: M = 44; F = 19	12	LSCP: exercise, nutrition, and stress management; Control: exercise	Spiritual Involvement and Beliefs Scale	Spirituality classes	Overall mental and health status	NS
Miller et al[42]	Cohort, N = 44 couples	M = 9; F = 35	12	Monitored exercise	SRC, RM: Religious Coping Activities Scale	No spiritual intervention	Quality of life, self-efficacy	NS
McConnell et al[43]	Descriptive, N = 105	M = 81; F = 24	12	No description	Religious Coping Activities Scale	No spiritual intervention	Gender, marital status, level of education	<.05

Abbreviations: CR, cardiac rehabilitation; F, female; HPLP II, Spiritual Growth in the Health-Promoting Lifestyle Profile II; LSCP, Lifestyle Change Program; M, male; RM, Religiosity Measure; SRC, Spirituality and Religious Concern Questionnaire.

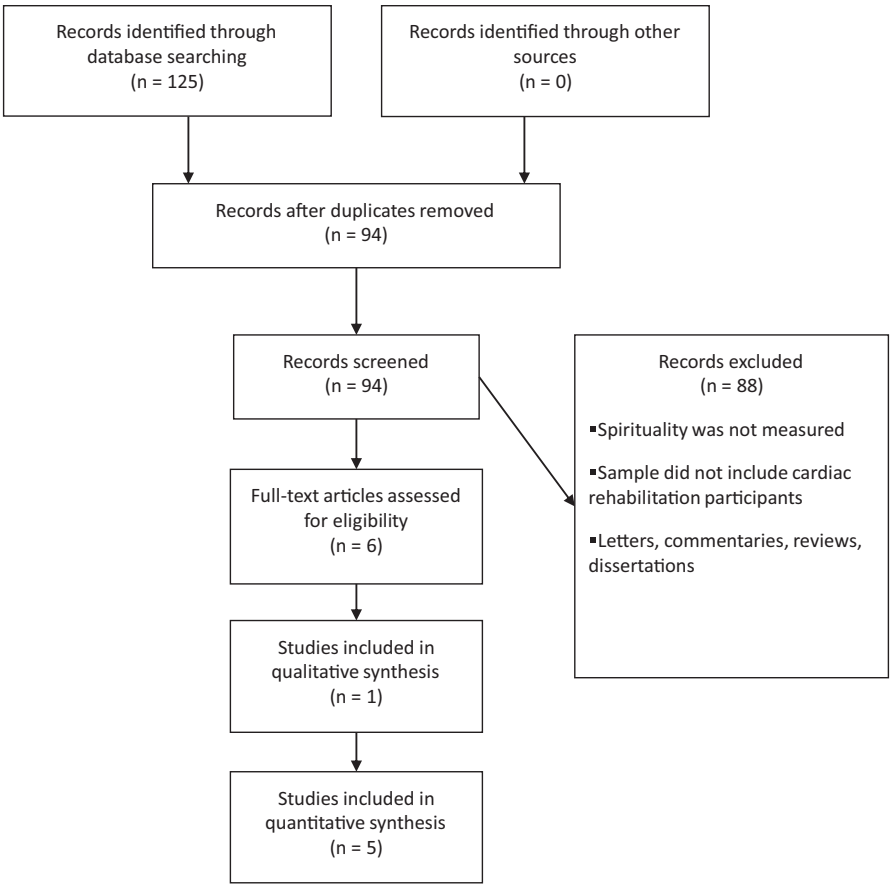

Figure 1. Summary of articles included in and excluded from the systematic review.

additional educational lectures, cooking classes, music therapy, spirituality classes, as well as weekly lecture series on the progression and treatment of heart disease. Conversely, the comparison group had only monitored exercise, supervised by an exercise physiologist. Miller at el[42] did not include any spiritual intervention, and the CR program included only monitored exercise for 1 hour, 3 times per week. There was no program description in the McConnell et al[43] study.

Quality of the Studies

Of the 5 quantitative studies, McConnell et al[43] and Miller et al[42] did not use any spiritual interventions. Therefore, only 3 quantitative studies were included in the assessment of study quality. The studies of Casey et al[40] and Chang et al[41] were both rated as moderate, on the basis of the study quality assessment. The study of Kreikebaum et al[44] was rated as weak (Table 2). The major threats to the internal and external validity of these studies are noted in Table 4. The study of Medich et al[2] was assessed, using the McMaster critical review form for qualitative studies. Explicit and clear information was provided on the study purpose, background, design, sampling, data collection, procedural rigor, data analysis, and auditability. Although Medich et al used phenomenology, the article only reported a case study and not the entire findings of the study. Chang et al[41] and Casey et al[40] used the same clinical data to answer different research questions (ie, Casey et al and Chang et al essentially conducted a single study, and not 2 studies).

