RELIGION AND HEALTH: A REVIEW AND CRITICAL ANALYSIS

by Bruce Y. Lee and Andrew B. Newberg

Abstract. The study of the relationship between religion and health has grown substantially in the past decade. There is little doubt that religion plays an important role in many people's lives and that this has an impact on their health. The question is how researchers and clinicians can best evaluate the available information and how we can improve upon the current findings. In this essay we review the current knowledge regarding religion and health and also critically review issues pertaining to methodology, findings, and interpretation of these studies. It is important to maintain a rigorous perspective with regard to such studies and also to recognize inherent limitations and suggest constructive ways in which to advance this field of study. In the end, such an approach can provide new information that will improve our understanding of the overall relationship between religion and health.

Keywords: health; methodology; religion; spirituality.

The relationship between religion and health care has cycled between cooperation and antagonism throughout history. Some of the most advanced civilizations of ancient times (Assyrian, Chinese, Egyptian, Mesopotamian, and Persian) equated physical illnesses with evil spirits and demonic possessions, and treatment was aimed at banishing these spirits. Since then, physicians and other health-care providers have been viewed by religious groups as everything from evil sorcerers to conduits of God's healing powers. Similarly, physicians', scientists', and health-care providers' views of religion have ranged from interest to disinterest to disdain.

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In recent years, interest in understanding the effects of religion on health has grown in the medical and scientific communities (Levin 1996). Popular news magazines such as *Time* and *Newsweek* and television shows have devoted ample coverage to the interplay of religion and health (Begley 2001a, b; Greenwald 2001; Woodward 2001). Spiritual activities aimed at improving or maintaining health, such as yoga, have become very popular (Corliss 2001; Ulick 2002). Moreover, studies have clearly shown that many patients consider religion to be very important and would like their physicians to discuss religious issues with them.

In this essay we review what is currently known about clinical effects of religious and spiritual practices and the challenges that researchers and health-care practitioners face in designing appropriate studies and translating results to clinical practice. We also discuss future directions in the roles of religion and spirituality in health care.

The Importance of Religion and Spirituality to Patients and Physicians

Studies have confirmed that religion and spirituality play significant roles in many people's lives. Over 90 percent of Americans believe in God or a higher power, 90 percent pray, 67 to 75 percent pray on a daily basis, 69 percent are members of a church or synagogue, 40 percent attend a church or synagogue regularly, 60 percent consider religion to be very important in their lives, and 82 percent acknowledge a personal need for spiritual growth (Bezilla 1993; Gallup 1994; Miller and Thoresen 2003; Poloma and Pendleton 1991; Shuler, Gelberg, and Brown 1994). Studies also show that patients are interested in integrating religion with their health care. More than 75 percent of surveyed patients want physicians to include spiritual issues in their medical care, approximately 40 percent want physicians to discuss their religious faith with them, and nearly 50 percent would like physicians to pray with them (Daaleman and Nease 1994; King and Bushwick 1994; King, Hueston, and Rudy 1994; Matthews et al. 1998). Many physicians seem to agree that spiritual well-being is an important component of health and that it should be addressed with patients, but only a minority (less than 20 percent) do so with any regularity (MacLean et al. 2003; Monroe et al. 2003). Surveyed physicians blame lack of time, inadequate training, discomfort in addressing the topics, and difficulty in identifying patients who want to discuss spiritual issues for this discrepancy (Armbruster, Chibnall, and Legett 2003; Chibnall and Brooks 2001; Ellis, Vinson, and Ewigman 1999).

Educators have responded by offering courses, conferences, and curricula in medical schools, postgraduate training, and continuing medical education (Pettus 2002). However, some question the relevance and appropriateness of discussing religion and spirituality in the health-care setting, fearing that it gives health-care workers the opportunity to impose

personal religious beliefs on others and that necessary medical interventions may be replaced by religious interventions. R. P. Sloan and colleagues caution that patients may be forced to believe that their illnesses are solely the result of poor faith (Sloan and Bagiella 2002; Sloan, Bagiella, and Powell 1999). Moreover, there is considerable debate over how religion should be integrated with health care and who should be responsible, especially when health-care providers are agnostic or atheist (Levin et al. 1997).

The Role of Religion in Health Care

Despite this controversy, there are many signs that the role of religion in health care is increasing. For instance, the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, recognizes religion and spirituality as relevant sources of either emotional distress or support (Kutz 2002; Lukoff, Lu, and Turner 1992; Turner et al. 1995). Also, the guidelines of the Joint Commission on Accreditation of Healthcare Organizations require hospitals to meet the spiritual needs of patients (La Pierre 2003; Spiritual assessment 2003). The literature reflects this trend as well. The frequency of studies on religion and spirituality and health has increased over the past decade (Levin, Larson, and Puchalski 1997). M. Stefanek and colleagues tallied a 600 percent increase in spirituality-and-health publications and a 27 percent increase in religion-and-health publications from 1993 to 2002 (Stefanek, McDonald, and Hess in press).

