ORIGINAL RESEARCH

Colorectal cancer knowledge, cancer fatalism, and religious coping among individuals attending an African American church

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Abstract

Background: African Americans are disproportionately affected by colorectal cancer. Cancer fatalism is a construct that may be associated with poor participation in health-promoting behaviors, particularly colorectal cancer screening among African Americans.

Methods: This study explores the relationship among colorectal knowledge, cancer fatalism, and religious coping among 479 individuals attending African American churches in North Carolina. Linear regression analyses were performed with cancer fatalism as the dependent variable.

Results: Linear regression analyses showed that lower levels of colorectal cancer knowledge were significantly associated with greater levels of cancer fatalism. Negative religious coping was significantly associated with greater levels of cancer fatalism. No relationship occurred for positive religious coping or religious denominational affiliation and cancer fatalism. Lower education level and lower income level had an association with increased cancer fatalism.

Conclusions: Healthcare providers should educate African Americans about colorectal cancer. Also, healthcare providers and religious leaders should consider jointly developing strategies to reduce negative religious coping that is a phenolmenon rooted in strong social ties that thrive in religious settings, such as the African American church environment. Also, both education level and income level should be considered when developing interventions to address cancer fatalism among African Americans.

Key words

Cancer, African Americans, Colorectal, Health knowledge, Attitudes, Practice

1 Introduction

Colorectal cancer is the third-leading cause of cancer-related deaths in the United States among men and women [1]. In North Carolina, colorectal cancer is the second-leading cause of cancer deaths [2]. Out of every 100,000 individuals in North Carolina, 23.5 African Americans die of colorectal cancer a year compared to 15.7 Caucasians [3]. Colorectal cancer

incidence and mortality rates are slowly decreasing among African Americans; nevertheless, incidence and mortality rates remain higher than those of Caucasians [4]. In fact, African Americans have the highest incidence of colorectal cancer of any racial or ethnic group [3]. Understanding the barriers that prevent African Americans from adopting health-promoting behaviors can help to identify effective ways of addressing this health disparity.

Fatalism, fear, and a sense of powerlessness against the inevitable create barriers for those who face disparities in the provision of health care [5]. Early on, Cornell West [6] defined fatalism to be the result of a complex psychological state characterized by a sense of hopelessness, worthlessness, powerlessness, and social despair. Most often, when cancer is diagnosed, there is an automatic association with thoughts of pain, powerlessness, hopelessness, and inevitable death [7]. Given this background, Powe identified that this phenomenon characterizes cancer fatalism [8].

Cancer fatalism is more prevalent among disadvantaged and vulnerable populations, especially African Americans [9-11], and the psychological effects are more pronounced [12]. Fatalism has a greater impact among African Americans due to a mistrust and fear of healthcare professionals and institutions that developed as a result of the United States Public Health Service Syphilis Study at Tuskegee [5, 8, 10]. The Tuskegee study has had significant public health implications [9]. Overall, the most egregious implication is that African Americans delay getting medical tests [6, 9]. A delay in cancer screening can lead to a late diagnosis; consequently, a delayed diagnosis often results in poorer outcomes and potentiates cancer disparities [9, 11].

Since the 1980s, researchers have reported African Americans possess greater fears regarding cancer than other racial or ethnic groups [4]. It has also been reported by the American Cancer Society that African Americans perceive cancer to be a death sentence [4]. When compared to Caucasians, African Americans underestimate cancer prevalence, are more pessimistic about effective treatments or a cure, and are less knowledgeable about the disease [13]. Over time, the perception of cancer as an automatic death sentence persists, particularly among African Americans [14]. As a result, cancer fatalism has been identified as a barrier for African Americans to engage in colorectal cancer screenings [8, 11, 14].

