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Spiritual Well-Being and Mental Health Outcomes in Adolescents With or Without Inflammatory Bowel Disease

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Abstract

Purpose—The purpose of this study was to a) describe spiritual well-being (existential and religious well-being) in adolescents with inflammatory bowel disease (IBD) versus healthy peers, b) examine associations of spiritual well-being with mental health outcomes (emotional functioning and depressive symptoms), and c) assess the differential impact of existential versus religious well-being on mental health.

Methods—One-hundred fifty-five adolescents ages 11-19 from a children's hospital and a university hospital filled out questionnaires including the Spiritual Well-Being Scale, the Children's Depression Inventory-Short Form, and the Pediatric Quality of Life Inventory. Covariates in multivariable models included demographics, disease status, and interactions.

Results—Participant's mean (*SD*) age was 15.1 (*2.0*) years; 80 (52%) were male; and 121 (78%) were White. Levels of existential and religious well-being were similar between adolescents with IBD and healthy peers. In multivariable analyses, existential well-being was associated with mental health (partial R^2change = .08-.11, $p < .01$) above and beyond other characteristics (total $R^2 = .23$, $p < .01$). Presence of disease moderated both the relationship between existential well-being and emotional functioning, and between religious well-being and depressive symptoms – that is, the relationships were stronger in adolescents with IBD as compared to healthy peers. Religious well-being was only marginally significantly associated with mental health after controlling for other factors.

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Conclusions—While both healthy adolescents and those with IBD had high levels of spiritual well-being, having IBD moderated the relationship between spiritual well-being and mental health. Meaning/purpose was related to mental health more so than connectedness to the sacred.

Adolescents with a chronic illness often face numerous psychosocial and medical issues [1-5]. Inflammatory bowel disease (IBD), comprising ulcerative colitis and Crohn's disease, is characterized by chronic and relapsing inflammation of the gastrointestinal tract, and its manifestations may include abdominal pain, bloody diarrhea, and/or nausea and vomiting. Approximately 15-25% of cases of IBD are present by 20 years of age, with an age-specific incidence rate in North America for 10- to 19-year-olds of 6 per 100,000 people [6,7]. Females have a slightly higher incidence of Crohn's disease than males [8] and rates in Whites and African Americans are similar [8].

With side effects of treatment from potent anti-inflammatory drugs, immunosuppressants, and newer biologic agents being substantial [6,7], adolescents with IBD face a range of issues that could considerably impact their health-related quality of life (HRQOL), including emotional difficulties, delayed growth and puberty, and painful procedures and treatments [1,3,9]. Studies of psychosocial functioning in adolescents with IBD have found that in comparison with healthy peers, those with IBD have a greater risk of behavioral/emotional difficulties, such as depression, anxiety, impaired social functioning, and lower self-esteem [1,3,10,11]. Still, perhaps because of developed coping skills, such difficulties only appear to be clinically significant in a minority of patients with IBD, a finding similar to that reported in other pediatric chronic illnesses [2]. However, given the evidence that adolescents with IBD are at increased risk for mental health difficulties [1,3,9], research examining resilience factors (factors that promote healthy adaptation to a chronic illness) associated with improving mental health outcomes in these vulnerable adolescents is warranted.

With the ultimate goal being able to "adapt" to living with a chronic illness, multiple factors have been identified to determine how an adolescent will cope with or adapt to having a chronic illness. These include: a) disease factors (e.g., severity, functional status), b) child factors (e.g., temperament, coping styles), and/or c) social-ecological factors (e.g., family functioning, parental adjustment) [4,5] - all interrelated factors that have been posited in various theoretical models [4,12]. For example, adolescents with better self-concept and adaptive coping strategies, as well as those whose parents are better adjusted themselves, have demonstrated improved adjustment to an illness [4,5].

