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Review Article

Spirituality, religiosity, aging and health in global perspective: A review

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A B S T R A C T

Persistent population aging worldwide is focusing attention on modifiable factors that can improve later life health. There is evidence that religiosity and spirituality are among such factors. Older people tend to have high rates of involvement in religious and/or spiritual endeavors and it is possible that population aging will be associated with increasing prevalence of religious and spiritual activity worldwide. Despite increasing research on religiosity, spirituality and health among older persons, population aging worldwide suggests the need for a globally integrated approach. As a step toward this, we review a subset of the literature on the impact of religiosity and spirituality on health in later life. We find that much of this has looked at the relationship between religiosity/spirituality and longevity as well as physical and mental health. Mechanisms include social support, health behaviors, stress and psychosocial factors. We identify a number of gaps in current knowledge. Many previous studies have taken place in the U.S. and Europe. Much data is cross-sectional, limiting ability to make causal inference. Religiosity and spirituality can be difficult to define and distinguish and the two concepts are often considered together, though on balance religiosity has received more attention than spirituality. The latter may however be equally important. Although there is evidence that religiosity is associated with longer life and better physical and mental health, these outcomes have been investigated separately rather than together such as in measures of health expectancy. In conclusion, there is a need for a unified and nuanced approach to understanding how religiosity and spirituality impact on health and longevity within a context of global aging, in particular whether they result in longer healthy life rather than just longer life.

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Introduction

There has been growth in the volume of scientific studies that explore the connection between religion, spirituality and health. Earlier reviews have established that while associations are not universal, on balance, studies indicate salutary benefits arising from religious and spiritual involvement across a number of health outcomes (Hummer, Ellison, Rogers, Moulton, & Romero, 2004; Koenig, 2009; Koenig, King, & Carson, 2012; Marks, 2005; Seeman, Dubin, & Seeman, 2003). The current article is an essay that examines a selection of literature that derives from several notions: religiosity and spirituality is pervasive globally; health benefits that may stem from religious and spiritual involvement could be important for the future of global population health, and; this is particularly the case given realities of global population aging. The dialog to follow therefore identifies religiosity and spirituality as key components of health within the context of global aging and expanding life expectancy. The essay covers several topics. It begins by characterizing population aging and increasing longevity. It then defines religiosity and spirituality within a global context. Evidence is provided that links religiosity and spirituality to health of older persons. Potential mechanisms of these links are then discussed. This leads into a dialog on some potential future directions, followed by a concluding statement.

Religiosity and spirituality in the context of global aging and increasing longevity

Population aging is a term that refers to increasing numbers and proportion of older persons within populations. Population aging is being experienced throughout the world (UNFPA & HelpAge International, 2012). According to United Nations estimates, the population aged 60 and older in 2015 was about 900 million, representing about 12% of the global population (United Nations, 2015). Given medium level growth projections, this number is expected to pass 2 billion by 2050, which at that time will represent close to 22% of the global population. Related to this is increasing longevity with people in many parts of the world living to much older ages than has ever been the case (Vaupel & Kistowski, 2005). With few exceptions, these changes are happening everywhere, in every global region (Zimmer & McDaniel, 2013). The impacts of population aging, including rising health care costs and formal and informal health care needs, are being shared across societies thousands of miles apart, rich and poor, with different cultures, languages, structures of government, family values, and economic systems. Many of the consequences of population aging are common across human societies in all corners of the world.

Given the ubiquity of population aging and increasing longevity, common ways in which good health in old age can be promoted is now of paramount concern to health professionals, researchers and policy makers worldwide (World Health Organization, 2015). While population aging is a recent phenomenon, religiosity, which evidence suggests may be a common factor associated with health, is a long-standing one that similarly extends to all corners of the world (George, Larson, Koenig, & McCullough, 2000; O'Brien, Palmer, & Barrett, 2007). When expanded to include meditative and contemplative activity, the desire to seek a meaning to life or the desire for a transcendent connection, it is clear that expressions of religiosity and spirituality is widespread across individuals living in human societies, across regions with differing ideologies, orientations and practices.

