Spiritual and Mind–Body Beliefs as Barriers and Motivators to HIV-Treatment Decision-Making and Medication Adherence? A Qualitative Study

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Abstract

We examined spiritual/mind–body beliefs related to treatment decision-making and adherence in 79 HIV-positive people (35% female, 41% African American, 22% Latino, 24% White) who had been offered antiretroviral treatment by their physicians. Interviews (performed in 2003) identified spiritual/mind–body beliefs; the Adult AIDS Clinical Trials Group (ACTG) questionnaire assessed adherence and symptoms/side effects. Decision-making was influenced by health-related spiritual beliefs (e.g., calling on God/Higher Power for help/protection, God/Higher Power controls health) and mind–body beliefs (e.g., mind controls body, body tells when medication is needed). Participants believing God/Higher Power controls health were 4.75 times more likely to refuse, and participants with mind–body beliefs related to decision-making were 5.31 times more likely to defer antiretrovirals than those without those beliefs. Participants believing spirituality helps coping with side effects reported significantly better adherence and fewer symptoms/side effects. Fewer symptoms/side effects were significantly associated with the beliefs mind controls body, calling on God/Higher Power for help/protection, and spirituality helps adherence. Spiritual/mind–body beliefs as barriers or motivators to taking or adhering to treatment are important, since they may affect survival and quality of life of HIV-positive people.

Introduction

SURVIVAL WITH HIV largely depends on taking¹ and adhering to antiretroviral treatment.² The CD4 count at initiation of treatment was the strongest prognostic factor predicting survival according to a collaborative analysis of cohort studies.³ However, the decision to take antiretroviral therapy requires a long-term commitment, because patients interrupting antiretroviral therapy compared to those continuing were at increased risk of death,⁴ cardiovascular disease, metabolic effects, and immune activation during viral rebound.⁵ Furthermore, insufficient adherence to antiretroviral treatment is associated with increased rates of treatment resistance⁶ and reduced survival.⁷ Therefore, our study's purpose was to examine how spiritual beliefs and mind–body beliefs intertwine with treatment decision-making and treatment adherence in people living with HIV.

Our working definition of spirituality is the search for one's connection to the sacred.^{8,9} We purposely chose this definition to be broad so that individuals would be able to frame spirituality within their own experience, and it is not limited to religion or belief in a God/Higher Power, but can also include aspects of life perceived as sacred by the individual.¹⁰ Spiritu-

tual beliefs linked to health can be conceptualized as specific mind–body beliefs. Mind–body beliefs refer to the general belief in a relationship between the mind or mental processes, and bodily states or processes.¹¹

Approximately 95% of the U.S. population believes in God or a Higher Power, and this belief is a central guiding force in their lives.¹² A survey in an ambulatory pulmonary clinic found that 90% of the patients believed prayer may sometimes influence recovery from an illness and 45% stated that spiritual beliefs would influence their medical decisions should they become gravely ill.¹³ Spirituality's prominent role in coping with HIV has been well established.^{14,15} Furthermore, spirituality may play a crucial role in guiding the decisions of people with HIV about taking antiretroviral treatment.^{9,16} However, there is a scarcity of research on the relationship between spirituality and treatment decision-making, and only a few studies address spirituality and treatment adherence.¹⁴

Results of the studies assessing the connection between spirituality and adherence have been inconsistent. This may be due to each study's use of instruments that captured different aspects of spirituality and self-reported adherence. Adherence (measured with the Antiretroviral General

Adherence Scale) was weakly correlated with existential well-being (e.g., viewing life as positive and meaningful) and there was no significant association with religious well-being and the level of spiritual belief and involvement.¹⁷ In contrast, adherence (assessed with the AIDS Clinical Trials Group measure) was strongly associated with the level of spiritual and religious beliefs and practices, spiritual support, and coping.¹⁸ Furthermore, a survey indicated that positive religious practices and beliefs were associated with better adherence to medication and keeping up with medical appointments, whereas those who believed that HIV is a sin were more likely not to seek health care for HIV, and those who felt that HIV is a punishment of God were more likely to postpone the initiation of antiretroviral therapy (ART).¹⁹

