

## Mental Disorders, Religion and Spirituality 1990 to 2010: A Systematic Evidence-Based Review

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**Abstract** Religion/spirituality has been increasingly examined in medical research during the past two decades. Despite the increasing number of published studies, a systematic evidence-based review of the available data in the field of psychiatry has not been done during the last 20 years. The literature was searched using PubMed (1990–2010). We examined original research on religion, religiosity, spirituality, and related terms published in the top 25 % of psychiatry and neurology journals according to the ISI journals citation index 2010. Most studies focused on religion or religiosity and only 7 % involved interventions. Among the 43 publications that met these criteria, thirty-one (72.1 %) found a relationship between level of religious/spiritual involvement and less mental disorder (positive), eight (18.6 %) found mixed results (positive and negative), and two (4.7 %) reported more mental disorder (negative). All studies on dementia, suicide, and stress-related disorders found a positive association, as well as 79 and 67 % of the papers on depression and substance abuse, respectively. In contrast, findings from the few studies in schizophrenia were mixed, and in bipolar disorder, indicated no association or a negative one. There is good evidence that religious involvement is correlated with better mental health in the areas of depression, substance abuse, and suicide; some evidence in stress-related disorders and dementia; insufficient evidence in bipolar disorder and schizophrenia, and no data in many other mental disorders.

**Keywords** Religiosity · Spirituality · Psychiatry · Depression · Substance abuse · Suicide

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Religious and spiritual dimensions of mental health have not received much study in psychiatry during the last 150 years. In the late nineteenth century, Jean Charcot and Sigmund Freud began to associate religion with hysteria and neurosis. This began a deep divide that would separate religion from mental health care for the next century (Koenig 2009). In 1969, after reviewing the research in this area, Victor Sanua stated: “The contention that religion as an institution has been instrumental in fostering general well-being, creativity, honesty, liberalism, and other qualities is not supported by empirical data. [...] there are no scientific studies which show that religion is capable of serving mental health” (p 1,203) (Sanua 1969).

(Larson et al. 1986) challenged this view by conducting systematic reviews of quantitative research on religion in psychiatry. In 1986, they reported that only 2.5 % of psychiatric articles reviewed included a religious variable. Six years later, they assessed all measures of religious commitment reported in research studies published in two prominent research journals in psychiatry in 1978 through 1989, finding 139 religious measures examined in 35 studies. In contrast to Sanua’s conclusion, they found that 72 % of studies reported a positive relationship between religious involvement and better mental health, 16 % worse mental health, and 12 % no correlation (Larson et al. 1992). For many years, the work of Larson and colleagues served as *the* state-of-the-art review of associations between religion and mental health. Since then, however, research on the topic has increased dramatically across health disciplines, but has yet to be analyzed in a systematic way in psychiatry.

Due to the large number of reports available, reviews on the topic are often biased by the author’s selection of papers. Our aim was to conduct a systematic evidence-based review of research on mental disorders and religion/spirituality between 1990 and 2010, using simple but rigorous selection criteria, applying a standardized rating for the quality of each study’s design/methods, and providing a systematic summary of the results.

## Methods

The literature was searched using the electronic database of PubMed (1990–December 2010). The search terms used were “religio” (i.e., religion, religiosity, and religiousness) or “spiritu” (i.e., spiritual and spirituality), searching only the title of the article. A total of 5,200 publications were found among all journals listed in PubMed. To identify the highest quality papers, we selected publications in psychiatric journals ranked in the top 25 % by the ISI citation index 2010, that is, the top 32 journals out of 126 listed. Using this procedure, we identified 108 papers of which 66 were reports of original data-based quantitative research. Interestingly, 13 out of these 32 top journals (41 %) had published no research on this topic during that 20-year period (at least none that listed “religio” or “spiritu” in the title). Fourteen of the 66 papers were excluded because they focused on non-psychiatric diseases (i.e., hypertension, myocardial infarction, and epilepsy). The same procedure was performed in the top neurological journals, defined by their impact factor (as with psychiatry journals). Of the 185 neurological journals listed in the ISI citation index, 41 fell into this category. In those journals, we located 15 additional papers, of which two reported original research on mental disorders, defined by the International Classification of Diseases (ICD-10), Chapter V *Mental and Behavioral Disorders*, of the World Health Organization (WHO). Both papers were included in our review (Kaufman et al. 2007; Coin et al. 2010). Twenty-nine of the 41 neurology journals (69.0 %) had no research articles on religion/spirituality between 1990 and 2010.

