

Religion, Spirituality, and HIV Clinical Outcomes: A Systematic Review of the Literature

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Published online: 21 December 2016
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Abstract This systematic review evaluates the association between religion, spirituality and clinical outcomes in HIV-infected individuals. A systematic literature review was conducted for all English language articles published between 1980 and 2016 in relevant databases. Six hundred fourteen studies were evaluated. 15 met inclusion criteria. Ten (67%) studies reported a positive association between religion or spirituality and a clinical HIV outcome. Two (13%) studies failed to detect such an association; and two (13%) demonstrated a negative association. One study (7%) identified features of religiosity and spirituality that had both negative and positive associations with HIV clinical outcomes. Recognizing the religious or spiritual commitments of patients may serve as an important component of patient care. Further longitudinal studies and interventions might be required to further clarify the potential impact of religion and spirituality on HIV clinical outcomes.

Resumen Esta revisión sistemática evalúa la asociación entre religión, espiritualidad y resultados clínicos en individuos infectados por el VIH. Se realizó una revisión sistemática de la literatura para todos los artículos en inglés publicados entre 1980 y 2016 en bases de datos relevantes. Se evaluaron seiscientos catorce estudios. 15 cumplieron los criterios de inclusión. Diez (67%) estudios informaron una

asociación positiva entre religión o espiritualidad y un resultado clínico del VIH. Dos (13%) estudios no detectaron tal asociación; dos (13%) demostraron una asociación negativa. Un estudio (7%) identificó características de religiosidad y espiritualidad que tenían asociaciones negativas y positivas con los resultados clínicos del VIH. Reconocer los compromisos religiosos o espirituales de los pacientes puede servir como un componente importante de la atención al paciente. Es posible que se necesiten más estudios e intervenciones longitudinales para aclarar más el posible impacto de la religión y la espiritualidad sobre los resultados clínicos del VIH.

Keywords Religion · Spirituality · HIV · CD4 cell count · Viral load

Introduction

Religion and spirituality are important to HIV-infected patients. In a study that evaluated 2266 patients from the HIV Cost and Utilization Study (HCSUS), 85% responded that spirituality was “somewhat” or “very important” to their lives [1]. Sixty-five percent of HIV infected individuals rated the importance of religion similarly. Notably, 72% responded that they “often” or “sometimes” used religion and spirituality when making decisions; and 65% responded that they use religion and spirituality when they confront problems [1]. Religious and spiritual involvement has also been tightly correlated with improved mood, less depressive symptoms, greater well-being, and less self-blame among HIV-infected individuals [2–4].

There is some debate about the operational definitions of spirituality and religion [5, 6]. In the literature, spirituality is defined as an internal, personal, emotional expression of the sacred, and is measured by exploring spiritual well-being, peace, and comfort derived from faith and spiritual

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connectedness. Religion is defined as an outward formal, institutional expression of the sacred, associated often with a prescribed set of beliefs or dogma. Religiosity is often measured by asking about the importance of religion, belief in God, and frequency of attendance at religious services or other group activities. Religion and spirituality are often tightly correlated, but not always [5, 6].

While religious and spiritual involvement may correlate with improved emotional wellness, an important question remains: Does religious involvement make a difference in HIV clinical outcomes? Several studies have shown that religious involvement is associated with reduced mortality among the general population [7, 8], and those with cardiovascular disease [9]. These studies use attendance at religious services as the measure of religious involvement [7–9]. Religion and spirituality as a construct is more complex than the single variable of religious participation [5, 6]. After adjusting for important potential confounders such as access to antiretroviral treatment, adherence, race, ethnicity and substance use, the association between religion and spirituality with t-cell counts, viral load, mortality, and other clinical outcomes, is unknown. This systemic review of the literature seeks to address this important question.

Methods

Six databases were searched for relevant studies published from 1980 to June 2016 from related fields: medicine (MEDLINE), psychology (PSYCHinfo), nursing (Cumulative Index of Nursing and Allied Health Literature), religion (American Theological Library Association Religion Database), and sociology (Sociological Abstracts), and the Cochrane Central Register of Controlled Clinical Trials. Standard protocol was followed for Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) [10]. Search terms were HIV, religion, spirituality, t-cell, CD4 cell, viral load, disease progression, morbidity, and mortality. Two researchers independently employed these search criteria. The title and abstract of each article were screened for relevancy. Eligible studies included HIV-infected patients. We excluded studies that did not provide information on the association between religion or spirituality and an HIV clinical outcome, such as mortality or CD4 cell counts. We excluded those papers which focused exclusively on complementary and alternative medicine (CAM) as well as mindfulness. We considered CAM outside the scope of this current review. Endnote software was used to manage the files [11].