Some have recommended that physicians and other health-care providers routinely take religious and spiritual histories of their patients to better understand the patients' religious backgrounds, determine how they may be using religion to cope with illness, open the door for future discussions about spiritual or religious issues, and help detect potentially deleterious side effects from religious and spiritual activities (Kuhn 1988; Lo, Quill, and Tulsky 1999; Lo et al. 2002; Matthews and Clark 1998). It may also be a way of detecting spiritual distress (Abrahm 2001). There also has been greater emphasis in integrating various religious resources and professionals into patient care, especially when the patient is near the end of life (Lo et al. 2002). Some effort has been made to train health-care providers to listen appropriately to patients' religious concerns, perform clergy-like duties when religious professionals are not available, and better understand spiritual practices (Morse and Proctor 1998; Proctor, Morse, and Khonsari 1996).

Methodological Issues with Clinical Studies

The study of religion and health has faced the same challenges that most nascent research areas have had to confront: lack of adequate funding, institutional support, and training for investigators. This is part of the reason why a large percentage of the literature consists of anecdotes and

editorials, which are helpful in generating discussions, formulating ideas, and fueling future studies but do not establish causality or scientific support of specific interventions. Of the scientific studies, many are correlational, which demonstrates interesting associations but does not always adjust for all possible confounding variables such as socioeconomic status, ethnicity, and different lifestyles or diets and as a result does not clearly establish causality. In some cases, religious variables are included in a larger study that does not focus on the effects of religion. Because these studies were not necessarily designed to primarily study the religious variables, results must be considered cautiously. There have been a limited number of randomized controlled trials (RCTs). In a systematic review of studies from 1966 to 1999, M. Townsend and colleagues (2002) counted nine RCTs. As the study of religion and health progresses, the number and sophistication of scientific studies should continue to grow.

There also are challenges inherent in the clinical study of religion, ten of which are listed below. Understanding these challenges is crucial in designing appropriate studies and interpreting the results. Otherwise, inappropriate conclusions may be drawn, unnecessary and even dangerous interventions may be initiated, and further necessary research may be curtailed. These challenges may help guide investigators in choosing areas that need further study.

1. Defining *religion* and *spirituality* has been difficult. Investigators have struggled to agree on formal definitions of these two distinct and difficult-to-define terms, which often are mistakenly used synonymously (Powell, Shahabi, and Thoresen 2003; Tanyi 2002). Even if universal definitions were established, which specific practices would be classified as either or neither? For example, where does one draw the line between religions and cults? The Merriam Webster Dictionary defines cult as "a religion regarded as unorthodox or spurious." But what is the criterion for being unorthodox and spurious? As history demonstrates, what formerly was considered a cult and spurious can eventually become a major religion, and vice versa.

2. Designing studies with sufficient numbers of subjects and adequate controls can be problematic. It is difficult to control for the multiple possible confounders as well as recruit and randomize subjects, because they may not be willing or able to alter their religious beliefs and practices for the study. Prayer and other religious activities are often private, silent, or disguised as social interactions, so investigators may have trouble monitoring and ensuring that subjects comply with study requirements. Inadvertent noncompliance can easily occur, as patients are influenced by visitors or their environment.

3. There are many possible measures of religiousness. Religiousness can be measured in many different dimensions, and patients who score high in one dimension may not necessarily score high in others. For example, just because an individual feels that he or she is very religious (high *subjective*

religiosity) does not mean he or she would score high on more objective measures (low *religious commitment/motivation*). An individual may not participate significantly in formal church, synagogue, or temple activities (low *organizational religiosity*) but may regularly perform private religious activities such as praying, reading religious scriptures, and watching religious television (high *nonorganizational religiosity*). A number of other potential measures exist, including how closely an individual's beliefs conform to the established doctrines of a religious body (*religious belief*), how knowledgeable or informed an individual is about his or her religion's doctrines (*religious knowledge*), and how well his or her actions, such as working for the church and acts of altruism, support his or her religion (*religious consequences*). Studies should always clearly state the exact measures used and avoid making claims about measures not used.

4. Religiousness should be measured by accurate and valid means. Some measures of religiousness may be determined by direct observation. Organizational religiosity can be measured by noting the frequency of church attendance, reading religious scriptures, and prayer over a period of time. Counting such activities can be challenging, however. Subtle religious displays may be missed. Moreover, it is unclear how each activity should be counted. Is reading scriptures every day for one hour equivalent to reading scriptures five days a week for four hours? To establish a true cause-and-effect relationship, it would be helpful to elicit a dose-response curve—that is, determine whether increased religiosity corresponds to better health. Many studies have simply divided patients into dichotomous groups (e.g., did they belong to a church?), which does not account for significant variation within each group. Should certain religious activities be considered more important than others? Someone who does not belong to a church but regularly prays and follows religious doctrine may in fact have greater religious commitment than a person who belongs to a church but does not believe in or care to comprehend religious doctrine.

