

Spiritual and Religious Interventions for Medically High-Risk Adults: A Systematic Review

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Abstract

This systematic review is an update and expansion to the population and methods of a previous systematic review concerning spiritual and religious interventions for the well-being of terminally ill adults. After expanding the criteria to incorporate a more diverse population and including non-randomized experimental studies that contained relatively few concerns of bias, the results of the review are inconclusive due to insufficient data. The lack of usable data in the field highlights the ethical and theoretical issues with the use of experimental trials in analyzing the efficacy of spiritual and religious interventions. The development of spirituality in healthcare will remain stagnant until large volumes of high-fidelity data can be generated. The implementation of a spiritual history in a patient history will aid in achieving this goal by making retrospective cohort studies feasible. Spiritual histories not only enable further research endeavors but streamline comprehensive holistic care. Initiatives by healthcare administrators should implement spiritual histories for the benefits of both research and patient care.

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I would like to thank my parents for all the sacrifices they made to allow me to attend college. I am proud to be a first-generation college student and hope that by this work I can bring them honor. I would like to thank my grandparents for their unwavering faith in the saving work of Jesus Christ that has inspired me to commit to something greater than myself. Their lives are a large inspiration for this research, and I hope that the health care system will develop to better care for people like them.

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Spiritual and Religious Interventions for Medically High-Risk Adults: A Systematic Review

Religion and spirituality (R/S) in the realm of healthcare is a relatively new discipline, however the idea of religious and spiritual healing is not new. R/S have long been a part of human civilization, always intertwined with health and healing, and they have served as the focal point of human hope and purpose up until the modern era when secularism has removed them from prominence (Koenig, 2012). In ancient times, health was viewed from the perspective that spiritual healing was complementary and necessary to natural healing. During this time, there was heavy traditionalism that emphasized the use of known treatments instead of new treatments. New medical practices and views were not formed until the creation of scientific inquiry, around 500-100 AD, which was predicated on theory instead of traditionalism. Medical theory was also deeply involved in the philosophical discussion of the time due to its perceived relevance to philosophy and education. Philosophers at the time were effectively Renaissance Men, trained in all disciplines, integrating knowledge as a cohesion of ideas. The most prominent and influential physicians in western medicine at the time, Galen and Aristides, both honed their craft through mentorship and teaching in many locations but attributed their advancements to the Greco-Roman healing deity Asclepius. Even until the end of the Middle Ages, the interdisciplinary integration of all fields was the method of the foremost scholars that developed human understanding. One important note during the millennia between the fall of Rome and creation of the University is the prevalence of the Church in medicine. The church served a critical role in refuting magical forms of healing and favoring a more natural approach. Also, early Christians are responsible for developing hope and health through the intentional administration of elementary natural healing practices, the formation of the first hospital, and creating a culture of social justice. Medical education and scientific knowledge were preserved and propagated by the

church throughout the Middle Ages. The modern hospital, ethical emphasis, and naturalistic perspectives can in large part be attributed to the influence of Judeo-Christian values by the church (Amundsen, 1996; Ferngren, 2014). A divergence from this influence began at the Reformation and the gap steady grows with each passing day.

Education in the university during the early modern period was dominated by four scientific theories: Aristotelian, Unitary, Hermetic-Platonic, and Ciceronian. All these theories, except for Ciceronian, were deeply concerned with metaphysics as a foundation for understanding. The deep concern for the metaphysical by nearly all people made theology the leading science in the beginning of the early modern era, and the pinnacle of theological thought begat the Reformation. The Reformation divided the western religious landscape of the time into three distinct ideas all claiming to reveal the metaphysical truth, but the disagreement caused civilization to doubt religion and move towards natural theology for insight into the metaphysical. As the limitations of metaphysical inquiry were made more obvious by the Reformation, ciceronian science became the most prominent. Ciceronian science was deeply influenced by secular humanistic thought, which predicated on atheism as a tenant; this explains their lack of concern for metaphysical knowledge (Schmidt-Biggemann, 1996). This shift in scientific view was also a pivotal factor in the long scientific revolution during this time, which was characterized by the movement of science as orthodoxy and rhetoric, that was safe guarded by the church throughout the Middle Ages, to a new definition consisting of theory and experimentation. This led to advancements in understanding the natural world (Porter, 1996). However, these advancements came at the cost of the morality and hope.

The movement from secularism as a mindset modality for academic inquiry to one of life outlook is the foundation of the naturalist worldview. If one rationally follows naturalistic

thinking to its conclusion, the profoundness of this nihilism would justify all levels of amoral behavior (Sire, 2009). Analyzing an issue of moral ambiguity can help demonstrate this philosophical shift. The definitive value of a fetus is undeterminable by natural science, and as such the issue of abortion is an excellent indicator of the moral caution exercised in today's society. Moral caution is the idea that moral people take morality seriously and therefore exercise caution when they have the opportunity to do so. Therefore, a decline in moral caution is indicative of a decline in morality (Matheson, 2016). The ambiguity of a fetus's value can potentially make abortion either murder or parasite removal, but the moral person would exercise moral caution and stand opposed to murder. Yet, over the past fifty years there has been steady increase in the acceptance of abortion (Granberg & Granberg, 1980; Pew Research Center, 2019). In the same way that persons may have value before they are born, persons may have value after they die. A person's adoption of some spiritual meaning follows the same principle of moral caution; either one's eternal destiny is nonexistent and therefore inconsequential or a present reality and therefore of utmost importance. Again, naturalism as an all-encompassing world view has robbed people of moral caution, even as it pertains to themselves; as a result, many people have not fully considered the ramifications of possibly having an eternal destiny, which can give insight to the existential turmoil that exists when people face a threat to their livelihood (Warden & Weisman, 1977). It then could be understood why research shows R/S has a heightened importance for people who are facing the possibility of death in their near future (MacLean et al., 2003; Morris et al., 2006; Peteet, Zaben, & Koenig, 2019). "Indeed, terminally ill adults report significantly greater religiousness and depth of spiritual perspective compared with healthy adults" (Mueller, Plevak, & Rummans, 2001, p. 1227)

Definitions

Religion and Spirituality (R/S) are two distinct but interconnected terms. Religion is defined by “a fixed system of ideas or ideological commitments that fail to represent the dynamic personal element in human piety” (Hill & Pargament, 2008, p. 64), while spirituality is now being defined as “the human aspect through which people seek meaning, purpose and transcendence, and experience relationship with self, family, others and the significant or sacred” (Ichihara et al., 2019, p. 46). Spirituality is about the meaning of life, which is multifaceted and is not distinct to religious people but can be taken from either a secular or religious perspective (Anandarajah, 2005). This spiritual component of humanity, that urges each individual to seek meaning, is thought to be the catalyst for the creation of religion. Religions serve as a form of affirmation for a person’s spiritual beliefs. When incorporating religion and spirituality together, religion can be defined as the actions, while spirituality is the purpose beyond those actions. Spirituality is not only the origin of religion, but it is also what enriches religious act. Despite this deep connection between R/S, religion is still distinct in that actions apart from purpose are void of meaning. This nuance is the largest predictor of the success of spiritual interventions for patients that have such beliefs. A study that individually analyzed each quantitative article in 75% of the entire R/S literature prior to 2012 found that the literature confirmed the benefit of R/S in virtually every category of physical and mental health except weight. However, each area had multiple studies with nonsignificant outcomes and few studies presented a positive correlation for inverse variable relationships (Koenig, 2012). Outliers such as these are thought to be due to this difference in religion and spirituality, as studies with nonsignificant findings primarily focus on variables consistent with religiosity, while spirituality variables were significant even when controlling for confounding variables (Ironson, Kremer, & Lucette, 2016).

Description of Condition

The World Health Organization has included the spiritual dimension in palliative care for 15 years (Gijsberts, Liefbroer, Otten, & Olsman, 2019) as the importance of such care at the end of life is exhibited by a large variety of factors. The heightened importance of spiritual matters to patients at all times of medical care has been discussed by many studies, but it has been shown to be of particular importance in instances that prompt existential crises (Best, Butow, & Olver, 1983; MacLean et al., 2003; McCord et al., 2004). Typically, this existential crisis has been attributed to patients facing terminal illness and recent serious diagnosis (Warden & Weisman, 1977), however patients who are facing high risk operations and surgeries have also been shown to desire this type of care more intently, likely due to the existential factor (Morris et al., 2006). For these reasons, this review is to concern patients who are *medically high-risk*, which is further specified by the criteria in the method section.

Description of Intervention

Spirituality is a distinct dimension of patient wellbeing and needs to be appropriately addressed especially in times of existential need, as patients generally draw strength from their belief systems (Mueller et al. 2001); an irrational or challenged belief system may result in existential crises that need care beyond normal psychological interventions. One example of how spiritual care goes beyond normal psychological care for spiritually inclined patients can be seen through a comparison of the two methods. One study looking at self-identity spiritual people compared cognitive behavioral therapy (CBT) alone, CBT with pastoral care, and pastoral care alone and found that CBT with pastoral care or pastoral care alone had a significantly less post-treatment depression than CBT did alone (Propst, Ostrom, Watkins, Dean, & Mashburn, 1992). Although psychological interventions such as CBT and meaning/outlook therapy can and often

do aid in facilitating one's search for the meaning of life, that defines spirituality, the difference between psychological and spiritual treatment remains. The issue becomes how one defines R/S interventions if not by practices that influence spiritual outcomes. A recent study concluded that despite R/S being separate elements they are both deeply intertwined with the human desire for transcendence (Kim, Lee, & King, 2020). The search for transcendence is both the uniting factor of R/S and what separates R/S practices from other kinds of interventions.

Justification of Review

In 2012, a review titled *Spiritual and Religious Interventions for the Well-being of Adults in the Terminal Phase of Disease* was published by Cochrane Reviews that addressed the question of how beneficial are R/S interventions at addressing the spiritual, psychological, and physiological outcomes of patients with existential needs (Candy et al., 2012). The study was inconclusive due to a few factors, the most prominent being a lack of quantifiable research. However, there has been exponential growth in research on R/S within the healthcare setting over the past decade (Koenig, 2012). There appeared to be a gap in the literature due to the inconclusive results of the previous review and the large increase in data over the past decade. This review sought to identify studies that have properly assessed the value of various spiritual interventions for people who are medically high risk, in order to answer whether spiritual interventions are beneficial in the wellbeing of medically high-risk patients.

Method

Criteria

Types of studies. The types of studies included in this review were journal articles from any geographic locale, so long as a full text was available in English. Studies were peer reviewed and of a randomized control trial design. Outstanding, non-randomized, study designs such as quasi-experiment, case control, or cohort studies were included if they were without high risk of bias in more than two areas of bias. Details on this method can be found in the bias risk assessment on included studies section.

Types of participants. Participants included in this study must be adults, aged 18 and over, of either sex facing a high risk of medical/disease related death. This includes patients with terminal or advanced diseases and/or receiving palliative care, and this includes patients with a relatively high potential of death or vegetative state from high-risk surgeries or operations. A high-risk operation is being defined as having greater than 5% mortality rate (Cecconi & Muchembled, n.d.). Life expectancy was often not declared, so patients were included if they were declared to be in the end or terminal phase of disease or were diagnosed with a disease that has a survivability rate of less than 3 years based on data generated within past 5 years.

