CME 2: The Research (for physicians)
by Harold G. Koenig, M.D.

Part 2, Section 1

Part 2 of this training series focuses on research in the area of religion, spirituality and health. Studies demonstrating a connection between religious involvement and health are some of the strongest reasons why physicians should assess patients' spiritual needs.
I begin this section by briefly summarizing (1) what "integrating spirituality" actually means, (2) what is expected of physicians, (3) why it's important for physicians to be doing this, and (4) why I will focus on religion (rather than spirituality) when discussing the research. I will then dive into the research, examining relationships with *mental*, *social*, *behavioral*, and *physical* health, and discussing HOW religion affects health.

Some of the research in Part 2 will seem repetitive for those who have seen Part 1, although much more detail will be provided here and the findings will be illustrated with graphs rather than just numbers. I will also be describing exciting new research published since 2010 that supports earlier findings, and will discuss some of the latest research at Duke that seeks to identify **biological mechanisms** that explain how religion affects health. Finally, I will describe **new interventions** now being tested that may improve patients' ability to cope with medical illness, especially for those already suffering from depression.

Part 2, Section 2

First, what do we mean by "integrating spirituality into patient care?" In essence, this means assessing and addressing the patient's spiritual needs related to illness and medical care.

For the physician, that means:
(1) Conducting a brief "spiritual assessment" to identify spiritual needs;
(2) Arranging for someone to address those needs;
(3) Following up to ensure that spiritual needs are met; and…
(4) Being willing to discuss this subject with patients, while appreciating the health benefits of doing so

The *Spiritual Assessment* involves asking a few simple questions to identify spiritual needs related to medical illness. Assuming the receptionist or ward clerk has recorded the patient's religious affiliation in the chart, and the physician has access to this information, the spiritual assessment consists of three questions:

1. Do you have a religious or spiritual support system to help you in times of need?
2. Do you have any religious beliefs that might influence your medical decisions?
3. Do you have any other spiritual concerns that you would like someone to address?

The physician should then document the patient's responses in the EMR. If spiritual needs are identified, the physician should alert the "spiritual care team" so that arrangements can be made to address those needs. Finally, there should be follow-up down the road to determine if spiritual needs have been adequately addressed. Although the spiritual care team may assist in this regard, the physician should ensure that such follow-up happens. These activities are the minimum requirement we are requesting of physicians regarding the spiritual assessment.

Bear in mind that Spiritual Assessment is NOT a one-time event. Whenever there is a significant change in the patient's condition, the physician will want to check whether any new spiritual needs have arisen that the patient needs help with.

Part 2, Section 3

Why is doing this an important use of physician time?

(1) Many patients have spiritual needs related to illness that influence satisfaction with care and healthcare costs
(2) Religious beliefs influence coping with illness and may affect the patient's emotional state and motivation towards recovery
(3) Religion affects important health-related behaviors and likely influences medical outcomes
(4) Religious beliefs of patients influence their medical decisions, **AND** religious beliefs of physicians influence the medical decisions they make as well
(5) The "standards of care" established by JCAHO require that providers respect patients' cultural and spiritual beliefs ((RI.01.01.01 EP 6; RI.01.01.01 EP 9; PC.01.02.01 EP 4; PC.01.02.11 EP 5; PC 01.02.13 EP3),[1] and assessment is the only way to know what those beliefs are
(6) Involvement in a religious community may affect health by increasing patient monitoring and thereby improving compliance with treatment
(7) Finally, addressing spiritual issues may also benefit the physician. By this I mean, the intrinsic rewards experienced when practicing "whole person" health care.

Part 2, Section 4

As we begin to transition in this Introduction to a focus on Research, we need to define the terms *Religion* and *Spirituality*. Definitions are particularly important in this section because we are dealing with quantitative research that requires the use of clear definitions that are specific,

[1] Information contained here on the standards are based on a series of communications between Dr. Koenig and JCAHO staff, particularly Doreen Finn (DFinn@jointcommission.org), Senior Associate Director, who works under Mark Pelletier (MPelletier@jointcommission.org), Executive Director, JCAHO, Hospital Accreditation (January 6-12, 2012)

distinct, and **do not** overlap with the mental or physical health outcomes that we are studying. This is essential for meaningful interpretation of results.

First, is the term **Religion**. Religion involves beliefs and practices related to the Transcendent, where the Transcendent in Western religious traditions usually means God. Religions usually have doctrines that guide behavior during this life and prepare a person for life after death. Religion is often organized as a community, but can also exist outside of an institution and may be practiced alone and in private.

Next, is the term **Spirituality**. According to the traditional, historical definition, spirituality is the core of what it means to be religious. Spirituality described those who were deeply religious, living a life dedicated and surrendered to the Divine as understood. The modern definition of spirituality, however, has become much broader, including not only those who are deeply religious, but those who are **not deeply religious** and those who are **not religious at all**. In fact, spirituality has become largely self-defined and can now mean almost anything, depending on what the person means by it.

Spirituality is an ideal term to use in clinical settings where **connecting to and engaging with patients** is the goal. In clinical settings, patients should be allowed to define spirituality themselves and clinicians should address it in that way. Because of its vague and nebulous nature, and because it may change depending on the meaning to the person, spirituality is difficult to measure, quantify, and standardize for research purposes.

Religion, while it can be divisive and discomforting to some, has a more universally agreed upon definition. That definition is more specific and distinct than spirituality, and therefore more easily measured, quantified, and standardized. While in clinical settings the physician's goal is to engage the patient and promote conversation, the researcher's goal is quite different. Rather than engage the patient, the researcher seeks to COMPARE --- compare the health of those with certain characteristics to the health of those without them. Thus, religion is more useful than spirituality when conducting research that seeks to identify characteristics that prevent disease or alter disease course.

Furthermore, most of the measures that currently assess spirituality use questions that either ask about religious involvement or involve questions about positive mental health (i.e., meaning and purpose in life, peacefulness, degree of connection with others). When questions that assess positive mental health are included in the definition and measures of spirituality, this contaminates those measures resulting in tautological (or circular) associations with mental health.[1] In other words, if spirituality is defined ***a priori*** as good mental health and is measured

[1] Koenig, H. G. (2008). Concerns about measuring "spirituality" in research. Journal of Nervous and Mental Disease *196*(5): 349-355.

in that way, it is not possible to look at the relationship between spirituality and mental health. This is because doing so guarantees they will be related -- 100% of the time. When spirituality is measured in this way, then, the results are usually not meaningful or interpretable unless spirituality is assessed by religious involvement. For this reason, I will largely refer to religion when discussing the research.

Part 2, Section 5
OK, so let's talk about the Research.

To begin with, I will discuss the role that religion plays in coping with illness, and then illustrate this with studies examining religious coping during stress and, especially, during medical illness. I will then examine relationships between religion and ***mental health, social health, health behaviors,*** **and** ***physical health***, as well as describe recent research on ***spiritual needs*** and on the effects that ***addressing those needs*** has on patient outcomes.

First, what is the role of religion as a **Coping Behavior**?

Many individuals turn to religion for comfort when they are stressed, especially here in the U.S. For example, after the September 11th terrorist attacks, a random survey of the U.S. population found that 9 out of 10 Americans coped by turning to religion.[1] Religion was the most common form of coping, second only to talking with friends and relatives about the attacks.