Spiritual Coping

Negative religious coping was reported by Miller et al[42] and McConnell et al[43] and was associated with decreased quality of life and self-efficacy.[42] Miller et al reported that spouses' negative spiritual coping was significantly associated with lower quality of life at baseline. Patient negative spiritual coping (spiritual discontent coping) was significantly associated with lower physical self-efficacy at completion of CR. McConnell et al reported that CR participants with less education often used negative forms of religious coping such as plead coping than others with more education. Women participants engaged more frequently in spiritually based activities than men. In addition, single participants used spirituality as a coping mechanism more often than married participants. Because negative religious coping was associated with lower

Table 4 • Major Internal and External Threats to the Validity of the Reviewed Studies

Study	Design	Threats to Internal Validity	Threats to External Validity
Casey et al[40] Chang et al[41]	Cohort	Missing information on the use of antianxiety medications, impact of other components (exercise, group sessions, classes) of the study, 24% missing data, no information on which part of the relaxation response was practiced by the participants	Single-site study, predominantly well-educated whites
Kreikebaum et al[44]	Quasi-experimental	Experimental and comparison group did not have same measurements (comparison groups psychosocial and lipid panels were not measured), 74% missing data (intervention group)	Single-site study, self-selection into either intervention or traditional cardiac rehabilitation comparison group

quality of life and self-efficacy, it might be important to assess religious coping clinically in CR participants and spouses, and intervene appropriately.

Spiritual Interventions

The spiritual interventions used by the studies in this review included relaxation response[40,41] (n 2) and spirituality classes[44] (n 1). Relaxation response is a mind-body technique used to reduce stress and is elicited with activities including prayer, meditation, mindfulness, breath focus, visualization, and yoga.[41] Spirituality classes focused on introspection and discussion of spiritual well-being.[44] Since relaxation response includes various techniques such as meditation, yoga, breathing, and visualization, it would be beneficial to know how much of each technique was practiced by the patients. These details would help replicate the study with a rigorous design. Similar elaborative information on spirituality classes may help comparisons of various studies.

Measurement of Spirituality

As discussed earlier, there is no single definition of spirituality and no single tool to measure spirituality. In the reviewed studies, spirituality was measured by using tools that included simple yes/no questions regarding spiritual practices (n 2);[40,41] the Spiritual Growth in the Health-Promoting Lifestyle Profile II (n 1);[41] the Spiritual Involvement and Beliefs Scale (n 1);[44] the Spiritual and Religious Concerns Questionnaire (n 1);[42] the Religiosity Measure (n 1);[42] and the Religious Coping Activities Scale (n 2).[42,43] In the future, it may be beneficial to use a common, standard tool to measure spirituality to compare the effectiveness of spiritual interventions across studies.

Spirituality and Health Outcomes

Casey et al[40] and Chang et al[41] measured the influence of relaxation response on medical and psychological outcomes. In both the studies, there were significant differences in both medical (blood pressure, lipids, weight, exercise capacity, and cardiac symptoms) and psychological (depression and anxiety) outcomes between baseline and the completion of the CR program (P .05). The practice time of relaxation response increased from baseline to the completion of the intervention, and the increase was positively correlated with spiritual well-being. Both studies included exercise and group sessions, in addition to relaxation response in the CR program. Therefore, it was difficult to determine whether the improvements in the medical and psychological outcomes were the result of the relaxation response or from the effects of exercise and other aspects of the intervention. Both studies used retrospective data that were not collected as part of the research study. Repeating the same study with a randomized controlled trial design and comparing both traditional and the earlier-mentioned CR programs would provide better evidence for including spirituality in CR programs.

Kreikebaum et al[44] did not report any significant changes in the overall mental and physical health status of the intervention group. However, significant differences in depression, stress, and spirituality scores between baseline and the completion of the CR program were reported in 20 of 85 CR participants in the intervention group. Miller et al[42] did not report any significant differences in quality of life or self-efficacy after the completion of the CR program.

Spirituality and Life-Threatening Illness

In a life-threatening situation, such as an acute cardiac event, cardiac patients must directly face their own mortality. Facing mortality raises questions about finding meaning and purpose in life.[2] The awareness of mortality directs the cardiac patient to refocus on spirituality (not just religion). In the study of Medich et al,[2] the process of cardiac recovery began with periods of vulnerability during which spirituality provided comfort and peace followed by awareness of the situation. Response to the situation was enhanced by social support, relaxation response, and healing