The remaining 54 papers were reviewed by both authors. After examining the studies, the authors agreed to exclude six more papers because they did not focus on a specific psychiatric disorder, but rather on well-being (Tsuang et al. 2002), coping (Winter et al. 2009; Rammohan et al. 2002; Hebert et al. 2007), spiritual healing (Bishop et al. 2010), or the serotonin system (Borg et al. 2003). Two papers on schizophrenia did not examine the association between religious/spiritual involvement and schizophrenia, so they were excluded as well (Jones and Watson 1997; Trindade et al. 2010). One more paper was excluded because it turned out to be a case report (Burt and Rudolph 2000), and the studies by Reynolds et al. (Reynolds et al. 2000) and Fallon et al. (1990) were excluded because they did not statistically examine the religion/spirituality–mental health relationship. The remaining 43 studies were then rated for the quality of their design, measures, and statistical methods.

### Assessing Quality of Methods

The quality of each study was rated by both authors using a score between 1 (lowest quality) and 10 (excellent quality) according to the following eight criteria: study design (clinical trial, prospective cohort, cross-sectional, etc.); sampling method (random, systematic, or convenience); number of religion/spirituality measures; quality of measures; quality of mental health outcome measure; contamination between outcome and religion/spirituality measures; inclusion of control variables; and statistical method, based on a scheme adapted from Cooper (Cooper 1984). Although Cooper's primary focus was on conducting research reviews (identifying studies and integrating them), he also described how to judge the overall quality of a study's methods. He emphasized the definition of variables; validity and reliability of measures; representativeness of the sample (sample size, sampling method, and response rates); research methods (quality of experimental manipulation and adequacy of control group for clinical trials); how well the execution of the study conformed to the design; appropriateness of statistical tests (power, control variables); and the interpretation of results. Our study ratings followed these guidelines, emphasizing quality of design/execution, variable measurement, and quality of the statistical analyses. The Pearson correlation between the two ratings was 0.76. Disagreements were resolved, and the ratings presented here represent a consensus of the two authors. The mean value of the quality scores between studies reporting positive relationships between religious/spiritual involvement and mental health outcomes versus non-positive findings did not differ significantly (7.06 vs. 7.08). The quality of the methods and statistics presented in Table 1 were arrived at by consensus and were rated using five levels: poor, fair, good, very good, and excellent.

Over 40 different measures of religion/spirituality were used in the different studies. All assessed degree of involvement, comparing subjects along this dimension. The study findings were placed into six categories: NA: no association with mental health outcome; POS: at least one significant positive association and no significant negative associations; (POS): positive association, but significance level borderline ( $0.05 < p < 0.10$ ); NEG: at least one significant negative association with better mental health and no significant positive ones; (NEG): negative association, but significance borderline ( $0.05 < p < 0.10$ ); and MIX: mixed (both significant positive and significant negative associations with mental health depending on the religious/spiritual characteristic measured).

Finally, based on other evidence-based reviews (Bonelli and Wenning 2006), the level of evidence for the correlation between religious/spiritual involvement and mental health in different psychiatric disorders was standardized in four categories: good evidence, some

**Table 1** Quality ratings and findings for the 43 research reports

First author, year of publication	Journal of publication	Number of subjects	Study design	QDM	QStat	QS	R/S impact on MH
<i>F00–F09 organic, including symptomatic, mental disorders</i>							
Kaufman et al. (2007)	Neurology	70	Prospective study	Very good	Very good	8	POS
Coin et al. (2010)	Curr Alzheimer Res	64	Prospective study	Excellent	Excellent	9	POS
<i>F10–F19 mental and behavioral disorders due to psychoactive substance abuse</i>							
Francis and Mullen (1993)	Addiction	4,753	Cross-sectional cohort study	Very good	Fair	5	POS
Mullen et al. (1996)	Addiction	985	Cross-sectional & longitudinal	Fair	Fair	3	POS
Kendler et al. (1997)	Am J Psychiatry	1,902	Cross-sectional and retrospective	Excellent	Excellent	9	POS
Miller et al. (2000)	J Am Acad Child Adolesc Psychiatry	676	Cross-sectional cohort study	Excellent	Excellent	8	POS
Kendler et al. (2003)	Am J Psychiatry	2,616	Cross-sectional and retrospective	Very good	Fair	6	POS
Blay et al. (2008)	Am J Geriatr Psychiatry	6,961	Cross-sectional cohort study	Very good	Very good	8	MIX
Chi et al. (2009)	Addiction	357	Cross-sectional and longitudinal	Good	Very good	7	MIX
Ghandour et al. (2009)	Addiction	1,837	Cross-sectional and retrospective	Good	Good	6	POS
Harden (2010)	J Child Psychol Psychiatr	5,348	Cross-sectional and longitudinal	Excellent	Excellent	9	NA
<i>F20–F29 schizophrenia, schizotypal, and delusional disorders</i>							
Nimgaonkar et al. (2000)	Am J Psychiatry	8,542	Retrospective cohort study	Very good	Very good	8	POS
Mohr et al. (2006)	Am J Psychiatry	115	Cross-sectional study	Good	Good	6	POS
Moss et al. (2006)	Schizophr Res	195	Cross-sectional and retrospective	Good	Very good	7	MIX
Borras et al. (2007)	Schizophr Bull	103	Cross-sectional study	Good	Fair	6	MIX
Linden et al. (2010)	Psychol Med	n.a.	Retrospective cohort study	Very good	Very good	8	NEG
Mitchell and Romans (2003)	J Affect Disord	147	Cross-sectional study	Fair	Fair	5	MIX
Cruz et al. (2010)	Bipolar Disord	334	Cross-sectional study	Good	Good	6	NEG
<i>F32 depressive episode and F33 recurrent depressive disorder</i>							
Pressman et al. (1990)	Am J Psychiatry	30	Prospective study	Good	Fair	6	POS
Koenig et al. (1992)	Am J Psychiatry	850	Cross-sectional and longitudinal	Excellent	Very good	9	POS