One factor less often studied in relation to coping with a pediatric chronic illness -though ubiquitous and present across individual, family, and social-ecological levels – is religion/spirituality. Although definitions and measurement tools for religious/spiritual variables in health outcomes research vary widely [13,14], there is general consensus that religion/spirituality encompass multidimensional constructs that include a variety of dimensions such as attitudes and belief systems, values, behaviors, meaning, and transcendence [14,15]. Religiosity has been described as institutional and outward expression of the sacred (i.e., frequency of prayer)[16], while spirituality encompasses the internal, personal, and emotional expression of the sacred (e.g., spiritual well-being or the use of spiritual/religious coping) [13,14]. For the purpose of this study, we chose a spirituality measure that assessed spiritual well-being (well-being in relation to that which lies beyond oneself [18]). It is comprised of two distinct domains: religious well-being and existential well-being. The religious well-being domain focuses on "how one perceives the well-being of his/her spiritual life as expressed in relation to God/Higher Power"[18]. The existential well-being domain concerns "how well the person is adjusted to self, community, and surroundings, and is involved in the existential notions of life purpose, life satisfaction, and positive/negative life experiences"[18].

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Some authors have found that the existential domains of religion/spirituality may contribute uniquely to adolescent health outcomes. For example, a recent review by Wong and Rew found that institutional (e.g., frequency of religious service attendance) and existential (e.g., meaning/purpose) dimensions of religion/spirituality generally had the most robust relationships with mental health outcomes in adolescents [19]. In addition, a study by Cotton and colleagues of 134 suburban adolescents found that existential well-being was the only remaining significant predictor of health risk behaviors and depressive symptoms after accounting for religious well-being, importance of religion, and belief in God [20]. However, it is unclear whether this additional predictive value of existential well-being would be present in adolescents with a chronic illness.

The importance of religion/spirituality for adolescents in general is clear: 95% believe in God, 85-95% state that religion is important in their life, over 50% attend religious services at least monthly, and close to 50% pray alone frequently [21-23]. Literally hundreds of studies have examined the role of religion/spirituality and health outcomes in adolescents *without* a chronic illness [24,25]. In general, adolescents with higher levels of religiosity and spirituality have better health behaviors (e.g., less drug and alcohol use, later sexual initiation) and improved mental health outcomes [19,24,25]. Though little is known about the role of spirituality and coping in pediatric populations, in adults with a chronic illness such as HIV or cancer, higher levels of spirituality have been associated with improved mental health outcomes and better HRQOL in over one hundred studies [14,26,27]. Adult patients report that spirituality helps them reframe their disease, aids in putting life into perspective, and comforts them in times of distress [26,28]. The few adolescent studies with chronically ill samples that do exist have been conducted with very small samples/case studies, have not focused on religion/spirituality as a primary variable of interest, and have not utilized a group of healthy controls as a comparison sample [29,30]. Much more work needs to be done in the area of understanding the potential role that religion/spirituality might play in the lives of adolescents living with a chronic illness.

Therefore, given that adolescents with IBD have a higher risk for social and emotional distress, we posited that those with IBD may be more likely to turn to religion/spirituality for comfort during such stressful times – thus adolescents with IBD may have slightly higher levels of spiritual well-being as compared to their healthy peers. We also hypothesized that the presence of disease would moderate the relationships between spiritual well-being and mental health outcomes; that is, that the relationship between spiritual well-being and mental health would be stronger for adolescents with IBD than for healthy peers. In addition, given prior studies, we hypothesized that existential well-being would predict more of the variance in mental health outcomes in comparison to religious well-being. Of note, due to the increased risk of emotional difficulties in adolescents with IBD, we focused on mental health outcomes, specifically depressive symptoms and emotional functioning (broader construct than depressive symptoms, incorporating symptoms of depression and anxiety, as well as frustration and fear).

Therefore, the purpose of this study was to: 1) describe spiritual well-being in adolescents with IBD versus healthy peers; 2) examine the association of spiritual well-being to mental health outcomes in adolescents with IBD as compared with healthy peers (will there be a moderator effect); and 3) determine whether existential or religious well-being impacts mental health differentially.

Method

Participants

We recruited 67 adolescents with IBD and 88 healthy peers ages 11 to 19 years. Participants were recruited from Cincinnati Children's Hospital Medical Center (IBD clinic and Teen Health Center) and the University Hospital (University Internal Medicine and Pediatrics

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practice) in Cincinnati, Ohio at the time of their clinic visit, by telephone, or via flyers. The institutional review boards from each participating site approved the study and informed consent and assent were obtained from all participants and their parents/guardians. A trained research assistant met with adolescents after clinic appointments or at pre-arranged times between October 2005 and April 2007. Adolescents received $20 remuneration for their participation in the study.