Interestingly, spiritual beliefs and other mind-body beliefs were prominent factors in the decision not to take treatment against medical advice in people at an advanced stage of HIV disease.²⁰ Certain spiritual beliefs, such as the belief that it is not legitimate from a spiritual view to prolong life artificially, and mind-body beliefs, such as the belief that medication is not needed because the mind can heal the body, led to risky treatment choices.²¹ On the other hand, in our research on long survival with HIV we found that people with HIV often report an increase in spirituality after the HIV diagnosis, which is associated with slower disease progression.²² Furthermore, we compared the rationales of people with HIV deciding to take or not to take antiretroviral treatment and found that mind-body beliefs and spirituality/world views were among the 10 most important factors involved in the treatment decisions and equally important as side effects and whether the treatment was easy to take.¹⁶ It is of note that spiritual/mind-body beliefs can affect the decision to take and to adhere to antiretroviral treatment in a positive as well as a negative way.^{16,19,23,24}

In summary, prior studies suggest that spiritual and mind-body beliefs are associated with treatment decision-making and adherence in people with HIV. Quantitative studies tested only selected spiritual and mind-body beliefs that were predefined by standardized questionnaires and were not based on formative research. Prior studies did not identify which specific spiritual and mind-body beliefs served as barriers or motivators to treatment readiness and adherence, which is a gap in our knowledge.

Combining qualitative and quantitative methods, the present study addresses this gap. Using an inductive category formation without applying any preconceived theory or framework, we examined in-depth which spiritual and mind-body beliefs were associated with the preparedness to take and to adhere to antiretroviral treatment.

Method

We interviewed 79 people living with HIV in South Florida regarding the role of spirituality and mind-body beliefs in their decision to reject or accept and to adhere to an antiretroviral treatment offered by their physician.

Study participants

The study was conducted in 2003 as a substudy of the Long-Term Survivor Study, which examined psychological and biological factors of health and long-term survival with HIV/AIDS.^{22,25} The parent study started in March 1997 and

recruited English-speaking HIV-positive individuals from AIDS organizations, doctors' offices, and community events in the Miami area. A subset of 79 participants of the parent study was selected by two criteria: they had been offered antiretroviral treatment by their physician and antiretroviral treatment was recommended according to the US DHHS treatment guidelines in 2003 based on either HIV-associated symptoms, CD4 count below 350/mm³, or viral load count above 55,000 copies per milliliter.²⁶

Procedures

The local Institutional Review Board approved this study, and all participants gave written informed consent. For the study center visit, participants were reimbursed \$50. Participants completed their demographic and medical information (Table 1) with the researcher. Additionally, blood was drawn to assess CD4 cells and HIV-1 viral load.

Next the participants were interviewed (see Kremer²⁷ for the full interview). As part of the interview, participants provided information pertaining to their current antiretroviral treatment. This was followed by the open-ended question: "Currently you have decided (interviewer repeats the present treatment). Why did you make this decision?" Further interview questions relevant to this study were the follow-up questions, probing for example if and how spiritual beliefs played a role in the decision about their treatment, and if they ever prayed not to have side effects of the medication. Although the questions were not primarily designed to examine the connection between spiritual and mind-body beliefs and treatment decision-making and adherence, those open questions and probes elicited narratives that indicated such a connection.

Finally, the interviewer administered the adherence questionnaire of the Adult AIDS Clinical Trials Group (ACTG).²⁸ The ACTG adherence questionnaire measures self-reported adherence to antiretrovirals, such as proportion of missed doses over the past 3 days, and the last time they skipped any medications. The questionnaire also includes a patient rating how often the 12 most common reasons for nonadherence and 14 most common symptoms related to HIV and its treatment applied to them (ranging between never = 0, rarely = 1, sometimes = 2, and often = 3).