When direct observation is not possible, investigators must rely on questionnaires or interviews. Therefore, the quality of the data depends on the quality of the instrument, and many studies do not indicate how or whether their questionnaires or interviews were validated. Even well-validated instruments are susceptible to a number of potential biases. For instance, patients may forget or be unwilling to admit lapses in religiousness.

5. Studies must account for the positive externalities of religion. Religion can provide many positive externalities potentially beneficial to health. Church groups may provide a social support network, and church activities may offer exercise and reprieves from unhealthy environments. Persons can meet future spouses, physicians, and other health-care workers through church. Religious activities can offer reprieves from daily stress and time for reflection. When a study shows a positive effect of religion, it is not always clear what is responsible for the effect.

6. The direction of causality is not always clear. Is a patient's religious activity causing the observed effects on his or her health, or is the patient's health status affecting his or her religious activity? If an association is seen in a study, it is not always clear which side is the cause. In some cases, poor health can prevent or discourage patients from participating in religious and spiritual activities. In other cases, serious health problems may motivate patients to attend religious activities.

7. Studies must account for significant variations in practices and doctrines among and within different religious affiliations and denominations. Practices and doctrines vary significantly both within and across traditions. Prayers may be silent or vocal. Behaviors connoting minimum levels of religious commitment differ from one religion to another: what passes for proper dress in one denomination may be evidence of inadequate religious commitment in more orthodox denominations. A person's sense of well-being may depend on the degree of hierarchy in a religion and his or her place in that hierarchy. A person's socioeconomic status, gender, and ethnicity may affect his or her acceptance by a given religious group.

8. Religions are affected by the local environment. Different religions hold different social statuses in different countries during different times. Most religions have been persecuted and deprived of resources at some time and place during history. Members of the dominant religion in a society may be more accepted, enjoy a stronger and more extensive social network, and have greater access to resources. All of these can have subtle psychological and physical consequences. In severe cases, physical punishment may be inflicted on minority religious sects. Moreover, members of minority or fringe religious sects who are unable to persuade mainstream individuals to join their cause may have to recruit among societal outcasts, many of whom could have psychological or physical illness. Therefore, any study of a specific religious sect should account for the location of the study group and the sect's relationship with the ambient society.

9. Determining the proper time frame for the study is difficult. How long should individuals or populations be observed before effects are expected to occur? Spiritual activities such as prayer, yoga, and meditation have been found to have immediate effects on physical parameters such as heart rate and blood pressure. The potential effects of other religious and spiritual activities may take longer to occur. Therefore, studies that observe subjects over only a short time period may miss findings. However, the longer the follow-up, the more difficult the study is to perform and the greater chance that more confounders will enter the picture.

10. Bridging the divide between health researchers and religion researchers can be challenging. While interdisciplinary fields have the benefits of bringing together people with diverse interests, experiences, perspectives, and abilities, they also must confront communication hurdles. Health researchers and religion researchers often are not familiar with important

publications in each others' specialty journals. Separate meetings, separate departments, different methodologies, and different lexicons have hindered collaboration. However, the emergence of interdisciplinary journals and conferences has alleviated this problem.

The Positive Effects of Religion on Health

Disease Incidence and Prevalence. Various systematic reviews and meta-analyses demonstrate that religious involvement correlates with decreased morbidity and mortality (Ball, Armistead, and Austin 2003; Braam et al. 1999; Brown 2000; Kark, Shemi, et al. 1996; Kune, Kune, and Watson 1993; McCullough et al. 2000; McCullough and Larson 1999; Oman et al. 2002), and high levels of religious involvement may be associated with up to seven years of longer life expectancy (Helm et al. 2000; Hummer et al. 1999; Koenig et al. 1999; Oman and Reed 1998; Strawbridge et al. 1997). In a study by J. D. Kark, G. Shemi, and colleagues (1996) over a sixteen-year period, belonging to a religious collective in Israel was associated with lower mortality. In G. W. Comstock and K. B. Partridge's (1972) analysis of 91,000 people in a Maryland county, those who regularly attended church had a lower prevalence of cirrhosis, emphysema, suicide, and death from ischemic heart disease. Several studies have implied that religious participation and higher religiosity may have a beneficial effect on blood pressure (Armstrong, van Merwyk, and Coates 1977; Hixson, Gruchow, and Morgan 1998; Koenig et al. 1998b; Walsh 1998).

