

Spirit & Soul Overview, Part II

What Does the Research Tell Us About Spirituality and Health?

One should not be surprised that any effect of ritual, meditation, prayer, or potentially any other religious or spiritual practice would express itself through physical mechanisms.

Religiosity/spirituality, like all of reality, is multileveled or stratified.¹

Research may not ever fully answer all our questions in the area of spirituality and health. In fact, some argue that understanding Spirit & Soul requires the use of “other ways of knowing” such as reflection, personal experiences, intuition, ongoing personal exploration, and creating and appreciating the arts. (For more on this, check out [“How Do You Know That? Epistemology and Health.”](#))

That said, research does offer some important insights about the current state of the evidence regarding spiritual and religious issues and their impact on health and well-being. As you review the research findings described below, keep in mind that some of the studies lump religion and spirituality together, as “religiosity/spirituality” (R/S), despite the distinctions between the two that were noted earlier. If they focus just on one or the other, that is noted.

1. Religiosity and spirituality affect our physiology.

In this era of mapping brain activity using devices like functional magnetic resonance imaging (fMRI) and single-photon emission computed tomography (SPECT) machines, we have some insights about how spirituality and religiosity affect the brain at a physiological level. This area of study is sometimes called “Neurotheology.” There are also studies that test levels of various chemical compounds in the body to see if they shift when people are having spiritual and/or religious experiences. Examples of study findings include the following: ¹⁻⁴

- Prayer and meditative states activate the prefrontal structures of the brain.
- They also increase blood flow to the other parts of the brain, including the frontal cortices, cingulate gyri, and thalami.
- They decrease flow to the superior parietal cortices. When this occurs, people describe the feeling that they lose their sense of “self”; that they no longer feel like they have physical boundaries or limits.
- With prayer and meditation, the left hemisphere overall is positively affected. There is a link with this activation and immune response.
- Higher dopamine levels in the prefrontal cortex correspond with a higher level of religiosity. Those with loss of dopamine (e.g. people with Parkinson’s disease) lose their religiosity and spirituality.
- The frontal lobes of the brain become more active when a person engages in pro-social behaviors like perspective taking, empathy, and forgiveness.
- People who have more R/S have thicker of cortical regions of the brain. This can be protective against depression, which is associated in many people with cortical thinning.⁵

- Affirmation of one's values and beliefs lowers cortisol (and neuroendocrine stress) levels.
- These physiological changes happen in part because of our experiences; it is not simply that some people are born with brains that have more activity in certain area. Both "nature" and "nurture" are important.

2. Religious affiliation and spiritual practices are linked to decreased mortality.

Data from the Nurses' Health Study (focused on over 74,000 participants over 16 years) found that mortality rate for those who attended weekly religious services was 845 deaths per 100,000 people per year, compared to 1229 for those who had never attended.⁶ This represents a hazard ratio of 0.74. There seems to be a dose response, too; attending more than one service per week lowers mortality risk even more.

A meta-analysis of all available studies on spirituality and religiosity done in 2000 found a 22% lower mortality rate (odds ratio 0.78) for those who attended religious gatherings at least once weekly.⁷ This study was criticized for not demonstrating that this 22% represented a "clinically significant change." The authors responded that the impact was actually quite meaningful, noting that, statistically speaking, the benefits of religiosity and spirituality, according to their findings, were comparable to the following:

- The positive mortality benefit of treating people with a known heart disease history and who have high cholesterol with statin drugs
- The inverse of the amount of harm caused by heavy drinking (though it would be oversimplifying to say that going to church negates the health effects of heavy drinking)
- The beneficial effects of exercise-based rehabilitation following a heart attack.

Other, more recent, studies also indicate a mortality benefit for those who attend religious services. For example, in a study that followed nearly 5,300 adults for 28 years, researchers found that those who attended religious services one or more times weekly had, on average, a 23% lower mortality rate.⁸ This was *after* correcting for age, sex, education, ethnicity, baseline health, body mass index, and *even social connection*, which is often cited as a key element of religious practices that contributes to health benefits.

What are some of the other study findings in this area? Some studies indicate that Orthodox Jewish people seem to be healthier than secular Jewish people. A 1986 study found that the odds ratios for first heart attacks were 4.2 for secular Jewish men and 7.3 for women compared to those who described themselves as Orthodox.⁹ Similarly, a study of male Israelis found that Orthodox Jewish men had a 20% lower risk of fatal coronary heart disease compared to nonreligious Israeli men.¹⁰ In both studies, researchers adjusted for various cardiac risk factors, such as elevated blood pressures and smoking.