All interviews, performed by two trained interviewers, were audiotaped and transcribed and entered into the qualitative software program atlas.tiTM. For the analysis, we used qualitative content analysis, which allows both quantitative and qualitative operations.^{29,30} Categories were derived inductively from the interviews without applying any preconceived existing theoretic framework.³¹ Initially, two researchers worked through all the interviews, developing tentative categories regarding the role of spiritual and mind-body beliefs in treatment decision-making and adherence. Next, both researchers compared their categories, and reduced, selected, and grouped them into a hierarchical system, providing typical examples for every code (Table 2). It appeared that spiritual beliefs related to decision-making and adherence were a subcategory of mind-body beliefs, in the sense that those spiritual beliefs also included the belief in a relationship between the mind or mental processes, and bodily states or processes (e.g., "My faith in God and faith in keeping a positive mind is very influential in my well-being").

TABLE 1. DEMOGRAPHIC AND MEDICAL CHARACTERISTICS ($n = 79$)

<i>Demographic characteristics</i>		
Mean age years (SD)	42.03	(7.88)
Gender (n , % female)	28	35%
HIV risk factor (n , %)		
Heterosexual contacts	40	51%
Homo-/bisexual contacts	34	43%
IDU-drug use	4	5%
Unknown	1	1%
Ethnicity (n , %)		
African American	32	41%
Latino	23	29%
White	19	24%
Other	5	6%
Religious upbringing (n , %)		
Christian	34	43%
Non-Christian	39	47%
Nonreligious	8	10%
Income level (n , % less than \$10,000/year)	42	53%
Education level (n , % high school or less)	28	35%
Employment status (n , % employed)	29	37%
<i>Medical characteristics</i>		
CD4 nadir below 200 cells/mm ³ (n , %)	58	73%
Mean years since HIV-diagnosis (SD)	11.14	(4.15)
Mean viral load copies/ml (SD)	37,858	(83,125)
Mean CD4 cells/mm ³ at interview (SD)	347.00	(227.65)
Antiretroviral treatment (n , % taking)	58	73%
Treatment naïve (n , %)	5	6%
Mean % of missed doses (over last 3 days) (SD)	1.89	(0.96)
Last time skipping doses (n , %)		
Never	27	34%
More than 3 months ago	17	21%
1–3 months ago	13	17%
2–4 weeks ago	10	13%
1–2 weeks ago	5	6%
Within past week	7	9%
Mean reasons for missing doses (scale 0–42) (SD)	4.14	(5.27)
Mean symptoms related to HIV or HIV treatment (scale 0–36) (SD)	9.60	(8.14)

SD, Standard deviation.

Therefore, the coding of mind-body beliefs that played a role in decision-making and adherence included only mind-body beliefs that had no connection to spiritual beliefs (e.g., “If you say in your mind you are sick, you will be sick”).

Based on this category system, two researchers rated each interview independently. κ Coefficients were calculated to examine independent interrater reliability between the two raters. According to Landis and Koch,³² a chance corrected level of agreement greater than 0.60 is regarded as substantial, and a standard of greater than 0.80 is viewed as excellent. As indicated in Table 2, independent interrater reliability was good for all codes ranging from 0.65 to 0.93, except for two codes related to spirituality and adherence. This may reflect that the interviews were not originally designed to examine the association between spirituality and adherence. Finally, both researchers reviewed the categorizations in which they deviated from each other, and decided consensually about the final coding.

Statistical analysis

All data were entered and analyzed using SPSS version 14 statistical software (SPSS Inc., Chicago, IL). Basic descriptive statistics were calculated for the medical and demographic

characteristics and the codes. κ Coefficients were calculated for independent interrater reliability of the coding (see above). For each code, we examined the association with the treatment decision (using χ^2 tests and Fischer’s exact tests indicated as p_f if necessary) and with treatment adherence and symptoms (using independent t -tests).