Religious beliefs are especially used to cope with stress caused by medical illness. Medical illness is frequently accompanied by uncertainty, fear, pain, disability, and loss of control. If illness is prolonged, this can result in discouragement, loss of hope, and ultimately depression. In some areas of the U.S., over 90% of hospitalized patients rely on religious beliefs to cope. In one study of consecutively admitted patients to general medicine, neurology and cardiology, over 40% indicated that religion was "the most important factor" that enabled them to cope with their medical illness.[2] Religious beliefs and activities give ***meaning*** to illness and ***strength*** to engage in the hard work that rehabilitation often requires.

Other than being used to cope, how is religious involvement related to health ***more generally***?
I will now summarize this research based on a **Systematic Review** of quantitative peer-reviewed studies published in academic journals prior to 2010. This research is documented in second edition of the *Handbook of Religion and Health* (Oxford University Press, 2012).

[1] Schuster et al. (2001). A national survey of stress reactions after the September 11, 2001, terrorist attacks. New England Journal of Medicine 345(20):1507-1512.
[2] Koenig HG (1998). Religious beliefs and practices of hospitalized medically ill older adults. International Journal of Geriatric Psychiatry 13: 213–224

First I summarize studies on religion, spirituality, and mental health, and then go on to review the research on social health, health behaviors, and physical health.

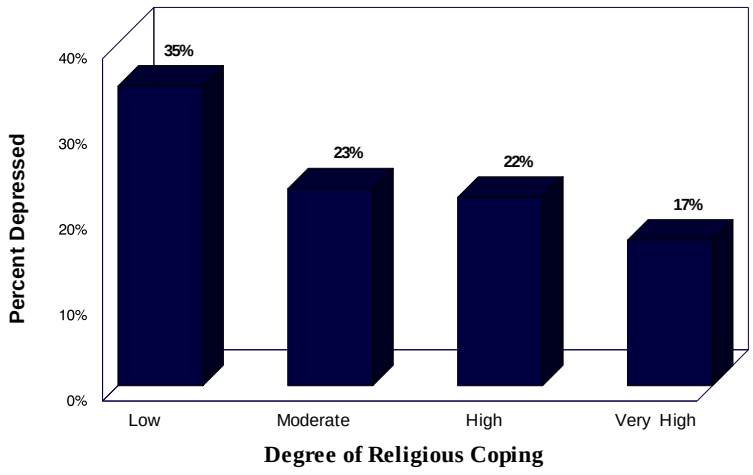
Part 2, Section 6

With regard to **Mental Health**, I will start by reviewing studies on religion and **depression**, the most common psychiatric disorder likely to be encountered by physicians. I will then examine associations with suicide, substance abuse, and then associations with positive mental health such as well-being, happiness, meaning and purpose, optimism and hope.

Concerning religious involvement and **Depression**, nearly 450 quantitative studies have examined this relationship. These include studies where the design was either cross-sectional or prospective, as well as about a dozen randomized clinical trials. Over 60% reported that religiosity is associated with significantly less depression, faster recovery from depression, or a more rapid response to spiritual interventions compared to control groups. The percentage of positive findings increased to 67% in higher quality studies. In contrast, only 6% reported higher levels of depression in those who were more religious or spiritual.

As an example, I review studies on religion and depression by our research group at Duke. First, we examined the relationship between religious coping and depression in 991 consecutively admitted patients to the general medicine or neurological services of our nearby VA Hospital.[1] Significant depression was determined based on the usual cut-off score on a standard measure of depressive symptoms, the Geriatric Depression Scale. The rate of depression was twice a high in those with low religious coping (35%) compared to the rate in those with high religious coping (17%).

Religion and Depression in Hospitalized Patients



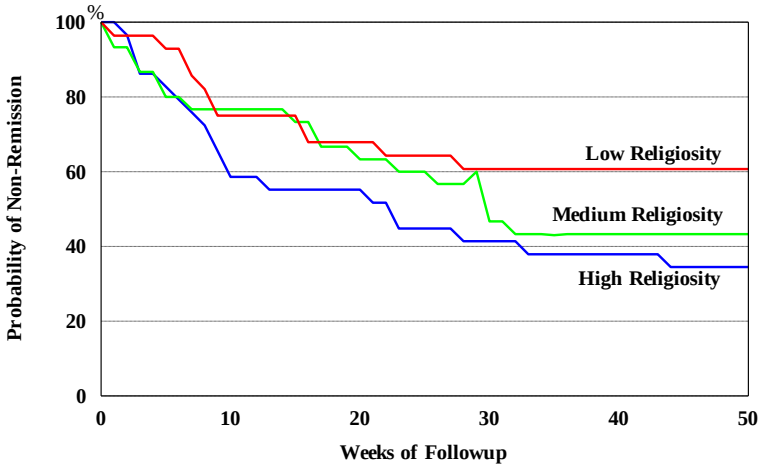
Geriatric Depression Scale
Information based on results from 991 consecutively admitted patients (differences significant at p<.0001)

[1] Koenig et al (1992). Religious coping and depression in elderly hospitalized medically ill men. American Journal of Psychiatry 149:1693-1700

Next, we used a standard psychiatric interview (the Diagnostic Interview Schedule) to identify depressive disorder in 87 patients admitted to the medical services of Duke Hospital.[1] We assessed religiosity at baseline with a 10-item Intrinsic Religiosity Scale, and then followed patients for nearly a year after hospital discharge, measuring depressive symptoms every three months. As indicated in the Figure, patients scoring in the top one-third on intrinsic religiosity recovered from depression 70% faster than patients scoring in the bottom one-third.

Time to Remission by Intrinsic Religiosity

(N=87 patients with major or minor depression by Diagnostic Interview Schedule)

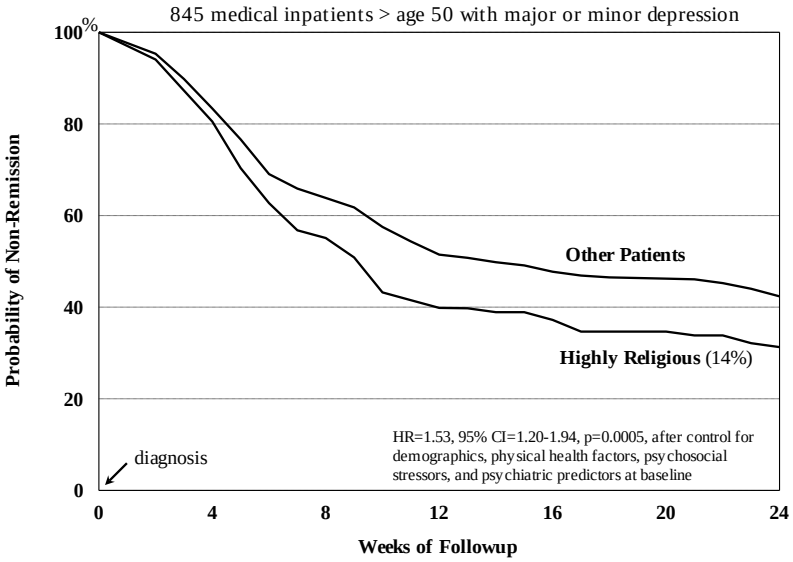


American Journal of Psychiatry 1998; 155:536-542

Finally, we conducted a much larger study in patients hospitalized with either congestive heart failure or chronic lung disease. Using the Structured Clinical Interview for Depression, we diagnosed depressive disorder in 1,000 patients hospitalized at three regional hospitals. Religious involvement was examined at baseline, and included frequency of church attendance, prayer, scripture reading, and level of intrinsic religiosity. Depressed patients were then followed up every 6 weeks for 6 month assessing degree of recovery. Follow-up was obtained on 85% of patients in the study.[2] Once again, the most religious patients (i.e., those who attended religious services weekly, prayed daily, read religious scriptures regularly, and scored high on intrinsic religiosity) recovered from depression over 50% faster compared to others.