Results

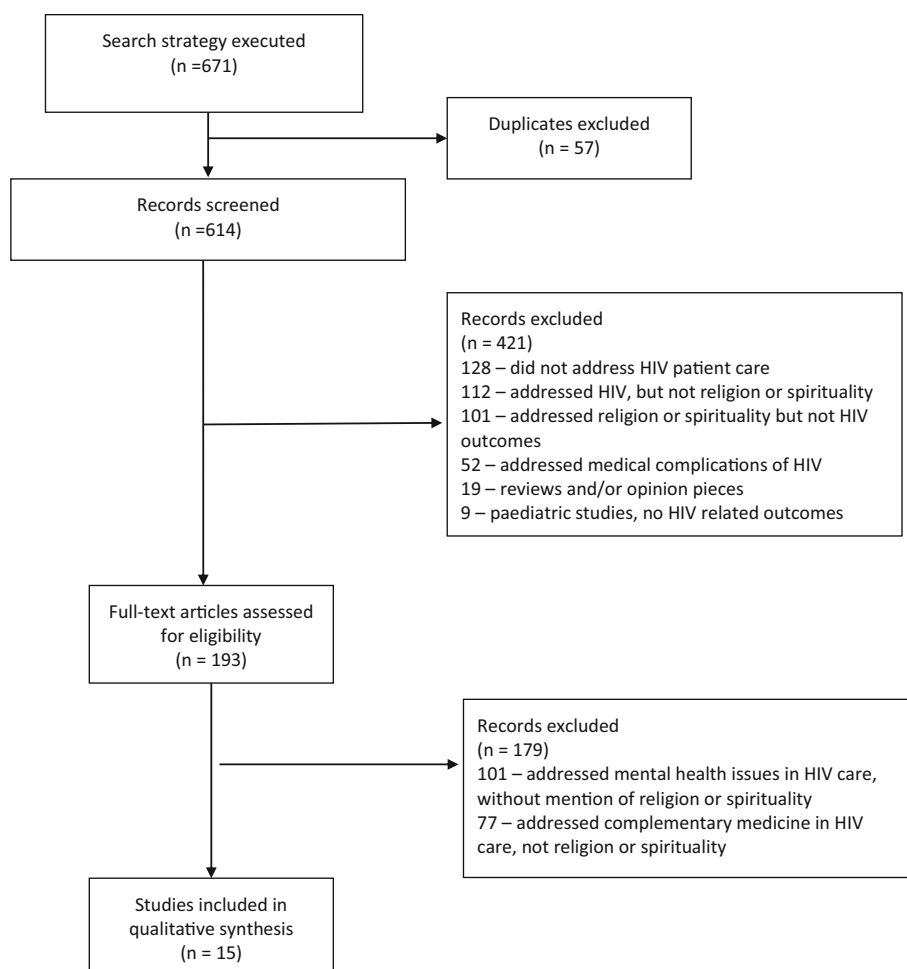
The electronic search identified 671 studies (Fig. 1). 57 studies were duplicates, leaving 614 studies for consideration. 421 studies were excluded based on screening the abstracts. 128 studies did not address the care of patients with HIV infection. 112 addressed the care of patients with HIV but did not address religiosity or spirituality. 101 were about religion or spirituality and did not address HIV related outcomes. 52 addressed medical complications of HIV. 19 were reviews or opinion pieces. 9 addressed pediatric patients and did not include HIV related outcomes.

The full text of the remaining 193 papers were reviewed. 178 were excluded. Of these, 101 addressed mental health related issues. 77 addressed complementary medicine and mindfulness practices. The remaining 15 papers were reviewed for inclusion in the study.