To illustrate we provide in Table 1 results from the 2015 release of the World Values Survey (WVS) (data collected between 2010 and 2014) for major countries with different religious traditions and degrees of secularization (World Values Survey Association, 2014). The countries we show are chosen because they are the most populated ones covered by the WVS. Together they represent 60% of the global population. Shown is the percent within each country that respond to questionnaire items by saying they consider themselves to be a religious person (labeled 'Religious') and the percent saying that they sometimes or often think about or contemplate upon the meaning of life (labeled 'Think'). The latter question is not a direct measure of spirituality, but, given common definitions of spirituality (Koenig, 2012) it does suggest reflection upon abstract and intangible things that relate to a purpose of life and therefore reflects a degree of spiritual-like thinking. Moreover, earlier versions of the WVS included additional questions about meditation and prayer, and the item on thinking and contemplating meaning of life correlates highly with these other measures that can also be linked to spiritualness. The first two columns compare these items for the total sample 18 and older. The next four columns show the percentages for those under age 60 and for those age 60 and older. Statistically significant differences across age groups are indicated by an asterisk.

The percent that say they consider themselves to be religious varies widely with lows of 12.9% in China, 25.4% in Japan and 33.0% in Thailand, and highs of 99.8% in Pakistan, 95.8% in Nigeria and

Table 1
Percent responding in the affirmative to specific questions on the World Values Survey, 2010–2014, in the thirteen most highly populated countries covered by the 2015 release wave, by age.

	All ages		Under 60		60 and older	
	Religious[a]	Think[b]	Religious[a]	Think[b]	Religious[a]	Think[b]
China	12.9	50.2	12.3	52.5	16.6*	37.5*
India	78.3	66.4	78.6	66.8	75.8	61.7
USA	67.9	77.8	64.7	78.7	77.6*	75.1
Brazil	81.2	79.9	79.7	81.1	87.8*	74.3*
Nigeria	95.8	92.4	96.0	92.4	94.3	94.3
Pakistan	99.8	82.7	99.7	82.7	100	82.7
Russia	61.2	71.1	60.8	70.6	62.5	73.1
Japan	25.4	79.2	22.5	80.1	30.1*	77.8
Mexico	74.7	80.8	73.6	81.8	84.1*	72.0*
Philippines	80.8	92.0	80.1	92.8	83.9	87.9*
Germany	50.9	69.9	44.9	66.7	64.1*	76.9*
Turkey	85.0	88.5	83.9	88.8	93.3*	86.9
Thailand	33.0	81.4	30.9	81.2	48.6*	76.6
Mean across countries	65.1	76.8	63.7	78.2	70.7*	75.1
Standard deviation	27.2	11.5	27.9	11.4	25.5	14.0

* Difference between under 60 and 60+ significant at $p < 0.05$.
[a] The full question is: 'Do you consider yourself to be a religious person?'
[b] The full question is: 'Do you think about/contemplate upon (sometimes or often) the meaning or purpose of life?'

85.0% in Turkey. But, when it comes to the percent that frequently think about the meaning of life, there is less variation and the percentages in the more secular countries are quite high. In China, Japan, and Thailand, where a clear minority of persons report themselves as being religious, 50.2%, 79.2% and 81.4% respectively report thinking about the meaning or purpose of life. The average across these thirteen countries is higher and the standard deviation is lower for the item about meaning of life than the item about religiosity. While the different ways in which people respond to these two questions across countries is clearly a function of normative beliefs and practices, the point we make is that some form of spiritual-like thinking as it is ordinarily defined is quite common among people in countries around the world characterized by different dominant religious traditions and different degrees of secularism.