Some results suggest that mortality and morbidity may vary by religion, even when adjusting for major biological, behavioral, and socioeconomic differences (Rasanen et al. 1996; Van Poppel, Schellekens, and Liefbroer 2002). However, as mentioned previously, the experience of individuals within a given religion can depend significantly on the local environment, so that the results of such comparisons should be viewed guardedly. For instance, a study of contemplative monks in the Netherlands showed that mortality compared with the general population varied with time during the 1900s (de Gouw et al. 1995). Greater morbidity and mortality have been reported among Irish Catholics in Britain, which may reflect their disadvantaged socioeconomic status there (Abbotts, Williams, and Ford 2001; Abbotts et al. 1997). A study in Holland suggested that smaller religious groups may be less susceptible to infectious disease because of social isolation (Van Poppel, Schellekens, and Liefbroer 2002). In general, there have not been enough studies looking at how mortality and morbidity for different religions vary over time and place. Also, many religions and religious sects have received little attention from investigators. Consequently, the body of literature comparing morbidity and mortality rates among religions is not large enough to draw any definitive conclusions.

As a whole, broad epidemiological studies that use crude outcome measures such as morbidity and mortality cannot establish causality but raise

the possibility that something about religion is protective. Many of the study populations may have been too large to account for all possible confounders. Religious participation may be associated with a number of socioeconomic, lifestyle, ethnic, and geographic factors that may affect health. Further epidemiological studies looking at different subgroups may help refine and define associations.

Disease and Surgical Outcomes. Study results also suggest that religiousness may correlate with better outcomes after major illnesses and medical procedures. In T. E. Oxman and colleagues' analysis of 232 patients following elective open-heart surgery, lack of participation in social or community groups and absence of strength and comfort from religion were consistent predictors of mortality (Oxman, Freeman, and Manheimer 1995). In P. Pressman and colleagues' (1990) look at thirty elderly women after hip repair, religious belief was associated with lower levels of depressive symptoms and better ambulation status. R. J. Contrada and colleagues (2004) found that, in patients who underwent heart surgery, stronger religious beliefs were associated with shorter hospital stays and fewer complications, but attendance at religious services predicted longer hospitalizations. S. D. Hodges and colleagues (2002) did not, however, find spiritual beliefs to significantly affect recovery from spinal surgery.

Studies have looked at whether religiosity improves the survival of patients with different illnesses as well. In a study of African American women with breast cancer, patients who did not belong to a religion tended to not survive as long (Van Ness, Kasl, and Jones 2003). In a study by T. W. Zollinger and colleagues (1984), Seventh Day Adventists had better breast-cancer survival than non-Seventh Day Adventists, but this was likely due to earlier diagnosis and treatment. Several other studies of various cancers including colorectal, lung, and breast cancer showed no statistically significant effect of religious involvement on survival (Kune, Kune, and Watson 1992; Loprinzi et al. 1994; Ringdal et al. 1996; Yates et al. 1981).

Behavior and Lifestyles. Lifestyle differences may account for some of the observed effects. Studies in Israel showed that secular residents had diets higher in total fat and saturated fatty acids (Friedlander et al. 1985) and higher plasma levels of cholesterol, triglyceride, and low-density lipoprotein (Friedlander, Kark, and Stein 1987) than religious subjects. W. A. Oleckno and M. J. Blacconiere's (1991) study of college students revealed an inverse correlation between religiosity and behaviors that adversely affect health. Religious involvement has been shown to be associated with greater use of seat belts (Oleckno and Blacconiere 1991) and preventative services (Comstock and Partridge 1972). Compared to the general population, Mormons and Seventh Day Adventists have been found to have lower incidence of and mortality rates from cancers linked to tobacco and alcohol use (Fraser 1999; Grundmann 1992).

Religion can affect alcohol and substance use at several stages. It may affect whether a person initiates use, how significant the use becomes, how the use affects the person's life, and whether the person is able to quit and recover (Miller 1998). It is important to remember that the attitudes of religions toward alcohol and substance use vary considerably. Some religious sects strictly prohibit alcohol and substance use, some allow the use of alcohol and have incorporated drinking wine into their rituals, and others use psychoactive substances such as peyote, khat, and hashish to achieve spiritual goals (Lyttle 1988). Most studies have looked at Judeo-Christian religious sects, which may allow the use of alcohol but tend to proscribe alcohol abuse and illicit substance use. Therefore, conclusions from these studies may not apply to all religions.

Religious individuals may be less likely to use alcohol and other substances (Heath et al. 1999; Luczak et al. 2002; Stewart 2001). Even among those who use alcohol and drugs, religiously involved individuals are more likely to use them moderately, not heavily (Gorsuch and Butler 1976; Miller 1998). In a nationally representative sample of adolescents, L. Miller and colleagues determined that personal devotion (which they defined as a personal relationship with the Divine) and affiliation with fundamentalist denominations were inversely associated with alcohol and illicit drug use (Miller, Davies, and Greenwald 2000). This effect was seen outside the United States as well, in Latin America (Chen et al. 2004). There are a number of possible reasons for these findings. Fear of violating religious principles and doctrines can have a powerful effect. Religions can play a role in educating people about the dangers of alcohol and drugs (Stylianou 2004). Religious involvement and the accompanying positive externalities may keep people occupied and prevent idleness and boredom that can lead to substance abuse. There may be peer pressure from other members of the church to remain abstinent and an absence of peer pressure to try alcohol and other substances. Moreover, religious involvement could be the effect rather than the cause. Substance abuse may prevent religious involvement. D. B. Larson and W. P. Wilson (1980) noted that alcoholics compared to nonalcoholic subjects had less involvement in religious practices, less exposure to religious teachings, and fewer religious experiences.