Description of Studies

Among the 15 papers (see Table 1), there were six longitudinal studies (40%) [12–17]. Three studies (20%) were case–control [18–20]. The remaining six studies (40%) were cohort studies or convenience samples [21–26]. One study (7%) was conducted outside the United States [20]. Two studies (13%) were conducted prior to the Highly Active Antiretroviral Therapy (HAART) era [25, 26]. The median number of subjects enrolled in each study was 147 with a range of 33–1138. Ten studies (67%) reported a positive association with religion/spirituality and measurable clinical outcomes [12, 13, 15, 16, 18–21, 23, 26]. Two studies were neutral [22, 25]. Two studies (13%) reported a negative correlation between religion/spirituality and biological markers [17, 24]. One study (7%) identified features of religiosity and spirituality that had both negative and positive associations with HIV clinical outcomes [14].

Most studies used several validated questionnaires, such as the Ironson-Woods Spirituality/Religiousness Index, the Spiritual Well-Being Scale, and the Duke University Religion Index (DUREL) [13, 14, 17–23, 25, 26]. Fitzpatrick et al. [12] used a more general questionnaire about the use and importance of spirituality and prayer. Ironson et al. [15] and Kremer et al. [16] used qualitative interviews and essays to assess religiosity and spirituality. Van Wagoner et al. [24] relied upon demographic information assessing church attendance.

Fig. 1 PRISMA search strategy

Positive Association Between Religious Involvement, Spirituality, and HIV Clinical Outcomes

Eight studies explicitly evaluated religious involvement and spirituality with HIV viral load and CD4 cell count. Woods et al. evaluated 106 mildly symptomatic HIV+ men who have sex with men (MSM). Religious behavior (e.g. Regular service attendance, prayer, spiritual discussion, religious reading) was associated with higher CD4 cell count. Interestingly, religious coping (e.g. Place trust in God, seeking comfort in religion) was not correlated with biomarkers but was correlated with less depressive symptoms [26]. Ironson et al. enrolled 100 people in a longitudinal study that evaluated the changes in spirituality and religiousness after a diagnosis of HIV over a period of 4 years. Her team found that 45% of patients had an increase in religiousness and spirituality after HIV diagnosis. This increase predicted greater preservation of CD4 cells and better control of viral load. Of note, this association remained significant after controlling for demographic variables, initial disease status, psychiatric comorbidity, church attendance, and health behaviors such as drug use [14]. In a cross-sectional study,

Dalmida et al. evaluated 129 predominantly African-American HIV-infected women and found that greater religious well-being, spiritual well-being, and existential well-being were associated with higher CD4 cell count, beyond what was explained by demographic variables and medication adherence [21]. The largest cohort evaluated 1138 HIV positive patients with psychiatric illness and substance abuse diagnoses [23]. Higher spirituality was associated with improved adherence to HAART, which in turn correlated with an undetectable viral load [23].

A four year longitudinal study by Ironson et al. evaluated the perception of God among patients with HIV infection. This study uniquely evaluated the *quality* or *character* of belief in addition to the *intensity* of belief or *quantity* of religious practice. Patients completed the View of God inventory which explores whether patients perceive God as being benevolent and forgiving or harsh, judgmental, and punishing [15]. They found that patients who view God as benevolent had higher CD4 cell count and improved viral load response. These results remained significant after controlling for church attendance, mood, coping strategies, and health behaviors [15].

Table 1 Studies evaluating the association between religion/spirituality and HIV-related outcomes