Types of interventions. Interventions included in this study were to be religious or spiritual in nature. These terms are applied liberally throughout the literature to capture any version of the existential, however for the purpose of this study spirituality is being defined as beliefs and/or experiences that connect one with the sacred via transcendence, prayer, religious practices or other means. This is not inclusive of meaning-based psychological interventions unless explicitly in a spiritual and/or religious context. Other possible interventions are traditional religious practices such as holy readings, prayer, care from a religious leader,

expanded consciousness, or anything described as transcending everyday experiences. Yoga was included if it was not purely for exercise but included a spiritual component. Mindfulness and meditation are often associated with yoga but can be found on their own as well. Mindfulness is a focused awareness of the material world, while meditation is a transcendent experience of higher consciousness. Based on these definitions, meditation meets criteria to be considered spiritual, while mindfulness does not. Mindful-meditation was also excluded for this reason. However, not all states of transcendence were included, specifically drug induced transience was excluded. Hypnosis was also excluded as it is a state of unconsciousness and not higher consciousness. Various forms of psychotherapy that focused on the elevation of hope, meaning and purpose were excluded unless the study explicitly indicated these being of a spiritual nature.

Types of outcome measures.

Primary. The outcome measures of this study are modeled after Candy et al. (2012) as this review is an update and expansion to that review, therefore, patient quality of life is the outcome measure of interest. Patient quality of life has been broken down into three components, two primary and one secondary. The two primary outcome measures for spiritual interventions are spiritual wellbeing and psychological wellbeing, since they result directly from the intervention itself. Spiritual wellbeing has a large variety of assessment tools; therefore, outcome information will be included if assessed by a tool that has been verified to have high internal consistency. Some surveys that have had their internal consistency thoroughly validated for use within the healthcare environment include but are not limited to Religious Belief Index (RBI-15), Religious Orientation Scale (ROS), Index of Core Spiritual Experiences (INSPIRIT), Mystical Orientation Scale (MOS), Believe Symptom Inventory (BSI), Spiritual Well-being Scale, and Functional Assessment of Chronic Illness—Spiritual Well-being (Cordella & Poiani, 2014;

Holland et al., 1998). Psychological wellbeing can be assessed in a variety of ways, but quantifiable data from internally consistent and validated survey forms are included in this review.

Secondary. Physical Wellbeing is assessed secondarily as R/S has no direct effect but influences this outcome through psychological pathways defined in the primary outcome (Koenig, King, & Carson, 2011). Physical wellbeing can be assessed with numerous measures including hospitalization status, pain, and mortality.

Search Methods

Database searches. The searches were broken down into two objectives: update and expand. Update refers to the use of all search terms to identify articles published between the previous review (Candy et al., 2012) and January 1, 2020. Expansion refers to use of search terms that were not used by Candy et al. (2012) to identify articles that were published prior to 2012 in databases that were used by the previous study. Additionally, expansion includes that use of all search terms to identify articles published prior to 2012 in databases that were not used in the previous study. The search terms were chosen to reflect the two variables, spiritual interventions and medically high risk, detailed in the research question, and are mostly unchanged from the previous review. The main addition to the search terms was to expand from terminally ill to high risk. Two of the terms used to achieve this were ("high-risk" OR "high risk") AND (surgery OR operation) and "threat to existence". Additional search terms based on the quality of study design were added as a filter due to export limitations (e.g. "rct", "quasi-experimental", "cohort"). The databases that were searched with these terms were chosen on account of their use in the previous study that this review seeks to update and expand (Candy et al., 2012). These databases were MEDLINE, CINAHL, ATLA, CENTRAL, Social Science

Premium, PsychINFO, Psychology and Behavior Sciences Collection, Althealth Watch, SocINDEX, Sociology Source Ultimate. This study would have included EMBASE, AMED, The National Health Service Research Register, and Anthropology Plus to mirror Candy et al. (2012); however, due to institutional limitations this was not possible. These nonincluded databases have overlap with some of the included databases, which cuts down on potential record loss due to their exclusion. Where possible, additional databases were added to replace excluded databases based on the amount of similar content to limit the potential loss of resources that would result from not incorporating these databases. The full strategy details for the database searches can be found in Appendix A through Appendix D.

Searching other resources. Resources in this category were identified via a forward and backward citation check of included studies and of a select few articles discovered through, yet excluded during, screening.

Data Collection and Analysis

The identified records' citations and abstracts were screened for compliance with the inclusion criteria through the use of Rayyan QCRI, a web software and mobile app for systematic reviews (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016). After screening, the full text of the eligible studies was assessed to ensure each completely met inclusion standards and was capable of data extraction. Any exclusions made at this stage were documented with justification, which can be found in Appendix E.

Bias Risk Assessment of Included Studies

The bias of each included study was assessed using RoB 2, which is the August 2019 edition of the revised Cochrane risk-of-bias tool for randomized trials (Sterne et al., 2019). Five potential areas of bias were analyzed with this tool: random sequence generation, allocation

concealment, blinding, incomplete data, and selective reporting. Outcomes of this evaluation were documented and divided into three categories: low risk of bias, some concerns, and high risk of bias.

Analysis of Outcomes

If the studies presented enough data per outcome to conduct a meta-analysis, then the procedure would follow a metanalytical procedure in Microsoft Excel by Neyeloff, Fuchs, & Moreira (2012). If the studies did not provide enough data, then the study would be declared inconclusive for lack of quantifiable data. In the case of insufficient data, obtained data would be collected and visualized, but there would be no combination of this data as the limited data volume would make such a method inappropriate.

There will presumably be a substantial amount of missing data and lack of heterogeneity among the studies due to the diversity in spiritual interventions. Additionally, there was expected to be missing data within studies due to the high mortality rate of the population, contributing to attrition rates. Missing data within studies will be handled by allowing for individual studies to properly address any missing data, and missing data among the studies will be handled by defining weeks as a nominal variable instead of an ordinal one.

Results

Description of Studies

Database searches identified 34,774 records. Due to software and institutional limitations, additional criteria were added to searches in all databases except CENTAL, creating a pre-screen reduction of the data. After this reduction, records numbered 2065. After combining with the 278 records identified by other means and removing the duplicates, 1967 articles were left to be screened. After screening the abstract and titles, 23 were identified to be relevant to the topic and appeared to meet criteria. These articles had their full-text assessed for eligibility, and any exclusions made at this stage were documented: six articles were excluded because they did not meet the criteria for high risk, four articles did not have results, four articles were excluded because the full-text was not available, three articles were excluded because of issues with the intervention, and one article was excluded for the underreporting of data for groups that received treatment that fit in the defined interventions. Full details on these exclusions can be found in Appendix E Table E1. The remaining five articles (Babamohamadi et al., 2017; Babamohamadi, Sotodehasl, Koenig, Jahani, & Ghorbani, 2015; Chimluang et al., 2017; Cole et al., 2012; Frih et al., 2017) were included into the study because they fit the criteria for population, intervention, study design, and risk of bias. Four articles were randomized control trials and one was a quasi-experimental study (Chimluang et al., 2017). The single quasi-experimental study was included as it met the inclusion criteria of having two or less high risk of bias categories, which was specified in the Method prior to analysis. Details of the included studies can be found in Appendix F. The identification to inclusion process has been summarized into Figure 1, which was based on the PRISMA statement (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009).

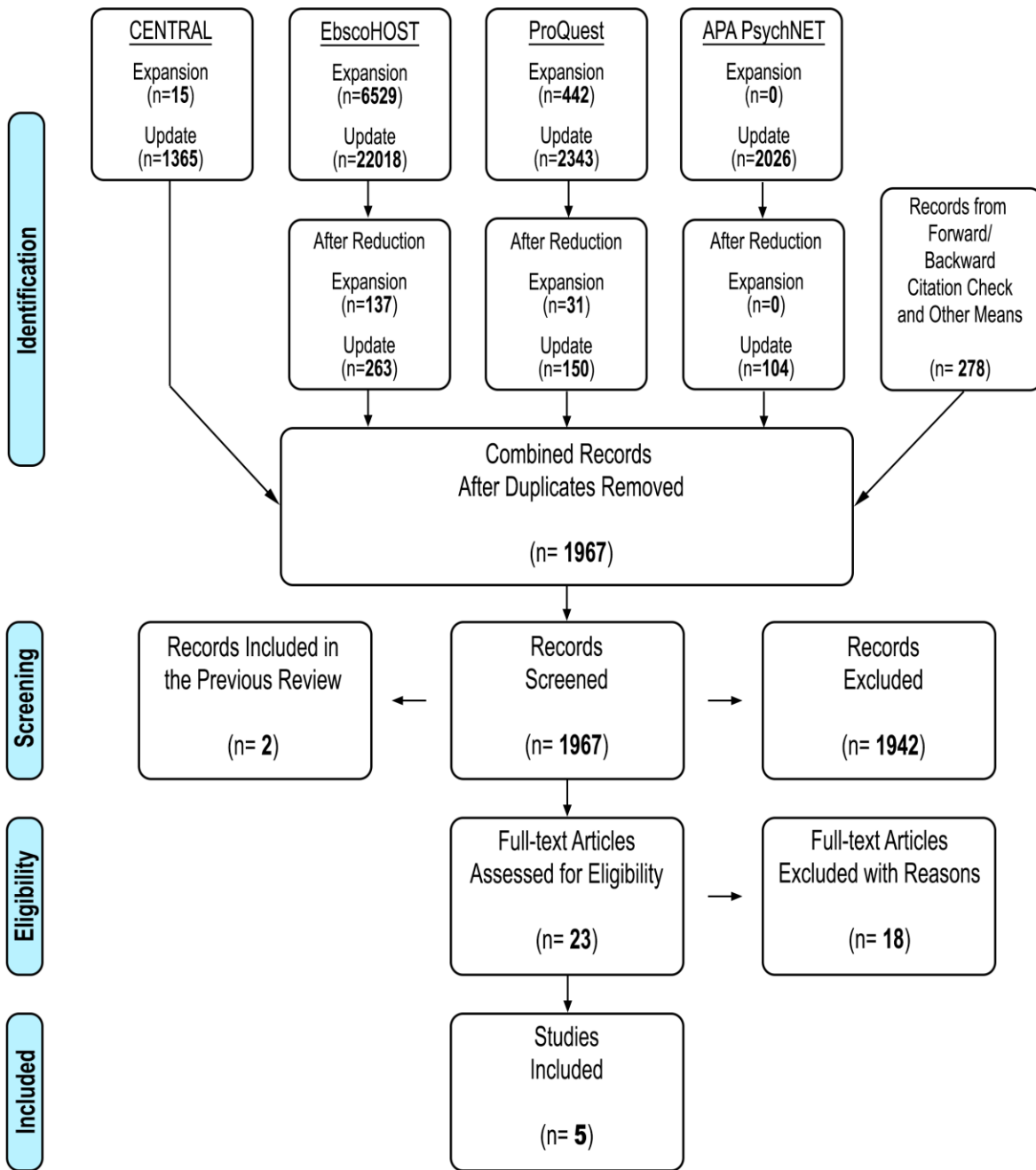


Figure 1. Identification to inclusion: A flow diagram of quantities

Participants

All included participants were adults ($\bar{X}=56$). Three studies (Babamohamadi et al., 2017; Babamohamadi et al., 2015; Frih et al., 2017) were conducted on an entirely Muslim population (n=167). One study (Chimluang et al., 2017) was conducted on an entirely Buddhist population (n=48). One study (Cole et al., 2012) had no participant religion data but indicated that every participant declared that their spirituality was important to them (n=83).

Intervention

One study (Chimluang et al., 2017) derived interventions from religious principles and created practices to facilitate these principles. Three studies used the reading of a sacred text (Babamohamadi et al., 2017; Babamohamadi et al., 2015; Frih et al. 2017). One study used spiritual mediation (Cole, 2012).