Many, including patients, think that spirituality should play a large role in cessation programs (Arnold et al. 2002; Dermatis et al. 2004). Indeed, spirituality already permeates many established programs such as Alcoholics Anonymous (AA) (Brush and McGee 2000; Forcehimes 2004; Li, Feifer, and Strohm 2000; Moriarity 2001). Studies have suggested that religious and spiritual practices may aid recovery (Aron and Aron 1980; Avants, Warburton, and Margolin 2001; Carter 1998). A significant number of recovering intravenous drug abusers use religious healing, relaxation techniques, and meditation (Manheimer, Anderson, and Stein 2003). Data suggest that patients often experience spiritual awakenings or religious

conversion during recovery (Green, Fullilove, and Fullilove 1998). However, not all studies show that religiously involved patients have better outcomes. The first RCTs failed to demonstrate sufficient clinical benefit from meditation (Murphy, Pagano, and Marlatt 1986) or intercessory prayer (Walker et al. 1997). In a study by J. S. Tonigan and colleagues (2002), although subjects self-labeled as religious were more likely than agnostics and atheists to initiate and continue attending AA meetings, their outcomes were not clearly better.

Religion may play a role in preventing risky sexual behavior. In a study of African American adolescent females, religiosity correlated with more frank discussions about the risks of sexual activity and avoidance of unsafe sexual situations (McCree et al. 2003). L. Miller and M. Gur's study (2002) of more than 3,000 adolescent girls found positive associations between personal devotion and fewer sexual partners outside a romantic relationship, religious event attendance and proper birth control use, and religious event attendance and a better understanding of human immunodeficiency virus or pregnancy risks from unprotected intercourse. But these findings are not universal. Some have found no relationship between religiosity and sexual practices (Dunne et al. 1994; McCormick, Izzo, and Folcik 1985). In fact, religious traditions or environments may actually suppress open discussion of sex and contraception. E. S. Lefkowitz and colleagues (2003) found that adolescents who discussed safe sex with their mothers tended to be less religious.

Some studies have looked at how religion and spirituality can promote exercise. Among Utah residents, R. M. Merrill and A. L. Thygerson found that persons who attended church weekly were more likely to regularly exercise. However, differences in smoking and general health status seemed to account for this effect (Merrill and Thygerson 2001). A study by S. McLane and colleagues (2003) suggested that incorporating faith-based practices in exercise programs may be attractive to certain people and improve participation in physical activity.

Access to Health-care Resources. Along with encouraging healthy lifestyles, religious groups may promote or provide access to better health care and sponsor health-improvement programs (blood pressure screening, blood drives, soup kitchens, food drives) (Heath et al. 1999; Koenig et al. 1998a; Stewart 2001; Zaleski and Schiaffino 2000). Groups such as the Roman Catholic Church have substantial resources and positions that allow them to positively influence people in ways that many secular organizations cannot. Additionally, many hospitals and health-care clinics are supported by, affiliated with, or even owned by religious groups.

General Well-Being. The effects of religion on mental health have been more heavily studied than effects on physical health. Studies have

demonstrated religiosity to be positively associated with feelings of well-being in white American, Mexican American (Markides, Levin, and Ray 1987), and African American populations (Coke 1992). N. Krause (2003) observed that African American older individuals were more likely than similarly aged white Americans to derive life satisfaction from religion. Religious service attendance was predictive of higher life satisfaction among elderly Chinese Hong Kong residents (Ho et al. 1995) and elderly Mexican-American women (Levin and Markides 1988). Members of religious kibbutzim in Israel reported a higher sense of coherence and less hostility and were more likely to engage in volunteer work than nonmembers (Kark, Carmel, et al. 1996). Similar findings occurred in a population of nursing-home residents (House, Robbins, and Metzner 1982). Hope and optimism seemed to run higher among religious individuals than nonreligious ones in some study populations (Idler and Kasl 1997a, b; Raleigh 1992). Using religious attendance as one of the markers of social engagement, S. S. Bassuk and colleagues determined that social disengagement was linked with cognitive decline in the non-institutionalized elderly (Bassuk, Glass, and Berkman 1999).

A few studies have compared different religions. One showed that among elderly women in Hong Kong, Catholics and Buddhists enjoyed better mental health status than Protestants (Boey 2003). However, not enough data exist to generate meaningful conclusions.