References	Association ^a	Study design	N, patient population setting	Control variables	Measurement	Outcome
Dalmida et al. [21]	Positive	A descriptive cross-sectional, secondary analysis of data from two similar NIH funded adherence studies	129 predominately African American HIV-positive women Nurse educators recruited participants through community infectious disease clinics	Demographic variables but not viral load, CD4, and HAART	Depression, spiritual well-being, religious well-being, and existential well-being using Spiritual Well Being Scale, CES-D Depression scale. CD4 cell counts and percentages	Greater spiritual well-being, existential well-being, and religious well-being associated with greater CD4 cell counts and percentages. Depressive symptoms not associated with CD4 cell counts or percentages
Fitzpatrick et al. [12]	Positive	Longitudinal observational study of HIV+ patients who employ psychological and spiritual activities for at least one year	901 HIV+ adults living the United States Patients were recruited from practitioners who employ complementary therapy. Death was ascertained using the National Death Index	Age, race, gender, income, alcohol use, smoking status, baseline cd4 count, duration of HIV infection, and HAART	Questionnaire survey inquiring religious and spiritual activities	Individuals not on HAART and who participated in spiritual activities over the previous year were found to be at a reduced risk of death (HR 0.4, 95% CI 0.2–0.9) compared to those not practicing spirituality
Ironson et al. [8]	Positive	Case control cohort study	79 long term survivors with HIV were compared with 200 HIV+ controls Two groups of patients were recruited. Long-term survivors were defined as having survived twice the median survival time. The control group had similar CD4 cell counts and demographics	Age, socioeconomic status, route of infection. ART, viral load, and CD4 count were not controlled	Ironson-Woods Spirituality/Religiousness Index subscales (sense of peace, faith in God, religious behavior, compassionate view of others) was associated with mortality, cortisol	Higher score of each subscale associated with long survival and lower cortisol levels. Increased frequency of prayer less judgmental attitude also associated with long survival
Ironson et al. [3]	Positive	Longitudinal cohort study over 4 years	100 HIV+ patients evaluated every six months over 4 years. Patients were evaluated before and after their HIV diagnosis over 4 years	Demographic variables, health behaviors (adherence, risky sex, alcohol, cocaine), depression, hopelessness, optimism, coping, and social support. ART was not controlled	Changes over time were measured in CD4 cell count and viral load as well as religiousness, spirituality, depression, hopelessness, optimism, coping, and social support using validated instruments	People reporting an increase in spirituality/religiousness after the diagnosis had significantly greater preservation of CD4 cells and better control of viral load

Table 1 continued

References	Association ^a	Study design	N, patient population setting	Control variables	Measurement	Outcome
Ironson and Kremer [19]	Positive	Cohort study with mixed method approach	147 HIV+ adults Two samples of patients were recruited—a longitudinal cohort and group which self-identified as spiritual	Age, gender, race, education, time since HIV diagnosis, substance abuse, CD4 count	Questionnaire study using validated instruments investigating Spiritual Transformation (ST). CD4 counts, medication adherence, symptom report	Spiritual Transformation (ST) was associated with undetectable viral load, high CD4 cell counts, better medication adherence, fewer symptoms
Ironson et al. [14]	Positive/ Negative	Longitudinal cohort study over 4 years	101 patients with HIV Patients were self-referred to a study on stress and coping with HIV	Hierarchical linear modeling was used to control for age, gender, race, education, antiretrovirals, cd4 cells, and viral load	Validated instrument assessing a positive view of God (benevolent/forgiving) and negative (harsh/punishing) and change in CD4 count and viral load	A Positive View of God predicted significantly slower disease-progression (better preservation of CD4-cells, better control of VL), whereas a Negative View of God predicted faster disease-progression over 4 years
Ironson et al. [15]	Positive	Longitudinal cohort study	177 patients at mid stage of disease (150–500 CD4 cells)	Age, sex, ethnicity, education, sexual orientation, CD4 cells, viral load	Qualitative analysis of interviews and essays regarding stress and coping	Spiritual reframing, overcoming spiritual guilt, spiritual gratitude, and spiritual empowerment were 2–4 times more likely to survive over a 17 year period
Kremer et al. [16]	Positive	Longitudinal cohort study over 4 years	177 patients with HIV Patients were self-referred to a study on stress and coping with HIV	Age, gender, ethnicity, education, substance abuse, baseline CD4 cells and viral load	Spiritual coping was assessed using qualitative interviews and essays. Demographic variables, substance abuse, CD4 counts, and viral load were measured	Spiritual coping predicted sustained undetectable VL and CD4-cell preservation over four years, independent of socio-demographics, baseline disease status, and substance use disorder
Marconi et al. [20]	Positive	Case control study	158 patients with HIV with virologic failure (defined as HIV viral load >1000 copies) and 300 controls (viral load <1000 copies) Urban clinic in Durban, South Africa	All variables were independently analyzed. Further models were developed based on significant variables	Psychosocial and symptom scales using validated instruments. Virologic failure	Not having an active religious faith was associated with virologic failure independent of adherence measures