**Table 1** continued

First author, year of publication	Journal of publication	Number of subjects	Study design	QDM	QStat	QS	R/S impact on MH
Azhar and Varma (1995a)	Psychother Psychosom.	64	Randomized clinical trial	Fair	Good	5	POS
Miller et al. (1997)	J Am Acad Child Adolesc Psychiatry	211	Prospective cohort study	Very good	Very good	8	POS
Braam et al. (1997)	Acta Psychiatr Scand	177	Prospective cohort study	Very good	Good	7	POS
Koenig et al. (1997)	Am J Geriatr Psychiatry	4,000	Cross-sectional cohort study	Very good	Very good	8	POS
Koenig et al. (1998)	Am J Psychiatry	86	Prospective study	Very good	Very good	9	POS
Braam et al. (1999)	J Affect Disord	3,051	Cross-sectional cohort study	Very good	Very good	7	MIX
Braam et al. (2001)	Psychol Med	8,398	Cross-sectional cohort study	Very good	Very good	8	POS
Braam et al. (2001)	Psychol Med	17,739	Cross-sectional cohort study	Very good	Very good	8	POS
Miller and Gur (2002)	J Am Acad Child Adolesc Psychiatry	3,356	Cross-sectional cohort study	Very good	Good	7	POS
Horowitz and Garber (2003)	J Am Acad Child Adolesc Psychiatry	240	Prospective cohort study	Very good	Good	7	(POS)
Nasser and Overholser (2005)	Acta Psychiatr Scand	62	Cross-sect/prospective study	Good	Very good	6	POS
King et al. (2007)	Psychol Med	709	Cross-sectional study	Good	Very good	7	MIX
King et al. (2007)	Psychol Med	402	Prospective study	Very good	Very good	7	MIX
Koenig (2007)	Am J Geriatr Psychiatry	1,424	Case-control study	Very good	Very good	7	POS
Chatters et al. (2008)	Am J Geriatr Psychiatry	837	Cross-sectional cohort study	Very good	Very good	8	POS
Cruz et al. (2009)	Am J Geriatr Psychiatry	130	Cross-sectional study	Good	Good	5	POS
Maselko et al. (2009)	Psychol Med	918	Cross-sectional and retrospective	Very good	Fair	6	POS
Braam et al. (2010)	J Affect Disord	776	Cross-sectional cohort study	Very good	Very good	8	MIX
Dew et al. (2010)	J Affect Disord	145	Cross-sectional and longitudinal	Very good	Very good	7	POS
<i>Suicide</i>							
Neeleman et al. (1997)	Psychol Med	28,085	Cross-sectional cohort study	Excellent	Very good	10	POS
Dervic et al. (2004)	Am J Psychiatry	371	Cross-sectional study	Good	Good	7	POS
Rasic et al. (2009)	J Affect Disord	36,984	Cross-sectional cohort study	Excellent	Very good	9	POS

Table 1 continued

First author, year of publication	Journal of publication	Number of subjects	Study design	QDM	QStat	QS	R/S impact on MH
<i>F40–F48 neurotic, stress-related, and somatoform disorders</i>							
Azhar et al. (1994)	Acta Psychiatr Scand	62	Randomized clinical trial	Good	Good	5	POS
Azhar and Varma (1995b)	Acta Psychiatr Scand	30	Randomized clinical trial	Good	Good	5	POS
Kaplan et al. (2005)	J Clin Psychiatry	314	Cross-sectional cohort study	Very good	Good	8	POS

QS quality score, MH mental health, POS significant, (POS) trend, NEG significant, (NEG) trend, NA no association, MIX mixed, QDM quality of design and method, QStat quality of statistics, Ref reference in the text; see text for details

evidence, insufficient evidence, and no evidence. The evidence in favor of a positive correlation between religious/spiritual involvement and mental health was considered “good” when supported by at least 66 % of the studies available (irrespective of quality) and confirmed by at least three high-quality studies (quality score 6 or higher). The evidence was considered “some” when supported by at least 66 % of the studies (irrespective of quality) and confirmed by one high-quality study. The evidence was considered “insufficient” when there were some positive findings, but they did not reach the 66 % criterion and/or no study had a quality score of 6 or higher.