Understanding the barriers to participation in cancer screening is important particularly for African Americans, an ethnic group at high risk for health disparities. In 2005, Greiner et al. found that fear of cancer, fear of the health care system, and lack of knowledge about cancer screening were frequently identified topics among African Americans [15]. In 2006, Powe et al. have provided noteworthy evidence of the link between cancer fatalism and cancer knowledge [14]. Furthermore, the findings of their study indicated that increasing cancer knowledge counteracts myths and reduces fear.

Other mechanisms that respond to fatalism must be investigated in order to better cultivate measures to improve responses to cancer, particularly among African Americans. In 1966, Parker et al. attributed fatalism as an adaptive response to uncontrollable life situations [16]. It is well documented that African Americans often turn to religion to cope to deal with uncontrollable life situations [17, 18]. Religion has historically provided many African Americans with a tool to cope with fears, disparities, societal challenges, and discrepancies [17, 18]. A study of the relationship between colorectal cancer knowledge, fatalism, and religious coping will help healthcare providers identify best practices and effective strategies to decrease colorectal cancer among African Americans.

1.1 Colorectal cancer knowledge and cancer fatalism

Busch developed a qualitative study that explored the knowledge and beliefs of elderly African American women regarding colorectal cancer [19]. Busch found that 61.5% of the study participants reported they had never heard of colorectal cancer or did not know anything about the disease [19]. Additionally, 30.8% of the participants responded that receiving more information about colorectal cancer would encourage them to take preventative measures and engage in a cancer screening test [19]. Some possible reasons identified in the study for low participation in colorectal cancer screenings were lack of knowledge, absence of a recommendation by a doctor to have tests, lack of symptoms, fear of perceived pain, and sense of embarrassment [19].

Cancer fatalism and religious coping

A review of the literature identified cancer fatalism as a barrier to participation in health-promoting behaviors [8, 14, 20]. In the African American community, fatalistic beliefs and attitudes have persisted and resulted in poor cancer screening behaviors and health outcomes [8, 10]. Perceptions of fatalism, a sense of powerlessness against the inevitable, and fear create challenges for those at risk for disparities in the provision of health care [5].

Religion plays a central role in the African American community and is utilized as a powerful spiritual, social, and emotional resource [21]. Historically, a strong commitment to religion and participation in religious practices has provided African Americans with a means of coping [9]. Studies have shown African Americans are more likely to use religion as a coping strategy when confronted with health challenges [21, 22].

Coping has been defined by Lazarus and Folkman [23] in 1984 as the process of constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands exceeding an individual's resources. The term coping generally refers to adaptive or constructive coping strategies (i.e., the strategies reduce stress levels) [23]. However, some coping strategies can be considered maladaptive (i.e., stress levels increase). Maladaptive coping can thus be described, in effect, as non-coping [23]. Weiten et al. classified coping strategies into three categories [23]:

- appraisal-focused (adaptive cognitive)

- problem-focused (adaptive behavioral)

- emotion-focused

Appraisal-focused strategies are used when an individual modifies his or her thought process; for example, individuals may deny or distance themselves from the problem [24]. Problem-focused strategies focus on discovering the causes of a problem [24]. An individual utilizes these strategies when becoming knowledgeable about a problem and learning new skills to manage the problem. This coping strategy is aimed at changing or eliminating the source of stress. Lastly, emotion-focused strategies involve releasing pent-up emotions, distracting oneself, managing hostile feelings, and meditating or using systematic relaxation procedures [24]. Therefore, emotion-focused coping "is oriented toward managing the emotions that accompany the perception of stress" using the strategies identified [24].

All of these coping methods can prove useful, but in 2006 Taylor noted individuals using problem-focused coping strategies are often better able to adjust [25]. Problem-focused coping mechanisms may allow individuals to develop more perceived control, whereas emotion-focused coping may lead to a reduction in the level of perceived control and create maladaptive coping [25]. Fatalism, therefore, is one of the most maladaptive coping mechanisms because individuals perceive they have no control over their fate and do not attempt to engage in any other form of coping [11].