Depression. A number of investigators have looked at the effects of religion on depression. Prospective studies have shown religious activity to be associated with remission of depression in Protestant and Catholic Netherlanders (Braam et al. 1997) and ill older adults (Koenig, George, and Peterson 1998). Prospective studies have also found religious activity to be strongly protective against depression in Protestant and Catholic offspring who share the same religion as their mother (Miller et al. 1997) and weakly protective in female twins (Kennedy et al. 1996). Cross-sectional studies have yielded significant (Koenig et al. 1997) and nonsignificant (Bienenfeld et al. 1997; Koenig 1998; Musick et al. 1998) associations between different indicators of religiosity and a lower prevalence of depression in various populations.

Studies show an inverse correlation between religiosity and suicide. This was found to be the case in P. A. Nisbet's analysis of 1993 National Mortality Followback Survey data (Nisbet et al. 2000) and in another analysis of cross-sectional data of Judeo-Christian older adults from twenty-six countries (Neeleman and Lewis 1999). Suicide may be less acceptable to people with high religious devotion and orthodox religious beliefs (Neeleman et al. 1997; Neeleman, Wessely, and Lewis 1998). But again, it is unclear whether suicidal individuals are less likely to hold strong religious beliefs or individuals with strong religious beliefs are less likely to be suicidal.

Several RCTs have been performed. One demonstrated that directed and nondirected intercessory prayer correlated favorably with multiple measures of self-esteem, anxiety, and depression but did not clearly state the randomization technique and did not account for multiple confounders (O'Laoire 1997). Another suggested that using religion-based cognitive therapy had a favorable impact on Christian patients with clinical depression but may have contained too many comparison groups for strong cause-and-effect relationships to be established (Propst et al. 1992). Three RCTs suggested that religious (Islamic-based) psychotherapy appeared to speed recovery from anxiety and depression in Muslim Malays but did not control for the use of antidepressants and benzodiazepines (Azhar and Varma 1995; Azhar, Varma, and Dharap 1994, Razali et al. 1998).

Coping with Medical Problems. Religious belief may provide greater meaning in people's lives and, in turn, help patients better cope with their diseases (Autiero 1987; Foley 1988; Patel et al. 2002). Although many major religions have deemed illness and suffering the result of sin, many also believe that pain and suffering can be strengthening, enlightening, and purifying. According to various religious teachings, pain and suffering are inevitable and can be cleansing, test virtue, educate, readjust priorities, stimulate personal growth, and define human life (Amundsen 1982).

Religions differ in how they confront suffering. Although generalizations are difficult to draw because considerable variability exists within each religion, many Buddhists believe in enduring pain matter-of-factly (Tu 1980), many Hindus stress understanding and detachment from pain (Shaffer 1978), many Muslims and Jews favor resisting or fighting pain (Bowker 1978), and many Christians stress seeking atonement and redemption (Amundsen 1982).

Religion evidently provides more than just a distraction from suffering. The "diverting attention" and "praying" factors on the Coping Strategies Questionnaire have correlated with pain levels (Geisser, Robinson, and Henson 1994; Swartzman et al. 1994; Swimmer, Robinson, and Geisser 1992). The social network and support provided by religions may be associated with lower pain levels, and religious belief may improve self-esteem and sense of purpose (Hays et al. 1998; Musick et al. 1998; Swimmer et al. 1992). After following 720 adults, D. R. Williams and colleagues (1991) concluded that religious attendance buffered the effects of stress on mental health. In D. D. Coward's (1991) study of 107 women with advanced breast cancer, spirituality appeared to improve emotional well-being.

The Negative Effects of Religion on Health

Although most studies have shown positive effects, religion and spirituality also may negatively impact health. Religious groups may directly oppose certain health-care interventions, such as transfusions or contraception,

and convince patients that their ailments are due to noncompliance with religious doctrines rather than organic disease (Donahue 1985). S. M. Asser and R. Swan (1998) demonstrated that a large number of child fatalities could have been prevented had medical care not been withheld for religious reasons. After interviewing 682 North Carolina women, J. Mitchell and colleagues (2002) concluded that belief in religious intervention may delay African American women from seeing their physicians for breast lumps. In addition, religions can stigmatize those with certain diseases to the point that they do not seek proper medical care (Lichtenstein 2003; Madru 2003).

Moreover, as history has shown, religion can be the source of military conflicts, prejudice, violent behaviors, and other social problems. The religious may ignore or ostracize those who do not belong to their church. Those not belonging to a dominant religion may face obstacles to obtaining resources, hardships, and stress that deleteriously affect their health (Bywaters et al. 2003; Walls and Williams 2004). Religious leaders may abuse their own members physically, emotionally, or sexually (Rossetti 1995; Tieman 2002). Religious laws or dicta may be invoked to justify harmful, oppressive, and injurious behavior (Kernberg 2003).