**Results**

Of the 43 studies identified, 36 focused exclusively on some aspect of religion, two emphasized only spirituality, and five examined both religion and spirituality. The specific term used in the two studies that only examined spirituality assessed “spiritual beliefs” (Mitchell and Romans 2003; Nasser and Overholser 2005), whose measurement included religious beliefs in addition to more diffusely defined spiritual, philosophical, and existential beliefs. In the five studies using both terms, most did not make clear distinctions between spirituality and religion, which is not surprising given challenges involved in differentiating these concepts for research purposes and the usual practice of assessing spirituality using religious measures—see Discussion. For these reasons, we present the results in terms of *religious* involvement (as did the Larson reviews).

The findings are summarized in Table 1, presented by the order of ICD-10 chapter V. Among the 43 studies, we found two on *organic mental disorders* [ICD-10 F0], nine on *psychoactive substance abuse* [F1], five on *schizophrenia* [F2], 24 on *affective disorders* (including suicide) [F3], and three on *neurosis* [F4]. No studies were found in the five remaining categories *Behavioral syndromes associated with physiological disturbances* [F5], *Disorders of adult personality and behavior* [F6], *Mental retardation* [F7], *Disorders of psychological development* [F8], and *Behavioral emotional disorders with onset in childhood* [F9]. Table 2 summarizes the results. In total, 72 % reported a positive relationship between religious involvement and better mental health, 2 % a trend toward a positive association, 2 % no association, 19 % found mixed (positive and negative) results,

**Table 2** Results summarized according to diagnostic groups

	POS		(POS)		NA		MIX		(NEG)		NEG		ALL		QS
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	
F0 dementia	2	100	0	0	0	0	0	0	0	0	0	0	2	100	8.50
F1 addiction	6	66.7	0	0	1	11.1	2	22.2	0	0	0	0	9	100	6.78
F2 schizophrenia	2	40	0	0	0	0	2	40	0	0	1	20	5	100	7.00
F3 depression	15	78.9	1	5.3	0	0	3	15.8	0	0	0	0	19	100	5.50
F3 suicide	3	100	0	0	0	0	0	0	0	0	0	0	3	100	7.14
F3 bipolar	0	0	0	0	0	0	1	50	0	0	1	50	2	100	8.67
F4 neurosis	3	100	0	0	0	0	0	0	0	0	0	0	3	100	6.00
All mental disorders	31	72.1	1	2.3	1	2.3	8	18.6	0	0	2	4.7	43	100	7.05

POS significant, (POS) trend, NEG significant, (NEG) trend, NA no association, MIX mixed, QS quality score; see text for details

and 5 % found a negative association. In other words, 93 % of the studies found at least one positive association (significant, trend, or mixed), whereas 23 % reported at least one negative relationship. All studies on dementia [F0], suicide [F3], and neurosis [F4] found a positive association between religion and mental health, as well as 79 % of the studies on depression [F3] and 67 % of those on substance abuse [F1]. In contrast, most findings in schizophrenia [F2] were predominantly mixed or positive, whereas those in bipolar disorder [F3] were mixed or negative. Among the 43 papers, only three (7 %) were intervention studies (Azhar and Varma 1995; Azhar et al. 1994; Azhar and Varma 1995).

The quality and volume of this research have been increasing during the past 20 years. We found 14 papers published before 2000 and 29 afterward. A weak positive correlation between quality score and year of publication was found (+0.16). Publications before 2000 had an average quality score of 6.86, publications from 2000 to 2005 had a score of 7.00, and papers from the years 2006 to 2010 had a score of 7.21. Interestingly, both of the studies with negative results were published during this last period, as well as the only no association study and six of eight studies with mixed findings. Overall, the soundest methodology and design were found for studies on suicide (quality score 8.67) and dementia (8.50), somewhat lower scores were given to studies on depression (7.14), schizophrenia (7.00) and addiction (6.78), and relatively poor quality was assigned to studies on neurosis (6.00) and bipolar disorder (5.50).

## Specific Studies

### *Organic Mental Disorders*

Two studies were in the category F00–F09 Organic Mental Disorders (Kaufman et al. 2007; Coin et al. 2010) and had many characteristics in common. Both focused on Alzheimer's disease [ICD-10 code F00], both used a sound methodology for making the diagnosis, both examined religious involvement as the primary predictor, both were prospective, and both were rated high for quality of design and statistical methods, resulting in a high-quality score. Both studies measured cognitive decline over 12 months with the Mini-Mental State Examination. Both study populations had a mean age of about 78 years and had more female than male subjects. Finally, both studies reported that higher levels of religiosity correlated with slower cognitive decline over time.