Religious affiliation associated with cancer fatalism

When individuals face stressors and adversity, they seek out the opinions and support of like-minded individuals. Others who have similar problems can often be found in a church setting [26]. Individuals who attend church can benefit from using religion as a coping mechanism because church attendees can offer solutions and strategies for handling problems [26]. When compared to other ethnic and racial groups, African Americans are more likely to report a religious affiliation [27]. In fact, 87% of African Americans identify as being members of a religious group [27]. Religion provides many African Americans with a tool to cope with fatalistic oppositions, such as oppression, discrimination, and subjugation [26-28]. African Americans often turn to religion for social and emotional support [26]. Thus, the church has a central role in supporting African Americans, especially as they experience stressful life experiences. Religious organizations influence health-promotion programs [29]. African Americans turn to religion to cope with uncontrollable life situations, so further investigation of the relationship among cancer knowledge, fatalism, and religious affiliation is warranted.

1.2 Objectives

The researchers implemented a project to study the relationship of colorectal knowledge and religious coping to cancer fatalism among individuals attending an African American church. The researchers also considered the potential impact of religious affiliation to cancer fatalism. As demographic characteristics (i.e., age, gender, education, marital status) and household income may influence cancer fatalism, we include these as covariates in our analyses.

Research Question 1: What is the relationship between colorectal cancer knowledge and cancer fatalism among individuals attending an African American church?

Research Question 2: What is the relationship between religious coping and cancer fatalism among individuals attending an African American church?

Research Question 3: Is religious affiliation associated with cancer fatalism among individuals attending an African American church?

2 Material and methods

2.1 Participants and procedures

A sample of 479 African Americans was recruited through African American churches in the Fayetteville, North Carolina area. The sample is a result of sampling of faith-based institutions in historically African American communities in Fayetteville. Based on the high incidence of colorectal cancer among African Americans4, this ethnic group was targeted. Also, because colorectal cancer incidence increases exponentially after age 50 [1, 4], the sample focused on African Americans 50 years of age and older. The inclusion criteria were African Americans 50 years of age and older; residents of the Fayetteville/Cumberland county area; individuals who were willing to participate in a church-based educational program in a group setting; individuals who were willing to participate in a telephone follow-up interview to discuss screening for colorectal cancer; and individuals who were willing to provide verbal and written consent to participate in the project. This is cross-sectional data from the baseline data collection. The follow-up information about behavioral outcomes was the focus of a different published paper [30]. Participants were approached to complete the study from 11 African American churches in Fayetteville. The study received permission for implementation from the Fayetteville State University and Hampton University Institutional Review Boards.

2.2 Measures

2.2.1 Demographic questionnaire

Demographic variables were measured. Participants self-reported age (years), gender, education (last grade of education completed was reported in years), marital status of married versus not married (i.e., single, divorced, or widowed), and annual household income categories.

2.2.2 Knowledge of colorectal cancer

The Knowledge of Colorectal Cancer Questionnaire consists of 12 questions that are scored as true or false. The range of scores to assess colorectal cancer knowledge is 0 – 1231. Each correct answer is awarded 1 point. Seven questions on the Knowledge of Colorectal Cancer Questionnaire measure the respondent's exposure to colorectal cancer [31]. The questions measure if the respondent has ever had cancer; if a family member has ever had cancer; and if the respondent has ever read, heard, or discussed the issue of colorectal cancer [31]. The Cronbach alpha reliability coefficient in the original study was 0.6931. The test-retest reliability for a subset of the sample was 0.6531. In this current study, we obtained a Cronbach alpha reliability coefficient of 0.73.

2.2.3 Cancer fatalism

Cancer fatalism in this study was measured using the 15-item Powe Cancer Fatalism Inventory10, which assesses the degree to which a person equates cancer with death. The Powe Cancer Fatalism Inventory provides participants with yes or no options in response to 15 belief statements that assess cancer fear, pessimism, predetermination, and inevitability of death. The possible range of scores for the Powe Cancer Fatalism Inventory is 0 – 1510. Scores are determined by adding 1 point for each yes response [11]. No points are given for no or don't know responses [10]. Higher scores on the Powe Cancer Fatalism Inventory indicate higher levels of cancer fatalism for the participants [10].