There are age differences in Table 1. Except for two countries, older persons are more likely to report they are religious, and in most cases, the difference is statistically significant. Differences tend to be non-significant within countries that report very high rates of being religious, such as in Nigeria and Pakistan. When it comes to the percent reporting that they think about the meaning of life, differences across age groups are less noticeable. China is an exception. In the USA, the percent that say they think about the meaning of life sometimes or often is 78.7% for those under 60 and 75.1% for those 60 and older, a difference that is not statistically significant. Differences in thinking about meaning of life also run in both directions. In Mexico younger persons are significantly more likely to think about the meaning of life, whereas in Germany it is older persons that are more likely.

It is because population aging and religiosity are both pervasive global phenomenon that the potential salutary effect of religiosity and spirituality is so important for global health. Evidence suggests that older persons tend to be more religious than younger ones; an association that has proven robust in both cross-sectional and longitudinal data (Argue, Johnson, & White, 1999; Levin, Taylor, & Chatters, 1994). Some of this could be a function of cohort differences, with the current older generation coming from a background and a time where religion was valued to a greater degree and thus they carry those values into old age (Wilhelm, Rooney, & Tempel, 2007). However, there is other evidence to suggest that people become more involved with religion and their sense of spirituality magnifies with age (Moberg, 2005; Wink & Dillon, 2001). Therefore, as the world grows older, it is quite possible that it will grow more religious and spiritual. It is not hyperbole to say that population aging coupled with increasing longevity will be among the most important trends driving population health and health care costs around the world over the next several decades (Mayhew, 1999; Zimmer & McDaniel, 2013). Therefore, how religiosity and spirituality associate to health among older persons will be critical for determining the health of these aging older populations and ultimately for health policies adopted by the societies in which older persons live.

Defining religiosity and spirituality for the purpose of global research

Distinguishing the difference between religiosity and spirituality has not been easy for any single culture let alone cross-nationally, and centuries of thinking have yet to provide standard delineations of the two concepts (Fetzer Institute, 2003; Hill et al., 2000; Idler et al., 2003; Koenig et al., 2012; MacKinlay, 2002; Ortiz & Langer, 2002). One difficulty is that the two concepts are related and have common characteristics (Seybold & Hill, 2001); both can involve personal transformation and the search for an ultimate truth. A religious person often defines themselves as being spiritual, so that spirituality often encompasses religiosity, but is often defined in broader terms (Holmes, 2002). Religion around the world generally associates with specific foundational principles that are organized around distinct systems of beliefs, practices and rituals that take place within communities of participants. Spirituality is more difficult to define, particularly across cultures, as its characteristics are not easily agreed upon, and it can mean different things for different individuals in different places (Koenig et al., 2012). More so, spirituality conveys the notion of a personal search relating to things sacred and transcendent (Crowther, Parker, Achenbaum, Larimore, & Koenig, 2002). While levels of religiosity around the world are often measured in direct ways, for instance with respect to frequency of activity, such as ritualistic practice and attendance at places of worship, spirituality must be measured in more indirect personal experiential terms, such as the search for meaning, peace and personal fulfillment, contemplation about meaning of life, and the feeling of a personal relationship to a higher power (Zinnbauer et al., 1997). Religious activity is normally thought to take place within or in connection to formal institutions while spiritual activity, taking on a more personal tonality, can take place within and equally outside of formal institutions. This does not mean to say that religion is necessarily a public endeavor. Eastern religions, such as Shintoism as practiced in Japan and Buddhism as practiced across Southeast and South Asia, involve a greater degree of private worship than do the religions more commonly practiced in the United States and Europe (Hidajat, Zimmer, Saito, & Lin, 2013).

In many ways, religiosity is easier to quantify than spirituality. Because of the abstraction involved with the concept, survey research often includes indirect indicators of spirituality, such as the item referred to in Table 1. This type of measure demonstrates the broadness of spirituality. In some settings, many more people say that they reflect upon the meaning of life, meditate or participate in ritualistic activities rather than say they are religious. Most research around the world to date has focused on the link between religion and health as opposed to spirituality and health (Lucchetti, Lucchetti, & Koenig, 2011). Yet, spirituality and religiosity are often considered together, particularly when incorporating measures relating to meaning of life (Krause, 2003).