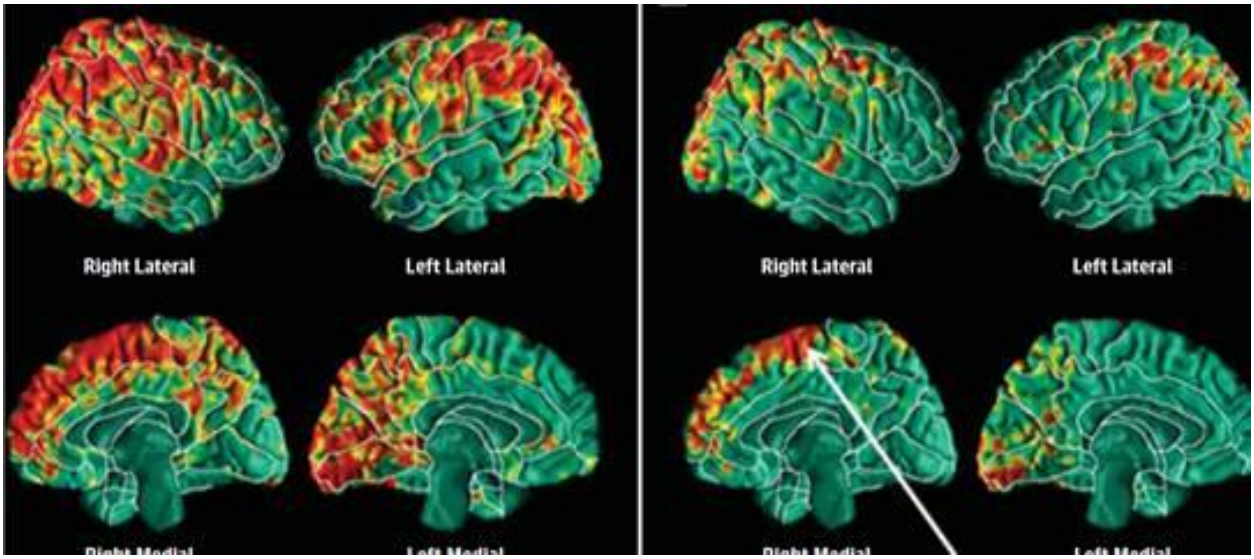
[1] Koenig et al. (1998). Religiosity and remission from depression in medically ill older patients. American Journal of Psychiatry 155:536-542

[2] Koenig HG (2007). Religion and remission of depression in medical inpatients with heart failure/pulmonary disease. Journal of Nervous and Mental Disease 195(5):389-395



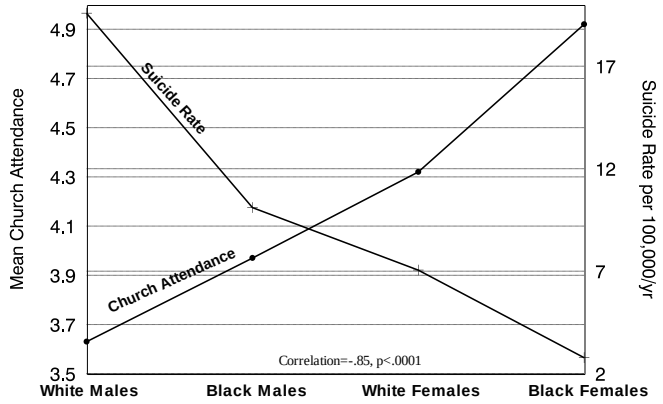
In January 2014, a functional MRI study was published in the Journal of the American Medical Association (JAMA) by psychiatric epidemiologists at Columbia University in NYC.[1] Researchers examined the relationship between importance of religiosity or spirituality and the thickness of cortical regions of the brain in those at high risk for depression. "High risk" was defined as having a parent diagnosed with major depression. Investigators had previously found that if high risk individuals indicated religion or spirituality was "very important" to them, they were 90% less likely to experience depression. They had also previously found that functional MRI scans indicated large expanses of cortical thinning across the cerebral hemispheres in those at high risk for depression. However, when they divided high risk individuals by importance of religiosity, cortical thinning was found primarily in those for whom religion/spirituality was not very important (see scan on L panel). In contrast, cortical thinning was much less likely in persons indicating religion was very important (see scans on R panel). Researchers concluded that the expanded cortical reserve observed in those indicating high religious or spiritual importance may help to counter the vulnerability that cortical thinning poses for developing depressive disorder in high risk individuals. Here is objective evidence of a possible benefit to religious involvement.

[1] Miller L et al (2014). Neuroanatomical correlates of religiosity and spirituality in adults at high and low familial risk for depression. JAMA Psychiatry 71(2):128-35



Research on religiosity and **Suicide** is consistent with the findings for depression. Suicide often occurs when meaning and hope are lost. The figure shows differences in *suicide rate* plotted against rates of church attendance in population groups divided by gender and race. The highest suicide rate in the U.S. is among older white males, a population group known to have the lowest church attendance. The lowest suicide rate is among black females, a population group known for high rates of church attendance. Interestingly, among older black females who have the highest attendance rates, the suicide rate is almost undetectable.

Church Attendance and Suicide Rates



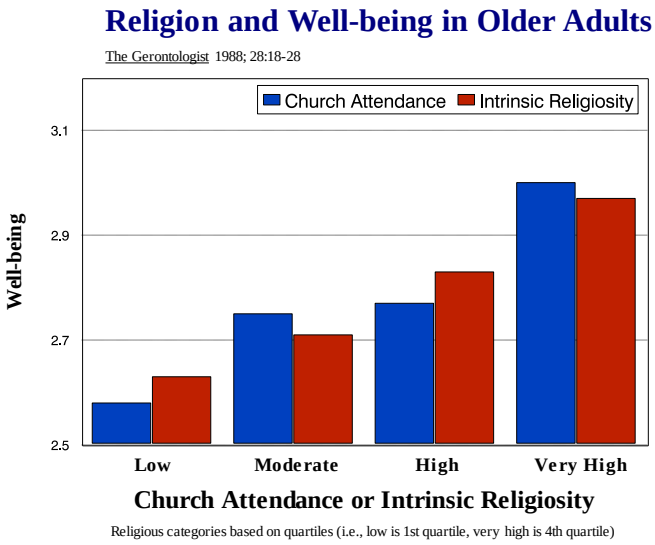
Martin WT (1984). Religiosity and United States suicide rates. J Clinical Psychology 40:1166-1169

Our systematic review found that 106 of 141 studies (75%) reported less suicide, fewer suicide attempts, or more negative attitudes toward suicide in those who were more religious. From a clinical standpoint, it is always helpful to know how religious a person is when assessing suicide risk.