The first study by Kaufman et al. (2007) examined the effects of two religious variables on annual cognitive decline, a self-rating of spirituality, and frequency of private religious activities (prayer, Bible study, meditation, etc.). These predictors accounted for 16.5 % of the variance in annual cognitive score in a multiple regression model. In contrast, neither measure of quality of life predicted rate of cognitive decline. The second study by Coin et al. (2010) had a slightly more cognitively impaired sample (baseline MMSE 20.7) compared to the Kaufman study (23.6). Not only did these researchers measure cognitive decline, but also included functional and behavioral measures. Two groups were formed based on a measure of religiosity that included religious attendance, praying, reading religious literature, and watching/listening to religious programs on TV or radio; 35 subjects had moderate or high religiosity and 29 no or low religiosity. Cognitive, functional, and behavioral scores did not differ significantly between the two groups at baseline. However, a year later, the high religiosity group showed no significant decline in cognitive and behavioral scores, while the low religiosity group scored significantly worse on both. All patients, however, experienced a progressive decline in functional abilities.



Researchers also examined caregiver burden, finding a significant reduction over time in caregivers of religious patients.

### *Substance Abuse*

Nine studies were in the category F10–F19 Psychoactive Substance Abuse (Kendler et al. 1997; Miller et al. 2000; Kendler et al. 2003; Harden 2010; Chi et al. 2009; Francis and Mullen 1993; Ghandour et al. 2009; Mullen et al. 1996; Blay et al. 2008), with an average quality score of 6.67. Out of the nine substances listed in F10–F19, six of them were covered by the studies found. All nine papers focused on alcohol abuse [F10], two of them exclusively (Harden 2010; Ghandour et al. 2009), three on nicotine dependency [F17] (Kendler et al. 1997; Mullen et al. 1996; Blay et al. 2008), and four on other forms of substance abuse (Miller et al. 2000; Kendler et al. 2003; Chi et al. 2009; Francis and Mullen 1993) including use of heroin [F11] (Francis and Mullen 1993), marijuana [F12] (Miller et al. 2000; Francis and Mullen 1993), cocaine [F14] (Miller et al. 2000), nicotine [F17] (Kendler et al. 2003; Francis and Mullen 1993), butane gas [F18] (Francis and Mullen 1993), glue [F18] (Francis and Mullen 1993), “drug abuse” in general (Kendler et al. 2003; Chi et al. 2009), and “any contraband drug” (Miller et al. 2000). Three of the nine subcategories were not covered: there were no studies on the use of *sedatives or hypnotics* [F13], *other stimulants, including caffeine* [F15], and *hallucinogens* [F16]. Four papers focused on adolescents (Miller et al. 2000; Harden 2010; Chi et al. 2009; Francis and Mullen 1993), another four on adults (Kendler et al. 1997, 2003; Ghandour et al. 2009; Mullen et al. 1996), and one on a geriatric population (Blay et al. 2008). Two papers were based on the population-based Virginia Twin Registry (Kendler et al. 1997, 2003), both of them including several other lifetime psychiatric disorders besides substance abuse in their analyses. One study had only female participants (Kendler et al. 1997). Six out of nine studies found an inverse relationship between religiosity and substance abuse, and one study found an inverse relationship with drug dependency but not with alcohol misuse (Chi et al. 2009). The findings in the five substances studied [F11, F12, F14, F17, and F18] besides alcohol all reported inverse relationships between religious involvement and substance abuse.

The only study in this group that found no association between substance abuse and religiosity was the most recent and highest quality publication with the largest sample, Harden (2010), on the age at first onset of drinking, using twins and siblings (aged 11–21 years) who were concordant or discordant for religiosity. In this dataset, the mean age at drinking initiation for the “Both Religious” group (14.4 years) was slightly but significantly later than for the “Both Non-Religious” group (13.9 years). In the case of religious discordance between the siblings, however, the mean age at first drink for the “Self Religious Only” group (14.2) was equal to the mean age at first drink for the “Sibling Religious Only” group (14.2), indicating that siblings who differed in their religiosity both drink earlier in a non-religious family and later in a religious family. They could not, however, exclude family religiosity as the key factor.

### *Psychotic Disorders*

Five studies were in the F20–F29 Schizophrenia, Schizotypal, and Delusional Disorders category (Nimgaonkar et al. 2000; Mohr et al. 2006; Linden et al. 2010; Borrás et al. 2007; Moss et al. 2006), with an average quality score of 7.00. Most examined patients with disorders within the overall group [F20–F29], although one study focused on *Acute and*

*Transient Psychotic Disorders* [F23] (Linden et al. 2010). The latter work from Linden and colleagues reported that intensive religious experiences increased the likelihood of transient psychotic disorders, whereas the four remaining publications reported that religious involvement was related to greater compliance or higher well-being in patients with schizophrenia. Moss et al. (2006) also found a longer duration of untreated psychosis in Protestants compared to those with no affiliation, and Borrás et al. (2007) found more noncompliance in the “spiritual but not collectively practicing” than in the “not religious” and the “spiritual and collectively practicing” group.