The Powe Cancer Fatalism Inventory had a coefficient alpha reliability of 0.87 during pilot testing [10]. Reliability coefficients of the original version of the Powe Cancer Fatalism Inventory have been reported as ranging from .84 – .899 [10, 32]. The questionnaire has been used by researchers in previous studies conducted with African American partici- pants [7]. In this current study, we obtained a Cronbach alpha reliability coefficient of 0.77.

2.2.4 Religious coping

The BriefRCOPE Questionnaire developed in 1999 by Pargament et al. [33] was used to measure the use of religious/spiritual coping. This instrument consists of 14 items that measure positive and negative religious coping methods. Subsets of questions relate to positive religious coping, and a subset of questions relate to negative religious coping. The BriefRCOPE Questionnaire is a Likert-type scale with responses ranging from "not at all" = 1 to "used a great deal" = 433. Two subscales measure negative and positive religious/spiritual coping, and there are seven items per subscale33.

Positive religious coping reflects benevolent religious involvement and is manifested by an expression of spirituality; secure relationship with God; and belief there is meaning to be found in life, a spiritual connection, and seeking help from clergy or members [33]. Negative religious coping reflects a struggle with coping and manifested by a less secure relationship with God, tenuous and ominous view of the world, struggle with the search for significance, and belief in punitive religious reappraisals [33]. This is a reliable measure. In the original study, Cronbach's alpha reliability coefficient was 0.87 and 0.69 for the positive and negative scales, respectively [33]. In this current study, we obtained a Cronbach alpha reliability coefficient of 0.78 for positive religious coping and 0.86 for negative religious coping.

2.3 Statistical analyses

Descriptive statistics of mean and standard deviation were used for the continuous variables and percentage and frequency for the categorical variables. Pearson product-moment correlations were calculated to examine the relationship between colorectal cancer knowledge, religious coping, and cancer fatalism. Linear regression analyses were performed with the dependent variable of cancer fatalism. Three separate regression analyses were performed, each with four models. Independent variables for each of the three separate regression analyses included as Model 1 the predictors of colorectal cancer knowledge, negative religious coping, or positive religious coping (defined above in the Material and Methods section). Model 2 included Model 1 plus religious affiliation. Model 3 included Model 2 plus demographic characteristics of age, gender, education, and marital status. Model 4 included Model 3 plus income. This was included as a separate model since not all participants reported income. The level of significance was set at $p < .05$ with two-tailed analyses. Data were analyzed using SPSS ® version 17.0 software.

The reasons for the hierarchical regression analytical approach and the model order used are as follows. Our first two research questions focused on the relationship of colorectal cancer knowledge, negative religious coping, or positive religious coping with cancer fatalism. This is why they were included as Model 1. Our third research question focused on the relationship of religious affiliation to cancer fatalism. As we did not want to ignore the potential impact of the variables considered potentially important in the first two research questions, we included them along with religious affiliation as Model 2. We noticed that relevant covariates of the demographic variables of age, gender, education, marital status, and income had missing data due to participant non-completion of these questions, with income having an even larger number

of participants choosing not to complete the income question. As we used the commonly used approach for analyzing missing data of list-wise deletion for our analyses, we would have had a much smaller sample size if we included all the variables in one analytical model. We therefore chose to have two additional models. Model 3 included the demographic variables of age, gender, education, and marital status along with the variables that were considered as part of our research questions. Model 4 included income along with the variables that were considered as part of our research questions and also the demographic variables of age, gender, education, and marital status.