Another ambiguity in distinguishing religiosity from spirituality is that both can involve contemplative activity. These will differ across contexts around the world. Religious activities can involve prayer, chanting, singing and listening to chants, songs and sermons. More recently, research on spirituality and health has been extended to consider the impacts of mindfulness and non-denominational meditation (Davidson et al., 2003). While prayer may be considered a conversation, often internal, with a divine power or a higher self, meditation and mindfulness may be thought of as an attempt at deep concentration with a particular focus, such as on the breath, or an attempt at being acutely aware of one's feelings, thoughts and experiences (Shapiro & Carlson, 2009). Again, like religion and spirituality, there are close connections between prayer and mindfulness meditation and both are thought to elicit physical and mental relaxation (Ivanovski & Malhi, 2007).

Connecting religiosity and spirituality to health of older persons

A connections between religiosity or spirituality and health has been recognized for decades if not centuries (Dearmer, 1909; Hiltner, 1943; Koenig, 2012; Koenig et al., 2012; Lavretsky, 2010). Scientific dialog on the topic accelerated in the 1980s and 1990s with influential studies that focused on mental health (Bergin, 1983; Koenig, 1989, 1998). Religion has specifically been found to

exert positive impacts on disability and depressive outcomes of older persons (Idler & Kasl, 1997a; Lavretsky, 2010). Recent years have witnessed proliferation of research on mechanisms that link religiosity to health outcomes (Ellison & Levin, 1998; Hummer et al., 2004; Krause, 2008, 2009, 2011; Krause & Hayward, 2014; Larson, Swyers, & McCullough, 1998).

The impact of religion and spirituality on the health of older persons specifically has been a growing concern and there are a number of empirical and theoretical reviews on the topic (Krause, 1997, 2004; Levin & Chatters, 2008). For older populations, an increasing focus on how the association is manifest has been driven by not only concern for elderly health and related policy implications but also, as referenced above, increasing human longevity, the growth in the size of the older population globally, and the relationship between aging and spirituality (Krause, 2006). Demographic research has for one been critically involved in linking religiosity and longer life (Clark, Friedman, & Martin, 1999; Dupre, Franzese, & Parrado, 2006; Hummer, Benjamins, Ellison, & Rogers, 2010; Hummer, Rogers, Nam, & Ellison, 1999; Koenig et al., 1999; McCullough, Hoyt, Larson, Koenig, & Thoresen, 2000; Musick, House, & Williams, 2004; Strawbridge, Cohen, Shema, & Kaplan, 1997; Sullivan, 2010; Zhang, 2008). Hummer et al. (1999) provided evidence, using the U.S. National Health Interview Survey, that those that do not attend religious services have close to twice the risk of dying as opposed to those that do. Unfortunately, demographic research has almost exclusively focused on frequency of service attendance as an indicator of religiosity and, with few exceptions (noted later in this review), considered only U.S. data (Hummer et al., 2004).

Statistical correlation between religiosity, spirituality and health has been found with other health outcomes (Larson et al., 1998; Levin & Vanderpool, 1991). These include cardiovascular conditions common among older persons such as heart disease, blood pressure, cholesterol, myocardial infarction and stroke (Armstrong, Van Merwyk, & Coates, 1977; Brown, 2000; Sørensen, Danbolt, Lien, Koenig, & Holmen, 2011; Walsh, 1998). Benefits of religiosity and spirituality pre and post cardiac event have been observed (Berntson, Norman, Hawkley, & Cacioppo, 2008; Oxman, Freeman, & Manheimer, 1995). Salutary effects have been seen with respect to disability and functional limitation, kidney function, cirrhosis, emphysema, chronic pain, cancer and self-rated overall health (Gillum, 2006; Hank & Schaan, 2008; Hidajat et al., 2013; Idler & Kasl, 1997a, 1997b; Koenig et al., 2012; Kune, Kune, & Watson, 1993; Larson et al., 1998; Roff et al., 2006; Thege, Pilling, Székely, & Kopp, 2013). Religious attendance has been shown to buffer the need for and length of hospitalization (Koenig et al., 1992, 1998).