Rates of **Alcohol and Drug Use** are also substantially lower among those who are more religious, especially in studies of high school and college students, a time when lifelong patterns of substance use are often established. Our systematic review found that 240 of 278 studies (86%) reported inverse relationships between religiosity and alcohol use or abuse, and 155 out of 185 (84%) reported inverse relationships with drug use or abuse. Studies with better research designs were even more likely to report such inverse relationships.

Next, let's review research on positive emotions such as **Well-Being and Happiness**. These emotions exist at the other end of the spectrum from depression.

The figure displays results from research we did nearly 30 years ago in 1985. In that study involving 813 adults over age 60, we measured religious involvement by frequency of church attendance and level of intrinsic religiosity. Psychological well-being was assessed using the 17-item Philadelphia Geriatric Center Morale scale, a standard measure of this construct. As indicated in the figure, there was a stepwise increase in well-being with each increase in religious attendance or intrinsic religiosity, suggesting a gradient of effect.



Prior to 2010, there were at least 326 studies that examined relationships between religiosity and well-being or happiness. Of those, 256 (79%) reported significantly greater well-being in persons scoring higher on measures of religiosity or spirituality. Among the better designed studies, 82% reported this finding. Less than 1% reported lower levels of well-being among the more religious, i.e., only 3 of 326 studies.

Similar findings have been reported for research examining **Meaning and Purpose, Hope, and Optimism**. In studies of **meaning and purpose**, 42 of 45 (93%) reported significantly greater meaning and purpose in those who were more religious. Many of these studies were in people with chronic disabling medical illness who were facing serious challenges to the meaning and

purpose of their lives. Among studies examining **hope**, 29 or 40 (73%) reported significantly greater hope, and in those examining **optimism**, 26 of 32 (81%) reported greater optimism among the more religious.

Part 2, Section 7

Now let's look at relationships with ***Social Health***, including prosocial behaviors, marital stability, and social support. As reviewed for positive emotions, these studies are likewise uniformly positive. Our systematic review identified 104 studies examining religious involvement and **Crime or Delinquency**. Of those, 82 studies (79%) reported less crime or delinquency in those who were more religious. Of 11 studies examining **Academic Performance** among high school and college students, all 11 (100%) reported that religious youth did better in school.

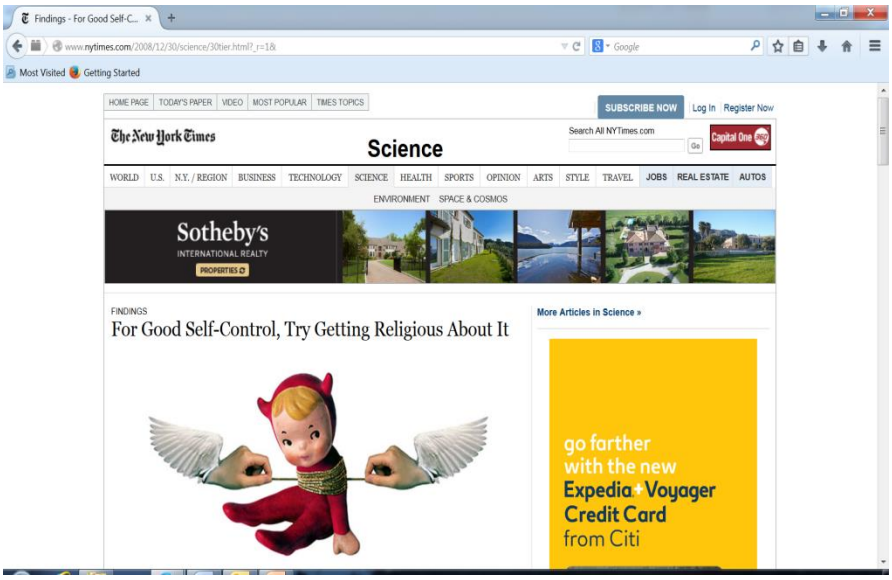
Family health is also affected by religious involvement. Our systematic review identified 79 studies that examined relationships with **Marital Stability** or marital satisfaction. Of those, 86% (68 of 79 studies) reported significant positive findings. Similarly, of 74 studies examining religiosity and **Social Support**, 61 (82%) reported positive relationships, especially in older patients or those with medical illness.

Part 2, Section 8

OK, what about ***Health Behaviors***, such as exercise, diet, sexual behavior, and cigarette smoking. We know that nearly 80% of all chronic disease can be attributed to health behaviors, and many chronic conditions could be avoided by a healthy lifestyle. Our systematic review found that those who were more religious were more likely to be **Physically Active** in 25 of 37 studies (68%). Similar findings were reported for eating a **Healthy Diet** in 13 of 21 studies (62%). Likewise, **Extra-Marital Sex** and multiple sexual partners were less common among the more religious in 82 of 95 studies (86%).

In a major review of research titled "Religion, self-regulation and self-control" published in the journal Psychological Bulletin[1] and featured in the New York Times, investigators concluded that it was greater *self-control* that led to healthier lifestyles in the more religious.

[1] McCullough, M. E., & Willoughby, L. B. (2009). Religion, self-regulation, and self-control: associations, explanations, and implications. Psychological Bulletin 135 (1), 69-93

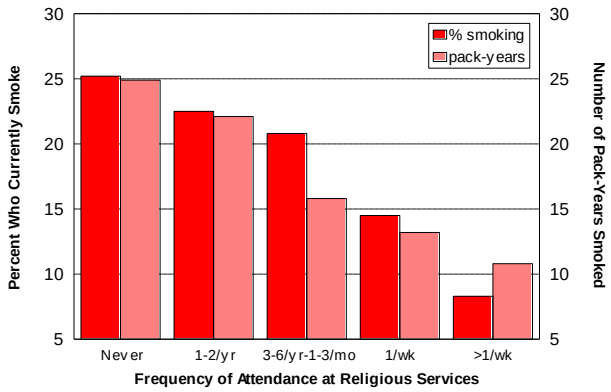


What about **Cigarette Smoking**? Smoking has major adverse effects on almost every organ system in the body, accounting for more than 10% of all deaths worldwide, especially those from cardiovascular and chronic lung diseases. This includes 30% of deaths from all types of cancer and 87% of deaths from lung cancer. Does religious involvement make a difference?

We examined the relationship between frequency of religious attendance and cigarette smoking in a random sample of close to 4,000 older adults living in North Carolina.[1] North Carolina is the largest tobacco producing state in the country, harvesting nearly double the tonnage of tobacco compared to the next largest producing state, Kentucky. As shown in the figure, increasing religious attendance is associated with both a decrease in current smoking and a decrease in pack-year history of smoking.