### *Mood Disorders*

Twenty-four of the 43 papers were in the F30–F39 Mood (affective) Disorders category. Out of these, two studies were in the F31 *Bipolar Affective Disorder* (Cruz et al. 2010; Mitchell and Romans 2003) group and 19 in the F32 *Depressive Episode* or F33 *Recurrent Depressive Disorder* categories (Pressman et al. 1990; Koenig et al. 1992, 1998; Braam et al. 2001; King et al. 2007; Braam et al. 1997, 1999; Cruz et al. 2009; Koenig 2007; Koenig et al. 1997; Chatters et al. 2008; Miller et al. 1997; Miller and Gur 2002; Horowitz and Garber 2003; Dew et al. 2010; Azhar and Varma 1995; Maselko et al. 2009; Nasser and Overholser 2005; Braam et al. 2010). No studies, however, were found in the F30.0 *Hypomania*, F34 *Persistent Mood Disorders* (i.e., Cyclothymia and Dysthymia), or F38 *Other Mood Disorders* groups. We also included three studies on suicide (Neeleman et al. 1997; Dervic et al. 2004; Rasic et al. 2009) in this section.

The papers on bipolar affective disorder [F31] had the lowest average quality score of all groups. The study by Mitchell and Romans (Mitchell and Romans 2003) found that most patients saw a direct link between their beliefs and the management of their illness, and many used religion to cope with their symptoms. However, a significant minority also indicated that their religious beliefs put them in conflict with illness models (24 %) and with the advice (19 %) provided by their medical advisors. Moreover, Cruz et al. (2010) found increased rates of prayer/meditation in bipolar patients who were in a mixed state and lower rates of prayer/meditation in those who were euthymic. Depression and mania by themselves were not associated with religious involvement in that study.

While the role that religion plays in bipolar disorder is unclear or negative, the results reported by the three studies on religious involvement and suicide were consistently in the positive direction (i.e., an inverse relationship with suicidal thoughts, attitudes, and behaviors). Moreover, they had the highest quality score of all diagnostic groups. Neeleman et al. (1997) examined ecological associations between religion, suicide tolerance, and suicide rates. Overall, there was a negative association between religiousness and suicide tolerance (stronger in women than men), and higher levels of suicide tolerance were associated with higher suicide rates. Higher levels of religiousness, church attendance, and religious upbringing were associated with lower suicide rates in women, but not in men. Rasic et al. (2009) found that 0.47 % of religious and 0.83 % of non-religious persons made at least one suicide attempt in the past 12 months. “Identifying oneself as spiritual” and “religious attendance” were both significantly associated with a decreased likelihood of attempted suicide. Finally, Dervic et al. (2004) found that religiously unaffiliated subjects had significantly more lifetime suicide attempts and more first-degree relatives who committed suicide than subjects with a religious affiliation. Furthermore, subjects with no religious affiliation perceived fewer reasons for living, particularly fewer moral objections to suicide. In addition, religiously unaffiliated subjects had more lifetime impulsivity, aggression, and were more likely to have a past history of substance abuse.

Research on the relationship between religious involvement and depression is the most developed, and as a group, it showed a relatively high-quality score. Eleven of the 19 studies examined a geriatric sample (Pressman et al. 1990; Koenig et al. 1992, 1998; Braam et al. 2001; King et al. 2007; Braam et al. 1997, 1999; Cruz et al. 2009; Koenig 2007, 1997; Chatters et al. 2008), four studies focused on adolescents (Miller et al. 1997; Miller and Gur 2002; Horowitz and Garber 2003; Dew et al. 2010), and four studies examined adults (Azhar and Varma 1995; Maselko et al. 2009; Nasser and Overholser 2005; Braam et al. 2010). Four focused on depression in the medically ill (Pressman et al. 1990; Koenig et al. 1992, 1998, 2007), two on religious coping (Koenig et al. 1992; Braam et al. 2010), two had only female participants (Pressman et al. 1990; Miller and Gur 2002), and two examined mother–offspring relationships (Miller et al. 1997; Horowitz and Garber 2003). Five of the 19 studies focused on psychiatric patients (Koenig et al. 1998; Cruz et al. 2009; Dew et al. 2010; Azhar and Varma 1995; Nasser and Overholser 2005), two of which were in psychiatric inpatients (Cruz et al. 2009; Nasser and Overholser 2005). The vast majority examined representative population-based samples and examined the prevalence of depression. With regard to the relationship between religiosity and depression, three studies reported mixed results (King et al. 2007; Braam et al. 1999, 2010), whereas the other 16 papers found a positive relationship between religious involvement and depression (i.e., less depression in the more religious). All 19 studies reported at least one positive finding, and none found no association or only a negative association.