There is also strong evidence of a connection between religiosity and mental health (Musick, Traphagan, Koeing, & Larson, 2000). The mental health side of the literature has been more likely to recognize broader spirituality measures as predictors (Richards & Bergin, 2005). Religiosity and spirituality has been shown to relate to depressive and anxiety outcomes, particularly among older persons (Bergin, 1983; Braam, Beekman, & van Tilburg, 1999; Koenig, 1989, 2013, 1998; Lucchetti et al., 2011; Mueller, Plevak, & Rummans, 2001; Seybold & Hill, 2001). Some of the literature has indicated that religiosity can moderate the association between physical health conditions and depression through coping mechanisms, and can increase recovery time from a number of health disorders (Koenig et al., 1992). Cognition has been shown to benefit from religiosity (Corsentino, Collins, Sachs-Ericsson, & Blazer, 2009).

While many studies combine concepts of spirituality and religiosity, spirituality can also represent a separate component of the literature. As noted, spiritual attitudes are assessed using different types of indicators and may be more challenging to measure (George et al., 2000; Miller & Thoresen, 2003; Schlehofer, Omoto, & Adelman, 2008). Atchley (2009) has devoted a book to the topic of spirituality and aging separate from religiosity, much of which illustrates connections between spirituality and well-being. Like religiosity, those that have focused on spirituality have generally found strong associations with both mental and physical health (Ballew, Hannum, Gaines, Marx, & Parrish, 2012; Crowther et al., 2002; Liu, Schieman, & Jang, 2011; Rippentrop, Altmaier, Chen, Found, & Keffala, 2005; Saad, Hatta, & Mohamad, 2010; Tan, Wutthilert, & O'Connor, 2011). Much of this literature concerns older persons (Kirby, Coleman, & Daley, 2004; Lavretsky, 2010; Reed, 1991).

Expanded to include meditative and contemplative activities, there is the possibility of additional associations that have been underexplored (Jantos & Kiat, 2007). Prayer can impact stress and coping, and it has been shown to be related to happiness and feelings of general well-being (Boehnlein, 2008; Poloma & Pendleton, 1989, 1991). A mindfulness practice is increasingly being seen as effective in controlling stress and anxiety (Koszycki, Benger, Shlik, & Bradwejn, 2007; Ledesma & Kumano, 2009; Roth & Creaser, 1997). Older persons benefit from such activity (Ernst et al., 2008). Studies have indicated mindfulness meditation positively impacts a host of physical health outcomes (Cahn & Polich, 2006; Davidson et al., 2003; Fang et al., 2010; Jevning, Wallace, & Beidebach, 1992; Solberg et al., 2000; Young & Taylor, 1998). However, very little research has examined the impact of prayer and meditation on demographic outcomes like life or healthy life expectancy.

While the preponderance of evidence thus far has linked religiosity and health in a positive way, effects are not universally beneficial. Certain aspects and measures of religiosity have been shown to be disadvantages to health. For instance, religion has been found to induce anxiety when it fosters psychologically harmful feelings such as guilt and shame, when it promotes adverse attitudes towards outsiders or when it encourages unquestioning devotion and obedience or beliefs that step toward 'fundamentalism' (Chatters, 2000; Nooney & Woodrum, 2002). It is harmful to rely on faith healing as a substitute for medical care (Pargament et al., 2001). Unfavorable interactions with fellow church members were identified in one study as leading to depressive outcomes among clergy and older church-goers (Krause, Ellison, & Wulff, 1998). Religious doubt, or a feeling of uncertainty towards religious beliefs has been associated with negative mental health outcomes (Krause & Wulff, 2004). There may also be causation and sampling issues in studies of religiosity and health that warrant attention. Depressed individuals may drop out of religious activities making samples biased (Maselko, Hayward, Hanlon, Buka, & Meador, 2012). In this case, mental health affects religious activity rather than the other way around. For older populations with high prevalence of disability, attending religious services requires a certain level of physical ability. This might suggest that attendance, which is the single most frequently used measure of religiosity and the one most often linked to health outcomes, could bias associations more so than other measures, like private practice, which may be the activity of choice for chronically ill and those near death (Yeager et al., 2006).