Measures

Demographic/Clinical Variables—We collected data regarding age, sex, race/ethnicity, parental education, and religious affiliation. We performed chart reviews to assess type of disease (ulcerative colitis, Crohn's disease or indeterminate) and disease severity (severe, moderate, mild, inactive) according to the modified clinical score of Lloyd-Still and Green for IBD in children [31]. Regarding sample selection, we did not actively recruit patients based on any one type of disease or level of severity.

Dependent Variables

Health-Related Quality of Life (HRQOL): Patients completed the Pediatric Quality of Life Inventory [32], a well-known HRQOL instrument developed and validated on the quality of life concerns of children and adolescents with or without chronic illness. The PedsQL™ 4.0 Generic Core Scales are designed to enable comparisons across patients with chronic conditions and healthy populations [32]. The adolescent version of the PedsQL takes approximately 4 minutes to complete and consists of 23 core items that assess 4 dimensions: physical functioning, emotional functioning, social functioning, and school functioning. Each subscale is scored from 0 – 100 so that higher scores indicate better functional status. The emotional functioning subscale was chosen as the outcome measure for this analysis due to the focus on the relationship between spiritual well-being and mental health outcomes, and incorporates items assessing feelings of anxiety, sadness, anger, frustration, and helplessness or hopelessness (see glossary of terms). Internal consistency reliability for the emotional functioning subscale in the present study was α=.77.

Depressive Symptoms: Adolescents also completed the Children's Depression Inventory - Short Form (CDI-S; [33]), a 10-item modification of the Children's Depression Inventory [33], designed to measure symptoms of depression in children and adolescents. For each item, participants were asked to choose 1 of 3 statements to characterize their thoughts and behaviors over the past 2 weeks (e.g., "I am sad once in a while," "I am sad many times," or "I am sad all the time"). Scores range from 0 – 20, with higher scores indicating greater endorsement of depressive symptomatology. High internal consistency has been reported (α=.86;[20]) and the CDI-S showed good internal consistency reliability in the present study (α=.76).

Independent Variable

Spiritual Well-Being: Adolescents completed an adapted 10-item version of the Spiritual Well-Being Scale [34], which measures overall spiritual well-being and includes 2 subscales assessing religious well-being and existential well-being [17]. In an effort to be more meaningful for adolescents of different religious/spiritual traditions, the adapted scale uses a broad definition of "God" by referring to "God, Higher Power, or other spiritual being." The revised scale asks each adolescent to answer questions about his/her relationship with a Higher Power; meaning and purpose; and satisfaction and direction in life (e.g., "I believe that a Higher Power loves me and cares about me" and "I believe there is some real purpose for my life"; see Table 2 for all items). For each item, participants were instructed to choose one of the following options from a 5-point Likert scale: "strongly agree," "agree," "neither agree or disagree," "disagree," or "strongly disagree." Scores range from 10-50 for the overall scale

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and 5-25 for each of the two subscales with higher scores reflecting higher levels of well-being. The reliability and validity of the full scale are well established and the measure has been used widely in various samples, including adolescents [20]. Test-retest reliability coefficients range from .88 to .99 (religious well-being), .73-.98 (existential well-being) and .82-.99 (overall spiritual well-being). Cronbach's alphas range from .78 to .94 [20,35], and for the present study was .84 (overall spiritual well-being), .90 (religious well-being), and .80 (existential well-being).

Statistical Analysis

Descriptive statistics including means, standard deviations, and frequencies were tabulated. Skewness and kurtosis of variables were examined. Three out of the four psychosocial measures - those assessing religious well-being, existential well-being, and depressive symptoms - were not sufficiently unidimensional. As such, the skewed variables were log transformed because they violated assumptions associated with t-tests, the MANOVA and the regression models. Internal consistency was assessed by calculating Cronbach's alpha statistics. We examined bivariate relationships by performing chi-square tests of independence and Pearson's correlations as appropriate. T-tests and one way analysis of variance were used to compare depressive symptoms and emotional functioning between adolescents with IBD and healthy peers, and among adolescents with various IBD severity levels. As there was only one adolescent who reported an outlying severe symptomatology, this participant was dropped from the analyses. Given that religious well-being and existential well-being were not highly correlated (r = .27), a MANOVA was used to test for differences in religious well-being and existential well-being for adolescents with IBD versus healthy peers.