Religious Attendance and Cigarette Smoking

3968 Persons aged 65 or Older in North Carolina



[1] Koenig et al (1998). The relationship between religious activities and cigarette smoking in older adults. Journal of Gerontology, Medical Sciences 53A:M426-M434

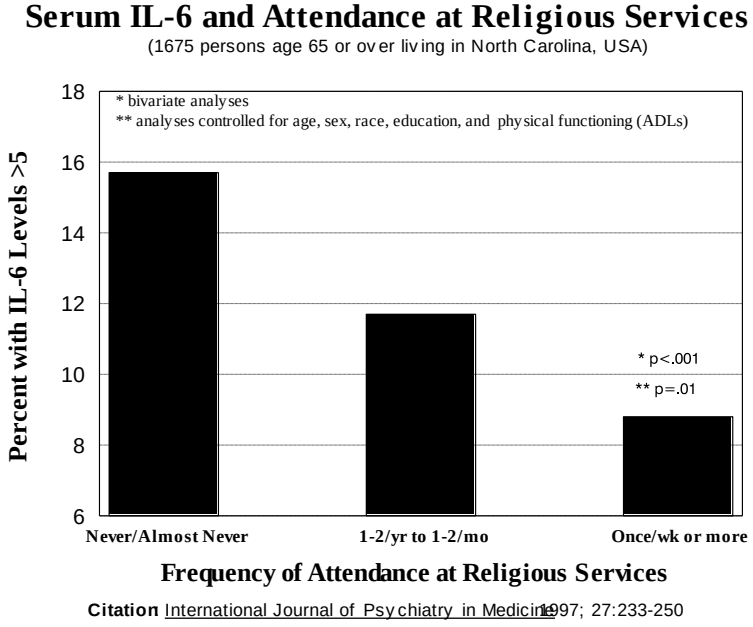
Our systematic review identified 137 quantitative studies that examined religiosity and cigarette smoking. Many of these studies were conducted in adolescents and young adults, when the habit of smoking begins. Ninety percent (or 123 studies) reported significantly less smoking in those who were more religious. Less cigarette smoking means less cardiovascular disease, less chronic lung disease, and less cancer.

Part 2, Section 9

Now, better mental health, better social health, and better health behaviors should translate into ***better physical health*** in those who are more religious. Let's review research that has directly examined relationships with physical health and medical outcomes. In this section, we will examine immune functioning, endocrine functioning, blood pressure, other cardiovascular functions, coronary heart disease, survival after open heart surgery, cancer, and all-cause mortality.

Immune Functions are the body's primary defense against outside invaders and internal pathological processes. Let's look at the connection with religiosity or spirituality.

In the first study to report on the link between religiosity and immune function, we examined the relationship between religious attendance and interleukin-6 (IL-6), a pro-inflammatory cytokine associated with immune function. We did this in a random sample of 1,675 older adults. As a person gets older or develops immune system disorders such as AIDS, levels of IL-6 begin to increase in the blood. This indicates increasing impairment of immune function, which is often associated with age-related diseases such as coronary artery disease and other inflammatory disorders. As shown in the figure, higher levels of religious attendance were associated with lower levels of IL-6.



Citation International Journal of Psychiatry in Medicine 1997; 27:233-250

Older adults who attended religious services at least once a week had lower levels of the inflammatory marker IL-6, even after controlling for age, gender, race, education, and physical function. This finding was also reported a few years later by a research group at the University of Iowa.[1]

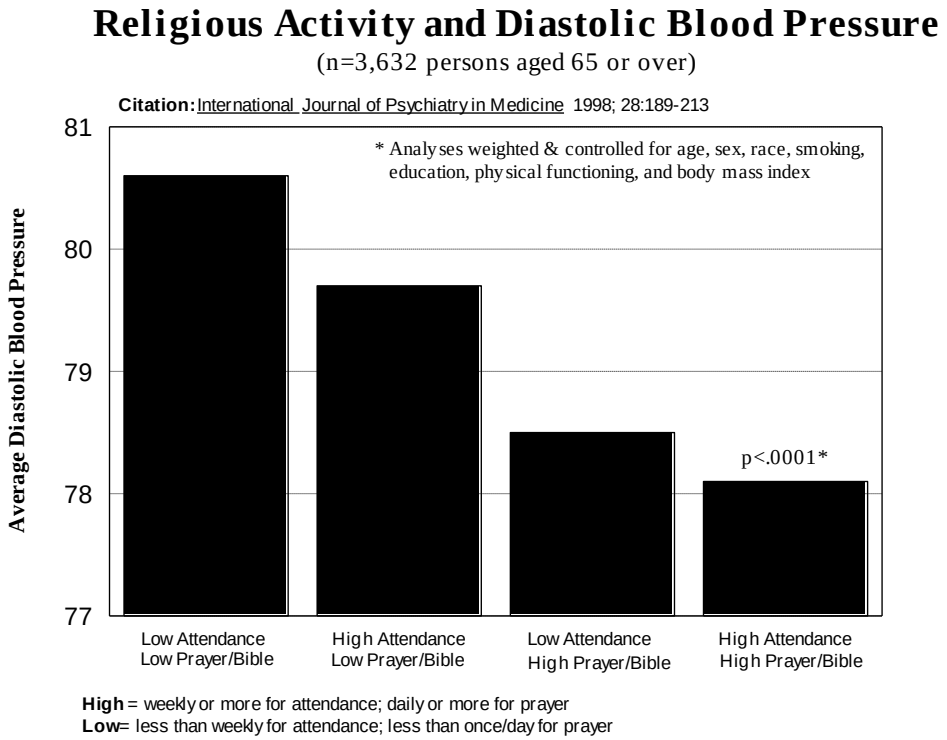
Our systematic review in 2010 identified over two dozen studies that examined relationships between immune function and religiosity or spirituality. Of those, over half (56%) reported significantly better immune function in those who were more religious. Immune parameters included inflammatory markers such as IL-6, natural killer cell activity, T helper cell numbers, and response to immunization. These findings are supported by studies examining rates of infection or virus concentration in the blood. Of a dozen such studies, two-thirds reported significantly lower rates of infection among the more religious. Many of these studies were conducted in patients with compromised immune systems, such as older adults or those who were HIV positive.

Similar findings have been reported in studies examining **Stress Hormones** such as cortisol, epinephrine, and norepinephrine. Our systematic review uncovered 31 such studies, 23 of which found significantly lower stress hormones in the more religious or those receiving spiritual interventions (often studies of meditation). Both immune and endocrine functions, then, appear to be healthier in those who are more religious or spiritual.

OK, so let's move on to ***Heart Disease***, the nation's number one killer and most common cause of functional disability worldwide. Any relationships found with cardiovascular disorders are likely to impact public health in a major way. I review here relationships with blood pressure, cardiovascular reactivity, coronary heart disease, and recovery from open heart surgery.

High Blood Pressure contributes significantly to diseases of the coronary arteries, the kidneys, and the brain. In a study of over 3,500 older adults, we examined the relationship between diastolic blood pressure, religious attendance, and prayer or Bible reading.[2] As indicated in the figure, those who both attended religious services weekly and prayed or read the Bible daily had significantly lower diastolic blood pressure than other older adults. In fact, the probability of diastolic hypertension (a diastolic of 90 or higher) in the religiously active was 40% lower than in those who were less active.