Comparison

Four studies (Babamohamadi et al., 2017; Babamohamadi et al., 2015; Chimluang et al., 2017; Cole et al., 2012) compared usual care with spiritual interventions, while one study demonstrated how spiritual interventions amplified the effects of physical interventions (Frih et al., 2017).

Risk of Bias in Included Studies

All articles were high risk: three (Babamohamadi et al., 2017; Babamohamadi et al., 2015; Cole et al., 2012) from possible allocation concealment bias and two (Chimluang et al., 2017; Frih, 2017) from allocation concealment bias, as well as one other category. Findings are summarized by Figure 2 and Figure 3.

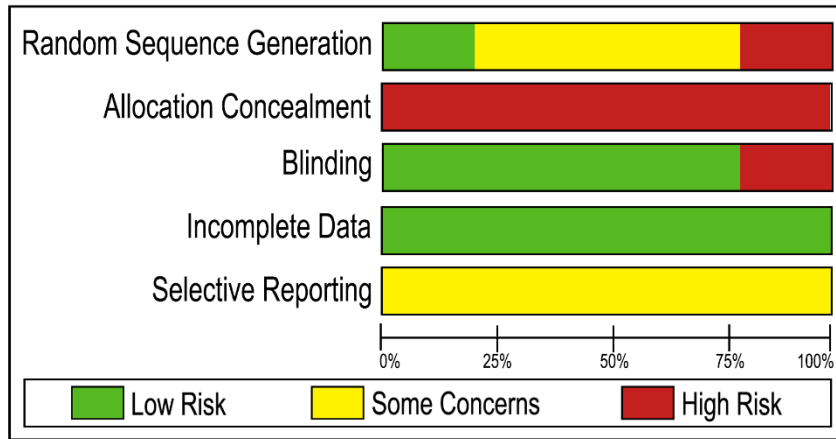


Figure 2. Risk of bias summary: Total risk of the review as a percent.

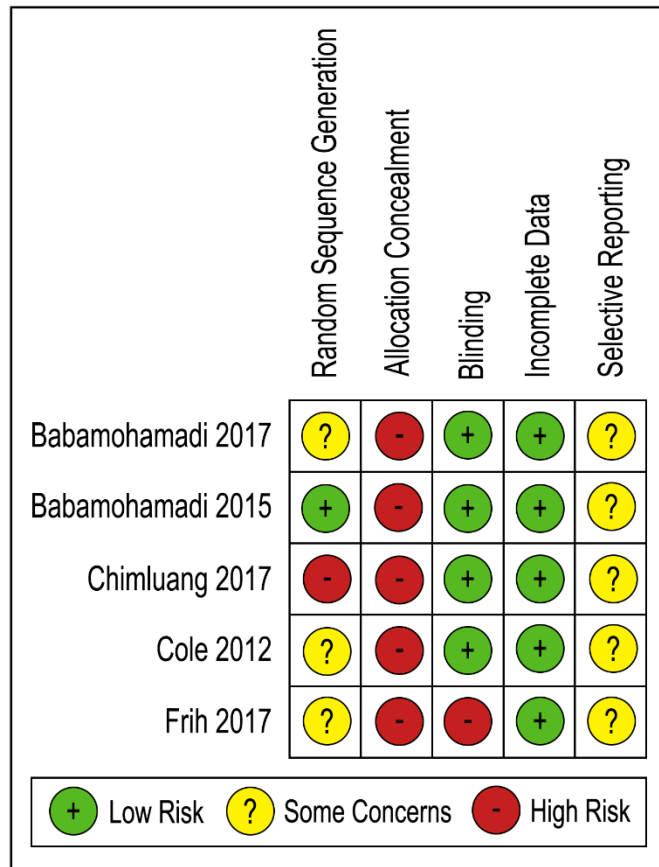


Figure 3. Risk of bias summary: Assessment of risk for included studies using RoB 2.

Random sequence generation. Random sequence generation refers to how the participants were split into groups. Most studies merely said they were randomized and did not provide a randomization method, which presents some concerns. The high-risk study was quasi-experimental, which is non-randomized by design; it gathered data for different groups at different time periods, not concurrently.

Allocation concealment. Allocation concealment refers to the participants' knowledge of which treatment they are receiving. Due to the nature of spiritual interventions, blinding the participants to the treatment they are receiving is impossible in all experimental study designs. This resulted in a high concern rate.

Blinding. Blinding refers to how the data were obtained. Most studies used survey tools that were previously validated for internal consistency, which is a more objective form of measurement in comparison to a post-intervention interview.

Incomplete data. Incomplete data refers to the loss of data due to lack of participant follow-up, which is of concern in the included studies, since the attrition rate of high-risk patients is relatively low. Some studies had complete data, while the remaining studies accounted for the lost data with proper methods.

Selective reporting. Selective reporting refers to whether the study includes all the data from all assessment methods as described in the methods formed prior to experiment. There are some concerns for most studies as data on this bias could only be subjectively obtained by article analysis; further information from the authors of these articles would be needed to fully assess the reporting methods.

Effects of Interventions

Across the five studies, 146 participants were subjected to one of three different spiritual interventions: practices facilitating religious principles, listening to reading of a sacred text, and spiritual mediation. The outcomes of these interventions were measured according to three categories: spiritual, psychological, and physical. Full data tables for each intervention have been included in Appendix G. Due to insufficient data, a meta-analysis was not conducted.

Basic Buddhist principles.

Spiritual outcomes. The effect of basic Buddhist principles on spiritual outcomes was tested by Chimlaung et al. 2017. The effect was determined to be statistically insignificant, but evidenced trends toward gradual change. A longer experiment could clarify the significance of this intervention over time. A graphical interpretation of the data is presented in Appendix G Figure G1.

Psychological outcomes. There were no studies that looked at the effect of basic Buddhist principles on mental health outcomes.

Physical outcomes. There were no studies that looked at the effect of basic Buddhist principles on mental health outcomes.

Sacred text reading.

Spiritual outcomes. There were no studies that looked at the effect of reading a sacred text on spiritual health outcomes.

Psychological outcomes. The effect of reading a sacred text on mental health outcomes was tested by Babamohamadi et al. (2017), Babamohamadi et al. (2015), and Frih et al. (2017), specifically in the context of anxiety and depression. The methodology for intervention was the same across studies, which included listening to the Quran for 20 minutes during treatment;

however, the study done by Frih et al. (2017) had an additional physical intervention for both groups. The effect of listening to the Quran during treatment was shown to have statistical and clinical significance for mental health in all three studies. A graphical interpretation of the data for the outcome for each variable per study is presented in Appendix G Figures G2-G6.

Physical outcomes. The effect of reading a sacred text on physical health outcomes was tested by Frih et al. (2017), specifically in the context of physical intervention amplification. The methodology for intervention included participants from all groups receiving additional physical intervention: exercise and stretching. The effect of listening to the Quran during treatment was shown to have statistical and clinical significance for amplifying additional physical interventions. This outcome was assessed using a physical component summary and dialysis adequacy; a graphical interpretation of the former is presented in Appendix G Figure G7.

Spiritual meditation.

Spiritual outcomes. The effect of spiritual meditation on spiritual outcomes was tested by Cole et al. 2012. The study primarily compared the effect of spiritual and secular meditation in their discussion, but the effect between control and spiritual meditation is described here. The effect of spiritual meditation was assessed using the McGill Quality of Life Scale by Cohen, Mount, Strobel, and Bui (1995) and was not shown to have statistical significance. A graphical interpretation of the data is presented in Appendix G Figure G8.

Psychological outcomes. The effect of spiritual meditation on psychological outcomes was tested by Cole et al. 2012. The study primarily compared the effect of spiritual and secular meditation in their discussion, but the effect between control and spiritual meditation is described here. The effect of spiritual mediation on mental health was assessed according to three different measures: Center for Epidemiological Studies-Depression scale (CES-D) by Radloff (1977), the

McGill Quality of Life Scale (MQOL) by Cohen et al. (1995), and the Positive and Negative Affect States scale (PANAS) by Watson, Clark and Tellegen (1988). The study indicated statistical significance for CES-D and the positive aspect of PANAS. However, the negative aspect of PANAS and MQOL were not determined to have statistical significance. In the case of the MQOL there was significance for certain subscales such as optimism and separation from people, despite having no overall significance. Graphical interpretations of these data are presented in Appendix G Figures G9-G12.

Physical outcomes. The effect of spiritual meditation on physical outcomes was tested by Cole et al. 2012. The study primarily compared the effect of spiritual and secular meditation in their discussion, but the effect between control and spiritual meditation is described here. The effect of spiritual meditation was determined to have statistical significance according to MQOL; this information is based on subjective interpretation of physical pain. There was no significant difference in the mortality data between participants. A graphical interpretation of the data from MQOL is presented in Appendix G Figure G13.

Discussion

Summary of Results

This review analyzed the quality of evidence and outcomes of spiritual interventions for medically high-risk patients. Five articles were identified in this review, which were conducted throughout the world, and most articles included an intervention that catered specifically to the religious affiliation of the participants. Interventions included a broad application of religious traditions, meditation, and listening to sacred text readings. Patient diagnoses included end stage renal disease and various cancers.

This review described three unique R/S interventions that were utilized on a high-risk population. The results of these studies showed no significant findings for basic Buddhist principles, but the results showed significance for the reading of a sacred text and some significance for spiritual meditation. However, this review is limited in its completeness by the lack of studies. The results presented here are from a very limited number of sources; due to this, the conclusions that can be definitively drawn from this review are inconclusive.

Quality of Evidence

The quality of evidence is limited by several challenges that are present when studying R/S interventions, namely allocation concealment and ethical restraints on study design. Allocation concealment of spiritual interventions is extremely difficult to achieve as a participant's active involvement is required for the intervention to take place. In every study the experimental group was aware that they were receiving some kind of spiritual intervention, which can have an impact on the outcomes of self-reported data. Unfortunately, there is no feasible way to counteract this potential bias due to the nature of the intervention. However, a study could lower an aspect of this risk through comparing a spiritual treatment group with an

active control; therefore, a three-armed control trial design is preferable to a two-armed control trial design when analyzing data sets for spiritual interventions. However, despite three-armed studies technically having lower risk of bias in this category, they were still determined to be high risk for the purposes of this study, since the active control data was not present in every study. Nevertheless, even though three-armed control trials fair better against the bias of allocation concealment, they will still contain bias on account of the nature and ethics of research on R/S.

The ethical concerns that arise from the very nature of spirituality are the biggest culprit of quality evidence within the R/S field. Four of the five studies had a biased population as each participant received interventions that were in line with his or her own belief system. The ethical concern that researchers have when creating a randomized control trial with R/S interventions stems from the idea that to gather actual evidence as to the benefits of R/S practices, participants would be required to stop or start practicing R/S beliefs, which they potentially might not agree with. Even if research were to continue forward despite this ethical dilemma, the population sample would still be biased as people will always have a predisposition towards whatever their deep-rooted beliefs are. It would also remain a biased sample if willing participants were used, since the study would contain a niche group, lacking people who feel strongly about their beliefs, and therefore would not be a representative sample of the greater population. Randomized control trials are not the preferred method of data acquisition on R/S interventions. The ideal research form would not be experimental but rather observational. Therefore, the cohort study design is the ideal form in the research on R/S. Unfortunately, this research model does not fit particularly well within the time frame limitations of people who are medically high risk and this population may evade conclusive findings for quite some time. Retrospective cohort studies

within the field at large are not yet feasible as proper data collection on patient spirituality has been implemented in very few locations. In addition, few prospective cohort studies on the topic of R/S interventions for any population have been done and none have been done on a medically high-risk population.