We constructed 2 separate multiple linear regression models using a block-entry method, with depressive symptoms (CDI-S) and emotional functioning (PedsQL) as primary outcomes. Analyses were first run using data that were not transformed because the results were interpretable. This was followed by analyses that included transformed data to ensure the accuracy of the results. For the regressions, independent variables were entered into each model in a stepwise fashion in the following order: 1) socio-demographics (age, sex, parental education level, and minority versus non-minority status); 2) disease status (IBD versus healthy); 3) spiritual well being (existential well-being and religious well-being entered in separate steps); and 4) interaction terms (disease status × existential well-being and disease status × religious well-being). We found that analyses using the transformed data supported our initial finding of an interaction and we also identified a second interaction. We report the significance of the overall model using the log transformed data, but report the individual relationships among the variables (e.g., correlations and beta weights) using data in their original metric (non-transformed) to facilitate the understanding of the relationships among the variables. We probed the interaction using nontransformed data because it was easier to interpret. A p-value of .05 was used to judge statistical significance. Analyses were performed using SPSS, version 15.0.1 [36].

Results

Participants

The mean (*SD*) age of the 155 participants was 15.11 (1.98); 80 (52%) were male and 121 (78%) were White (see Table 1). Demographic characteristics were similar for adolescents with IBD (n = 67) as compared with healthy peers (n = 88) except that patients with IBD were slightly older. Of participants with IBD, 52 (78%) had Crohn's disease, 13 (19%) had ulcerative colitis, and 2 (3%) had "indeterminate disease" or "other." There was a fairly even distribution of severity of illness, with 20 (30%) with moderate severity, 26 (39%) with mild severity, and 20 (30%) with inactive disease. The mean (*SD*) time since diagnosis was 3.1 (*2.5*) years.

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Adolescents with IBD had greater depressive symptoms than their healthy peers, CDI-S scores of 2.46 (SD = 2.82) and 1.68 (SD = 2.22), respectively; $t = 2.04$, $p = .04$, but similar levels of emotional functioning, PedsQL subscale scores of 72.2 (SD = 19.1) and 74.5 (SD = 15.6), respectively; $t = .83$, $p = .41$. Levels of depressive symptoms and emotional functioning were surprisingly similar among adolescents with mild, moderate, and inactive symptom severity, $F(3, 63) = .85$, $p = .43$; $F(3, 63) = .78$, $p = .30$, respectively.

Spiritual Well-Being in IBD versus Healthy Adolescents

Of the entire 155 adolescents, 91 (59%) adolescents reported that their relationship with a Higher Power/God contributes to their overall well-being. In addition, the majority of adolescents ($n = 126$, 82%) felt good about their future and said that a Higher Power loved them or cared about them ($n = 124$, 81%; see Table 2). A MANOVA did not indicate significant multivariate (Wilks' Lambda-associated $F(2,151) = 2.72$, $p = .07$) or univariate differences between adolescents with IBD and healthy peers on measures of existential well-being ($F(1,152) = .64$, $p = .42$) or religious well-being ($F(1,152) = 2.39$, $p = .07$).

Correlates of Depressive Symptoms and Emotional Functioning

In bivariate analyses, higher levels of existential well-being were significantly associated with fewer depressive symptoms ($r = -.48$, $p < .01$) and better emotional functioning ($r = .39$, $p < .01$; Table 3). Younger age was also associated with better emotional functioning ($r = -.16$, $p < .05$).