Results

The demographic and medical characteristics of the participants are described in Table 1. The sample was diverse with respect to age, sex/gender, and race/ethnicity. Sexual contact was the main route of transmission, with 40 of 80 (51%) heterosexual and 34 of 80 (43%) homosexual/bisexual contacts reported as risk factor. The majority (71/79; 90%) reported a religious upbringing. Despite education beyond high school in 51 of 79 (65%) participants, a large proportion (42/79; 53%) was living on an annual income below \$10,000. The majority (58/79; 73%) were diagnosed with AIDS based on a CD4 nadir below 200 cells/mm³ and they were diagnosed with HIV on average 11 years ago. However, 21 of 79 (27%) were not taking antiretrovirals at the interview, which included 16 of 79 (20%) who had discontinued treatment and

TABLE 2. CODES OF SPIRITUAL AND MIND–BODY BELIEFS RELATED TO TREATMENT DECISION-MAKING AND ADHERENCE, FREQUENCY OF CODES, INDEPENDENT interrater RELIABILITY (κ), AND EXAMPLES

Codes ^a	Frequency (n = 79)		κ^b	Examples
	n	%		
<i>Spiritual beliefs related to decision-making</i>	38	48%		
Calling on God/Higher Power for help and protection	19	24%	0.87	"God will help me, no matter what, if I am taking or not taking [antiretrovirals]."
Taking medication is the will of God/Higher Power	8	10%	0.70	"Life is a gift from God so I must take medication to honor it."
Spirituality enhances will to live	9	11%	0.69	"God is the reason I wake up every day."
God/Higher Power controls health	11	14%	0.80	"I think if God wants me to continue to live, I will, no matter what."
"God helps those who help themselves"	6	8%	0.88	"I believe that Jesus can heal me but I have to do my part."
<i>Mind–body beliefs related to decision-making^c</i>	13	17%		
Mind controls body	8	10%	0.93	"If you say in your mind that you are sick, you will be sick."
Body tells when medication is needed	7	9%	0.65	"My body was just telling me it did not want the medication."
<i>Spiritual beliefs related to adherence</i>	30	38%		
Spirituality helps adherence	27	34%	0.52	"God reminds me to take my medication."
Spirituality helps coping with side effects	13	17%	0.38	"Every morning I pray not to have side effects."
<i>Mind–body beliefs related to adherence^c</i>	11	14%		
Mind helps adherence	7	9%	0.71	"Belief in medication will make it work."
Mind helps coping with side effects	4	5.1%	0.85	"Keeping an open mind helps me to get over little side effects."

^aMultiple coding possible.^bAll κ coefficients were significant at $p < .001$.^cMind–body beliefs connected to spiritual beliefs were excluded in this count.

5 of 79 (6%) who had never been on any antiretrovirals at all. Self-reported treatment adherence was high. Only 4 of 58 (7%) participants taking antiretrovirals reporting that they missed medication over the past 3 days (which is why we excluded this variable from further analysis and used the scale "Last time skipping doses" instead). The majority of the participants taking antiretrovirals (36/58; 62%) reported that they did not skip medication within the past month. Most participants (70/79; 89%) described symptoms that are commonly related with HIV and its treatment.

Spiritual and mind–body beliefs related to treatment decision-making

More than half (43/79; 54%) of the participants indicated spiritual/mind–body beliefs related to treatment decision-making (38% spiritual beliefs, 6% mind–body beliefs that had no spiritual connotation, and 10% both spiritual and mind–body beliefs). The coded spiritual and mind–body beliefs related to treatment decision-making, frequencies, interrater reliability, and examples are depicted in Table 2.

In a large proportion (35/79; 44%) of the participants, one or more spiritual beliefs were coded that influenced their treatment decision-making (24% one, 18% two, and 2% three spiritual beliefs). Spiritual beliefs related to treatment decision-making comprised of five codes, "Calling on God/Higher Power for help and protection" and spiritual beliefs, such as "God/Higher Power controls health," "Taking medication is the will of God/Higher Power," "Spirituality enhances will to live," and "God helps those who help themselves." Some (4/79; 5%) participants did not state ex-

plicitly that spiritual beliefs played a role in their treatment decision, but explained that it did not matter if they were taking antiretrovirals or not since they felt that "God/Higher Power controls health." The researchers coded this as a spiritual belief that latently influenced the treatment decision. As indicated in Table 3, only one spiritual belief, "God/Higher Power controls health," was significantly associated with treatment decision-making. Participants who believed that their health was controlled by God/Higher Power were 4.75 times more likely not to take antiretrovirals than those who did not express this control belief ($p = 0.032$). Moreover, participants who were treatment naïve were 6.34 times more likely than those who were treatment experienced to believe that God/Higher Power was controlling their health (3/5 [60%] versus 8/74 [11%]; $\chi^2 = 9.45$, $p_t = 0.018$).