Understanding the Results

In systematic reviews of R/S interventions, there are generally studies present, in minority, that exhibit negative results for R/S interventions. However, this review presented none, which may be attributable to the population bias of the included studies. The results indicated by this review, despite being distorted due to the population bias, does give information on where to look for beneficial information for future implementations, namely cohort studies. One prospective cohort study that looked at the spiritual coping of patients with HIV over seventeen years identified that spiritual outcomes were a significant predictor of longevity. The study identified three groups within the data set. The patient outcomes from worst to greatest were patients with negative spiritual coping, minimal spiritual coping, and positive spiritual coping (Ironson et al., 2016). These data, and others that confirm them (Kremer & Ironson, 2014; Reynolds, Mrug, Wolfe, Schwebel, & Wallander, 2016), demonstrated the potential risk and benefit of spiritual beliefs, by identifying that spiritual coping can be negative or positive in comparison to minimal use of spiritual coping. Recognizing that a poor spiritual state puts a patient at risk, but also that his or her survival can be increased above that of non-spiritual patients when his or her spiritual state is properly addressed with adequate interventions, demonstrates the absolute need for R/S interventions, especially for a medically high-risk population who are increasingly in tune with their spirituality.

Future Research

The differences of outcomes between different spiritual coping mechanisms (Ironson et al., 2016; Kremer & Ironson, 2014; Reynolds et al., 2016) inherently suggest that spiritual beliefs are on a spectrum of benefit and so too must R/S interventions, which are almost always based on these beliefs. Further progress in the study of R/S interventions would be greatly aided by the identification of the specific characteristics that make different forms of spiritual beliefs more beneficial to patients. This question has yet to be thoroughly explored in the literature, and the ability to do so is limited by the lack of high-fidelity data. Future research should address this question by a prospective cohort study, until better methodology can be formed, specifically a retrospective cohort study.

Once the question of beneficial characteristics has been answered, the field will also need to answer the question of “whether recommending [R/S] can be done in a way that is ethically acceptable or effective (e.g., getting religion for the sake of health outcomes may not be the same thing as practicing religion for its own sake.)” (Ironson et al., 2016, p. 1075). Future research should be directed toward developing the means of obtaining and analyzing the outcomes of both questions.

Application

While research of R/S has faced a substantial challenge with the relatively recent shift in the definition of spirituality, the clinical implications have never been easier to implement! Now, it is the patients who define what spirituality is to them and healthcare professionals need only come alongside and support those beliefs (Peteet et al., 2019). The easiest way for a patient to express his or her spiritual beliefs is through the use of a spiritual history. A spiritual history is a tool that marks the first step in comprehensive spiritual care and has been recommended by

nearly all systematic reviews and meta-analyses of R/S. The use of a spiritual history is undeniably best practice, despite the fact that only about 10% of physicians are using one (Koenig, 2012). A systematic review of the various spiritual history tools within the literature defined sixteen qualities/areas of assessment that make up a good spiritual history: memorability, religious affiliation, religious attendance, negative aspects of religion, spiritual meaning, influence of spirituality on life, influence of spirituality on illness, religious rituals and practices and their influence on treatment, religious coping, religious support, allowance of medical practice, spiritual experiences, dealing with terminal events, openness to discuss religious issues, option to refer to religious leader/chaplain, and timely completion time (Lucchetti, Bassi, & Lucchetti 2013). The inclusion of these sixteen qualities is imperative to developing a thorough and holistic view of a patient's spirituality and religious customs. Unfortunately, there is not a single spiritual history tool that has integrated the assessment of all these areas into one tool. Healthcare professionals should consider which spiritual history tool best fits their practice, tweak it to incorporate all sixteen areas, tweak it to fit their population better, and implement it.

Mueller et al. (2001) made the case that "a spiritual history is not required for every clinical encounter" (p. 1231). However, in order to normalize the use of spiritual assessments throughout medicine, one ought to be used whenever a medical history is taken (Saguil & Phelps, 2012). Additionally, it is best to be cautious and collect as much comprehensive patient data as possible for a more holistic understanding of a patient. A study that looked at why patients choose to share spiritual information with healthcare providers also highlighted an emphasis on the patient's desire to be understood holistically; the top three reasons patients share spiritual information with a doctor are so that the doctor can understand the patient better, can understand how the patient makes decisions, and can understand how the patient's beliefs

influence how he or she deals with illness (McCord et al., 2004). Spiritual data are important for every aspect of medicine and spiritual histories can serve as means to communicate that data. A patient's spiritual history can be passed on to future health care providers through a patient's file to make holistic care possible. This is especially relevant in cases of emergency where patients' spiritual beliefs may cause them to refuse medical treatment, and they may not be able to communicate that due to their present state of mind in a crisis.

The normalization of a spiritual history into everyday medical assessment is not only crucial for this holistic patient understanding, but would also allow for more feasible and thorough research to be conducted on how R/S influence health outcomes, through methods such as a retrospective cohort study, which is preferable to a prospective cohort study due to the financial factors, potential data volume, and follow-up data loss that are prominent concerns for research for a medically high-risk population (Song & Chung, 2010).

The importance of a spiritual history has been shown to be relevant to holistic patient understanding and developing further research, but it can also be a form of intervention since it gives patients a space to "voice their spiritual doubts, needs, and concerns [which] may be reassuring and comforting to them" (Mueller et al., 2001, p. 1232). The administration of a spiritual history is the main way in which spiritual issues can be properly addressed in a healthcare setting as physicians are not properly equipped to handle the spiritual needs of patients. In contrast, chaplains have received extensive training to handle these types of needs. "[Chaplains] are the true experts in this area. For any but the most simple spiritual needs, then, patients should be referred to chaplains to address the problem" (Koenig, 2012, p. 21). Giving patients space to voice spiritual concerns through the use of a spiritual history will allow the issue to be directed to the proper professional more often. Despite this, a doctor may still find

himself or herself in situations where patients will spontaneously bring up a spiritual stressor directly to him or her. In response to this situation, the doctor should “normalize the use of spirituality and note there is evidence it may be helpful, or [he or she] can refer them out” (Ironson et al., 2016, p. 1075). As noted by Mueller et al. (2001), “The physician’s duty is not to judge a patient’s attitudes and behaviors but to understand their clinical importance” (p. 1231).

Beyond just a spiritual history and ethical dealings with spiritual interventions there are other practical ways in which a physician can help administer spiritual care. First, a physician can help ensure the patient’s spiritual needs are met by conversing with both the chaplain and patient to establish any potential spiritual interventions. With proper communication and documentation of a potential spiritual action plan, interventions that can be incorporated into medical treatment will be better facilitated by the healthcare team assigned to the patient. Secondly, a physician should follow up with the chaplain to ensure that the spiritual needs of a patient were met. Due to the nature of spiritual crises, a patient’s spiritual need will usually last beyond his or her stay at the hospital. “Therefore, a spiritual care discharge plan will need to be developed by the hospital social worker in consultation with the chaplain, which may involve (with the patient’s consent) contact with the patient’s faith community to ensure spiritual needs are addressed when the patient returns home” (Koenig, 2012, p. 22). Lastly, physicians can advance their ability to provide spiritual care by learning the various R/S beliefs that are prominent within their population of care.

Conclusion

R/S has been an important component of the human experience by providing meaning, hope, purpose, and responsibility to countless peoples throughout time. R/S interventions seek to heighten these traits in patients who are facing a loss of hope as a result of medical circumstance. This review was designed to expand the population and make current the findings of a previous systematic review concerning spiritual interventions for the wellbeing of terminal adults done by Candy et al. (2012). The update was done to account for the exponential growth of research in the field; the expansion was done to incorporate a wider population scope to include adults who may be vulnerable to a crisis of meaning resulting from their medical condition.

The results of this study identified five articles that suggest that religious and spiritual interventions on spiritual populations are beneficial to their spiritual and psychological wellbeing. After incorporating literature from other patient populations, the results seem to reach the same conclusion of the surrounding literature. However, the small data volume necessitates that these results are still inconclusive.

The clear need for research in the field and potential risk-benefit of spiritual beliefs make a compelling argument for the incorporation of spiritual histories into all patient data collection methods. The inclusion of a spiritual history whenever a patient history is taken will normalize the process of spiritual integration and better inform holistic patient care in a multiplicity of scenarios. Future research should be done through non-experimental methods and be focused on identifying the particular characteristics of R/S beliefs and interventions that make them beneficial. In addition, the field will need to address potential ethical questions that will arise as a result of these outcomes. The implementation of spiritual histories will give the opportunity for these future research objectives to come to fruition, giving a clearer picture of the effects of R/S.

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Appendix A

CENTRAL Search Strategy

Update Searches

- #1 MeSH descriptor: [Spiritual Therapies] explode all trees
- #2 MeSH descriptor: [Religion] explode all trees
- #3 religious or religion* or spirit* or soul or religiosity
- #4 meditat*
- #5 pray*
- #6 pastoral near/3 (care or caring)
- #7 anoint*
- #8 "laying on of hands"
- #9 Deity or divinity or divine
- #10 faith* or hope or connect* or identity
- #11 psychic next healing or "inner peace"
- #12 yoga
- #13 church* or cleric or clergyman or priest or preacher
- #14 shamanism or mystic* or transcend* or esoteric
- #15 Buddhism or Buddhist* or Christian* or catholic* or "eastern orthodoxy" or "Jehovah*
witness" or protestant* or Hindu* or Islam* or Judaism or Taoism or Sikk or Rastafari
- #16 confucianism or mystic* or "eastern philosophy"
- #17 God or "supreme being" or "higher being"
- #18 belief* or believe*
- #19 existential or salutogenesis

- #20 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12
OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19)
- #21 MeSH descriptor: [Palliative Care] explode all trees
- #22 MeSH descriptor: [Terminal Care] explode all trees
- #23 MeSH descriptor: [Hospice Care] explode all trees
- #24 hospice near (care or caring)
- #25 ("end stage" or "late stage") and (disease* or illness)
- #26 dying or "end of life"
- #27 "terminal* ill*" or "terminal stage"
- #28 advanced near (disease* or cancer or illness)
- #29 palliat*
- #30 "advanced directive"
- #31 ("high-risk" or "high risk") near (surgery or operation)
- #32 potential near (death)
- #33 threat to existence
- #34 (#21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31
OR #32 OR #33)
- #35 (#20 AND #34)

Expansion Searches

- #1 MeSH descriptor: [Spiritual Therapies] explode all trees
- #2 MeSH descriptor: [Religion] explode all trees
- #3 religious or religion* or spirit* or soul or religiosity
- #4 meditat*

- #5 pray*
- #6 pastoral near/3 (care or caring)
- #7 anoint*
- #8 "laying on of hands"
- #9 Deity or divinity or divine
- #10 faith* or hope or connect* or identity
- #11 psychic next healing or "inner peace"
- #12 yoga
- #13 church* or cleric or clergyman or priest or preacher
- #14 shamanism or mystic* or transcend* or esoteric
- #15 Buddhism or Buddhist* or Christian* or catholic* or "eastern orthodoxy" or "Jehovah*
witness" or protestant* or Hindu* or Islam* or Judaism or Taoism or Sikk or Rastafari
- #16 confucianism or mystic* or "eastern philosophy"
- #17 God or "supreme being" or "higher being"
- #18 belief* or believe*
- #19 existential or salutogenesis
- #20 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12
OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19)
- #21 ("high-risk" or "high risk") near (surgery or operation)
- #22 potential near (death)
- #23 threat to existence
- #24 (#21 OR #22 OR #23)
- #25 (#20 AND #24)