Beyond attending religious services, having "a higher purpose in life" is also linked to better survival. A meta-analysis that included 10 studies with over 136,000 participants found that those with a sense of "higher purpose" had a relative risk of death or cardiovascular events of 0.83¹¹.

Why mortality improves is the subject of much speculation.¹² Adjustment for many other variables (eg, being religious or spiritual correlates with healthy lifestyle behaviors, strong social connections, more positive emotions, more time in a meditative state, more optimism, better socioeconomic status) does NOT explain away these benefits¹³. Controlling for all those variables, the association between spirituality/religiosity and health remains “moderately robust.”

3. Religiosity and Spirituality (R/S) also have an impact on mental health, physical conditions, coping, and healthy lifestyle behaviors.

The number of studies on R/S has grown exponentially in recent years.¹⁴ Harold Koenig, one of the main researchers in religion, spirituality, and health, summarized the research findings based on number of favorable and unfavorable studies for different conditions from 1932-2010. In general, the overwhelming majority of studies—and particularly those with the best ratings as far as their methodology—have favorable findings. Few studies have negative findings; those that are not positive tend to find no effect.

Mental Health Issues

Most studies of religion/spirituality and health (over 80%) deal with mental health-related topics.¹⁵ A 2011 meta-analysis focused on the use of psychotherapy tailored to religious and spiritual perspectives. Doing so resulted in “enhanced psychological outcomes.”¹⁶ A 2007 study concluded, “The incorporation of religion and spirituality into psychotherapy should follow the desires and needs of the client.”¹

- *Well-being* was found to improve in 256 out of 326 studies prior to 2010. Only 3 studies reported a negative effect¹⁴. R/S is associated overall with overall Quality of Life for both well and ill patients, according to a variety of measures.¹²
- *Meaning and purpose* were positively affected in 42 out of 45 studies, and no studies showed any negative effects.
- *Hope and optimism* were also related to R/S. Three-fourths of studies (prior to 2010) report that hope is enhanced, and 80% of studies showed benefits for optimism, in more religious and spiritual people. No studies showed that R/S decreased these traits.
- There were also significant associations with *volunteering and altruism*. 15 out of 20 of the best studies reported positive relationships and two found negative associations (both related to organ donation).
- *Other traits*. People scoring higher on R/S score lower on ratings of psychoticism and neuroticism and higher in extraversion, agreeableness, conscientiousness, and openness to experience.
- *Depression*. People at high risk for depression, if they report R/S is very important to them, have a 90% lower incidence.¹⁷ A 2012 systematic review concluded that, taken in sum, there was a moderate effect size when it came to treating depression with R/S-related interventions. In a 2015 review, a similar effect was not found¹⁸, but then a 2017 review including over 5,500 study participants concluded that a high level of personal spirituality decreases the relative risk of moderate depression by half.¹⁹
- *Suicide*. Data from the NHANES-II Survey, which included over 20,000 people, found that risk of dying from suicide was 94% lower for people who went to at least 24 religious services yearly, compared to those who attended less often.²⁰ A 2016 review of 89 articles found that religious service attendance and having a religious affiliation does not prevent suicidal *ideation*, but does protect against suicide *attempts*.²¹ The protective

effect may vary based on what specific religion a person follows. A 2015 review concluded, "Preliminary evidence suggests that interventions and treatments that foster personal meaning and self-compassion in addition to reducing guilt, shame, and self-deprecation can reduce suicidal behavior among military personnel and Veterans."²²

- *Anxiety.* People who both pray and feel they have a secure attachment to God have less anxiety; if they feel an insecure attachment, they have more anxiety.²³ Studies of R/S and anxiety show a moderate effect size, according to a 2017 review.²⁴
- *Substance use disorders.* In a group of over 17,000 adolescents, level of religiosity was inversely related to use of tobacco, illegal drugs, and prescription drugs, as well as to heavy drinking.²⁵ The success of Alcoholics Anonymous is due, to a large degree, on the way it increases participants' spirituality.²⁶ Degree of R/S correlates with better drinking outcomes in alcoholics at nine months.

Physical Health Issues

R/S can prove beneficial to more "physical" symptoms as well.