Depressive Symptoms

In Step 1 of the multivariable analysis of CDI-S scores, demographics accounted for 5% of the variance in depressive symptoms ($R^2 = .05$; see Table 4). Disease status was added in Step 2 but was not a significant contributor, accounting for only an additional 2% of the variance in depressive symptoms (total model $R^2 = .07$). In Steps 3 and 4, existential well-being and religious well-being were added separately, with existential well-being as a significant contributor ($p < .01$), explaining an additional 11% of the variance in depressive symptoms (total model $R^2 = .18$); religious well-being was not significant and explained no additional variance. In Step 5, disease status and existential well-being were significant contributors ($p < .01$). The final model was significant ($F = 4.59$, $p < .01$), with a total of 23% of the variance in depressive symptoms explained. Regarding the interaction, the log transformed values indicated that for every 1-point increase in the religious well-being score, adolescents with IBD experienced a .96 unit increase in depressed mood, while a 1-point increase in religious well-being for healthy adolescents resulted in a .32 unit increase in depressed mood – thus the relationship was stronger for adolescents with IBD as compared to healthy peers.

Emotional Functioning

Demographic variables were entered into the PedsQL emotional functioning subscale model at Step 1 with age as the only significant contributor ($p < .05$), accounting for 5% of the variance in emotional functioning ($R^2 = .05$; see Table 4). Disease status was entered in Step 2, accounting for no additional variance (total model $R^2 = .06$). In Step 3, existential well-being explained 8% of the variance ($p < .05$) in emotional functioning (total model $R^2 = .13$). In Step 4, religious well-being was significant ($p < .01$) and explained an additional 3% of the variance (total model $R^2 = .16$). In Step 5, disease interactions with existential well-being and religious well-being were added, with existential well-being × IBD as a significant contributor ($p < .01$). Significant predictors in the final model were age and the interaction between existential well-being and IBD ($\beta = 1.77$, $p < .01$). The final model was significant ($F = 4.63$, $p < .01$), with a total of 23% of the variance in emotional functioning explained.

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Since the interaction was significant for models with nontransformed and transformed data we describe both interactions. For the nontransformed data the presence of IBD almost tripled the effect of existential well-being on emotional functioning. Specifically, for each 1-point increase existential well-being scores, adolescents with IBD experienced a 3.62 unit increase in emotional functioning, while a 1-point increase in existential well-being for healthy patients resulted in only a 1.22 unit increase in emotional functioning. For the model that included log transformed data, we found that for each 1-point increase in existential well-being scores, adolescents with IBD experience an 8.0 unit increase in emotional functioning, while a 1-point increase in existential well-being for healthy patients results in a 2.9 increase in emotional functioning.

Discussion

Although spirituality is important to most adolescents [21,22,36], it has received far less attention as a potential resilience factor for coping with a chronic illness than other factors such as self-efficacy, family functioning, and social support [4,5]. Overall, all of the adolescents in our study reported high levels of the importance of spirituality in their lives – the majority believed that a Higher Power loved them and cared about them and over half said that their relationship with a Higher Power contributed to their well-being. Contrary to our hypothesis, however, we found that levels of both existential and religious well-being were similar between healthy adolescents and those with IBD. One explanation could be the previously reported "ceiling effect" of many spirituality measures; that is, most people score fairly high on religiosity/spirituality measures in general [14,37], making it difficult sometimes to find differences between samples. It is also plausible that adolescents with a chronic illness may differ on other dimensions of spirituality/religiosity not measured in this study (e.g., intrinsic religiosity – how much one "lives" one's faith) when compared to healthy peers. Another reasonable explanation might be that our original hypothesis - that due to the increased psychosocial difficulties that adolescents with IBD face they would turn to religion/spirituality for comfort, thus exhibiting higher levels of religion/spirituality than healthy peers– was in fact overshadowed by the fact that adolescents in general are quite religious/spiritual, and healthy adolescents may turn to religion/spirituality to cope with general stressors in their lives.

Similar to other studies of spiritual well-being [19,20], meaning/purpose (existential well-being) was related to both depressive symptoms and emotional functioning more so than was connectedness to the sacred (religious well-being). This finding lends further support to the role of meaning/purpose as a potential mediator of the religion-health relationship in adolescents [36]. Our study suggests that it is not so much an adolescent's relationship with Higher Power that is related to his/her mental health, but rather the meaning/purpose he/she feels in his/her life. More measurement work is needed to distill whether the existential items with the term "spiritual" added in would predict outcomes differently (e.g., "I find meaning/purpose" in my life" versus "I find meaning/purpose in my life due to my faith"). Regardless, the findings with existential well-being highlight the importance of an adolescent's meaning/purpose that may merit particular attention in the clinical context of his/her mental health functioning.