Only a few participants (13/79; 17%) described mind–body beliefs disconnected from spiritual beliefs that played a role in treatment decision-making (14% one and 3% two mind–body beliefs). Such mind–body beliefs were "Mind controls body" and "Body tells when medication is needed." Although those mind–body beliefs were not associated with the decision to take or not to take antiretrovirals (Table 3), they were significantly associated with the decision to delay treatment. The group of participants not taking antiretrovirals included five participants who had never started treatment. The treatment-naïve participants, compared to those who were treatment experienced, were 5.31 times more likely to express mind–body beliefs related to treatment decision-making (3/5 [60%] versus 10/74 [14%]; $\chi^2 = 7.36$, $p_t = 0.029$). Furthermore, mind–body beliefs related to adherence were significantly associated with taking antiretrovirals (Table 3).

TABLE 3. DIFFERENCES BETWEEN PARTICIPANTS TAKING VS. NOT TAKING ANTIRETROVIRALS ON SPIRITUAL/MIND–BODY BELIEFS

<i>Spiritual/mind–body beliefs</i>	<i>Taking antiretrovirals (n = 58)</i>		<i>Not taking antiretrovirals (n = 21)</i>		χ^2
	n	%	n	%	
<i>Spiritual beliefs related to decision-making</i>	27	47%	11	52%	0.21
Calling on God/Higher Power for help and protection	11	19%	8	38%	3.09
God/Higher Power controls health	5	9%	6	30%	5.12*
Taking medication is the will of God/Higher Power	8	14%	0	0%	3.22
Spirituality enhances will to live	8	14%	1	5%	1.25
“God helps those who help themselves”	4	7%	2	10%	0.15
<i>Mind–body beliefs related to decision-making^a</i>	7	54%	6	46%	3.05
Mind controls body	4	7%	4	19%	2.50
Body tells when medication is needed	3	5%	4	19%	3.68
<i>Spiritual beliefs play a role in adherence</i>	24	41%	6	29%	1.07
Spirituality helps adherence	21	36%	6	29%	0.40
Spirituality helps coping with side effects	12	21%	1	5%	2.85
<i>Mind–body beliefs related to adherence</i>	11	19%	0	0%	4.62*
Mind helps adherence	7	12%	0	0%	2.78
Mind helps coping with side effects	4	7%	0	0%	1.53

^aMind–body beliefs connected to spiritual beliefs were excluded in this count.

*Significants at $\alpha < 0.05$.

Spiritual and mind–body beliefs related to treatment adherence

Approximately half (38/79; 48%) of the participants reported spiritual/mind–body beliefs related to treatment adherence (34% spiritual beliefs, 10% mind–body beliefs that had no spiritual connotation, and 4% both spiritual and mind–body beliefs). Table 4 provides an overview of the spiritual and mind–body beliefs related to adherence, their frequencies, interrater reliability, and characteristic examples.

Overall, 30 of 79 (38%) participants expressed spiritual beliefs related to adherence (25% one and 13% two spiritual beliefs). Two spiritual beliefs were coded: “Spirituality helps adherence” (18/79; 23%) and “Spirituality helps coping with side effects.” Fewer (11/79; 14%) participants expressed mind–body beliefs related to adherence, either “Mind helps adherence” or “Mind helps coping with side effects.”