- *Pain.* A 2008 study including 37,000 people who took the Canadian Community Health Survey found that those reporting they were religious had less chronic pain from fibromyalgia, back pain, and migraines.²⁷ People who reported being spiritual but who did not attend services had a *higher* likelihood of being in pain. Interestingly, people who reported both being spiritual and attending services were most likely to do well. Pain intensity, in general, is lower for people with more R/S.²⁸ One study indicated that people going through rehabilitation actually indicated that spiritual distress was a more significant contributor to their life satisfaction than the physical disabilities caused by their injuries.²⁹ A 2015 review pointed out that pain needs to be treated from a bio-psycho-social-spiritual framework, with spiritual care being "crucial" to pain management.³⁰ Accessing religious and spiritual resources is more related to decreased severity of arthritis pain, chronic pain, migraines, and acute pain. Often in these types of studies, it seems that it is not so much that the pain level is decreased as that the ability to tolerate it is improved.³¹
- *Cancer.* For a group 20 well-designed studies focused on cancer incidence, 12 reported improved outcomes/better risk. None reported worse outcomes.¹⁴ One review found that R/S interventions seem to stabilize psychoneuroimmunological outcomes for breast cancer patients,³² but other reviews do not find the relationship quite so clear-cut.³³
- *Hypertension.* Data from the Third National Health and Nutrition Examination Survey (NHANES III) found that people attending weekly religious services had a systolic blood pressure 1.5 mmHg lower than nonattenders.³⁴ People who attended services more than once a week had an average decrease of 3 mm Hg. This was after various socioeconomic factors were accounted for.
- *Heart disease.* In 12 of 19 studies done before 2010, there was a significant and favorable relationship between coronary heart disease and high R/S.¹⁴ People with lower Spiritual Orientation Inventory scores tend to have progression of coronary artery disease, whereas higher scorers have regression.³⁵
- *HIV.* Viral load³⁶ and CD4 counts³⁷ are favorably influenced by religiosity as well.

Coping

Religiosity and spirituality have been found to help people cope with many problems, including:^{15,38}

- Bereavement
- Cancer
- Chronic pain
- Dental problems
- Diabetes
- General medical illness
- Heart disease
- Irritable bowel syndrome
- Lung disease
- Lupus
- Natural disasters
- Neurological disorders
- Overall stress
- Psychiatric illness
- Vision problems
- The effects of war

Healthy Lifestyle Behaviors

Religion and spirituality also influence health behaviors.³⁸ A 2012 systematic review showed likelihood of smoking decreases as spirituality and religiosity increase. Similarly, 16 of 21 studies rated as being of “good methodological quality” found positive associations with exercise; only 2 found negative associations. Thirteen out of 21 studies found a link between R/S and a healthy diet, and only 1 found a negative connection. Of note, religious/spiritual people tend to be at higher risk for obesity, with the exception of people who are Amish, Jewish, or Buddhists. In the 25 studies Koenig and colleagues rated in their comprehensive 2012 review, 11 reported that being overweight is associated with being more spiritual or religious, while 5 found the opposite. Forty-two of 50 good-quality studies found that safer sexual practices strongly correlated with being religious as well.

4. Prayer may have therapeutic benefit, but the literature is not definitive.

There are different types of prayer. Intercessory prayer, which involves praying for another person, has been explored in several fascinating studies, including the following:

- Byrd and colleagues found, in a coronary care unit population, that the intervention group, while not experiencing lower mortality rates if they were prayed for, needed fewer antibiotics, did not require intubation (as did many people in the control group), and were less likely to develop pulmonary edema.³⁹
- A 2017 trial including 92 Muslim patients with migraines found that mean pain intensity (on a visual analog scale) decreased in the group that received propranolol and prayer versus propranolol alone.⁴⁰ The prayer group received 45 minutes of intercessory prayer weekly for 8 weeks but the study did not clarify who was doing the praying.
- In another study of 40 patients with AIDS, which controlled for age, CD4 counts, and AIDS-defining illnesses, there were several differences between the prayed-for patients and controls.⁴¹ In the prayer group, there were fewer new AIDS-defining illnesses, illness severity was scored as lower, and there was a need for fewer (and relatively shorter) hospitalizations and doctor visits. Prayed-for patients also rated their mood more favorably.
- Sixty percent of chronic pain patients report that they use prayer to help them cope.⁴² Prayer is identified in most research as a positive resource for reducing pain and enhancing psychological well-being and positive affect.⁴³

While these studies have had promising results, some have not shown an effect. Further research is needed. As might be expected, methodology can be a challenge for studies of this nature.⁴⁴

5. For some, there can be negative aspects to spirituality and religion.

For all this favorable data, it is important to remember that not everyone derives benefit from being religious or spiritual. There are studies (typically a small minority) that find negative correlations between R/S and health. While harm is quite unlikely, potential negative impacts should be borne in mind. Based on their beliefs, people may in rare circumstances do the following:

- Stop life-saving medications
- Fail to seek care
- Refuse blood transfusions
- Refuse prenatal care
- Ignore or promote child abuse or religious abuse
- Replace mental health care with religion
- Get entangled in a religious community—or cult—that has negative effects on health.