Potential mechanisms

Much of the literature indicating a favorable connection between religiosity, spirituality and health is descriptive in nature, meaning that the research empirically demonstrates a relationship, but the mechanisms driving the relationship are unexplained. This is particularly the case for research that connects religious attendance and mortality (Hummer et al., 2004).

Research that does examine mechanisms suggest they are complex and multi-faceted. Yet, recent research is uncovering several that appear to be consistent across cultures and countries: social support; behavior; stress reduction; and psychosocial indicators.

Social support

Religious institutions worldwide, such as churches, temples and mosques are often a focal point for interaction, exchange and support. They can play a role in integrating families and providing encouragement for an active family life. A place of worship is often a location where social interaction happens, friends meet, families gather, and supportive activities take place. A place of worship is often a focal point for volunteer and community building work (Wilson & Musick, 1997). Neal Krause has explored the concept of spiritual support, by which he refers to social support that is geared towards enhancing the spiritual and religious experience (Krause, 2002). Spiritual support can involve tangible exchanges such as help and advice in applying spiritual principles and emotional assistance in spiritual pursuits. In addition, in many societies around the world and across religious denominations, places of worship play a central role in organizing the community, providing a place to gather to celebrate events or mourn losses. In the latter case, the place of worship can play a supportive role particularly important for older persons who, in some countries, will be frequently living alone, could be lonely and may be experiencing frequent losses.

Behaviors

Religious institutions have long been viewed as organizations that promote healthy behaviors (Hill, Ellison, Burdette, & Musick, 2007; Powell, Shahabi, & Thoresen, 2003; Strawbridge, Shema, Cohen, & Kaplan, 2001; Takyi, 2003; Thege et al., 2013). Individuals who are religious are often committed to healthy lifestyles, and many religious orientations around the world possess negative views about tobacco, alcohol consumption, drugs and non-marital risky sex. Recent evidence suggests spirituality is associated with the popularity of activities such as meditation and yoga for the maintenance of health (Ross & Thomas, 2010). Related, some have referenced the ability of religion to imbue a sense of self-regulation and self-control (McCullough & Willoughby, 2009).

Stress

Perhaps the largest body of literature on mechanisms relates to the impact of religiosity and spirituality on stress and coping with stressful life events. To some, a chief function of religion is to assist in the face of adversity (Pargament, 1997; Pargament & Raiya, 2007). This is important for older persons who often cope with losses of loved ones, loss of mental and physical function and the propinquity of their own mortality (McFadden, 1995; Rogers, 1976). By prompting a meaning to life, religion has been shown to bolster life satisfaction, optimism and self-esteem, all of which act to reduce the impact of stressful life events (Krause, 2003; Krause, Ellison, Shaw, Marcum, & Boardman, 2001; Pargament, Koenig, & Perez, 2000; Ryff & Singer, 1998). There is also a link between the social support that can be provided through religious activity and the reduction of stress (Nooney & Woodrum, 2002).

Psychosocial responses

Some of the most profound advances in mechanisms have come by way of the testing of psychosocial mediators. Forgiveness for instance has been examined as a health determinant both within and external to religion (Enright & North, 1998; Thoresen, Harris, & Luskin, 2000). By promoting forgiveness religion has been shown to reduce feelings of hostility and anger, which is beneficial for health (Bono & McCullough, 2004). According to some, one of the primary aims of faith is to promote virtues such as humility, compassion, gratitude, wisdom and altruism (Lundberg, 2010). Across a series of studies, Krause has attempted to establish structural links between religiosity and health through these types of psychosocial mechanisms. In a recent publication, Krause and Hayward (2014) show that people who go to church more frequently are more likely to receive a type of support that relates to a sense of belonging that promotes self-ratings of health. In an earlier study (Krause, 2011), church attendance is linked to what is called human needs, such as self-transcendence, control and coping, social participation and development of intimate relationships.