Table 1 continued

References	Association ^a	Study design	N, patient population setting	Control variables	Measurement	Outcome
Mellins et al. [23]	Positive	Community based convenience sample	1138 patients with HIV, psychiatric and substance abuse disorders Patients were recruited from across the country, including rural and urban areas	Age, gender, race, ethnicity, employment, poverty, health insurance, education, relationship status, living arrangements, CD4 cells, and viral load were combined in various models.	Validated surveys addressing stress, religious involvement, and spirituality. Structured interviews were used to assess medication adherence.	Reports of non-adherence were significantly associated with having a detectable viral load. Higher self-reported spirituality was associated with improved medication adherence. Other factors associated with non-adherence were current drug and alcohol abuse, increased psychological distress, less attendance at medical appointments, and non-adherence to psychiatric medications.
Ramer et al. [22]	Neutral	Convenience sample in multi-ethnic clinic	420 patients with HIV Multicultural university based HIV clinic in Los Angeles, California	Age, gender, ethnicity, sexual preference, HIV status, CDC category, CD4 count, viral load, and depression were analyzed individually. Significance level of <0.2 was used for stepwise regression analysis	Validated scales addressing spirituality, self-transcendence, health status, and depression. Chart review for CD4 cell counts, viral load, and demographic information	Self transcendence was associated with greater energy ($p < .05$) and acculturation ($p < .05$). Spirituality was associated with greater energy ($p < .001$) and less pain ($p < .02$). Neither disease progression nor severity was related to self-transcendence or spirituality
Trevino et al. [17]	Negative	Quasi-longitudinal	429 patients with HIV Data were collected through patient interview and chart review at baseline and 12–18 months later from four clinical sites	Age, race, sex, education, sexual orientation, length of time since HIV diagnosis, and religious orientation	Validated surveys for positive religious coping (seeking spiritual support) and spiritual struggle (anger at God), viral load, CD4 count, quality of life, HIV symptoms, depression, self-esteem, social support, and spiritual well-being	Spiritual struggle associated with detectable viral load and poorer quality of life, more HIV related symptoms, more depression, less social support, poorer self-esteem

Table 1 continued

References	Association ^a	Study design	N, patient population setting	Control variables	Measurement	Outcome
Van Wagoner et al. (2014)	Negative	Cross sectional analysis of convenience sample among patients presenting for care	508 patients with HIV University associated HIV clinic in Birmingham, Alabama	Age, race, insurance status, education, employment, and HIV viral load	Church attendance, demographic information, CD4 cell count	Men who have sex with men (MSM) and who attend church are more likely to present with lower CD4(+) T-lymphocyte counts than MSM who do not attend church
Woods et al. [25]	Neutral	Convenience sample of African-American women	33 African-American women with HIV, mildly symptomatic (CDC stage B) Patients were recruited through HIV support agencies	Analysis was performed with control variables—exercise, sleep, cigarette use, coffee and alcohol consumption, and antiretroviral use. Since there was no significant difference, subsequent analysis did not include control variables	Validated surveys for depression, anxiety, religious coping and religious behavior, CD4 cell counts	Neither religious coping nor religious behavior was associated with CD4 cell counts
Woods et al. [26]	Positive	Convenience sample of gay men	106 patients with HIV Patients were recruited through HIV support agencies	Control variables were exercise, sleep, cigarette use, coffee, alcohol consumption, antiretroviral use. Since there was no significant difference, subsequent analysis did not include control variables	Validated surveys for depression, emotional and religious coping and religious behavior, CD4 cell counts	Religious behavior (service attendance, prayer, etc.) associated with higher CD4 cell count. Religious coping (e.g. placing trust in God) not associated with CD4 cell counts

^a “Positive” is a positive association between religiosity/spirituality and HIV biological outcomes. “Negative” is a negative association. “Positive/Negative” means the study has both positive and negative associations. “Neutral” is a neutral association

Marconi et al. evaluated several variables among 158 HIV+ patients in an urban South African clinic. In a multivariate model, not having an active religious faith was independently associated with detectable viral load (>1000 copies) and lower CD4 cell count [20]. Similarly, Trevino et al. [17] evaluated 429 patients and found that spiritual struggle was associated with detectable viral load and more HIV related symptoms. In a longitudinal study, Kremer et al. [16] followed 177 patients over 4 years. The researchers employed directed interviews and patient-written essays to determine patients’ spiritual coping. Qualitative analysis was used to derive common anchoring

principles. Positive spiritual coping was defined as using spirituality and religion as a supportive resource. Patient who used spirituality to avoid punishment from God were considered to have negative spiritual coping. Sixty-five percent of patients reported being engaged in positive spiritual coping which was associated with sustained undetectable viral load and higher CD4 cell count [16].