Individualizing care is vital, to ensure that any spiritual components of a PHP are truly appropriate to a given person's belief system and comfort level. It goes without saying that a clinician should NEVER attempt to impose his or her beliefs on a patient. Proselytizing is not appropriate.^{45,46}

Author(s)

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References

1. Seybold KS. Physiological mechanisms involved in religiosity/spirituality and health. *J Behav Med.* 2007;30(4):303-309.
2. van Elk M, Aleman A. Brain mechanisms in religion and spirituality: An integrative predictive processing framework. *Neurosci Biobehav Rev.* 2017;73:359-378.
3. Borg J, Andree B, Soderstrom H, Farde L. The serotonin system and spiritual experiences. *Am J Psychiatry.* 2003;160(11):1965-1969.
4. Granqvist P, Nkara F. Nature meets nurture in religious and spiritual development. *Br J Dev Psychol.* 2017;35(1):142-155.
5. Miller L, Bansal R, Wickramaratne P, et al. Neuroanatomical correlates of religiosity and spirituality: a study in adults at high and low familial risk for depression. *JAMA psychiatry.* 2014;71(2):128-135.
6. Li S, Stampfer MJ, Williams DR, VanderWeele TJ. Association of religious service attendance with mortality among women. *JAMA Intern Med.* 2016;176(6):777-785.

7. McCullough ME, Hoyt WT, Larson DB, Koenig HG, Thoresen C. Religious involvement and mortality: a meta-analytic review. *Health Psychol.* 2000;19(3):211-222.
8. Strawbridge WJ, Cohen RD, Shema SJ, Kaplan GA. Frequent attendance at religious services and mortality over 28 years. *Am J Public Health.* 1997;87(6):957-961.
9. Friedlander Y, Kark JD, Stein Y. Religious orthodoxy and myocardial infarction in Jerusalem--a case control study. *Int J Cardiol.* 1986;10(1):33-41.
10. Goldbourt U, Yaari S, Medalie JH. Factors predictive of long-term coronary heart disease mortality among 10,059 male Israeli civil servants and municipal employees. A 23-year mortality follow-up in the Israeli Ischemic Heart Disease Study. *Cardiology.* 1993;82(2-3):100-121.
11. Cohen R, Bavishi C, Rozanski A. Purpose in life and its relationship to all-cause mortality and cardiovascular events: a meta-analysis. *Psychosom Med.* 2016;78(2):122-133.
12. Mishra SK, Togneri E, Tripathi B, Trikamji B. Spirituality and religiosity and its role in health and diseases. *J Relig Health.* 2017;56(4):1282-1301.
13. VanderWeele TJ, Balboni TA, Koh HK. Health and spirituality. *JAMA.* 2017;318(6):519-520.
14. Koenig HG. Religion, spirituality, and health: a review and update. *Adv Mind Body Med.* 2015;29(3):19-26.
15. Maugans TA. The SPIRITual history. *Arch Fam Med.* 1996;5(1):11-16.
16. Worthington EL, Jr., Hook JN, Davis DE, McDaniel MA. Religion and spirituality. *J Clin Psychol.* 2011;67(2):204-214.
17. Miller L, Wickramaratne P, Gameraoff MJ, Sage M, Tenke CE, Weissman MM. Religiosity and major depression in adults at high risk: a ten-year prospective study. *Am J Psychiatry.* 2012;169(1):89-94.
18. Goncalves JP, Lucchetti G, Menezes PR, Vallada H. Religious and spiritual interventions in mental health care: a systematic review and meta-analysis of randomized controlled clinical trials. *Psychol Med.* 2015;45(14):2937-2949.
19. Portnoff L, McClintock C, Lau E, Choi S, Miller L. Spirituality cuts in half the relative risk for depression: Findings from the United States, China, and India. *SCP.* 2017;4(1):22-31.
20. Kleiman EM, Liu RT. Prospective prediction of suicide in a nationally representative sample: religious service attendance as a protective factor. *Br J Psychiatry.* 2014;204:262-266.
21. Lawrence RE, Oquendo MA, Stanley B. Religion and suicide risk: a systematic review. *Arch Suicide Res.* 2016;20(1):1-21.
22. Bryan CJ, Graham E, Roberge E. Living a life worth living: Spirituality and suicide risk in military personnel. *SCP.* 2015;2(1):74-78.
23. G. Ellison C, Bradshaw M, Flannelly K, C. Galek K. *Prayer, attachment to God, and symptoms of anxiety-related disorders among U.S. adults.* Vol 752014.
24. Goncalves JPB, Lucchetti G, Menezes PR, Vallada H. Complementary religious and spiritual interventions in physical health and quality of life: a systematic review of randomized controlled clinical trials. *PLoS One.* 2017;12(10):e0186539.
25. Ford JA, Hill TD. Religiosity and adolescent substance use: evidence from the national survey on drug use and health. *Subst Use Misuse.* 2012;47(7):787-798.
26. Kelly JF, Stout RL, Magill M, Tonigan JS, Pagano ME. Spirituality in recovery: a lagged mediational analysis of alcoholics anonymous' principal theoretical mechanism of behavior change. *Alcohol Clin Exp Res.* 2011;35(3):454-463.
27. Baetz M, Bowen R. Chronic pain and fatigue: associations with religion and spirituality. *Pain Res Manag.* 2008;13(5):383-388.
28. Rippentrop AE, Altmaier EM, Chen JJ, Found EM, Keffala VJ. The relationship between religion/spirituality and physical health, mental health, and pain in a chronic pain population. *Pain.* 2005;116(3):311-321.
29. Tate DG, Forchheimer M. Quality of life, life satisfaction, and spirituality: comparing outcomes between rehabilitation and cancer patients. *Am J Phys Med Rehabil.* 2002;81(6):400-410.
30. Siddall PJ, Lovell M, MacLeod R. Spirituality: What is its role in pain medicine? *Pain Med.* 2015;16(1):51-60.