Additionally, perceived religious transgressions can cause emotional and psychological anguish, manifesting as physical discomfort. This "religious" and "spiritual" pain can be difficult to distinguish from pure physical pain (Satterly 2001). In extreme cases, spiritual abuse (telling people that they are going to suffer eternal purgatory) and spiritual terrorism, an extreme form of spiritual abuse, can occur either overtly or insidiously—that is, it can be implied, though not actually stated, that a patient will be doomed (Purcell 1998a, b). When a mix of religious, spiritual, and organic sources is causing physical illness, overall treatment of the illness can become complicated. Health-care workers must properly balance treating each source.

The Effects of Specific Religious and Spiritual Activities

Religious and spiritual activities have become highly prevalent and may be practiced in either religious or secular manners. Although many of these activities have been correctly or incorrectly linked to specific religions, practicing them does not necessarily connote certain beliefs. In fact, hundreds of variations of each spiritual activity exist, since many have been altered and combined with other activities (such as aerobics) to develop hybrid techniques. As a result, some forms barely resemble the original versions. Thus, investigators must be very specific in describing the technique or activity that they are examining. Results from one form of meditation or yoga may not apply to other forms. A review of literature shows that many studies do not clearly describe the form of spiritual activity under investigation.

Prayer. In D. M. Eisenberg and colleagues' (1998) survey of alternative-medicine usage among Americans, one-fourth of respondents used prayer to cope with physical illness. There is evidence that prayer may be associated with reduced muscle tension, improved cardiovascular and neuroimmunologic parameters, psychologic and spiritual peace, a greater sense of purpose, enhanced coping skills, less disability, and better physical function in patients with knee pain (Rapp, Rejeski, and Miller 2000) and a lower incidence of coronary heart disease (Gupta 1996; Gupta et al. 1997).

M. Poloma and B. Pendleton (1991) found that petitionary and ritualistic prayers were associated with lower levels of well-being and life satisfaction, while colloquial prayers were associated with higher levels. L. Leibovici (2001) reported on a double-blind RCT that showed that remote, retroactive intercessory prayer was associated with shorter length of fever and hospital stay in patients with bloodstream infection. A very small, limited double-blind study showed that intercessory prayer used as adjunct therapy appeared to decrease mortality among children with leukemia (Collipp 1969). In a double-blind study of patients admitted to a coronary-care unit (Byrd 1988), intercessory prayer was linked to significantly more "good" outcomes (163 versus 147) than "bad" ones (27 versus 44). W. S. Harris and colleagues (1999) found similar outcomes with remote intercessory prayer. However, similar subsequent studies were not able to replicate these findings (Aviles et al. 2001; Matthews, Marlowe, and MacNutt 2000; Matthews, Conti, and Sireci 2001; Townsend et al. 2002).

Meditation. Meditation and meditation-related practices are widely used as alternative therapy for physical ailments (Eisenberg et al. 1998). Many physicians routinely recommend meditation techniques to their patients and include them as part of integrated health programs such as Dean Ornish's popular heart disease programs and a Stanford arthritis self-care course. Meditative and relaxation techniques are often part of childbirth preparation classes.

Evidence is not definitive, but preliminary studies suggest that meditation may have a number of health benefits, helping people achieve a state of restful alertness with improved reaction time, creativity, and comprehension (Domino 1977; Solberg et al. 1996), decreasing anxiety, depression, irritability, and moodiness, and improving learning ability, memory, self-actualization, feelings of vitality and rejuvenation, and emotional stability (Astin 1997; Astin et al. 2003; Bitner et al. 2003; Solberg et al. 1996; Walton et al. 1995). Preliminary studies suggest that meditative practices may benefit and provide acute and chronic support for patients with hypertension, psoriasis, irritable bowel disease, anxiety, and depression (Barrows and Jacobs 2002; Carlson et al. 2001; Castillo-Richmond et al. 2000; Kabat-Zinn et al. 1992; 1998; Kaplan, Goldenberg, and Galvin-Nadeau 1993; Keefer and Blanchard 2002; King, Carr, and D'Cruz 2002; Manocha

et al. 2002; Reibel et al. 2001; Williams et al. 2001). There also is evidence that meditation can improve chronic pain (Kabat-Zinn 1982; Kabat-Zinn, Lipworth, and Burney 1985). In a study by K. H. Kaplan and colleagues (1993), all 77 men and women with fibromyalgia who completed a ten-week stress-reduction program using meditation had symptom improvement. Moreover, in several studies, meditators had better respiratory function (vital capacity, tidal volume, expiratory pressure, and breath holding), cardiovascular parameters (diastolic blood pressure and heart rate), and lipid profiles than nonmeditators (Cooper and Aygen 1979; Wallace et al. 1983; Wenneberg et al. 1997).

Unfortunately, many studies did not specify or describe the type of meditation used. A wide variety of methods may be used, including some in which the body is immobile (Zazen, Vipassana), others in which the body is let free (Siddha Yoga, the Latihan, the chaotic meditation of Rajneesh), and still others in which the person participates in daily activities while meditating (Mahamudra, Shikan Taza, Gurdjieff's "self-remembering"). So it is not clear which forms are beneficial and what aspects of meditation are providing the benefits.