Two of the three studies with mixed results found a U-shaped association, such that those with very high religiosity and very low religiosity were prone to more depression. First, Braam et al. (1999) found more depressive symptoms among older Dutch citizens in a hyperconservative religious climate (examined on the municipality level) using percentages of votes for hyperconservative political parties. Second, King et al. (2007) found in their cross-sectional and longitudinal analyses of 709 primary care elders more depressive symptoms in those with very high compared to those with moderate levels of private religiosity. This U-shaped relationship between religious involvement and depression should be addressed in future studies, since this possibility was not examined in any other papers. The third study with mixed results reported by Braam et al. (2010) found that while religious attendance was associated with fewer depressive symptoms, religious coping methods considered “positive” were associated with a greater risk of subthreshold depression.

### *Neuroses*

For neurotic, stress-related, and somatoform disorders (F40–F48), we found only three studies during the last 20 years and the quality score for those was low average. One study was in the category F41 *Other Anxiety Disorders* (F41.1 Generalized anxiety disorder (Azhar et al. 1994)) and remaining two studies were in the category F43 *Reaction to Severe Stress and Adjustment Disorders* (both on F43.1 Post-traumatic stress disorder (Kaplan et al. 2005; Azhar and Varma 1995)). No studies were identified in the F40 *Phobic Anxiety Disorders*, F42 *Obsessive–Compulsive Disorder*, F44 *Dissociative Disorders*, or F45 *Somatoform Disorders groups*.

Azhar et al. (1994) conducted a randomized clinical trial in religious Muslim patients with generalized anxiety disorder. Those in the intervention group received religious psychotherapy in addition to supportive psychotherapy and anxiolytic drugs, and were compared with those in the control group that received only supportive psychotherapy and anxiolytic drugs. Those receiving religious psychotherapy showed significantly more rapid

improvement in anxiety symptoms. The same group (Azhar and Varma 1995) 1 year later completed a second randomized clinical trial in bereaved Muslim patients, comparing those who received psychotherapy from a religious perspective with those receiving traditional secular psychotherapy. The patients in the religious psychotherapy group improved significantly more compared to those in the control group by the end of 6 months.

One of the most interesting studies, however, comes from a Jewish sample (Kaplan et al. 2005) in Israel. Investigators found that highly religious inhabitants from the Gaza Strip, in spite of firsthand daily exposure to violent attacks, reported the fewest and least severe symptoms of stress-related complaints, the least sense of personal threat, and the highest level of functioning among the groups compared. The most severely symptomatic and functionally compromised group involved the predominantly secular inhabitants of a Tel-Aviv suburb, who were the least frequently and least directly affected by exposure to violent attacks.

## Discussion

The present review systematically identified 43 research studies that examined the relationships between religious/spiritual involvement and mental disorders between 1990 and 2010, reporting on the quality of the methods and summarizing the results. This article serves as a follow-up to the (Larson et al. 1986, 1992) reviews that examined the studies published in the previous 13 years from 1978 through 1989. Their work, particularly the 1992 report, focused on religious involvement in terms of ceremony (religious attendance, sacraments, or rituals); religious meaning (personal purpose, values, beliefs, and ethics); religious social support; prayer (personal devotional practices); relationship with God; and “indeterminate” (i.e., use of the term “religion” or “religiosity” without further specification). The 1992 report searched for studies in only two psychiatry journals. This approach differs from the present one in that we used the search terms “religio” or “spiritu” in the article title of the top 32 psychiatry and 41 neurology journals, allowing for a more representative selection of papers. In addition, we divided our results into ICD-10 diagnostic groups, rated each study by quality of design/execution, and categorized studies in terms of level of evidence. Despite these differences in methodology, our findings during the past 20 years were similar to those reported by Larson and colleagues during the 13-year period prior to 1990. We, along with Larson’s group, both found that 72 % of studies reported significant positive associations between religious involvement and better mental health.

There is *good evidence* today that religious involvement is correlated with mental health in three major domains of psychiatry: depression, substance abuse, and suicide (Table 3). There is *some evidence*, largely positive, for two other domains: stress-related disorders and organic mental disorder. *Insufficient evidence* was found in bipolar and schizophrenia, due to the relatively low quality of the studies and their conflicting results. Finally, there is *no evidence* of an association between religiosity and other psychiatric disorders such as eating disorders, sexual disorders, phobic anxiety disorders, obsessive–compulsive disorders, dissociative disorders, somatoform disorders, personality disorders, mental retardation, or psychiatric disorders in children, at least in the top tier journals of psychiatry and neurology. However, the fact that there is no evidence of an association between religious involvement and a psychiatric disorder does not mean there is no relationship, but rather that these relationships have not yet been studied.