Table 1. Descriptive Statistics of the Sample of African American Men and Women ($N = 479$)

Variables	Mean (SD)	Percentage (frequency)
Age	**64.6 (9.70)**	
Education	**13.14 (2.79)**	
Gender		
Male		26.3% (126)
Female		73.7% (353)
Marital Status		
Married or living with a partner		52.4% (251)
Not married		47.6% (228)
Income		
< $9,999		12.9% (62)
$10,000 – $29,999		29.0% (139)
$30,000 – $69,999		34.0% (163)
≥ $70,000		12.1% (58)
Missing		12.0% (57)
Religious Denomination		
Baptist		53.7% (22)
Non-Denomination		24.3% (10)
Methodist		4.9% (2)
AME Zion		12.2% (5)
Other		4.9% (2)
Participant Religious Denomination		
Baptist		72.0% (345)
Non-Denomination		6.7% (32)
Methodist		6.5% (31)
AME Zion		10.2% (49)
Other		4.6% (22)
Colorectal Cancer Knowledge	7.5 (2.25)	
Cancer Fatalism	4.6 (3.34)	
Negative Religious Coping	11.9 (5.29)	
Positive Religious Coping	25.1 (3.36)	

Note. SD = standard deviation. Variations in sample size result from item nonresponse.

3 Results

Table 1 reports the demographic characteristics of the study participants. The mean age of the participants was almost 65 years of age and mean educational level was greater than a high school education. Almost three-quarters of the sample were women and slightly more than half were married or living with a partner. Slightly more than one-third reported an

annual household income of $30,000 – $69,000. Also, almost one-third reported household income of $10,000 – $29,999. This is a category that falls within the poverty level and we are not able to determine the percentage of participants who had an average annual household income of less than $14,570, the poverty level of a two-family household [34]. More than half of the churches that participated in the study were Baptist churches. Non-Denomination was the next most frequent church participating in this study at almost one-quarter of the churches. Although the study took place at churches with a specific religious denomination, participants identified their personal religious denomination. Almost three-quarters of participants reported their denomination as Baptist. The second largest number of one-tenth of the participants reported their denomination as African Methodist Episcopal (AME) Zion. With regard to the scales used, the mean score of the Knowledge of Colorectal Cancer questionnaire indicates that participants had correct knowledgeable for more than 7 of the 12 items assessed. The mean score of the Powe Cancer Fatalism Inventory [10] indicates that participants had relatively lower levels of cancer fatalism. The mean negative religious coping score indicates coping between "not at all" 10 and "somewhat" [10]. The mean positive religious coping score indicates coping between "quite a bit" and "a great deal" [11].

Table 2 reports correlation analyses. With regard to cancer fatalism, colorectal cancer knowledge had a significant negative correlation and negative religious coping had a significant positive correlation. No significant correlation was found for positive religious coping. Also, colorectal cancer knowledge had a significant negative correlation with negative religious coping and a significant positive correlation with positive religious coping. Negative religious coping had a significant positive correlation with positive religious coping.

Table 2. Correlation Matrix for Cancer Fatalism

	Cancer Fatalism	Colorectal Cancer Knowledge	Negative Religious Coping	Positive Religious Coping
Cancer Fatalism	1.00			
Colorectal Cancer Knowledge	-.15**	1.00		
Negative Religious Coping	.22***	-.16**	1.00	
Positive Religious Coping	.03	.12**	.14**	1.00

** $p < .01$, *** $p < .001$.

Table 3 reports the regression analyses for cancer fatalism that includes colorectal cancer knowledge as a predictor. Model 1 showed a significant relationship indicating that lower levels of colorectal cancer knowledge were associated with higher levels of cancer. Model 2 showed a similar significant pattern for colorectal cancer knowledge. Also, participants belonging to non-denominational religious affiliations as compared to those with a Baptist religious affiliation had lower levels of cancer fatalism. Model 3, as in Models 1 and 2, showed a similar significant pattern for colorectal cancer knowledge. Also, gender was statistically significant where males had lower levels of cancer fatalism. Education was statistically significant, where individuals with fewer years of education had greater levels of cancer fatalism. However, unlike in Model 2, non-denominational religious affiliation was not associated with cancer fatalism. Model 4 showed similar significant patterns for colorectal cancer knowledge, as in Models 1, 2, and 3. Male gender and education showed similar significance patterns as in Model 3. Also, those who were single had lower levels of cancer fatalism as compared to participants who were married. Participants with incomes of $30,000 – $69,999 and >$70,000 had significantly lower levels of cancer fatalism as compared to those with incomes <$10,000.