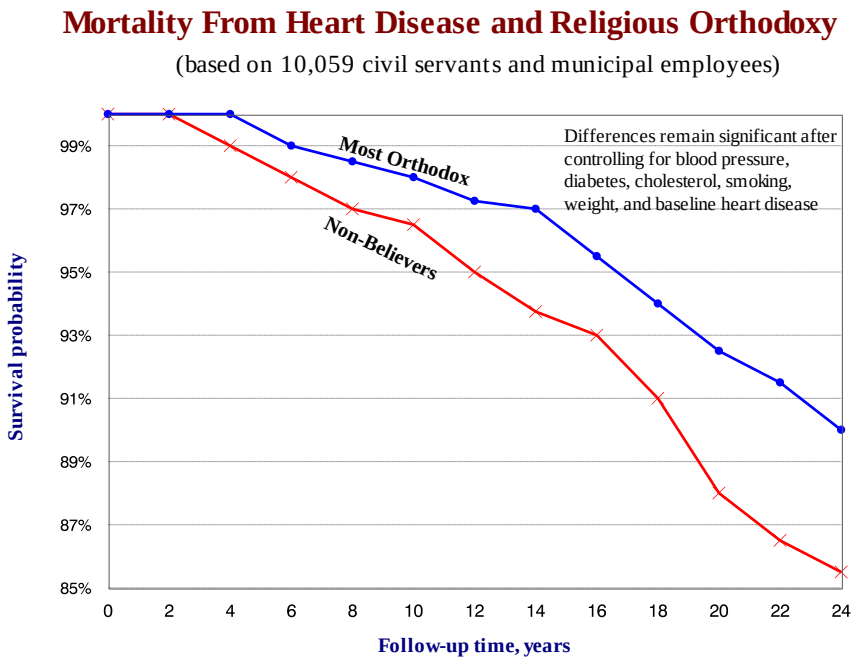
[1] Lutgendorf et al. (2004). Religious participation, interleukin-6, and mortality in older adults. Health Psychology, *23*(5):465-475.
[2] Koenig et al. (1998). The relationship between religious activities and blood pressure in older adults. International Journal of Psychiatry in Medicine 28:189-213



In our systematic review, we identified 63 studies that examined this relationship. Of those, 36 (or 57%) reported lower blood pressure or less hypertension in those who were more religious. Similar findings have been reported for studies of **Cardiovascular Reactivity**, **Heart Rate Variability**, and **C-Reactive Protein** levels in blood. In that research, 10 of 16 studies reported healthier levels in the more religious.

This brings us to the topic of **Coronary Artery Disease** (or CAD), the cause of one of every 4 deaths in the U.S. The Israeli Ischemic Heart Disease Project is one of the largest studies with the longest follow-up to examine risk factors for CAD.[1] Researchers followed over 10,000 civil servants for a period of 23 years from middle-age into later life. Religiosity was one of the risk factors examined and was measured by frequency of attending synagogue, religious vs. secular education, and self-identification as orthodox, traditional or secular. As indicated in the figure, those scoring in the top 20% of the religiosity measure were 20% less likely to die from CAD during the 23-year follow-up. The finding was independent of blood pressure, diabetes, cholesterol, smoking, weight, and baseline heart disease. This effect is similar to the reduction in CAD mortality that results from taking cholesterol-lowering drugs.

[1] Goldbourt et al. (1993). Factors predictive of long-term coronary heart disease mortality among 10,059 male Israeli civil servants and municipal employees. *Cardiology*, 82, 100-121.



Kaplan-Meier life table curves (adapted from Goldbourt et a l 1993. Cardiology 82:100-121)

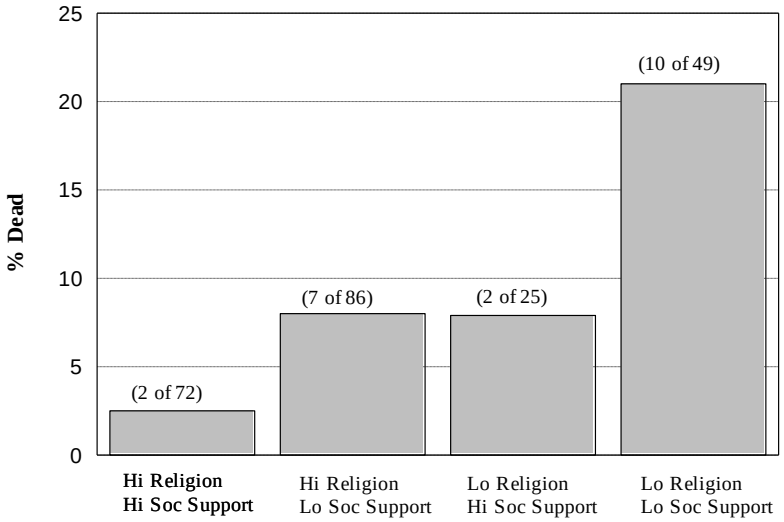
Our systematic review identified 19 studies examining religious involvement and CAD. Twelve of those (about two-thirds) reported lower CAD mortality or morbidity in those who were more religious.

Death rates following open heart surgery may also be influenced by religious involvement, given the role that immune and cardiovascular functions play in physiological processes that take place during wound healing. For example, in a study conducted at Dartmouth Medical Center in New Hampshire, researchers examined the effects of religiosity on 6-month survival in 232 patients undergoing elective coronary bypass surgery.[1] As indicated in the figure, patients with high religious coping and high social support (where social support often came from a faith community) were significantly less likely to die during follow-up. In fact, when other baseline risk factors were controlled – such as age, previous cardiac surgery, and impaired physical functioning – patients who indicated *low* religious coping and *low* social participation were 14 times more likely to die (the odds ratio was 14.3).

[1] Oxman et al.(1995). Lack of social participation or religious strength and comfort as risk factors for death after cardiac surgery in the elderly. Psychosomatic Medicine, 57:5-15.

Six-Month Mortality After Open Heart Surgery

(232 patients at Dartmouth Medical Center, Lebanon, New Hampshire)

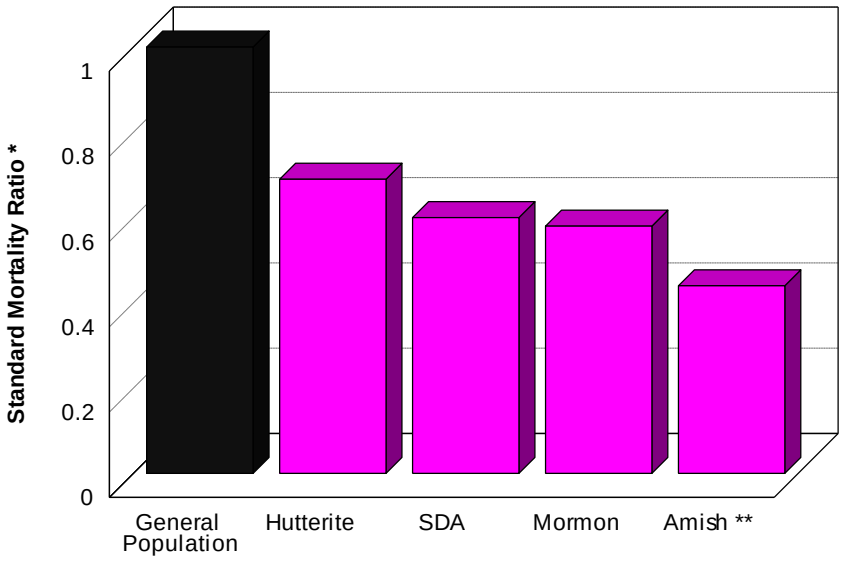


Citation Psychosomatic Medicine 1995; 57:5-15

Similarly, the risk of developing and dying from cancer may also be influenced by religious activity. For example, certain religious groups such as Seventh Day Adventists, Mormons, and the Amish have a standardized mortality ratio from cancer that is only about 50% that of persons in the general population. Eating a healthy vegetarian diet and avoiding cigarette smoking, alcohol, and caffeine -- are certainly likely to explain part of this effect. However, a strong family life and devout religious beliefs also contribute.