**Table 3** Conclusions from the analysis of the top 25 % Journals 1990–2010

	Good evidence	Some evidence	Poor evidence	No evidence
F0 dementia		Positive correlation		
F1 addiction	Positive correlation			
F2 schizophrenia			Mixed data	
F3 bipolar			Mixed/negative data	
F3 depression	Positive correlation			
F3 suicide	Positive correlation			
F4 obsessive–compulsive disorders				No data
F4 phobic anxiety disorders				No data
F4 stress-related disorders		Positive correlation		
F5 eating disorders				No data
F5 sexual disorders				No data
F5 sleeping disorders				No data
F6 personality disorders				No data
F8 development				No data
F9 childhood				No data

The findings in the present report are notable given the general neglect of this topic in many high-quality journals: 41 % of psychiatry and 69 % of neurology journals published no research focused on religion or spirituality during the period we investigated. This is remarkable given that research on religion/spirituality and health has increased dramatically during the past 20 years, with close to 2,500 original data-based quantitative reports published during this period, three-quarters addressing religion/spirituality and mental health (Koenig et al. 2012). In 1986, Larson et al. (1986) reviewed 2,348 quantitative studies in four major psychiatric journals between 1978 and 1982, of which only 59 included a quantifiable religious variable, 37 of those assessing denomination only. Those findings and the present review underscore the point that religious involvement may still be the “forgotten factor” in the study of many mental disorders, as Larson’s group concluded over 25 years ago (Larson et al. 1986).

Among the most important findings in the last 20 years has been a fairly consistent relationship between religious involvement and less depression (and suicide). This is surprising from the classical perspective that the moral restrictions of religion contribute to guilt and, hence, predispose to depression. Moreover, the role of religion in moderating impulsivity, aggression, and substance abuse (with delayed substance abuse in religious families) is also noteworthy and again go against the latter concept. Of interest, however, is that several studies reporting mixed findings found that those with extremely high religiosity were prone to more depression (as were those with low religiosity). This suggests that the religious life to be truly healthy (like love) needs a certain amount of inner freedom and flexibility.

There are plenty of issues that this review does not address. Since we focused on psychiatric disorder, other aspects of religion, spirituality, and mental health were excluded (well-being, etc.). Another question is whether religious involvement helps to prevent mental illness, affects treatment response, or is simply a marker for good outcomes, such as gender or personality. Addressing this issue will determine whether religion is an unexploited clinical opportunity, useful in terms of prevention, or simply a coincidental demographic factor that should be recognized but not addressed clinically. Only 7 % of studies reviewed involved interventions, and all others were observational. While the three religious intervention studies each reported a benefit, they were performed by the same research group in a sample of religious patients and involved *the addition* of religious psychotherapy to standard treatments (i.e., more time with therapist). These results need to be replicated using better methods, perhaps a direct head-to-head comparison of religious versus conventional psychotherapy with the only difference being the integration of patients' religious resources into therapy.

Another limitation of this review is the challenge of distinguishing terms such as religion, spirituality, and mental health. The 43 studies presented here used many different measures. Not only were different measures of religion and spirituality used, but mental health outcomes were also assessed in many different ways (although usually by structured psychiatric interviews or standard symptom scales). This weakens our conclusions. Of particular concern was the measurement of religion and spirituality. Unlike religion, the term “spirituality” has only recently been used in psychiatric research (since mid-1990s). The fact that the findings from seven studies using spirituality as a predictor (6 out of 7 positive) were similar to the findings from the general analysis of all 43 studies suggests that the differences in the operationalization of these terms may not have been that great. Nevertheless, this general lack of measurement precision underscores how important it is for future research on religion, spirituality, and mental health to clearly define how these terms are used and in what ways they are distinct from one another, particularly since definitional overlap that results in tautological relationships can be a serious problem—see Koenig (2008) and Tsuang et al. (2008).

In conclusion, hundreds of studies have been published over the last 20 years that have reported connections between religion/spirituality and mental health, and nearly four dozen of those have been published in high-quality journals in psychiatry and neurology, the majority finding positive associations between religious involvement and better mental health. Although many of these studies involve relatively large samples that are followed prospectively, most are cross-sectional in design and intervention studies are few. Furthermore, several studies in the past 5 years have reported negative or mixed results, underscoring the need for more research in this area. The greatest need appears to be in the area of religion and chronic mental disorders—schizophrenia, bipolar disorder, longstanding treatment-resistant depression, and severe personality disorders—about which we know very little. The same applies to psychiatric disorders in children; anxiety disorders (OCD, PTSD, phobias); and disorders involving sex, eating, and sleep. No studies reviewed here examined interactions between religion and biological interventions for mental disorder that could determine whether religious involvement enhances or interferes with these treatments. Clearly, the potential for future research appears almost limitless Koenig (2011). The importance of religion to our patients and its potential impact on the horrific disorders they must live with, however, makes this a factor that cannot be forgotten.

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