Table 4 reports the regression analyses for cancer fatalism that includes negative religious coping as a predictor. Model 1 showed a significant relationship indicating that higher levels of negative religious coping were associated with higher levels of cancer fatalism. Model 2 showed a similar significant pattern for negative religious coping. Also, those with a non-denominational religious affiliation as compared to those with a Baptist religious affiliation had lower levels of cancer fatalism. Model 3, as in Models 1 and 2, showed a similar significant pattern for negative religious coping. Also, education was statistically significant, where individuals with fewer years of education had higher levels of cancer fatalism. However, unlike in Model 2, non-denominational religious affiliation was not associated with cancer fatalism. Model 4 showed similar significant patterns for negative religious coping as in Models 1, 2, and 3. Also, those who were single had lower levels of cancer fatalism as compared to participants who were married. Participants with incomes of \$30,000 – \$69,999 and >\$70,000 had significantly lower levels of cancer fatalism as compared to those with incomes <\$10,000.

Table 3. Regression Analysis for Cancer Fatalism that Includes the Predictor of Colorectal Cancer Knowledge

Variable	Model 1 B (SE) (*n* = 462)	Model 2 B (SE) (*n* = 462)	Model 3 B (SE) (*n* = 416)	Model 4 B (SE) (*n* = 376)
Constant	6.33 (0.54)***	6.35 (0.54)***	8.71 (1.60)***	9.93 (1.59)***
Colorectal Cancer Knowledge	-0.23 (0.07)**	-0.23 (0.07)**	-0.19 (0.70)**	-0.24 (0.07)**
Religion				
Baptist		Reference	Reference	Reference
Non-Denominational		-1.49 (0.60)*	-0.92 (0.59)	-1.01 (0.58)
Methodist		-0.55 (0.63)	-0.51 (0.64)	-0.73 (0.67)
AME Zion		0.74 (0.50)	0.57 (0.49)	0.12 (0.48)
Other		0.55 (0.77)	0.04 (0.79)	-0.60 (0.85)
Demographics				
Age (years)			0.02 (0.02)	0.02 (0.02)
Gender (male)			-0.77 (0.35)*	-0.88 (0.36)*
Education (years)			-0.30 (0.06)***	-0.15 (0.06)*
Marital Status (single)			-0.09 (0.08)	-0.32 (0.08)***
Income				
<\$10,000				Reference
\$10,000 - \$29,999				-0.73 (0.51)
\$30,000 - \$69,999				-2.69 (0.56)***
≥ \$70,000				-3.01 (0.69)***

* *p* < 0.05, ** *p* < 0.01, *** *p* = < 0.001

Adjusted R square: Model 1 = 0.022, Model 2 = 0.035, Model 3 = 0.127, Model 4 = 0.218

Table 5 reports the regression analyses for cancer fatalism that includes positive religious coping as a predictor. All 4 models did not show any significant association of positive religious coping with cancer fatalism. Only Model 2 showed that those with a non-denominational religious affiliation as compared to those who had a Baptist religious affiliation had lower cancer fatalism. Model 3 showed that education was statistically significant, where individuals with fewer years of education had greater levels of cancer fatalism. Model 4 showed that male gender was now statistically significant, where males had lower levels of cancer fatalism. Education remained statistically significant, where individuals with fewer years of education had greater levels of cancer fatalism. Also, those who were single had lower levels of cancer fatalism as compared to participants who were married. Participants with incomes of \$30,000 – \$69,999 and >\$70,000 had significantly lower levels of cancer fatalism as compared to those with incomes <\$10,000.