Table 4 depicts the independent *t*-tests comparing the presence versus absence of spiritual/mind–body beliefs on treatment adherence and symptoms reported in the ACTG

TABLE 4. INDEPENDENT *t*-TESTS COMPARING THE PRESENCE VS. ABSENCE OF SPIRITUAL/MIND–BODY BELIEFS ON TREATMENT ADHERENCE AND SYMPTOMS REPORTED IN THE ACTG QUESTIONNAIRE

<i>Spiritual/mind–body beliefs</i>	<i>Last time skipping doses^a</i>	<i>Reasons for missing doses^a</i>	<i>Symptoms</i>
	t	t	t
<i>Spiritual beliefs related to decision-making</i>	–0.62	–0.42	–2.43*
Calling on a Higher Power for help and protection	–0.77	–0.92	–2.88**
God/Higher Power controls health	0.19	–0.29	–0.97
Taking medication is the will of God/Higher Power	–0.59	–1.05	–0.71
Spirituality enhances will to live	–0.59	0.39	–0.31
“God helps those who help themselves”	1.19	0.15	–1.13
<i>Mind–body beliefs related to decision-making</i>	1.12	1.47	–0.42
Mind controls body	–0.09	1.48	–3.24**
Body tells when medication is needed	1.77	0.47	0.85
<i>Spiritual beliefs related to adherence</i>	–2.32*	–1.11	–2.97**
Spirituality helps adherence	–1.60	–0.44	–2.64*
Spirituality helps coping with side effects	–6.57***	–5.69***	–3.37**
<i>Mind–body beliefs related to adherence^b</i>	–0.15	–0.52	–0.85
Mind helps adherence	0.37	–0.51	–0.68
Mind helps coping with side effects	–0.72	–0.16	–0.46

^aOnly the 58 participants taking antiretrovirals are included in this calculation.

^bMind–body beliefs connected to spiritual beliefs were excluded in this count.

Significants at * $\alpha < 0.05$; ** $\alpha < 0.01$; *** $\alpha < 0.001$.

adherence questionnaire. The presence versus absence of the belief "Spirituality helps coping with side effects" was significantly associated with better adherence (i.e., lower frequency of and fewer reasons for missing doses, $M = 0.75 \pm 1.28$ versus $M = 5.65 \pm 5.27$, $p = 0.002$) and fewer symptoms ($M = 4.86 \pm 4.79$ versus $M = 10.53 \pm 8.36$, $p = 0.020$). Symptoms that are commonly associated with HIV and its treatment were also significantly fewer in presence versus absence of the beliefs "Mind controls body," $M = 5.50 \pm 2.77$ versus $M = 10.06 \pm 8.42$, $p = 0.003$; "Calling on a God/Higher Power for help and protection," $M = 4.86 \pm 4.79$ versus $M = 10.53 \pm 8.36$, $p = 0.006$; and "Spirituality helps adherence," $M = 11.20 \pm 6.37$, $p = 0.010$.

Discussion

This study examined individual spiritual/mind-body beliefs in relation to treatment decision-making and adherence in people with HIV, using inductive methods rather than testing preconceived concepts of spiritual/mind-body beliefs. The most important finding was that about half of the participants considered spiritual/mind body beliefs in treatment decision-making and perceived them as enhancing adherence.

Are spiritual/mind-body beliefs a motivator or a barrier to antiretroviral treatment?

Although spiritual/mind-body beliefs frequently interplayed with treatment decision-making, most beliefs could serve as both, a motivator as well as a barrier to taking antiretrovirals. Remarkably, there was no specific belief that was identified as a motivator to take antiretrovirals. In contrast, certain beliefs were identified as a barrier to accepting the treatment that was offered by the physician due to the advanced stage of the disease. The belief in a God/Higher Power controlling health was associated with not taking antiretrovirals, and the belief in the individual's mind controlling health was associated with not starting antiretrovirals. Thus, the agentic perspective of the health locus of control, both the belief in God/Higher Power as a proxy agency and the belief in the individual's mind as a direct personal agency may function as a barrier to taking antiretrovirals. This finding confirms the social cognition theory of Bandura,³³ who describes that the belief in a proxy or personal agency plays a pivotal role in self-efficacy and the perceived capability to exercise control over the individual's functioning. For people with HIV, the belief in a proxy or personal agency controlling health may be a barrier to take or start antiretrovirals.