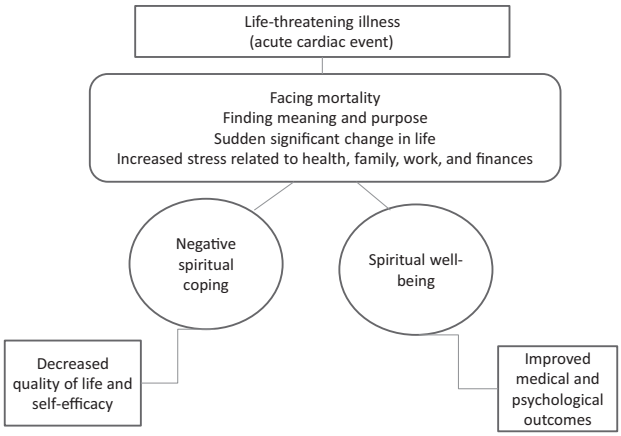

Figure 2. Concept mapping of spirituality and health outcomes.

awareness that led to transformation, growth, and finding meaning in life.[2] As in the other studies in the review, spiritual well-being led to better medical and psychological outcomes,[40,41] whereas negative spiritual coping led to decreased quality of life and self-efficacy[42] (Figure 2).

DISCUSSION

Cardiac recovery is a multidimensional, complex process that involves physical, psychological, social, and spiritual domains of health. This systematic review revealed that spirituality is rarely addressed in CR programs. Even with very broad inclusion criteria, only 6 studies that measured spirituality in the CR setting were identified. None of the studies included in the review received a strong rating on the quality assessment. No recommendations on the use of spiritual interventions in CR programs can be made from the review because of a lack of controlled clinical trials. However, these studies provide preliminary evidence that exploration of spiritual interventions in CR programs is necessary.

There are several limitations of this systematic review. First, the major limitation of this review is the paucity of articles included in the review. Second, the systematic review was based on nonrandomized, observational, single-site studies; therefore, generalizing to the CR population is limited. Third, spirituality and religion were not separated, as there were few articles that could be included in the review. It would be ideal to group spirituality and religious findings separately in future studies. Fourth, the studies in the review did not have detailed information on the intervention itself and its implementation, so the review was limited on the basis of the information available in the articles. Finally, there were no standardized CR program and measurement tools for spirituality, which made comparisons difficult across the studies.

Medich et al[2] showed how women tried to find meaning and purpose when faced with a life-threatening situation. A similar search for purpose and meaning was reported by Fleury et al[45] in 13 female cardiac patients after an acute cardiac event. From the findings published in the dissertation of the first author, it was found that facing mortality was a good motivator for lifestyle changes in cardiac patients. At the same time, it brings about a refocusing on spirituality to find meaning and purpose during an acute cardiac event.[46] Albaugh[23] interviewed 7 participants with life-threatening illnesses and found that spirituality provided comfort and hope. In addition, participants obtained strength from spirituality through a stressful and difficult time of their lives. Therefore, it is important to provide spirituality as one of the coping mechanisms for individuals facing a life-threatening illness.

McConnell et al[43] reported that spirituality was used as a coping mechanism in women and single participants, and negative spiritual coping was more often used by participants with less than a high school education. Also, negative spiritual coping was associated with decreased quality of life and self-efficacy,[42] and spiritual well-being was associated with improved medical and psychological outcomes.[40,41] Therefore, spiritual assessment should be included along with physical and psychosocial assessments for better health outcomes in CR programs. On the basis of individual spiritual assessments, culturally sensitive spiritual interventions could improve both medical and psychological outcomes of cardiac patients.

Spiritual interventions such as relaxation response were associated with improved medical and psychological outcomes. In a systematic review and meta-analysis, relaxation response was found to be effective in improving physiological and psychological outcomes, and thus, the secondary prevention of cardiac disease.[47] In another systematic review, relaxation response was reported to be effective in reducing anxiety.[48] Although relaxation response was found to improve medical and psychological outcomes, detailed information on the intervention would help in the rigorous design of similar interventions to determine their efficacy.

Despite the core components (patient assessment, nutritional counseling, weight management, blood pressure management, lipid management, diabetes management, tobacco cessation, psychosocial management, physical activity counseling, and exercise training)[13] guidelines, CR programs varied from one setting to another. Also, not all of the core components

were implemented. In addition, assessment of spirituality could be standardized so that outcomes could be compared across different studies. In addition to the medical, psychological, and functional outcomes, patient-reported outcomes may provide useful patient-centered information on the intervention.

Summary

Although spirituality could be a part of CR programs, only a limited amount of evidence has been generated to indicate that spirituality is an effective intervention, partly due to the small number of studies that have been conducted and, therefore, could be included in this systematic review. However, this area of research is still in its infancy. Therefore, this review reveals the need for controlled clinical trials that use a rigorous research design to test well-formulated spiritual interventions and evaluations to measure patient-reported outcomes to determine the efficacy of such approaches.

—Acknowledgments—

We thank Dr Gail Seabold, Cindy Clark, Karen Smith, and Fellows Editorial Board from National Institutes of Health and Ms Suzy French for reviewing and editing the manuscript.

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