Table 4. Regression Analysis for Cancer Fatalism that Includes the Predictor of Negative Religious Coping

Variable	Model 1 B (SE) ($n = 454$)	Model 2 B (SE) ($n = 454$)	Model 3 B (SE) ($n = 407$)	Model 4 B (SE) ($n = 369$)
Constant	2.92 (0.38)***	2.92 (0.39)**	5.45 (1.59)***	6.62 (1.62)***
Negative Religious Coping	0.14 (0.29)***	0.14 (0.29)***	0.13 (0.03)***	0.12 (0.03)**
Religion				
Baptist		Reference	Reference	Reference
Non-Denominational		-1.42 (0.60)*	-0.91 (0.58)	-0.93 (0.58)
Methodist		-0.18 (0.62)	-0.42 (0.63)	-0.65 (0.67)
AME Zion		0.83 (0.50)	0.61 (0.48)	0.17 (0.48)
Other		0.60 (0.81)	0.27 (0.81)	-0.40 (0.90)
Demographics				
Age (years)			0.03 (0.02)	0.02 (0.02)
Gender (male)			-0.57 (0.36)	-0.65 (0.36)
Education (years)			-0.30 (0.06)***	-0.16 (0.06)
Marital Status (single)			-0.07 (0.08)	-0.30 (0.08)***
Income				
< $10,000				Reference
$10,000 - $29,999				-0.67 (0.52)
$30,000 - $69,999				-2.55(0.57)***
≥ $70,000				-3.04 (0.70)***

* $p < 0.05$, ** =$p < 0.01$, *** $p < 0.001$

Adjusted R square: Model 1 = 0.047, Model 2 = 0.059, Model 3 = 0.149, Model 4 = 0.217

Table 5. Regression Analysis for Cancer Fatalism that Includes the Predictor of Positive Religious Coping

Variable	Model 1 B (SE) ($n = 456$)	Model 2 B (SE) ($n = 456$)	Model 3 B (SE) ($n = 408$)	Model 4 B (SE) ($n = 369$)
Constant	3.78 (1.18)**	3.71 (1.18)**	5.98 (1.89)**	8.29 (1.94)***
Positive Religious Coping	0.03 (0.05)	0.04 (0.05)	0.06 (0.05)	-0.00 (0.05)
Religion				
Baptist		Reference	Reference	Reference
Non-Denominational		-1.44 (0.62)*	-0.87 (0.60)	-0.95 (0.59)
Methodist		-0.21 (0.64)	-0.60 (0.64)	-0.69 (0.68)
AME Zion		0.75 (0.51)	0.55 (0.49)	0.11 (0.49)
Other		1.02 (0.81)	0.48 (0.82)	-0.27 (0.91)
Demographics				
Age (years)			0.03 (0.02)	0.02 (0.02)
Gender (male)			-0.66 (0.36)	-0.76 (0.37)*
Education (years)			-0.33 (0.06)***	-0.17 (0.06)**
Marital Status (single)			-0.07 (0.08)	-0.30 (0.09)**
Income				
< $ 10,000				Reference
$10,000 - $29,999				-0.69 (0.53)
$30,000 - $69,999				-2.71 (0.58)***
≥ $70,000				-3.16 (0.71)***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Adjusted R square: Model 1 = 0.001, Model 2 = 0.013, Model 3 = 0.115, Model 4 = 0.193

4 Discussion

The more knowledge individuals had about colorectal cancer, the less likely they were to be fatalistic. There was a significantly positive relationship between negative religious coping and cancer fatalism, but there was not a significant relationship between positive religious coping and cancer fatalism. Individuals who had non-denominational religious affiliations, compared to those who had a Baptist religious affiliation, had lower levels of cancer fatalism in linear regression models excluding demographic variables and income categories.