Appendix B

MEDLINE, CINAHL, and ATLA Via EBSCOhost Search Strategy

Update Searches

- #1 Spiritual therap*
- #2 religion
- #3 religious or religion* or spirit* or soul or religiosity
- #4 meditat*
- #5 (pray* or prey*)
- #6 pastoral near/3 (care or caring)
- #7 anoint*
- #8 "laying on of hands"
- #9 Deity or divinity or divine
- #10 faith* or hope or connect* or identity
- #11 psychic next healing or "inner peace"
- #12 yoga
- #13 church* or cleric or clergyman or priest or preacher
- #14 shamanism or mystic* or transcend* or esoteric
- #15 existential or salutogenesis
- #16 Buddhism or Buddhist* or Christian* or catholic* or "eastern orthodoxy" or "Jehovah*
witness" or protestant* or Hindu* or Islam* or Judaism or Taoism or Sikk or Rastafari
- #17 confucianism or mystic* or "eastern philosophy"
- #18 God or "supreme being" or "higher being"
- #19 belief* or believe*

- #20 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12
OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19)
- #21 Palliative Care/
- #22 Terminal Care/
- #23 Hospice Care/
- #24 ("end stage" or "late stage") and (disease* or illness)
- #25 dying or "end of life"
- #26 "terminal* ill*" or "terminal stage"
- #27 advanced (disease* or cancer or illness)
- #28 palliat*
- #29 "advanced directive"
- #30 ("high-risk" or "high risk") (surgery or operation)
- #31 potential death
- #32 threat to existence
- #33 (#21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31
OR #32)
- #34 (rct OR randomized control trial OR randomized controlled trial OR controlled trial OR
cohort OR case control OR quasi-experimental) AND (narrowed by subject age: aged
80+, aged 65+, middle aged (45-64), adult (19-44), young adult (19-24), all adult (19+))
AND (narrowed by date: Dec 2011-Dec 2019)
- #35 (#20 AND #33 AND)
- #36 (#34 AND #35)

Expansion Searches

- #1 Spiritual therap*
- #2 religion
- #3 religious or religion* or spirit* or soul or religiosity
- #4 meditat*
- #5 (pray* or prey*)
- #6 pastoral near/3 (care or caring)
- #7 anoint*
- #8 "laying on of hands"
- #9 Deity or divinity or divine
- #10 faith* or hope or connect* or identity
- #11 psychic next healing or "inner peace"
- #12 yoga
- #13 church* or cleric or clergyman or priest or preacher
- #14 shamanism or mystic* or transcend* or esoteric
- #15 existential or salutogenesis
- #16 Buddhism or Buddhist* or Christian* or catholic* or "eastern orthodoxy" or "Jehovah*
witness" or protestant* or Hindu* or Islam* or Judaism or Taoism or Sikk or Rastafari
- #17 confucianism or mystic* or "eastern philosophy"
- #18 God or "supreme being" or "higher being"
- #19 belief* or believe*
- #20 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12
OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19)

- #21 ("high-risk" or "high risk") (surgery or operation)
- #22 potential death
- #23 threat to existence
- #24 (#21 OR #22 OR #23)
- #25 (rct OR randomized control trial OR randomized controlled trial OR controlled trial OR cohort OR case control OR quasi-experimental) AND (narrowed by subject age: aged 80+, aged 65+, middle aged (45-64), adult (19-44), young adult (19-24), all adult (19+)) AND (narrowed by date: Any-Dec 2011)
- #26 (#20 AND #24)
- #27 (#25 AND #26)

Appendix C

Social Science Premium by Proquest[†] and PsycINFO by APA PsycNET** Search Strategy

Update Searches

(Spiritual Therap* OR Religion OR (religious OR religion* OR spirit* OR soul OR religiosity) OR meditate* OR (pray* or prey*) OR ((pastoral adj3 care) OR (pastoral adj3 caring)) OR anoint* OR "laying on of hands" OR ((belief* or believe*) AND (relig* or spiritual)) OR (Deity OR divinity or divine) OR faith* OR ("psychic healing" OR "inner peace") OR yoga OR (church* OR cleric OR clergy* OR priest* OR preacher* OR vicar* OR (minister* adj10 religi*) OR (minister adj10 church)) OR (shamanism or mystic* or transcend*or esoteric) OR (existential or salutogenesis) OR (Buddhism OR Buddhist* OR Christian* OR catholic* OR "eastern orthodoxy" OR "Jehovah* witness*" OR protestant* OR Hindu* OR Islam* OR Judaism OR Tao* OR Sikh* OR Rastafari*) OR (confucianism OR mystic* OR "eastern philosophy") OR (God OR "supreme being" OR "higher being")) AND (Palliative Care OR Terminal Care OR Hospice Car* OR ("end stage" OR "late stage")) AND ((disease* OR illness) OR palliat* OR "advanced directive*" OR ("dying" OR "end of life") OR ("terminal* ill*" OR "terminal stage") OR (advanced (disease* OR cancer OR illness)) OR ("High risk" (surger* OR operation)) OR potential death OR threat to existence) AND (rct OR randomized control trial OR randomized controlled trial OR controlled trial OR cohort OR case control OR quasi-experimental)

[†] Anywhere but full text, peer reviewed, and Dec 2011-Dec 2019

** Journal Title, Title, Abstract, MeSH, or Unique Identifier, peer reviewed, and 2012-2019

Expansion Searches

(Spiritual Therap* OR Religion OR (religious OR religion* OR spirit* OR soul OR religiosity)
 OR meditate* OR (pray* or prey*) OR ((pastoral adj3 care) OR (pastoral adj3 caring)) OR
 anoint* OR "laying on of hands" OR ((belief* or believe*) AND (relig* or spiritual)) OR (Deity
 OR divinity or divine) OR faith* OR ("psychic healing" OR "inner peace") OR yoga OR
 (church* OR cleric OR clergy* OR priest* OR preacher* OR vicar* OR (minister* adj10
 religi*) OR (minister adj10 church)) OR (shamanism or mystic* or transcend*or esoteric) OR
 (existential or salutogenesis) OR (Buddhism OR Buddhist* OR Christian* OR catholic* OR
 "eastern orthodoxy" OR "Jehovah* witness*" OR protestant* OR Hindu* OR Islam* OR
 Judaism OR Tao* OR Sikh* OR Rastafari*) OR (confucianism OR mystic* OR "eastern
 philosophy") OR (God OR "supreme being" OR "higher being")) AND ("High risk" (surger* OR
 operation)) OR potential death OR threat to existence AND (rct OR randomized control trial OR
 randomized controlled trial OR controlled trial OR cohort OR case control OR quasi-
 experimental)

† Anywhere but full text, peer reviewed, Any - Dec 2011

** Journal Title, Title, Abstract, MeSH, or Unique Identifier, peer reviewed, and Any - Dec 2011

Appendix D

Psychology and Behavior Sciences Collection, Alt Health Watch, SocINDEX, and Sociology

Source Ultimate Via EBSCOhost Search Strategy

Since these databases were not included in the previous study, all search terms were used and no date limitations were made.

- #1 Spiritual therap*
- #2 religion
- #3 religious or religion* or spirit* or soul or religiosity
- #4 meditat*
- #5 (pray* or prey*)
- #6 pastoral near/3 (care or caring)
- #7 anoint*
- #8 "laying on of hands"
- #9 Deity or divinity or divine
- #10 faith* or hope or connect* or identity
- #11 psychic next healing or "inner peace"
- #12 yoga
- #13 church* or cleric or clergyman or priest or preacher
- #14 shamanism or mystic* or transcend* or esoteric
- #15 existential or salutogenesis
- #16 Buddhism or Buddhist* or Christian* or catholic* or "eastern orthodoxy" or "Jehovah*
witness" or protestant* or Hindu* or Islam* or Judaism or Taoism or Sikk or Rastafari
- #17 confucianism or mystic* or "eastern philosophy"

- #18 God or "supreme being" or "higher being"
- #19 belief* or believe*
- #20 (#1 OR #2 OR #3 OR #4 OR #5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12
OR #13 OR #14 OR #15 OR #16 OR #17 OR #18 OR #19)
- #21 Palliative Care/
- #22 Terminal Care/
- #23 Hospice Care/
- #24 ("end stage" or "late stage") and (disease* or illness)
- #25 dying or "end of life"
- #26 "terminal* ill*" or "terminal stage"
- #27 advanced (disease* or cancer or illness)
- #28 palliat*
- #29 "advanced directive"
- #30 ("high-risk" or "high risk") (surgery or operation)
- #31 potential death
- #32 threat to existence
- #33 (#21 OR #22 OR #23 OR #24 OR #25 OR #26 OR #27 OR #28 OR #29 OR #30 OR #31
OR #32)
- #34 (rct OR randomized control trial OR randomized controlled trial OR controlled trial OR
cohort OR case control OR quasi-experimental) AND (narrowed by subject age: aged
80+, aged 65+, middle aged (45-64), adult (19-44), young adult (19-24), all adult (19+))
- #35 (#20 AND #33 AND #34)

Appendix E

Characteristics of Excluded Studies

Table E1
Characteristics of Excluded Studies

Study	Reason for exclusion
Amini, 2014	The results were not yet published.
Chaoul, 2017	Patients did not fall under this study's criteria for high risk.
Chaoul et al., 2018	Patients did not fall under this study's criteria for high risk.
Cole, 2005	Not all patients fall under this study's criteria for high risk.
Ichihara et al., 2019	Specific interventions varied between patients.
Johnson, 2011	Patients did not fall under this study's criteria for high risk.
Kim & Song, 2004	Full text was not available in English.
Kruizinga et al., 2019	The "spiritual counselor" did not provide spiritual care as defined by the criteria of this review.
Kruizinga, Scherer-Rath, Schilderman, Sprangers, & Van Laarhoven, 2013	The "spiritual counselor" did not provide spiritual care as defined by the criteria of this review.
Ling & Xing, 2018	The results were not yet published.
Majidi, 2004	Operation is not considered high risk (Tavakol, Ashraf, & Brener, 2012).
Moadel, Camacho, & Schlecht, 2017	Full text was not available.
Olver & Dutney, 2012	Patients did not fall under this study's criteria for high risk.
Oshvandi, 2016	The results were not yet published.
Pérez-Marín, 2019	The results were not yet published.
Rattani, 2016	Full text is not available in English.
Steinhilber et al., 2017	The group that fit within the scope of this study was compared as an active control, and as a result any outcomes of this group were not reported in enough detail to determine the statistical significance of the intervention.
Suwanampa, 2016	Full text is not available in English.

Appendix F

Characteristics of Included Studies

Table F1
 Characteristics of Babamohamadi et al., 2017

Characteristic	Information	
Methods	2-armed randomized controlled trial	
Participants	Adults (n=54) diagnosed with end stage renal failure undergoing hemodialysis for at least six months with no major psychological issues or taking any psychiatric related medications but had a BDI score of 20 or higher. Participants were 43% female, median age of 53 years old, 89% married, 56% poor and 76% without a high school diploma. All participants were Muslims and understood Arabic.	
Interventions	<p><i>Aim:</i> To assess the importance of the words and rhythm of the Qur'an on depression in patients with end-stage renal disease.</p> <p><i>Interventionist:</i> A Shateri reader</p> <p><i>Duration:</i> 3 times a week for 20 minutes over the course of 1 Month</p> <p><i>Intervention:</i> Listening to a portion of the Qur'an (Surah Yasin) 5 minutes prior to and during the first 15 minutes of hemodialysis treatment.</p> <p><i>Comparative treatment:</i> Treatment as usual</p>	
Outcomes	Depression (Beck Depression Inventory-II)	
Notes	None	
Bias	Author's Judgement	Support for Judgement
Random Sequence Generation	Some concern	Randomization method was not stated.
Allocation Concealment	High risk	The patients were aware of the treatment they were receiving. Due to the nature of intervention concealment is impossible. While there were no recorded deviations from assigned treatment, data fabrication by participants is still a factor that may have influenced results.
Blinding	Low risk	Data were obtained by a survey and therefore had no potential bias provided by the researchers.
Incomplete Data	Low risk	Incomplete data were entirely removed from the analysis.
Selective Reporting	Some concern	Only one scale was measured, as determined according to the methods. However, no specifications were made if the plan for analysis was pre-determined prior to data availability.

