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Psychosocial predictors of depression among older African American cancer patients

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Abstract

Purpose—To determine whether psychosocial factors predict depression among older African American cancer patients.

Design/Methods—A descriptive correlational study.

Setting—Outpatient oncology clinic of NCI designated Cancer Center in Southeastern U.S.

Sample—African American cancer patients aged 50 and over.

Methods—Fisher's Exact and Wilcoxon Rank Sum tests were used to evaluate differences between patients who were possibly depressed (Geriatric Depression Scale) or not. Multivariate linear regression statistics were used to identify the psychosocial factors that predicted higher depression scores. Education and gender were included as covariates.

Main Variables—Religiosity, emotional support, collectivism, perceived stigma and depression.

Findings—African American cancer patients (n=77) were on average a median age of 58 years (*IQR* = 55–65), a majority were well-educated, insured, religiously affiliated, and currently in treatment. Participants in the lowest income category, not married, and male gender had higher depression scores. The multivariable model consisting of organized religion, emotional support, collectivism, education, and gender explained 52% (adjusted R²) of the variation in depression scores. Stigma became insignificant in the multivariable model.

Conclusions—Psychosocial factors are important predictors of depression. For these participants, emotional support and organized religious activities may represent protective factors against depression, while collectivism may increase their risk.

Implications—Nurses need to be especially aware of the potential psychological strain for patients with collectivist values, experienced stigma, disruptions in church attendance and lack of emotional support. Further, these treatment plans for these patients should ensure that family members are knowledgeable about cancer, its treatment and side effects so they are empowered to meet the needs for support of the African American cancer patient.

Keywords

depression; stigma; religion; collectivism; social support; African American cancer patients

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Depression is a significant health concern, affecting an estimated 15% to 25% of all cancer patients (Chen, Chen, & Yu, 2011; Reyes-Gibby, Anderson, Morrow, Shete, & Hassan, 2012) and is a concern among aging (Nelson et al., 2009; Perkins et al., 2007), low socioeconomic status (Lo et al., 2010), and those patients experiencing severe cancer treatment-related symptoms (Boyd et al., 2012). Generally, cancer patients in depressed moods are less likely to participate in treatment decisions (Block, 2010), to seek out social support (Kleiboer et al., 2011), more likely to have declines in physical functioning during treatment and to drop out of treatment (Wells, Palinkas, Qiu, & Ell, 2011), and to have shorter survival times (Chen et al., 2011) than those patients who are not depressed.

In comparison to Caucasians, older African American cancer patients are more likely to have advanced staged cancers, more co-morbidities, and functional limitations placing them at higher risk for depressive moods (Zhang, Gary, & Zhu, 2012). Social factors may also increase the risk of depression among older African American cancer patients who are more likely than Caucasians to live below the poverty level, to lack private health insurance, and to have less than a high school education (U. S. Census Bureau, 2010). Older African Americans are more likely to be employed in the service sector (U. S. Census Bureau, 2010) and therefore are more vulnerable to job losses and extended layoffs. Depression among older African American cancer patients may also be influenced by a reluctance to express emotional distress to family members or to engage in support groups with other cancer survivors (Gullatte, Phillips, & Gibson, 2006) and a reluctance to seek mental health care (Poussaint & Alexander, 2000). Undetected and untreated clinical depression has been linked to poor treatment adherence in cancer patients (Fann, Fan, & Unutzer, 2009; Institute of Medicine, 2008) and a poor quality of life (Kroenke et al., 2010). Evidence to date however, suggests that among cancer patients, older African American cancer patients report lower rates of depression than Caucasians. However, it is not clear if this finding is the result of a pattern of underreporting depression (Zhang et al., 2012), under diagnosing of depression (Akincigil et al., 2011; DeJesus, Diaz, Gonsalves, & Carek, 2011), or protective elements within their culture—e.g., a strong religious orientation and frequent church service attendance (Reese, Thorpe, Bell, Bowie, & Laveist, 2012).