Religious Involvement and Survival

Four studies examined the association between religious involvement and survival. Ironson et al. [18] evaluated

“spiritual transformation” among patients with HIV, which they define as when patients regard the sacred as central in their life which involves, “a radical reorganization of one’s identity, meaning, and purpose in life.” Among the 147 patients, 80 experienced spiritual transformation. Those patients who experienced spiritual transformation were 5.35 times more likely to achieve 5 year survival. Additionally, these patients were more likely to achieve an undetectable viral load and also had a higher CD4 cell count [18]. Another study by Ironson et al. [13] compared 79 long-term survivors with 200 age-matched controls using the Ironson-Woods Spirituality/Religiousness Index. Faith in God, religious behavior, increased compassion towards others, increased prayer, and overall sense of peace was associated with long-term survival. In this study, while demographic confounders were controlled for, viral load, CD4 count, and HIV medications were not. 30% of long-term survivors and 50% of the comparison group were not prescribed protease inhibitors. Interestingly, greater spirituality and religiousness was also correlated with lower cortisol levels [13].

In a follow-up longitudinal study of 177 patients with initial CD4 cell counts of 150–500, patients who experienced spiritual reframing, gratitude, empowerment, and overcame spiritual guilt were 2–4 times more likely to survive over a 17 year period [15].

Fitzpatrick et al. evaluated spiritual activities among 901 HIV positive patients at baseline and 1 year follow up. Patients who participated in spiritual activities were at reduced risk of death after adjusting for income, AIDS diagnosis, CD4 count, smoking, alcohol use, and substance abuse. Even those not receiving antiretroviral therapy were at reduced risk of death (Hazard Ratio 0.4, 95% CI 0.2–0.9) compared to those who did not practice spirituality [12].

Neutral Association Between Religion and HIV Clinical Outcomes

Two studies showed a neutral or equivocal outcome. Ramer et al. studied spirituality and self-transcendence using Reed’s Self-Transcendence Scale and the Spirituality subscale of the Ferrans and Powers Quality of Life Index among a convenience sample of 420 HIV/AIDS patients [20, 27, 28]. They found that self-transcendence was associated with improved energy ($p < .05$) and acculturation ($p < .05$). Spirituality was also associated with improved energy ($p < .001$) and less pain ($p < .02$). However, neither spirituality nor self-transcendence was associated with disease progression or severity [18]. A small study by Woods et al. evaluated a convenience sample of 33 African-American women patients and found no association between religious coping and CD4 cell count [24].

Religious and Spiritual Involvement Associated with Worse HIV Clinical Outcomes

Two studies demonstrated an overall negative association between religious involvement and biological outcomes; and one showed both a positive and negative association [14, 17, 24]. A study by Van Wagoner et al. evaluated patients who presented for initial care as a university associated HIV clinic. They found that men who have sex with men (MSM) who also attend church regularly present with a lower t-cell count than those MSM who do not attend church regularly [24]. In a longitudinal study over 12–18 months among 429 patients, Trevino et al. [17] showed that spiritual struggle was associated with a detectable viral load as well as more HIV related symptoms. Similarly, in a 4 year longitudinal study, Ironson et al. [14] showed that a negative view of God (viewing God as harsh or punishing) predicted a faster disease progression.

Discussion

We conducted a systematic review of the English language literature to identify studies evaluating the association between religion, spirituality and HIV clinical outcomes. Of the 15 studies included, 11 demonstrated a positive association between religion, spirituality and HIV clinical outcomes, two were neutral, and two were negative, and one showed both positive and negative associations (Table 1). These studies showed that religious involvement and spirituality were associated with an increased CD4 cell count, decreased viral loads, and decreased mortality (Table 1).

While several studies suggest that religious involvement and heightened spirituality have a positive correlation with HIV biological outcomes, there are several provocative questions that arise. For instance, Dalmida et al. have proposed that the positive correlation between HIV outcomes and spirituality may be particularly important among ethnic minorities and the poor where there may be few other coping resources [15]. However, several studies demonstrate a positive association between religious and spiritual involvement and HIV biomarkers even after controlling for socio-demographic variables (Table 1).