Since many spiritual/mind-body beliefs can be a factor in the decision not to take treatment, it is important for physicians to address those beliefs, even if this sometimes requires that a professional asks personal questions.^{20,34} At times, physicians also will have to learn "dealing with religious delusions,"³⁴ such as the belief that the faith in God/Higher power is able to replace antiretrovirals, which was expressed by participants in this study.

Are spiritual/mind-body beliefs a motivator or a barrier to treatment adherence?

Despite that the participants perceived that their spirituality and their mind was enhancing their adherence and helped coping with side effects, the presence of those beliefs was not

necessarily reflected with reporting better treatment adherence on the ACTG adherence questionnaire. However, those results need to be interpreted with caution since self-reported adherence tends to be overreported³⁵ and only few participants admitted that they skipped doses over the past 3 days.

The only spiritual belief that was identified as a motivator to adherence was the perception that spirituality helped coping with treatment side effects. In fact, those who believed that spirituality was helpful in coping with side effects also reported fewer symptoms that are common due to the disease and its treatment. Fewer symptoms were also reported in participants believing that the mind controls the body, in those calling on God/Higher Power for help and protection, and in those perceiving that spirituality was helping them in adhering to treatment.

Spiritual/mind-body beliefs associated with fewer symptoms may also be related to adherence, since the association between fewer treatment side effects and better adherence is well established.^{36,37}

Interestingly, the belief in a personal agency and self-efficacy (i.e., the mind controls the body) can serve as both a barrier to the decision to take antiretrovirals as well as a motivator to adhere to the treatment once the person has decided to take them. Self-efficacy is known as a promoter of treatment adherence in HIV.^{36,37}

Limitations

Although this study included a large sample for qualitative research, statistical power for quantitative computations remains limited. Furthermore, the study was not primarily designed to examine spiritual/mind-body beliefs related to adherence, reflected in a poor interrater reliability of the coding of spiritual beliefs related to adherence. The sole use of a self-report questionnaire to measure adherence bears a bias towards overreporting.³⁵ However, despite low reliability, which may reduce power, we still found a significant association between adherence behavior and the belief in spirituality as helping to cope with side effects, which strengthens our finding. In addition, the associations found do not allow drawing causal conclusions. Our preliminary results need to be confirmed in studies with a larger sample size using composite measures of treatment adherence.

Conclusions

Spiritual/mind-body beliefs may serve as both barriers and motivators to treatment decision-making and adherence. The main barrier to taking antiretrovirals are health control beliefs, such as the belief in a God/Higher power (proxy agency) or in the individual's mind (personal agency). Such agency perspectives may lead to the belief that even in an advanced disease stage, medication is not needed, which may be a harmful treatment choice. On the other hand, for those decided to take treatment, mind-body beliefs may promote better adherence. Thus, mind-body beliefs such as personal agency may encourage individuals to postpone antiretrovirals, until they are ready to take them and enhance adherence, once the individual is prepared to take treatment. Unless initiation of treatment is not deferred beyond a critical point, awaiting treatment readiness may be the superior choice that prevents the development of treatment resistance due to non-adherence.^{26,38-40}

Furthermore, the belief that spirituality helps coping with side effects is not only related to better adherence but also to fewer symptoms/side effects. Fewer symptoms/side effects are also reported in those calling on God/Higher Power for help and protection and those believing that spirituality helps adherence. In summary, the importance of spiritual/mind–body beliefs in treatment decision-making and adherence should be acknowledged since not taking or not adhering to treatment may affect survival and quality of life of people with HIV.

Acknowledgments

The authors acknowledge all the people living with HIV/AIDS for their faithful participation in this study, and Annie George for performing interviews, Glenn Burkett for coding interviews, and Marilisa Jimenez for editorial comments. The authors thank the pharmaceutical companies Glaxo-Smith-Kline and Gilead for funding this substudy and the National Institute of Health (R01MH53791 and R01MH066697, Principal Investigator: Gail Ironson) for financially supporting the parent study on the Psychology of Health and Long Survival with HIV/AIDS.

Author Disclosure Statement

No competing financial interests exist.

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