It is generally accepted that certain psychosocial factors (e.g. religion and collectivism) influenced by culture play a critical role in the psychological well-being of African Americans. These psychosocial factors generally accepted as protective within the larger African American community, may place the African American cancer patient at a higher risk for depressive symptoms (Kagawa-Singer, Dadia, Yu, & Surbone, 2010). Psychosocial factors grounded in one's culture that influence psychological outcomes such as depression among diverse populations is understudied and not clearly understood (Kagawa-Singer et al., 2010). Yet, examinations of these factors and the ways they impact health is especially useful in enhancing our understanding of the behavioral responses to illness among racial and ethnic minority cancer populations (Kagawa-Singer et al., 2010). In this paper, we attempt to disentangle the influences of a group of cultural factors on the psychological well-being of African American cancer patients. It is anticipated that these findings will facilitate the identification of subgroups of African American cancer patients at risk for depression, contribute to the design of intervention studies, and ultimately improve culturally relevant care delivered to this underserved population.

Researchers are increasingly examining influences of religion on health outcomes among cancer patients. However, religion has long been recognized as a factor important to the psychological well-being among African American populations (Taylor, 2004). In comparison to other U.S. populations, African Americans are more likely to attend church, to believe in God, and to pray (PewForum, 2007). Although a strong religious orientation among African Americans is associated with increased social support (Holt et al., 2009; van

Olphen et al., 2003), probably the greatest benefit is derived from church attendance which allows for the release of emotions associated with stressful life events (Mbiti, 1999; Raboteau, 2001) and a reduction in depression and stress often associated with illness (Bradshaw & Ellison, 2010; Lawler-Row & Elliott, 2009). However, severe treatment related symptoms associated with a cancer diagnosis may restrict church attendance and this limitation may lead to increased depressive symptoms (Deimling et al., 2006).

Collectivism, another factor and important survival mechanism in ethnic minority populations, emphasizes interdependence and priority of the group (or family) over individual needs and goals (Almeida, Molnar, Kawachi, & Subramanian, 2009). Historically, the survival of African Americans has depended on the collective actions of extended families. White (1985) and Jones (1995) described the cooperative nature of African American slave families working together both in and out of the fields to overcome the stresses and burdens of slavery. They helped each other with work roles, child care, and other domestic activities in order to have adequate food and clothing for the family. After slavery in Southern rural areas where African Americans supported themselves through work as sharecroppers, families and extended kinship clusters usually stayed together as they migrated from plantation to plantation in their attempts to survive (Jones, 1995). These family clusters banded together to form a mutual aid system to help each other care for children and the elderly and to share whatever food, clothing, or shelter they had (Jones, 1995). Collective actions among African Americans continue in response to racism and oppression, limited access to quality health care, limited material resources, and a poor health status, African Americans engage in collective actions such as sharing material resources and providing information, encouragement, and assistance to families, friends, and neighbors when there are personal or health problems (Gutman, 1974; Stack, 1974). Thus, collectivism should function in a protective role, however the endorsement of collectivistic values can be a challenge to African American cancer patients who perceive their illness as a burden or disruptive to the functioning of the immediate and extended family unit (Hamilton, Moore, Powe, Agarwal, & Martin, 2010). When patients are concerned with protecting the well-being of family members, they may be hesitant to ask for help with their cancer care (Yoo, Aviv, Levine, Ewing, & Au, 2010) and to also forego their own needs for mental healthcare (Yoo et al., 2010).

Stigmatizing attitudes toward cancer are believed no longer prevalent in the U.S.; however, these attitudes and beliefs still persist among some cancer populations (Else-Quest, LoConte, Schiller, & Hyde, 2009; Phelan et al., 2011) and appear especially prevalent among African Americans (Burki, 2010; Wray et al., 2009), increasing their risk of depressive symptoms. African Americans may have existed in an environment where cancer was always perceived as the big “C” and a cancer diagnosis resulted in death (Burki, 2010; Hamilton et al., 2010). African Americans have reported that their primary experiences with cancer were that cancer patients were isolated and this was an illness not to be discussed (Hamilton et al., 2010; Wray et al., 2009). This fear of cancer is also linked to past experiences where overwhelming perceptions of cancer are associated with relatives and friends who ultimately died from this disease (Hamilton, et al., 2010). Encounters with family and friends who appear fearful may result in the African American cancer patients’ withdrawal from social networks, self-isolation, and refusal to disclose illness-related information (Hamilton et al., 2010; Heiney et al., 2011). These fears and stigmatizing behaviors contribute to depressive symptoms, particularly during a time when support is critical.