Further, religion may be a particularly complex variable among the MSM community where the studies did not reveal a clear pattern. Van Wagoner et al. [22] demonstrate that church-going MSM present later in their disease with a lower CD4 cell count. However, Woods et al. [25] found that church attendance among gay men was associated with a higher CD4 cell count. These disparate findings may be due to the differences in the demographics of the study

population, the type of churches patients attended, the regional differences in religious culture. Church culture and support for MSM activity likely varies widely across denominations and specific congregations and may impact the experience of organized religion by MSM. For instance, Woods et al. speculate that many religious organizations regard homosexual activity as against social norms. This may influence the willingness of HIV-infected individuals to seek screening or further care. Denial of HIV risk among churchgoing MSM may also play a role. The authors also acknowledge that reverse causality may play a role: sick patients may begin attending religious services more frequently. However, in the cohort reported on by Woods et al. [25], patients had a relatively recent diagnosis and had well-established religious practices.

What these studies do suggest is that a constellation of variables hang together: poor social support, spiritual struggle, low-self esteem, poor quality of life, more HIV related symptoms, and worse virologic control. This suggests the need for adjustment for these variables, using state of the art techniques such as propensity score matching, in studies evaluating the association between religion, spirituality and HIV outcomes. They also suggest that interventions will need to take a coordinated approach to the patient's well-being in which each of these issues are addressed. Viral control—a biological marker—cannot be separated from the patient's spiritual well-being, psychological symptoms, and social support.

And yet, addressing religion and spirituality in HIV-infected patients can be particularly challenging. Some patients may feel shame or guilt in their HIV status [24]. Some religious traditions are overtly hostile or judgmental to people with HIV [24].

Limitations to the literature and this systematic review are to be considered. First, most of the studies were small, enrolling between 100 and 200 people and focused on the populations of specific clinics in resourced settings. This may affect the generalizability of our findings. Further, only six studies were longitudinal. The constructs of spirituality and religious involvement can evolve over time and therefore have a variable influence upon health. Second, there is the potential of publication bias: studies with a positive association are more likely to be published. Third, the study of the association of HIV and spirituality has primarily been conducted by a relatively small group of researchers. These studies are robust and of high quality—including the most recent 17-year longitudinal study of 177 patients [17]. And yet, different perspectives may lead to new understanding of this important association.

An important consideration in evaluating questions of religion and spiritual belief is the question of causality. The cross-sectional nature of most of this research prevents the evaluation of potential cause and effect relationships. Does

HIV infection, like any serious illness, lead to spiritual questioning or doubt? Or rather, does it spur individuals to seek spiritual solace and strength? The question is, of course, which comes first? Does the spiritual struggle of a significant disease cause the depression or vice versa? Does a patient's poor social support lead to the depression and low-self esteem? Another consideration is the use of validated instruments for religion and spirituality. Spiritual struggle and depression may, in fact, be measuring the same emotional construct and simply applying two different labels, a spiritual label and a psychological one [5, 6].

Conclusion

Providers who care for patients with HIV infection should be aware of a patient's spirituality and religious involvement and may want to encourage it as a source of solace and meaning. However, as Ironson's paper suggests: the quality of one's belief can impact CD4 count and viral load [15]. Depending upon the patient's specific beliefs, spirituality and religious involvement may have positive or negative effects for patients living with HIV. Regarding God as harsh and punishing can have harmful effects such as faster disease progression compared with those who viewed God as benevolent and forgiving. Blanket encouragement or discouragement of religious beliefs may be ill advised. Instead, providers should seek to understand the role spirituality and religion plays in their patient's life and respond in a more nuanced manner. Additional research should investigate the longitudinal relationships between religion, spirituality and HIV outcomes with better adjustment for confounding factors. These data may offer additional support for a possible intervention study designed to increase the engagement in religious and spiritual endeavors among HIV-infected patients.

Acknowledgements The authors wish to thank Mark Gentry and Janice Glover for their thorough, comprehensive guidance in the literature search.

Compliance with Ethical Standards

Conflict of interest The authors declares that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants or animals performed by any of the authors.

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