Arguably the most interesting findings in our study were the two interaction effects showing that disease status did moderate the relationship between spiritual well-being and mental health outcomes. That is, the observed positive relationship between existential well-being and emotional functioning was stronger for adolescents with IBD than for healthy peers. In the second interaction the inverse relationship between religious well-being and depressive symptoms was stronger for adolescents with IBD versus those without the condition. These moderator effects suggest that while levels of existential and religious well-being may have been similar for the 2 groups of adolescents, that issues of spiritual well-being appear to

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influence the mental health of adolescents dealing with a chronic illness moreso than their healthy counterparts. Clinically speaking, addressing issues of how an adolescent may be using his/her religion/spirituality in the context of coping with IBD may have an impact on their mental health status. More empirical studies are needed to determine whether more active inclusion of religion/spirituality (beyond a clinician simply asking whether the adolescent uses religion/spirituality to cope) would have a significant impact on mental health outcomes in an adolescent with a chronic illness.

Regarding the nature of the illness group chosen for this study, while adolescents with IBD may have specific issues that are unique to that population/illness group, our research group posits that a systematic approach to better understanding spirituality and religious coping in pediatric populations is to examine these issues first in homogenous populations (e.g., adolescents with IBD), and to then determine whether these findings are generalizable to other adolescents with other chronic conditions (e.g., sickle cell disease or cystic fibrosis).

Our study had several limitations. First, it was cross-sectional, precluding assessing the temporal nature of relationships among our study variables. Second, as disease type and severity of illness reflected participants that volunteered for the study, rather than active recruitment based on a specific type of disease or level of severity, we have a skewed sample selection. Third, while our study did examine moderator effects, it did not examine proposed mediators of the religion-health relationship in adolescents to understand how, for example, social support may mediate the observed relationships. While speculative and not yet formally tested, a religious community may provide social support for an adolescent with IBD if he/she feels socially isolated. In addition, his/her religious or spiritual beliefs may provide comfort or strength in times of feeling depressed, anxious, or different from his/her peers [36,38]. We also were not able to examine how levels of spiritual development [39] or other developmental levels (e.g., cognitive development) might affect these observed relationships.

However, given the limited data available on spirituality in samples of chronically ill adolescents and the lack of comparative studies with healthy peers, this study offers a preliminary and unique perspective on the importance of spiritual well-being, and specifically existential well-being, in the context of adolescent mental health and chronic illness that lays groundwork for future longitudinal multi-method studies.

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Table 1

Sociodemographic Characteristics of the Sample

	Total Sample				Adolescents with IBD				Healthy Controls				
	n	**%**	***M* (*SD*)**	**Range**	***n***	**%**	***M* (*SD*)**	**Range**	***n***	**%**	***M* (*SD*)**	**Range**	***p***
Age	155		15.1 (2.0)	11-19	67		15.5 (2.1)	11-19	87		14.8 (1.9)	11-18	< .05
Gender													
Female	75	48			37	55			38	43			NS
Male	80	52			30	45			50	57			
Ethnicity													
Minority	34	22			14	21			19	23			NS
White	121	78			53	79			68	77			
Disease Severity													
Moderate	20	13			20	30							
Mild	26	17			26	39							
Inactive	20	13			20	30							
Healthy	88	57							88	100			
Parental Education													
High School or GED	14	9			5	8			9	10			NS
Some College	17	11			10	15			7	8			
Graduated from College	55	36			24	36			31	35			
Graduated with Advanced Degree	47	31			18	27			29	33			
Not Sure	21	14			9	14			12	14			