In this study, we examine the contribution of religious involvement, emotional support, collectivism, and stigma to depressive symptoms among African American cancer patients aged 50 and older. The goals of this study were to report patterns of depressive symptoms

among these cancer patients and determine the contribution of these factors on depressive symptoms. The findings from this study will advance our understanding of the predictive value of psychosocial factors on psychological well-being.

Methods

Patient Population

The sample for this study consists of African American cancer patients recruited from outpatient oncology clinics of a National Cancer Institute (NCI) designated cancer center. Institutional Review Board approval was obtained from the University of North Carolina at Chapel Hill. Patients were eligible for the study if they self-reported as African American, had a confirmed diagnosis of cancer, were 50 years of age, and were not severely cognitively impaired as determined with the Short-Form Mini Mental State Exam (MMSE).

Participants were contacted during a scheduled clinic visit and asked to complete a survey of questionnaires focused on their social support experiences. Written or verbal informed consent was obtained for all interviews after screening for cognitive impairment with the Short-Form MMSE. Two participants were severely cognitively impaired and not able to participate in the study. Questionnaires were administered in a face-to-face interview format in exam rooms or via telephone. The average time to complete the series of questionnaire was 30 minutes. Participants were given a \$30 gift card for each completed interview.

Measures

Demographic Characteristics—Cancer patients self-reported their age, gender, marital status, educational level, income, employment status, insured status, and religious affiliation. Patients' type of cancer, stage of cancer, and treatment status were obtained from hospital records.

Depression—The Geriatric Depression Scale-Short Form (GDS-SF15) is a 15-item scale designed to screen for depression with elderly, medically ill populations (Yesavage et al., 1982). The scale consists of 15 yes/no questions, and a score greater than 5 indicates the possibility of depression. A score of 5 or higher has 60% sensitivity and 89% specificity for a depression diagnosis. The GDS-15 has been previously used in studies with hospitalized African Americans aged 50–103 (Kane, Yochim, & Lichtenberg, 2010; Mills, Lichtenberg, Wakeman, & Scott-Okafor, 2002). The GDS-SF15 has also been used in research with African American cancer patients aged 50–89 with a Cronbach's alpha of .79 (Agarwal, Hamilton, Moore, & Crandell, 2010). In this study, internal consistency (Cronbach's alpha) reliability was .75.

Religious Involvement—The Organized Religious Involvement Subscale (Chatters, Levin, & Taylor, 1992) was included to determine the influence of organized religious participation (church attendance, church membership, and frequency of participation in congregational activities). Validity for this scale has been evaluated with a nationally representative sample of African American adults ($n = 581$, aged 55 years and older) through evaluations of the internal structure and relationships with exogenous variables. In this study, internal consistency (Cronbach's alpha) reliability was .73.

Emotional Support—The Others There for Me subscale of the Ways of Helping Questionnaire (WHQ) was used to measure emotional support (Hamilton, Stewart, Crandell, & Lynn, 2009). The WHQ was developed from qualitative research with African American cancer survivors. The six items in the Others There for Me subscale reflects support from the emotional presence of family members and friends, from knowing that a family member

or friend will be there to share the burden of cancer; that they will not be abandoned. Validity for the WHQ scale has been evaluated with a sample of African American cancer survivors through evaluations of its internal structure and associations with physical, psychological, and social well-being (Hamilton et al., 2009). In this study, the internal consistency (Cronbach's alpha) reliability was .88.

Collectivism—The Collectivism scale was originally developed for African American women and used in cancer screening studies to measure the importance of family in daily life (Lukwago, Kreuter, Bucholtz, Holt, & Clark, 2001). Items in the original scale have been revised based on qualitative interviews with African Americans diagnosed with cancer. Higher scores on this scale are indicative of more concern with the cancer being a burden on family members. In this study, internal consistency (Cronbach's alpha) reliability was .50.