Death Rates from Cancer

by Religious Group

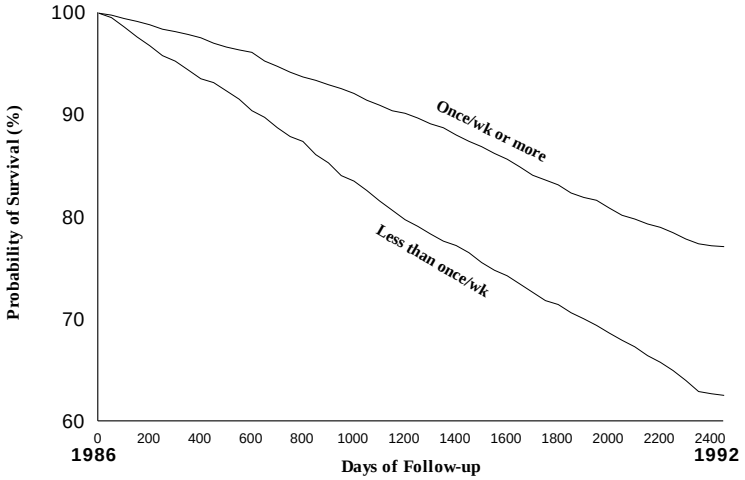


* 1.0=average risk of dying from cancer

** Males ages 40-69 only

Finally, studies of **All-Cause Mortality** can help to estimate the *cumulative effect* that religious involvement has on health over a lifetime. For example, we examined the effects of church attendance on mortality by following 4,000 older adults over a period of 6 years.[1] After controlling for multiple baseline measures of physical, behavioral, emotional, and social health, we found that those attending religious services at least once a week were 28% less likely to die during follow-up. The effect among women in this study approximated that of not smoking cigarettes (even though cigarette smoking was controlled for in the analysis).

Church Attendance and Length of Survival (n=4000 adults)

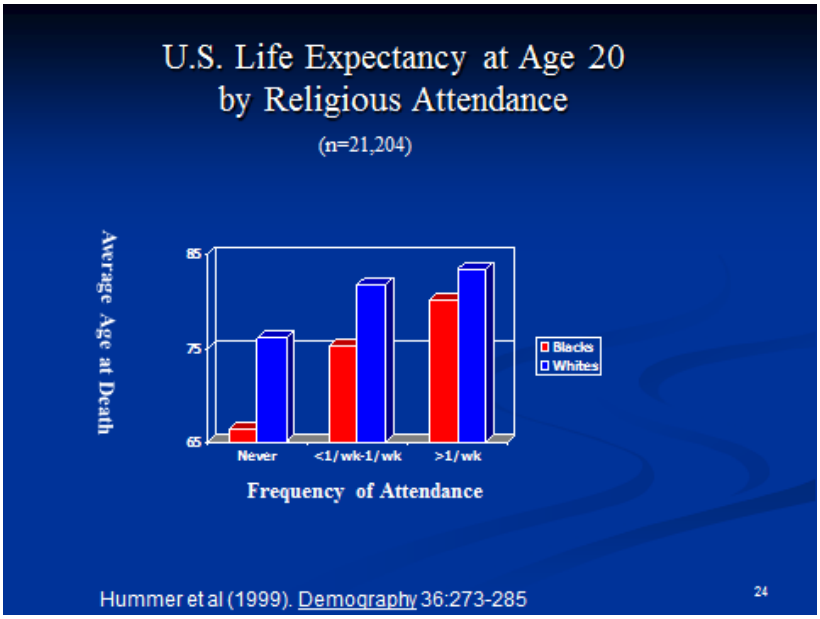


Citation: Journal of Gerontology, Medical Sciences 1999; 54A: M370-M377

Overall, our systematic review identified 121 studies conducted prior to 2010 that examined religious involvement and all-cause mortality. All studies were prospective in design and ranged in follow-up from several months to 65 years. Over two-thirds (68%) reported greater longevity among those who were more religious. Of the 63 studies with the largest sample sizes and longest follow-up, 75% indicated greater longevity. Only 6% of the 121 studies reported shorter longevity among the more religious.

One study of religion and mortality involved a random national sample of over 20,000 adults in the U.S. followed for 9 years.[2] This research found that among Whites, the average lifespan of those attending religious services more than weekly was 7 years longer than non-attendees, and in African-Americans the difference was 14 years.

[1] Koenig et al. (1999). Does religious attendance prolong survival?: A six-year follow-up study of 3,968 older adults. Journal of Gerontology, Medical Sciences, 54A: M370-M377.
[2] Hummer et al. (1999). Religious involvement and U.S. adult mortality. Demography 36(2):273-85.



In Summary, then, over 3000 quantitative studies -- all published in peer-reviewed academic journals -- have now examined relationships between religion, spirituality and health. Of those, the vast majority reported better health outcomes in those who were more religious or spiritual. This is true not only for mental health, social health, and health behaviors, but also for physical health.

Part 2, Section 10

During the past five years, increasing attention has focused on the ***Spiritual Needs*** of patients with medical illness. Let's take a look at some of that research.

Of particular importance is a series of reports by oncologists from the Dana Farber Institute at Harvard who have been following 345 patients with advanced cancer. In their initial report, they found that while 88% of patients said religion was important, 72% indicated their spiritual needs were *minimally or not at all supported* by the medical system.[1] Among the remaining 28% who said their spiritual needs were being met, quality of life was significantly higher.

Next, in a 2009 report published in JAMA, they examined the use of intensive, futile, life-prolonging care requested by advanced cancer patients in the last week of life.[2] Life-prolonging

[1] Balboni et al. (2007). Religiousness and spiritual support among advanced cancer patients and associations with end-of-life treatment preferences and quality of life. *Journal of Clinical Oncology, 25*(5), 555-560.

[2] Phelps et al. (2009). Religious coping and use of intensive life-prolonging care near death in patients with advanced cancer. *Journal of the American Medical Association*, 301 (11), 1140-1147

care included such treatments as mechanical ventilation or CPR. They found that such treatments were significantly more common in those indicating high levels of religious coping. This seemed counter-intuitive in that one would think that those who were more religious would be more accepting of death and less likely to demand aggressive treatment at the end of life. Not so.

This finding caused the researchers to explore why this might be the case. What they found was fascinating. High religious copers who used more intensive health services were primarily those whose "*spiritual needs were not being addressed by the medical team*". In contrast, high religious copers whose spiritual needs were being supported were 5 times more likely to receive hospice care and 72% less likely to receive aggressive care.[1]

Finally, the researchers took a look at the actual costs involved.[2] Among patients who reported their spiritual needs were *inadequately* supported, medical costs during the last 7 days of life were $4,947 compared to $2,833 for those who said spiritual needs were addressed. Cost differences were especially large in minorities, where the difference was $6,533 compared to $2,276 -- nearly three times higher in those whose spiritual needs were not being met. Harvard investigators concluded that **"**The integration of spiritual care into the care of dying patients holds promise to improve patients' and bereaved caregivers' well-being, while also avoiding health care costs because of futile, aggressive care at the EOL".