Table F2
Characteristics of Babamohamadi et al., 2015

Characteristic	Information	
Methods	2-armed randomized controlled trial	
Participants	Adults (n=60) diagnosed with end stage renal failure undergoing hemodialysis for at least six months with no major psychological issues or taking any psychiatric related medications. Participants were 43% female, median age of 54 years old, 52% poor and 77% without a high school diploma. All participants were Muslims.	
Interventions	<p><i>Aim:</i> To assess the importance of words in the use of music therapy on anxiety in patients with end-stage renal disease.</p> <p><i>Interventionist:</i> A Shateri reader</p> <p><i>Duration:</i> 3 times a week for 20 minutes over the course of 1 Month</p> <p><i>Intervention:</i> Listening to a portion of the Qur'an (Surah Yasin) 5 minutes prior to and during the first 15 minutes of hemodialysis treatment.</p> <p><i>Comparative treatment:</i> Treatment as usual</p>	
Outcomes	Anxiety (Spielberger State-Trait Anxiety Inventory)	
Notes	None	
Bias	Author's Judgement	Support for Judgement
Random Sequence Generation	Low risk	Randomization method was done by coin toss and so outcomes were completely independent of researchers.
Allocation Concealment	High risk	The patients were aware of the treatment they were receiving. Due to the nature of intervention concealment is impossible. While there were no recorded deviations from assigned treatment, data fabrication by participants is still a factor that may have influenced results.
Blinding	Low risk	Data were obtained by a survey and therefore had no potential bias provided by the researchers.
Incomplete Data	Low risk	All outcome data were available for all patients.
Selective Reporting	Some concern	Only one scale was measured, as determined according to the methods. However, no specifications were made if the plan for analysis was pre-determined prior to data availability.

Table F3
Characteristics of Chimluang et al., 2017

Characteristic	Information	
Methods	Quasi-experimental	
Participants	Adults (n=48) diagnosed with terminal cancer. Participants were 56% female, median age of 53 years old, 73% married, and 50% without a primary education. All participants were Buddhist and understood Thai.	
Interventions	<p><i>Aim:</i> To assess the effect of Buddhist principles on spiritual well-being in terminal cancer patients</p> <p><i>Interventionist:</i> Researchers</p> <p><i>Duration:</i> 2-3 hours a day for three days each with a different intervention</p> <p><i>Intervention:</i> Basic Buddhist principles done in a small group setting</p> <ol style="list-style-type: none"> 1. Precept training: training for moral behavior facilitated by social interaction and sharing proud life moments. 2. Concentration training: games that encouraged Self-analysis, teamwork, sharing of meaning, and worshiping entities that gave hope for wish fulfilment. 3. Wisdom training: Relaxation, sharing times of overcoming hardship, and managing earthly things in preparation for the inevitable. <p><i>Comparative treatment:</i> Treatment as usual</p>	
Outcomes	Spiritual wellbeing (Spiritual Well-being Scale)	
Notes	Outcomes were measured just prior to interventions, post final intervention, and one week post initial assessment.	
Bias	Author's Judgement	Support for Judgement
Random Sequence Generation	High risk	Quasi-experimental studies are non-randomized by design. This was done to separate groups and prevent cross contamination.
Allocation Concealment	Some concern	The patients were aware of the treatment they were receiving. Due to the nature of intervention concealment is impossible. While there were no recorded deviations from assigned treatment, data fabrication by participants is still a factor that may have influenced results.
Blinding	Low risk	Data were obtained by a survey and therefore had no potential bias provided by the researchers.
Incomplete Data	Low risk	Incomplete data were entirely removed from the analysis.
Selective Reporting	Some concern	Only one scale was measured, as determined according to the methods. However, no specifications were made if the plan for analysis was pre-determined prior to data availability.

Table F4
Characteristics of Cole et al., 2012

Characteristic	Information	
Methods	3-armed randomized control trial	
Participants	Adults (n=83) diagnosed with unresectable metastatic melanoma (life expectancy 6-9 months). Participants were 45% female, median age of 54 years old, 66% married, and 69% with at least some college education. Participants in the spiritual meditation group (n=23) referred to the sacred as God (n=20) and/or Jesus (n=8). All participants claimed spirituality as important to them.	
Interventions	<p><i>Aim:</i> To assess the effects of spiritual and secular meditation on adjustment to illness in people with metastatic melanoma.</p> <p><i>Interventionist:</i> 2 Doctors of Clinical Psychology who were equally trained and randomized between groups</p> <p><i>Duration:</i> 5 one-hour long sessions over 4 months</p> <p><i>Intervention:</i> 3 treatment groups</p> <ol style="list-style-type: none"> 1. Secular Meditation: Discussion of physical and emotional well-being, as well as other patient concerns, and then relaxation exercises 2. Spiritual Meditation: Discussion of physical, emotional, and spiritual well-being, as well as other patient concerns; one type of spiritual meditation depending on the session number: time of meaning, healing light, heart, letting go, spiritual transformation. 3. Usual care 	
Outcomes	Religious involvement (self-reported information), optimism (LOT-R), psychological and physical adjustment (the center for epidemiological studies-depression scale, the positive and negative affective states scale, The McGill Quality of Life Scale, illness status, program preference, session evaluation, manipulation check, and home practice)	
Notes	None	
Bias	Author's Judgement	Support for Judgement
Random Sequence Generation	Some concern	Randomization method was not stated.
Allocation Concealment	High risk	The patients were aware of if they were receiving treatment although unlikely that they knew of the other experimental group. Their knowledge is unlikely to have affected the results as secular meditation therapists redirected spiritual interactions introduced by patients. Additionally, sessions were monitored by the researchers for adherence and analyzed by a third party for adherence. However, data analysis for this review was did not account for active controls, since a true meta-analysis was not conducted from data

		insufficiency. As a result, this category has been marked as high risk for the purposes of this review. A true meta-analysis could presumably have this study as low risk for this category.
Blinding	Low risk	Most data were obtained by a survey or other objective means such as medical records and therefore had no potential bias provided by the researchers. Evaluations were confirmed by multiple parties.
Incomplete Data	Low risk	Only about 35% of the data were available due to participant loss as expected by the nature of the study. Groups were ensured to be randomized at each stage and there was consistency in loss between groups and with between participants of the study and the population. Analyses accounted for data loss by removing participants from each stage.
Selective Reporting	Some concern	Outcome measures were specific, but generally only assessed via one method per outcome. Additionally, analysis methods were adapted after the data had been obtained which presents concerns as well.

Table F5
Characteristics of Frih et al., 2017

Characteristic	Information
Methods	2-arm randomized control trial
Participants	Adults males (n=53) diagnosed with end stage renal failure undergoing hemodialysis. Participants had a median age of 65 years old. All participants were Muslims.
Interventions	<p><i>Aim:</i> To assess the effect of listening to the Qur'an on the amplification of the effects of physical exercise.</p> <p><i>Interventionist:</i> Not specified, presumably the researchers</p> <p><i>Duration:</i> 24-weeks</p> <p><i>Intervention:</i></p> <p>Days 1, 3, 5, 7: Endurance resistance training (Timed up and Go test and six-minute walk test)</p> <p>Days 2, 4, 6: Hemodialysis while listening to the Qur'an 5 minutes prior to and during the first 15 minutes of hemodialysis treatment. Picking up where they left off at the previous session.</p> <p><i>Comparative treatment:</i></p> <p>Days 1, 3, 5, 7: Endurance resistance training (Timed up and Go test and six-minute walk test)</p> <p>Days 2, 4, 6: Hemodialysis</p>

Outcomes	Quality of life (Short-form health survey) and anxiety and depression (Hospital anxiety and depression scale) measured at baseline and study conclusion
Notes	None

Bias	Author's Judgement	Support for Judgement
Random Sequence Generation	Some concerns	Randomization method was not stated.
Allocation Concealment	High risk	The patients were aware of the treatment they were receiving. Due to the nature of intervention concealment is impossible. While there were no recorded deviations from assigned treatment, data fabrication by participants is still a factor that may have influenced results.
Blinding	High risk	Data were obtained by a survey facilitated by nurses as not all patients would be able to complete them by themselves. It seems likely that the nurses may have been privy to patient intervention assignment prior to final survey as they would be present at the interventions and the intervention is unconcealable by nature. Stating that the blindness of the nurses was crucial yet not included, more information is needed.
Incomplete Data	Low risk	All outcome data were available for all patients.
Selective Reporting	Some concerns	Only one scale was measured, as determined according to the methods. However, no specifications were made if the plan for analysis was pre-determined prior to data availability.

Appendix G

Effects of Interventions on Outcome Measures

Basic Buddhist Principles

Table G1
Effects of Basic Buddhist Principles

Weeks	0	1
Spiritual Health		
<u>Spiritual Well-being Scale from Chimluang et al. (2017)</u>		
Control	100.72 (13.9)	102.64 (16.5)
Intervention	107.34 (11.05)	113.35 (7.41)
Psychological Health		
No information.		
Physical Health		
No information.		

Note. There were no results for the psychological or physical health categories. Results were reported: Mean (Standard Deviation).

Spiritual outcomes.

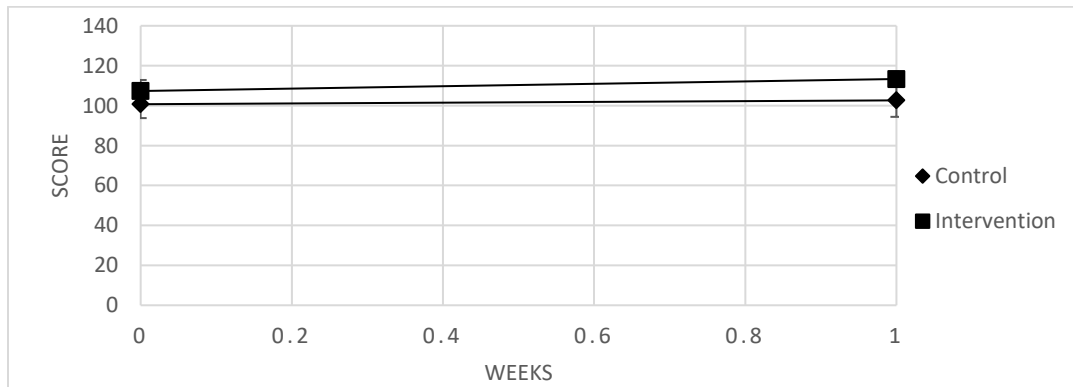


Figure G1. The mean spiritual wellbeing of the control and intervention groups in Chimluang et al. (2017) from 0 to 1 weeks with linear trendline. This variable was scored using the Spiritual Well-being Scale (SWBS) by Paloutzian and Ellison (1982). Points were plotted for mean scores, and error bars indicate standard deviation.