31. Wachholtz AB, Pearce MJ. Does spirituality as a coping mechanism help or hinder coping with chronic pain? *Curr Pain Headache Rep*. 2009;13(2):127-132.
32. Hulett JM, Armer JM. A systematic review of spiritually based interventions and psychoneuroimmunological outcomes in breast cancer survivorship. *Integr Cancer Ther*. 2016;15(4):405-423.
33. Robinson EA, Krentzman AR, Webb JR, Brower KJ. Six-month changes in spirituality and religiousness in alcoholics predict drinking outcomes at nine months. *J Stud Alcohol Drugs*. 2011;72(4):660-668.
34. Gillum RF, Ingram DD. Frequency of attendance at religious services, hypertension, and blood pressure: the Third National Health and Nutrition Examination Survey. *Psychosom Med*. 2006;68(3):382-385.
35. Ornish D, Brown SE, Scherwitz LW, et al. Can lifestyle changes reverse coronary heart disease? The Lifestyle Heart Trial. *Lancet*. 1990;336(8708):129-133.
36. Henry SM, Ironson G, Gonzalez B, Schneiderman N. Buffers of impact of bereavement or divorce on viral load in HIV: Role of religious coping and social support. *Ann Behav Med*. 2014;47(Suppl. 1, D-064):s260.
37. Ironson G, Stuetzle R, Fletcher MA. An increase in religiousness/spirituality occurs after HIV diagnosis and predicts slower disease progression over 4 years in people with HIV. *J Gen Intern Med*. 2006;21 Suppl 5:S62-68.
38. Koenig HG. Religion, spirituality, and health: the research and clinical implications. *ISRN Psychiatry*. 2012;2012:278730.
39. Byrd RC. Positive therapeutic effects of intercessory prayer in a coronary care unit population. *South Med J*. 1988;81(7):826-829.
40. Tajadini H, Zangiabadi N, Divsalar K, Safizadeh H, Esmaili Z, Rafiei H. Effect of prayer on intensity of migraine headache: a randomized clinical trial. *J Evid Based Complementary Altern Med*. 2017;22(1):37-40.
41. Sicher F, Targ E, Moore D, 2nd, Smith HS. A randomized double-blind study of the effect of distant healing in a population with advanced AIDS. Report of a small scale study. *West J Med*. 1998;169(6):356-363.
42. Pargament KI, Koenig HG, Tarakeshwar N, Hahn J. Religious struggle as a predictor of mortality among medically ill elderly patients: a 2-year longitudinal study. *Arch Intern Med*. 2001;161(15):1881-1885.
43. Bush EG, Rye MS, Brant CR, Emery E, Pargament KI, Riessinger CA. Religious coping with chronic pain. *Appl Psychophysiol Biofeedback*. 1999;24(4):249-260.
44. de Aguiar P, Tatton-Ramos TP, Alminhana LO. Research on intercessory prayer: theoretical and methodological considerations. *J Relig Health*. 2017;56(6):1930-1936.
45. Anandarajah G, Hight E. Spirituality and medical practice: using the HOPE questions as a practical tool for spiritual assessment. *Am Fam Physician*. 2001;63(1):81-89.
46. Sulmasy DP. Spirituality, religion, and clinical care. *Chest*. 2009;135(6):1634-1642.