4.1 Colorectal cancer knowledge and cancer fatalism

There was a negative relationship between colorectal cancer knowledge and cancer fatalism. This finding was congruent with other studies conducted by nurses engaged in research [10, 12]. In Powe's 1995 study, a lack of knowledge, along with other factors, contributed to a higher degree of cancer fatalism among African Americans, which causes higher cancer mortality rates [10]. A fear of cancer reinforces a perceived lack of control over health outcomes, and lack of control over health outcomes magnifies a sense of helplessness, hopelessness, and social despair that reinforces cancer fatalism [10]. An insidious and menacing cycle of fear, poor cancer screening participation, late-stage cancer diagnosis, and death is infused within the African American community [8, 10]. When cancer fatalism exists, individuals, particularly African Americans, are less likely to engage in health-promoting behaviors and participate in cancer screenings.

4.2 Religious coping and cancer fatalism

Increased negative religious coping was significantly associated with increased cancer fatalism while positive religious coping did not have any significant association with cancer fatalism. This finding of negative religious coping differs from that of Powe [7] who, in 1997, reported a negative relationship between cancer fatalism and religious coping/spirituality; when cancer fatalism decreased, there was an increase in religious coping/spirituality. There are different aspects of religious coping, and negative religious coping has been found to be significantly related to cancer fatalism.

Negative religious coping indicates difficulty in coping and is manifested by a less secure relationship with God, a tenuous and ominous view of the world, a struggle with the search for significance, and a belief in punitive religious reap-praisals [33]. The relationship between cancer fatalism and negative religious coping suggests the reinforcement of sin and punishment, as emphasized in some religious denominations, may be associated with increased fatalism among African Americans. Future research needs to be conducted to determine which aspects of negative religious coping are reinforced by religious practices and how this influences cancer fatalism.

4.3 Religious affiliation and cancer fatalism

Participants who had a non-denominational religious affiliation, compared to those with a Baptist religious affiliation, had lower levels of cancer fatalism only in models excluding demographic variables and income categories. After relevant demographic factors were considered, this association no longer occurred. Also, this association was not seen for other religious affiliations. Findings differ from a previous study that found religious affiliation and spirituality of African American church congregants had a significant influence on participation in colorectal cancer screening among the study participants [11]. The findings of this study suggest religious affiliation is not related to cancer fatalism.

4.4 Education, income, and cancer fatalism

There was a negative relationship between lower levels of education and higher levels of cancer fatalism in almost all of the analyses that included education as a predictor. This finding is consistent with studies that reported cancer fatalism is more likely to be associated with less educated individuals [10, 35, 36]. Participants who were in the moderate and higher income categories had lower levels of cancer fatalism. This finding is consistent with previous studies that reported cancer fatalism is associated with lower income individuals [10, 37]. The study adds to the literature and it is relevant for participants who attend an African American church.

5 Study limitations and future research

There were several study limitations. The first limitation was the geographic area, the southeastern region of North Carolina, which may affect the generalizability of the findings. Data from African Americans in the faith-based community in the southeastern region of North Carolina may differ from other populations in the United States. Another limitation was that the majority of this sample was Baptist, and other religious denominations had smaller samples. Additional research is warranted to measure the impact of religious affiliation on cancer fatalism, particularly among African Americans who had a non-Baptist religious affiliation. Lastly, the demographic variables and household income groups were not as large as those for colorectal cancer knowledge, religious coping, and religious affiliation. Although the researchers were not aware of any potential bias, there was a possibility that bias occurred.

6 Conclusion

In conclusion, there was an inverse relationship between knowledge of colorectal cancer and cancer fatalism. Participants who reported negative religious coping and lower educational and income levels also had increased levels of cancer fatalism. Healthcare providers and African American religious leaders should develop effective strategies to counteract negative religious coping methods utilized when encountering difficult or challenging health issues. Educational and income levels should also be considered when designing interventions to counteract cancer fatalism. Church ministers, health ministries, and healthcare providers can use the findings of this study to construct educational programs that address health issues impacting the African American community.

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