There has also been research on the effect that **Spiritual Assessment** on health outcomes. In the Oncologist Assisted Spiritual Intervention Study or OASIS study, researchers alternately assigned 118 outpatients with cancer to either oncologists who took a brief spiritual history or those who did not.[3] The OASIS intervention, which involved a bit more than taking a spiritual history, took an average of six minutes to administer and increased the visit length by 1.7 minutes from 13.1 to 14.8 minutes. In 85 percent of cases, oncologists felt comfortable administering the OASIS interview, and in 76 percent of cases, patients said it was useful. At 3-week follow-up, compared to the control group, patients receiving the SA reported significantly fewer depressive symptoms, significantly higher functional well-being, and a significantly greater sense of interpersonal caring by the physician.

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[1] Balboni et al (2010). Provision of spiritual care to patients with advanced cancer: associations with medical care and quality of life near death. Journal of Clinical Oncology 28:445-452

[2] Balboni et al. (2011). Support of cancer patients' spiritual needs and associations with medical care costs at the end of life. Cancer 117(23):5383-5391

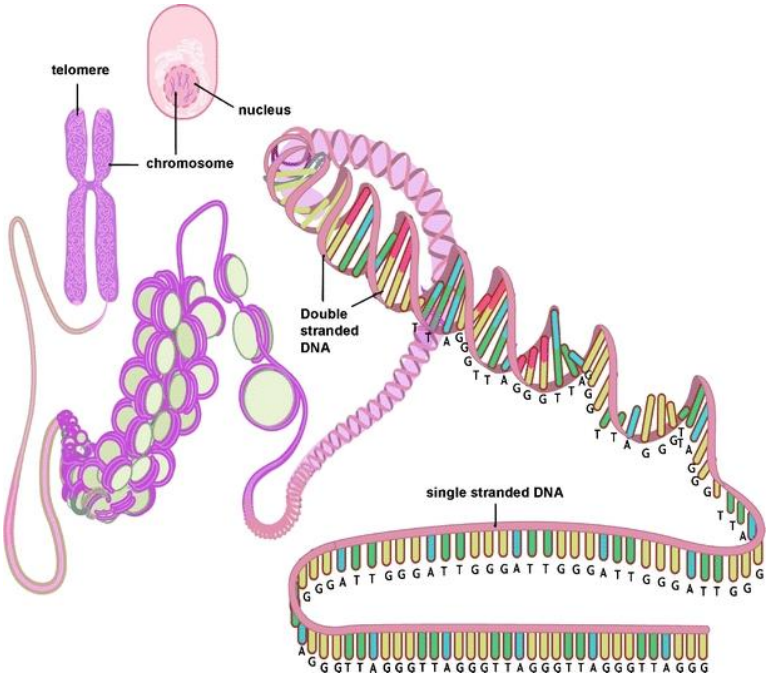
[3] Kristeller et al. (2005). Oncologist Assisted Spiritual Intervention Study (OASIS): Patient acceptability and initial evidence of effects. International Journal of Psychiatry in Medicine 35: 329–347

Similar results were found in a study of outpatients with schizophrenia.[1] A total of 78 patients were randomly assigned to either traditional treatment or to traditional treatment plus a spiritual assessment. **Results** indicated that the spiritual assessment was well tolerated by patients. Likewise, psychiatrists felt comfortable doing the assessments and in two-thirds of cases indicated that useful clinical information was obtained. Patients receiving the spiritual assessment were significantly more likely to adhere to their clinical appointments.

Part 2, Section 11

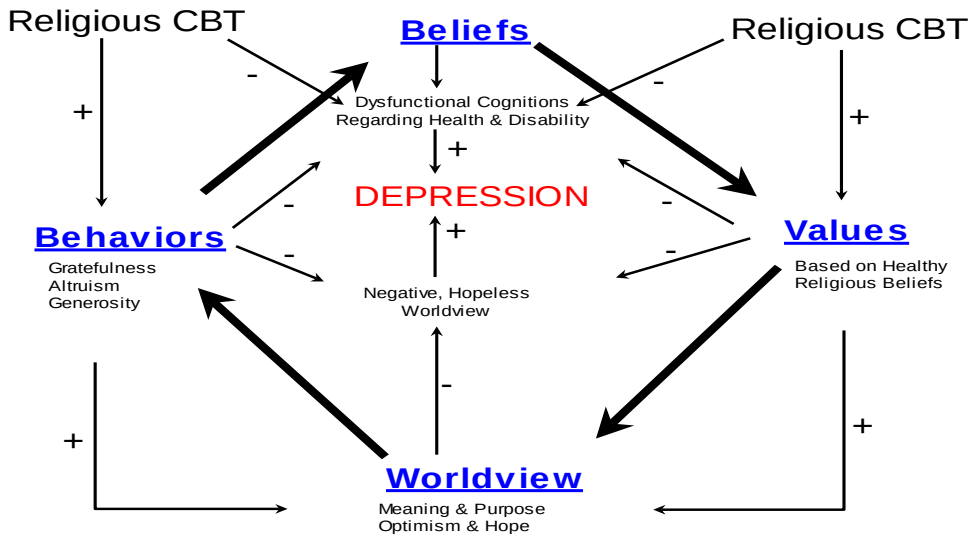
We conclude our review of research on religion, spirituality and health, with a description of the latest research now being done at Duke to better understand these relationships.

One study is examining biological mechanisms that might help to explain why religious people have better health and live longer. This study focuses on the effects of religiosity on *telomere length* in 250 highly stressed caregivers of persons with disabling neurological disorders. Telomeres are located at the end of the chromosomes. They serve as a biological clock within the cell. Telomeres shorten throughout the lifespan and once they reach a certain length, the cell can no longer replicate, organs fail, and the person dies. Psychological and social stress speed the rate at which telomeres shorten. We think that religious involvement can reduce caregiver stress and thereby slow the rate of telomere shortening. We'll see.



[1] Huguelet et al. (2011). A randomized trial of spiritual assessment of outpatients with schizophrenia: patients' and clinicians' experience. Psychiatric Services 62(1):79-86

We're also developing religious interventions to treat depression in persons with chronic medical illness. We're doing a randomized clinical trial involving 132 persons to compare the effects of religious vs. standard psychotherapy. We are also examining the effects of religious psychotherapy on immune and endocrine functions, as well as trying to determine whether religious psychotherapy is particularly effective in persons with a certain genetic makeup. The results of these studies will soon be appearing in medical journals.



Part 2, Section 12

In Conclusion, based on this review of the available data:

(1) Religion is often used to cope with stress in general and medical illness in particular;
(2) Religious or spiritual involvement is associated with greater well-being, less emotional disorder, less substance abuse, greater social support, and better health behaviors;
(3) Religiosity is related to less physical illness, better medical outcomes, and greater longevity;
(4) Spiritual needs are widespread in medical settings, especially in those with serious, life-threatening disease;
(5) Assessing and addressing patients' spiritual needs is related to: greater satisfaction with care, better QOL, less depression, fewer unnecessary health services, better functioning, and a better doctor-patient relationship.
(6) Much research is now being done to (a) better understand relationships between religion and health; (b) determine the underlying biological mechanisms involved; AND (c) develop new interventions that harness these effects.
(7) Given the results of research done thus far, there is every reason for physicians to begin assessing and addressing the spiritual needs of patients. **Part 3** of this educational series explains HOW this is done.

For viewers who want updated information about research in this area, go to the Duke's Center website at http://www.spiritualityandhealth.duke.edu/ .

Thank you!