These psychosocial concepts may be difficult to define and measure and the links between them are intricate and at times difficult to observe empirically. Each potential mechanism may be considered as providing a piece of the theoretical puzzle. Krause (2011) asserts that past research represents a disheveled or fractured literature, in need of grander perspective to connect the multidimensional parts. The literature is replete with potential mediators and their connection is often difficult to pinpoint. It is also important to note that across the many studies we reviewed and that adjust and control for multiple intervening mechanisms, there is still a residual impact of religiosity on health. In other words, the impact of religiosity and spirituality on health has yet to be fully explained, especially across global contexts and traditions.

Future directions

Population aging has considerable consequences for global health. Given the potential for religiosity and spirituality to impact on the health of older persons, there is clearly an advantage to public health that can be gained by better understanding the connection between spirituality, religiosity and health in old age across denominational and ritualistic backgrounds and ways of thinking about religious practice. As Hummer et al. (2010) note, future work is needed to determine the strength of the association, the mechanisms through which religiosity and spirituality impact on health across different societies, and the subpopulations for whom religious involvement may or may not be influential. While there has been a burgeoning of scholarly research on religion, spirituality and health, there remain challenges to address, including some that are substantive and some that are methodological (Moberg, 2005; Sloan, Bagiella, & Powell, 1999). Below we identify three contemporary challenges facing the scientific community interested in this topic: longitudinal data; cross-national studies; using health expectancy as an outcome.

Longitudinal data

Studies that link religiosity and mortality provide some of the most robust evidence of positive influences. By definition, such research incorporates longitudinal data. Outside of this, the literature is still weighted toward cross-sectional data, and many of the mortality studies involve a single observation of religiosity or spirituality followed by monitoring of mortality without interim observations. Moreover, connections between religion or spirituality and health transitions, meaning changes in health states while alive, have been mostly absent. This limits ability to make causal connections. Further, while religiosity and spirituality can impact upon health, health, especially among older persons, can make religious and spiritual involvement more or less accessible

or desired. As noted above, in a practical sense, disability typical in older ages can limit one's ability to transport from home to a place of worship. In contrast, life threatening disease may intensify the desire to find a meaning to life and increase the appeal of religious or spiritual involvement. Further, while research has connected many dimensions of early life exposure to later life health and mortality (Elo & Preston, 1992; Galobardes, Smith, & Lynch, 2006; Smith, Mineau, Garibotti, & Kerber, 2009; Temby & Smith, 2013), early life exposure to religion and spiritual thinking on late life health is missing from this dialog.

Cross-national studies

The field of religiosity, spirituality, global aging and health at present relies very much on data from the United States and other developed countries (Hank & Schaan, 2008; Krause & Booth, 2004; Lalive d'Epinay & Spini, 2004). A consideration of the developing world, where most of global population aging is taking place, where most of the world's old people live, and where health care costs are likely to increase most dramatically as a result, exist but has been more limited (e.g., Benjamins, 2007; Chokkanathan, 2013; Hidajat et al., 2013; Kodzi, Gyimah, Emina, & Ezeh, 2011; Nelson, 2000; Reyes-Ortiz, Pelaez, Koenig, & Mulligan, 2007; Zeng, Gu, & George, 2011; Zhang, 2008). There are many benefits of examining associations in non-western settings. Religious orientations differ around the world and, as such, not much is known about whether and to what extent the association persists across boundaries characterized by different ways of expressing religious conviction. Moreover, how different individuals practice religiosity varies widely across countries (Koenig, 2001). When contemplative and meditative pursuits are included, the notion of practice can become murkier. It can be difficult to tease out the impacts of religion versus spirituality versus meditation, and effects of public versus private expressions (Helm, Hays, Flint, Koenig, & Blazer, 2000). As mentioned earlier, Buddhism is organized around individualistic reflective principles much more so than western orientations (Batchelor, 1987; Lutz, Slagter, Dunne, & Davidson, 2008). Buddhists do engage in collective rituals, such as chanting, and visiting temples with family members during specific festivals. But, much more so than in western traditions, visitors to the temple engage in activities that promote meditative absorption, which in Buddhism is viewed as an attempt to cultivate a state of mindfulness. Referring back to Table 1, this could explain why such a minority of Thais, who tend to be practicing Buddhists, report that they are religious but a majority report regularly thinking about the meaning or purpose of life.