Although physically noninvasive, meditation can be harmful in patients with psychiatric illness, potentially aggravating and precipitating psychotic episodes in delusional or strongly paranoid patients and heightening anxiety in patients with overwhelming anxiety. It also can trigger the release of repressed memories. Therefore, all patients using meditative techniques should be monitored, especially when they first start using meditation.

Yoga. Yoga is widely used, often for regular exercise. Contrary to popular misconception, yoga predated Hinduism by several centuries, and, as the American Yoga Association emphasizes, because yoga practice does not specify particular higher powers or religious doctrines, it can be compatible with all major religions. In fact, many religions, including many Christian denominations, have adopted yoga techniques.

Yoga is based on a set of theories that have not yet been scientifically proven. Yoga practitioners believe that blockages or shortages of life force can cause disease or decreased resistance to disease and that yoga can restore the flow of life force to different parts of the body. They use a series of stretching, breathing, and relaxation techniques to prepare for meditation and use stretching movements or postures (*asanas*) that aim to increase blood supply and *prana* (vital force) as well as increase the flexibility of the spine, which is thought to improve the nerve supply. They also use breathing techniques (*pranayamas*) to try to improve brain function, eliminate toxins, and store reserve energy in the solar plexus region.

The few limited clinical studies on yoga have been encouraging, showing reduced serum total cholesterol, LDL cholesterol, and triglyceride levels and improved pulmonary function in yoga practitioners (Arambula et al. 2001; Birkel and Edgren 2000; Schell, Allolio, and Schonecke 1994;

Selvamurthy et al. 1998; Stancak et al. 1991; Stanescu et al. 1981; Udupa, Singh, and Yadav 1973). They also suggest that yoga may be associated with acute and long-term decreases in blood pressure (Murugesan, Govindarajulu, and Bera 2000; Sundar et al. 1984) and may benefit patients with asthma, hypertension, heart failure, mood disorders, and diabetes (Jain et al. 1993; Malhotra, Singh, Singh, et al. 2002; Malhotra, Singh, Tandon, et al. 2002; Manocha et al. 2002; van Montfrans et al. 1990). Two small controlled but non-double-blind studies showed Hatha yoga to significantly alleviate pain in osteoarthritis of the fingers and carpal tunnel syndrome (Garfinkel et al. 1994; 1998). However, yoga is not completely benign; certain asanas are strenuous and may cause injury. In fact, yoga practitioners believe some asanas cause disease.

More studies are needed to determine the benefits (and potential dangers) of yoga. Like meditation, many forms of yoga have emerged. Some involve significant aerobic exercise. Others involve significant strength and conditioning work. Many yoga practices include changes in diet and lifestyle. It may be difficult to draw the line between yoga and other practices that have established health benefits such as exercise. Therefore, future studies should focus on specific yoga forms and movements and avoid making general conclusions about all yoga practices.

Faith Healing. Faith healers use prayer or other religious practices to combat disease. Surveys have found that a fair number of patients in rural (21 percent) and inner-city (10 percent) populations have used faith healers and that many physicians (23 percent) believe that faith healers can heal patients (McKee and Chappel 1992). Despite numerous anecdotes of healing miracles, there has been no consistent and convincing scientific proof that faith healers are effective (King and Bushwick 1994). Additionally, it has not been determined whether faith healers affect patients psychologically or physiologically, and what factors may make them effective. Conclusions cannot be drawn from the existing research.

Conclusions and Future Directions

In general, clinical studies are fraught with challenges. Designing ones that are able to establish cause-and-effect relationships is difficult. This is especially true in the study of religion and health, where confounding factors abound. However, there is evidence that something about religion can provide health benefits. Religion brings many things including social and emotional support, motivation, and health-care resources, and it promotes healthy lifestyles. Clinical studies are valuable in identifying possible associations, raising further questions and guiding subsequent research. Clinical studies also can confirm possible cause-and-effect relationships elucidated by physiologic studies.

There are a number of future directions for research. Many of the accompanying and confounding factors need to be isolated to determine their relative roles. The clinical impact of findings from physiologic studies needs further investigation. Many diseases have not been studied. Many religious groups and sects have not been included. The effect of varying demographic parameters such as age, sex, and location deserves further inquiry.

The findings to date already have clinical implications. Religion is clearly important to many patients, and their religious concerns could be better addressed in the health-care setting. Health-care providers should be aware of how religious involvement can affect symptoms, quality of life, and patients' willingness to receive treatment. Religious and spiritual activities may serve as adjunct therapy in various disease and addiction treatment programs. In the future, additional specific spiritual interventions may prove beneficial.

The study of religion and health as well as the integration of religion into health care is likely to continue growing, and new ways of researching this discipline may emerge. Unless the relationship between religion and health care cycles back to antagonism, many exciting new findings may appear.

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