Sacred Text Reading

Table G2

Effects of Sacred Text Reading

Weeks	0	4	24
Spiritual Health			
No information.			
Psychological Health			
Anxiety			
<u>State-trait Anxiety Inventory from Babamohamadi et al. (2015)</u>			
Control	118.3 (14.5)	120.1 (14.4)	—
Intervention	128.5 (13)	82.1 (11.3)	—
<u>Hospital Anxiety and Depression Scale from Frih et al. (2017)</u>			
Control	16.2 (1.5)	—	13.2 (1.1)
Intervention	15.8 (2.5)	—	9.3 (2.1)
Depression			
<u>Beck Depression Inventory II from Babamohamadi et al. (2017)</u>			
Control	29.3 (9)	31.6 (9.2)	—
Intervention	33.6 (6.7)	14.5 (4.8)	—
<u>Hospital Anxiety and Depression Scale from Frih et al. (2017)</u>			
Control	15.1 (2.1)	—	11.3 (2)
Intervention	14.9 (2.1)	—	9.4 (1.9)
General Mental Health			
<u>36-item Short-Form Health Survey from Frih et al. (2017)</u>			
Control	53.8 (10.1)	—	60.7 (11.7)
Intervention	53.2 (9.1)	—	76.3 (10.2)
Physical Health			
<u>36-item Short-Form Health Survey from Frih et al. (2017)</u>			
Control	52.5 (9.5)	—	64.9 (11.7)
Intervention	49.7 (7.9)	—	70 (7.1)

Note. Information in this table was obtained from 3 different studies using 4 different measurement tools. There were no results for the spiritual health category. Results were reported: Mean (Standard Deviation).

Psychological outcomes.

Anxiety.

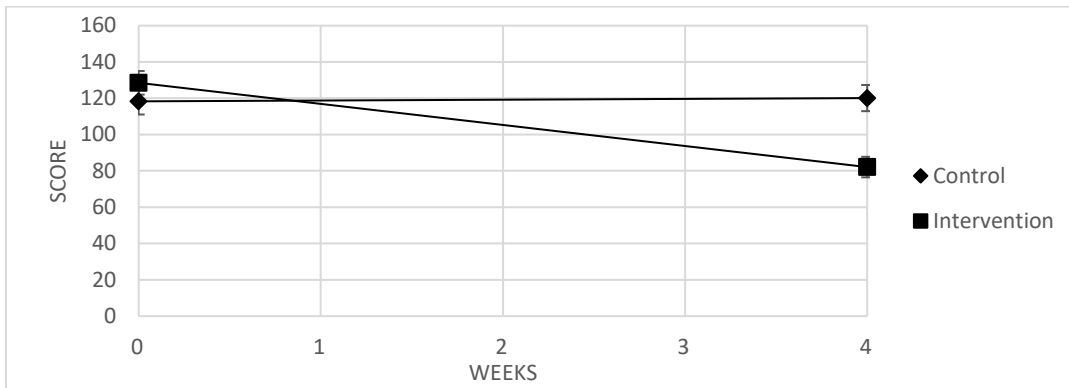


Figure G2. The mean prevalence of anxiety of the control and intervention groups in Babamohamadi et al. (2015) from 0 to 4 weeks with linear trendline. This variable was scored using the State-Trait Anxiety Inventory by Spielberger (1983). Points were plotted for mean scores, and error bars indicate standard deviation.

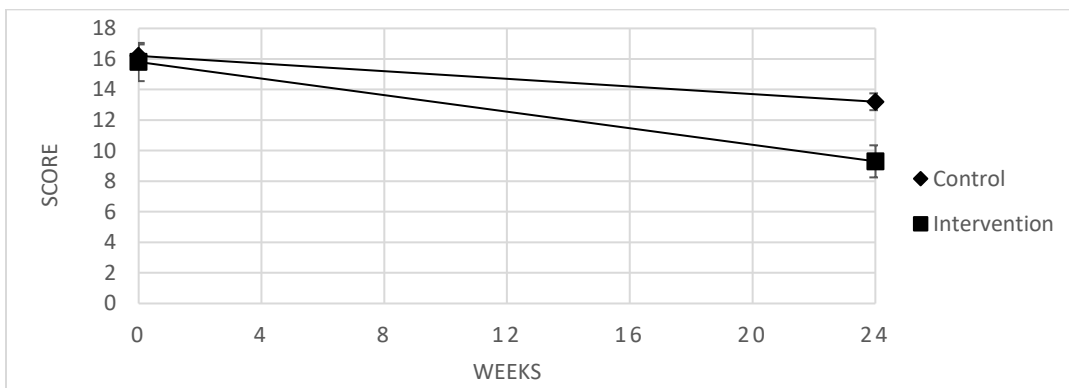


Figure G3. The mean prevalence of anxiety of the control and intervention groups in Frih et al. (2017) from 0 to 24 weeks with linear trendline. This variable was scored using the Hospital Anxiety and Depression Scale by Zigmond and Snaith (1983). Points were plotted for mean scores, and error bars indicate standard deviation.

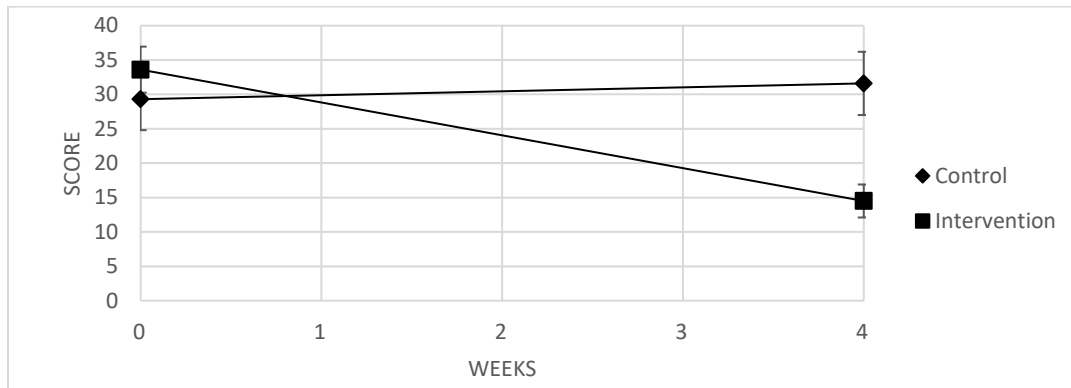
Depression.

Figure G4. The mean prevalence of depression of the control and intervention groups in Babamohamadi et al. (2017) from 0 to 4 weeks with linear trendline. This variable was scored using the Beck Depression Inventory II by Beck, Steer, and Brown (1996). Points were plotted for mean scores, and error bars indicate standard deviation.

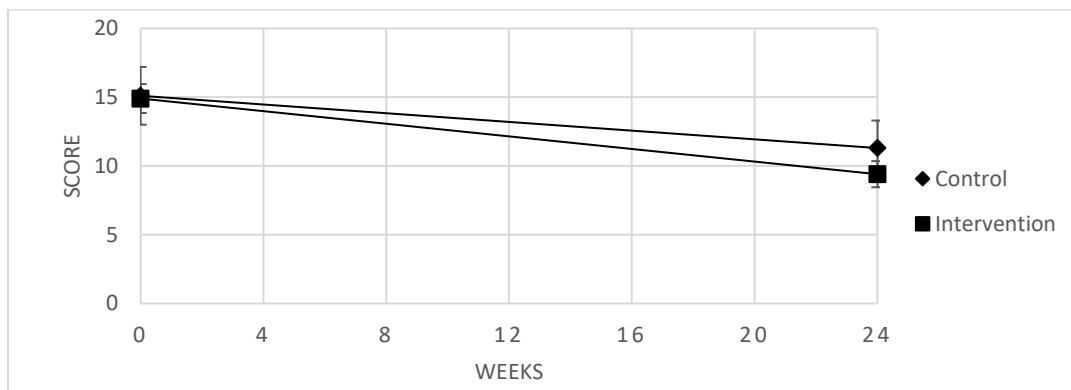


Figure G5. The mean prevalence of depression of the control and intervention groups in Frih et al. (2017) from 0 to 24 weeks with linear trendline. This variable was scored using the Hospital Anxiety and Depression Scale by Zigmond and Snaith (1983). Points were plotted for mean scores, and error bars indicate standard deviation.

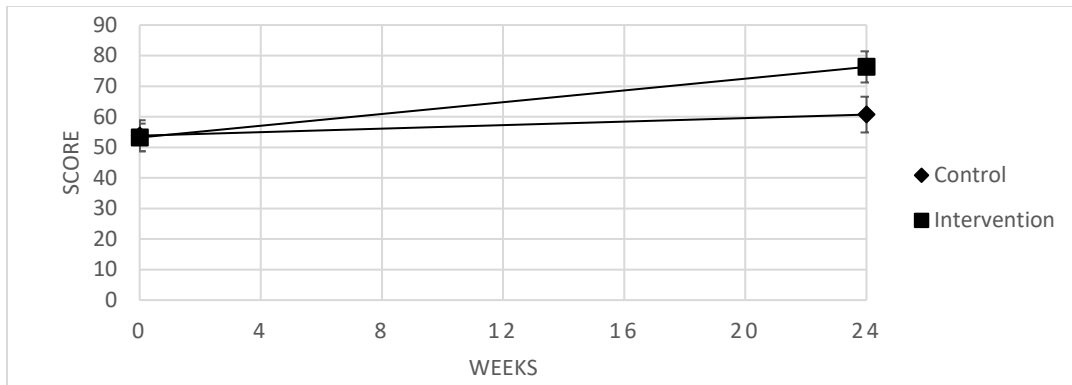
General mental health.

Figure G6. The mean quality mental health of the control and intervention groups in Cole et al. (2012) from 0 to 16 weeks with linear trendline. This variable was scored using the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) by Ware and Sherbourne (1992). Points were plotted for mean scores, and error bars indicate standard deviation.

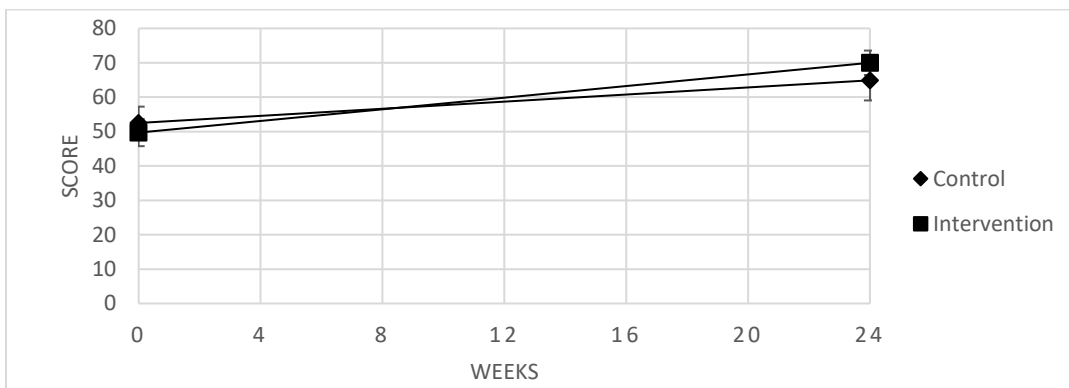
Physical outcomes.

Figure G7. The mean physical component of the control and intervention groups in Frih et al. (2017) from 0 to 24 weeks with linear trendline. This variable was scored using the Medical Outcomes Study 36-item Short-Form Health Survey (SF-36) by Ware and Sherbourne (1992). Points were plotted for mean scores, and error bars indicate standard deviation.