Health expectancy as opposed to life expectancy

An underlying goal within medical and other health sciences is to help people live long lives and the increasing longevity being experienced globally is a key indicator of improvement in the human condition. Thus, longevity itself can be a proxy for health. As such, as the global population increasingly lives to older ages it is often assumed that individuals are living both longer and healthier lives. However, the notion that longer life necessarily translates into a healthier old-age is often untested (Crimmins, Hayward, & Saito, 1994; Jagger, 2006). The issue has indeed led to some spirited debate amongst scholars (Fries, 2003; Jagger, 2000; Nusselder, 2003). Recent evidence now indicates that there are at least parts of the world where longer life has not brought about a healthier old-age (World Health Organization, 2015).

In this respect, an important concept is that of health expectancy, or amount of time that individuals within a population can expect to live in relative health. Health expectancy has become a widely used tool for comparing health across populations (Chiu, 2013; Jagger et al., 2009; Robine, Jagger, & Romieu, 2001; Saito, Qiao, & Jitapunkul, 2003). It allows for the quantification of differences in health in terms that are not only easily understood, with reference to number of years of life and percent of life to be lived in healthy states, but also can be translated into future health care needs. Although researchers have recognized the importance of religiosity and spirituality as a determinant of longevity, there is now a need to determine whether religiosity and spirituality associate with extra years of life being lived in good or poor health. That is, whether religiosity and spirituality contribute globally to healthy life expectancy as well as total life expectancy.

Conclusion

Several authors have noted that research on religiosity or spirituality and health can be controversial and critics of religiosity as a determinant of health can be outspoken (Hummer, 2005; Lavretsky, 2010). It can be considered by some to be ‘unscientific’ to consider religiosity among other health determinants, despite evidence cited above. Yet, there does appear to be an intensification of spiritual affectations with aging. At the same time, the global population is getting older and living to increasingly advanced ages. Now for the first time in human history, most people in the world can expect to live into their 60s (World Health Organization, 2015). These facts strongly point toward a requirement and even an obligation on the part of the scientific community to explore the connection between religiosity, spirituality and health in order to more fully understand the determinants of quality of life in old age and in so doing suggest ways for improving human health and the human condition.

The current essay has its limitations. More systematic reviews on religion and health exist elsewhere (Hummer et al., 2004; Koenig, 2009; Marks, 2005; McCullough et al., 2000; Seeman et al., 2003). Rather than doing a review that would involve empirical assessments of a set of literature, we have sought to focus on a particular subset that facilitates a discussion on religiosity and spirituality within the context of global aging. Therefore, we have chosen to examine literature that not only speaks to issues of religiosity and spirituality among older persons in different regions of the world, but also touches on the global aging taking place and the implications of this for overall health. While the lack of a systematic strategy herein results in selection bias, we believe that we have provided an honest and balanced look at the literature that links religion, spirituality and health among older persons.

The field of religiosity, spirituality and health is still growing. In the current essay we have suggested that advancements are needed in order to fully appreciate the impact of religiosity and spirituality on health within the context of global aging. These include examining related concepts of meditation and mindfulness, using longitudinal data more frequently to strengthen causal connections, conducting cross-national studies since religious and spiritual orientations, values, beliefs and practices differ worldwide, and examining a broader slate of health outcomes that are relevant for aging populations, which include contrasting changes in total life years versus years in states of healthfulness.

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