Note: IBD = inflammatory bowel disease; GED = General Educational Development

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Table 2

Spiritual/Religious Characteristics of the Sample

	Strongly Disagree/Disagree		Neither Agree nor Disagree		Strongly Agree/Agree			
	n	**%**	***n***	**%**	***n***	**%**	***M* (*SD*)**	**Range**
Spiritual Well-Being (Overall)							40.3 (6.3)	19 - 50
Religious Well-Being Subscale							19.1 (4.7)	5 - 25
Transformed Religious Well-Being							1.6 (.9)	0 - 3
I believe that God/a Higher Power loves me and cares about me	11	7	19	12.3	124	81		
I have a personally meaningful relationship with God/ a Higher Power	20	13	35	22.7	99	64		
I don't get much personal strength and support from God/a Higher Power	88	57	46	29.9	20	13		
I believe that God/a Higher Power is concerned about my problems	21	14	39	25.3	94	61		
My relationship with God/a Higher Power contributes to my sense of well being	16	10	47	30.5	91	59		
Existential Well-Being Subscale							21.3 (3.2)	10 - 25
Transformed Existential Well-Being Scale							1.3 (.7)	0 - 3
I don't know who I am, where I came from, where I'm going	130	84	20	13.0	4	3		
I feel very fulfilled and satisfied with my life	12	8	26	16.9	116	75		
I feel good about my future	5	3	23	15.0	126	82		
My life doesn't have much meaning	139	90	7	4.5	8	5		
I believe there is some real purpose in my life	9	6	7	4.5	138	90		
Depressive Symptoms Scale (CDI-Short)[a]							2.0 (2.5)	0 - 13
Transformed Depressive Symptoms Scale							.8 (.7)	0 - 3
Emotional Functioning Subscale (PedsQL)[b]							73.5 (17.2)	25 - 100

[a] CDI-Short = Children's Depression Inventory - Short Form.

[b] PedsQL = Pediatric Quality of Life Inventory.

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Table 3

Correlation Matrix

	1	2	3	4	5	6	7
1. Age	—						
2. Depressive Symptoms	.07	—					
3. Emotional Functioning	-.16*	-.56**	—				
4. Parent's highest level of education	-.02	.11	-.07	—			
5. Existential Well-Being	.06	-.48**	.39**	-.05	—		
6. Religious Well-Being	-.04	-.07	-.07	-.09	.27**	—	
7. Spiritual Well-Being	.00	-.29**	.14	-.09	.69**	.88**	—

Note : Significance testing was done with transformations but the numbers represent coefficients based on non-transformed data.

* $p < .05$.

** $p < .01$.

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Table 4

Multivariable Linear Regression Analyses

	Depressive Symptoms[a]					Emotional Functioning[b]				
	Step 1	**Step 2**	**Step 3**	**Step 4**	**Step 5**	**Step 1**	**Step 2**	**Step 3**	**Step 4**	**Step 5**
Demographics										
Minority vs. Nonminority	.16	.15	.08	.08	.07	-.07	-.07	-.01	-.01	-.01
Parent's highest level of education	.10	.11	.09	.09	.10	-.07	-.08	-.06	-.07	-.13
Female gender (vs. male)	.10	.08	.05	.05	.05	-.14	-.14	-.11	-.12	-.10
Age	.09	.06	.08	.09	.07	-.17*	-.16*	-.18*	-.20*	-.21**
Disease Status										
IBD vs. Healthy Controls		.14	.11	.10	-.14**		-.04	-.01	.03	-1.22
Existential well-being (EWB)			-.46**	-.48**	-.46**			.39**	.45**	.22
Religious well-being (RWB)				.06	-.03				-.22*	-.16
Disease Interactions										
EWB × Disease					-.34					1.77**
RWB × Disease					.61*					-.53
Partial R^2 Change		.02	.11**	.01	.04*		.00	.08**	.03*	.06**
R^2	.05	.07	.18	.19	.23	.05	.06	.13	.16	.23
F statistic	1.80	2.06	5.25**	4.68**	4.59**	2.09	1.71	3.65**	3.98**	4.63**

Note : Significance testing was done with transformations but the numbers represent coefficients based on non-transformed data. Standardized β weights are reported at each step to evaluate any changes in weights with the inclusion of additional predictors.

[a] CDI-S.

[b] PedsQL.

* $p < .05$.

** $p < .01$.