Spiritual Meditation

Table G3

Effects of Spiritual Meditation

Weeks	0	1	8	16
Spiritual Health				
<u>McGill Quality of Life Scale from Cole et al. (2012)</u>				
Control	6.87 (2.26)	6.8 (1.72)	6.68 (1.72)	6.26 (2.38)
Intervention	7.96 (1.22)	7.32 (1.55)	7.1 (1.96)	6.76 (1.54)
Psychological Health				
<u>Center for Epidemiological Studies-Depression from Cole et al. (2012)</u>				
Control	1.99 (0.66)	2.19 (0.56)	2.24 (0.74)	2.11 (0.84)
Intervention	1.7 (0.51)	1.74 (0.62)	1.65 (0.54)	1.7 (0.58)
<u>McGill Quality of Life Scale from Cole et al. (2012)</u>				
Control	6.35 (2.15)	5.82 (1.89)	6.11 (1.475)	6.4 (2.6)
Intervention	6.75(2.15)	6.64 (2.73)	7.5 (1.27)	6.63 (1.94)
<u>Positive and Negative Affect States Scale (Negative) from Cole et al. (2012)</u>				
Control	2.44 (0.77)	2.42 (0.79)	2.27 (0.86)	2.16 (0.89)
Intervention	2.21 (0.59)	1.75 (0.8)	1.6 (0.47)	1.74 (0.74)
<u>Positive and Negative Affect States Scale (Positive) from Cole et al. (2012)</u>				
Control	2.97 (0.76)	2.82 (0.77)	2.82 (0.8)	2.84 (1.05)
Intervention	3.35 (0.59)	3.24 (0.8)	3.11 (0.47)	3.37 (0.74)
Physical Health				
<u>McGill Quality of Life Scale from Cole et al. (2012)</u>				
Control	5.73 (2.28)	5.67 (2.12)	5.75 (2.32)	5.37 (2.98)
Intervention	6.76 (2.01)	6.69 (2.08)	6.73 (1.61)	6.74 (1.28)

Note. Information in this table was obtained from 1 study using 3 different measurement tools. Data in the Physical Health category was based on subjective experience; mortality data is not included in this table. All results were reported: Mean (Standard Deviation).

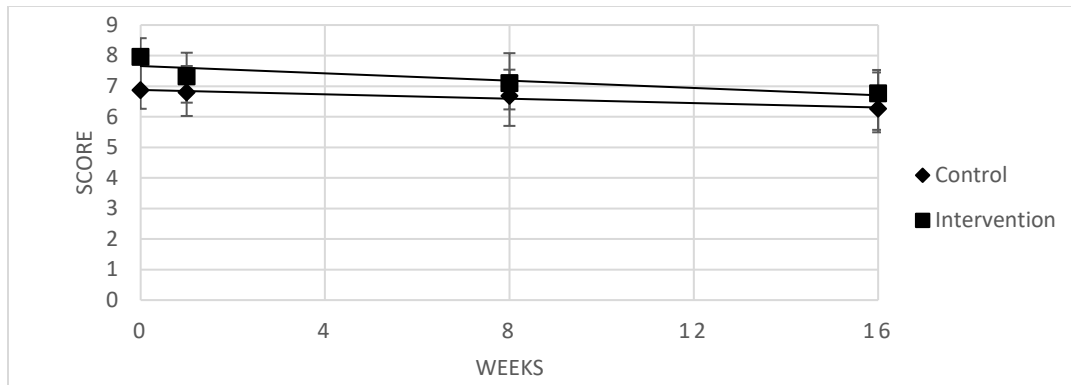
Spiritual outcomes.

Figure G8. The mean spiritual quality of life for the control and intervention groups in Cole et al. (2012) from 0 to 16 weeks with linear trendline. This variable was scored using the McGill Quality of Life Scale by Cohen et al. (1995). Points were plotted for mean scores, and error bars indicate standard deviation.

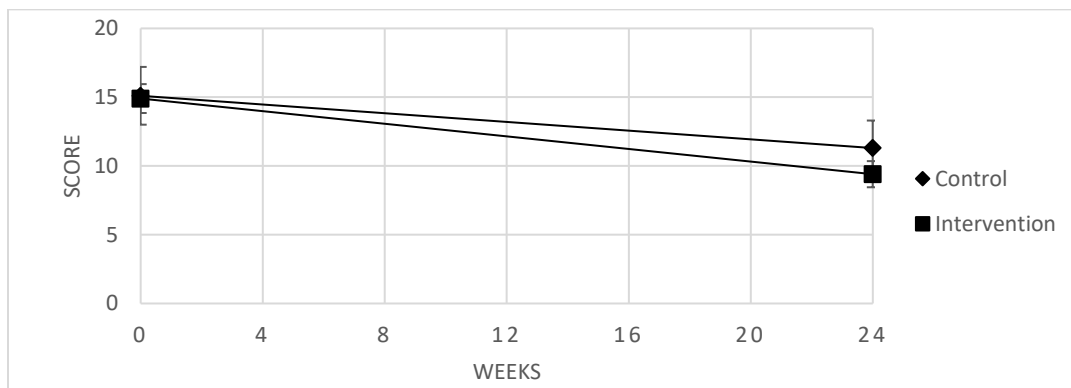
Psychological outcomes.***Depression.***

Figure G9. The mean prevalence of depression of the control and intervention groups in Cole et al. (2012) from 0 to 16 weeks with linear trendline. This variable was scored using the Center for Epidemiological Studies-Depression scale (Radloff, 1977). Points were plotted for mean scores, and error bars indicate standard deviation.

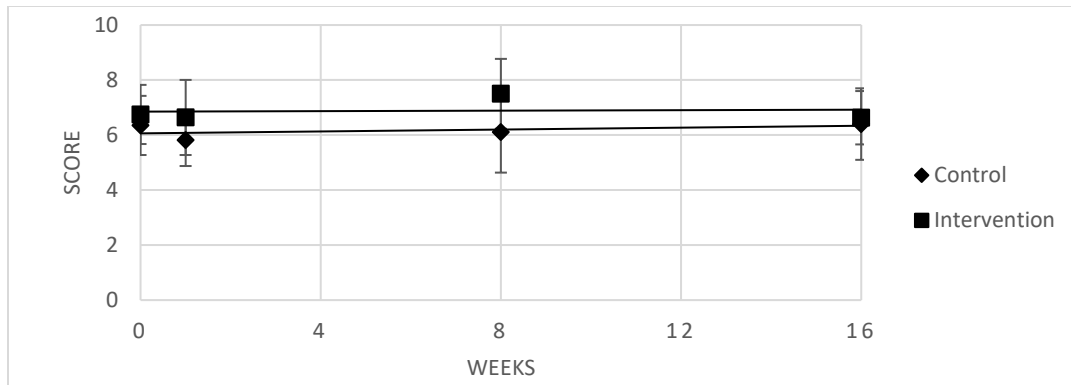
General mental health.

Figure G10. The mean quality mental health of the control and intervention groups in Cole et al. (2012) from 0 to 16 weeks with linear trendline. This variable was scored using the McGill Quality of Life Scale by Cohen et al. (1995). Points were plotted for mean scores, and error bars indicate standard deviation.

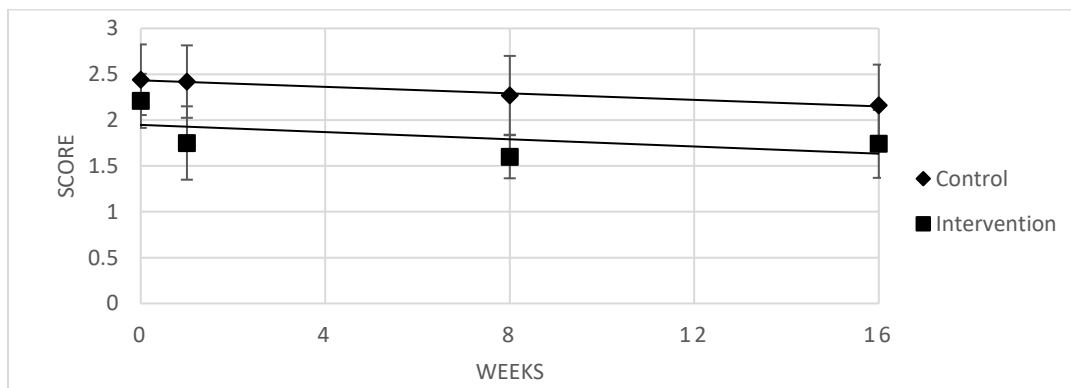
Negative affect.

Figure G11. The mean negative affect of the control and intervention groups in Cole et al. (2012) from 0 to 16 weeks with linear trendline. This variable was scored using the Positive and Negative Affect States scale by Watson et al. (1988). Points were plotted for mean scores, and error bars indicate standard deviation.

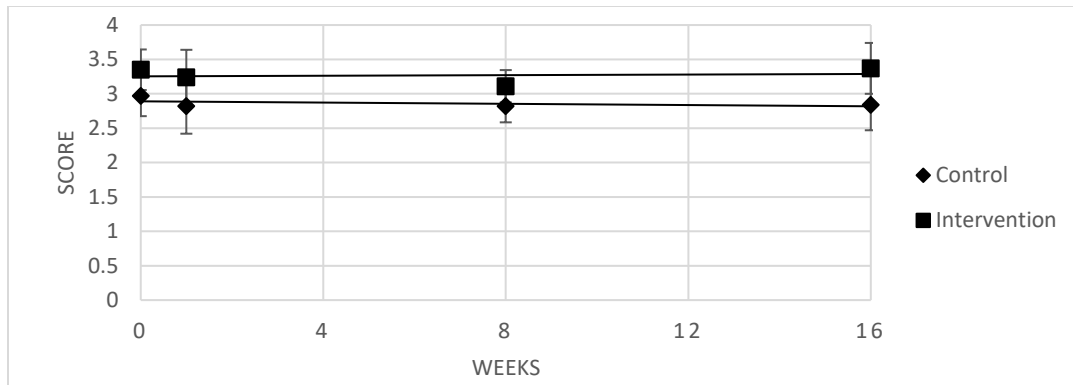
Positive affect.

Figure G12. The mean positive affect of the control and intervention groups in Cole et al. (2012) from 0 to 16 weeks with linear trendline. This variable was scored using the Positive and Negative Affect States scale by Watson et al. (1988). Points were plotted for mean scores, and error bars indicate standard deviation.

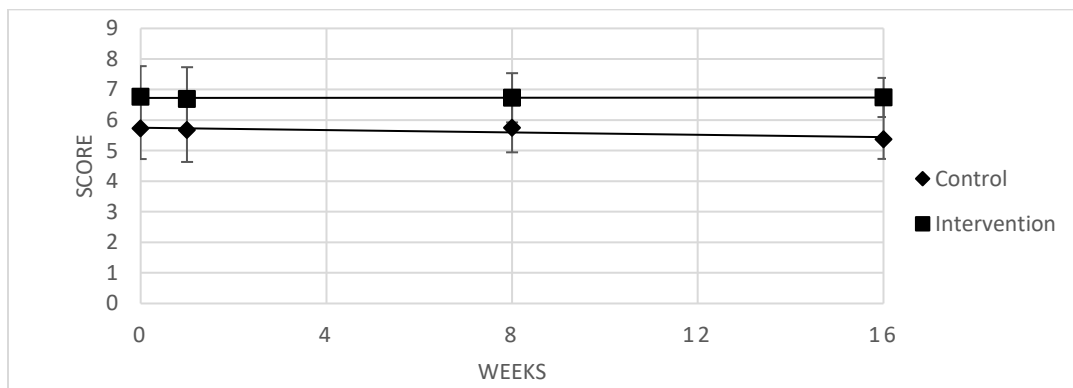
Physical outcomes.

Figure G13. The mean physical wellbeing of the control and intervention groups in Cole et al. (2012) from 0 to 16 weeks with linear trendline. This variable was scored using the McGill Quality of Life Scale by Cohen et al. (1995). Points were plotted for mean scores, and error bars indicate standard deviation.