Perceived Stigma—The individual's response to the perception of being stigmatized within their families and communities was measured using combination of items from an adapted stigma scale developed by Sayles, Wong, Kinsler, Martin, & Cunningham (2008) with additional items included that were based on data from focus groups with African American cancer survivors. The scale consists of 13 questions and example items include "Family or friends think that cancer is a death sentence," "When you are diagnosed with cancer, family or friends treat me as if I were dying," and "Family or friends are afraid to approach me." Higher scores indicate a higher level of perceived stigma. In this study, internal consistency (Cronbach's alpha) reliability was .82.

Data Analysis

Descriptive statistics, including percentages and medians with interquartile ranges (IQR) were used to summarize demographics, clinical characteristics, and depressive symptoms of the sample. Fisher's Exact tests were used to examine associations of categorical demographic and clinical characteristics with the possibility of being depressed (GDS-SF15 score greater than 5 points). Wilcoxon Rank Sum tests evaluated the differences in GDS-SF15 scores between demographic and clinical characteristic groups as well as differences in continuous variables (the four psychosocial factors, age, time since diagnosis) between participants who were classified as possibly depressed or not. Correlations between continuous measures and GDS-SF15 scores are reported using Pearson correlation coefficients. To assess the contribution of psychosocial variables (organized religious involvement, emotional support, collectivism, and stigma) with depressive symptoms, a multivariable model was constructed controlling for education and gender. Unadjusted p-values are reported and all analyses were done using SAS v9.2 (Cary, NC).

Results

As shown in Table 1, the 77 African American cancer patients who participated in this study had a median age of 58 years (*IQR* = 55–65) and a majority were women (66%) and married (53%). Participants were generally well-educated with nearly one third (30%) having completed high school and 51% with some college or completed college. At the time of the interview, 29% were employed in some manner, 30% were retired, and 34% had quit their jobs because of health concerns. An overwhelming majority were insured (82%) and religiously affiliated with Baptist Churches (62%).

The most prevalent cancer diagnosis was of breast (42%) followed by lung (19%), hematologic (9%), and colorectal (6%). Of those participants whose cancer stage was documented, 62% had advanced stage cancers and 78% were currently in treatment.

Using the recommended cutoff score of greater than 5 points as indicative of depression, 9 (11.7%) of the 77 participants were possibly depressed. Comparing participants' GDS-SF15 scores based on demographic and clinical characteristics, as shown in Table 2, those in the lowest income category also had significantly higher raw GDS-SF15 scores than the other categories (median 3 versus 2). Participants who were not married and those who were male had higher GDS-SF15 scores as well ($p = 0.04, 0.07$). Although not statistically significant, there were some interesting trends toward depression based on being unemployed ($p = .13$) and uninsured ($p = .12$). Participants who were possibly depressed had median scores that were significantly lower for organized religious involvement (median 6 (range 5–7) vs. 9 (range 6.5 – 13), $p = .03$, Figure 1) and emotional support (median 11 (range 8–22) vs. 22 (range 20–24), $p = .006$, Figure 2). Figures 3 and 4 show slightly higher scores for collectivism (median 10 (range 8 – 14) vs. 9 (range 7– 11.5), $p = .18$) and perceived stigma (median 21 (range 9.5 – 25) vs. 10 (range 6 – 16), $p = 0.096$) for participants who were possibly depressed compared to those who were not.

In Table 3, the correlation analyses show that organized religion ($r = -.34, p = 0.003$) and emotional support ($r = -.45, p < 0.0001$) were moderately negatively correlated with depression while collectivism ($r = .28, p = 0.01$) and stigma ($r = .31, p = 0.006$) were moderately positively associated with depression. There were no significant associations with time since diagnosis and the possibility of depression or raw GDS-SF15 scores.

Results from the multivariable analyses, displayed in Table 4, show that organized religion ($\beta = -.10, p = .04$), emotional support ($\beta = -.26, p < .0001$), and collectivism ($\beta = .25, p < .0001$) remained significantly associated with GDS-SF15 score when controlling for education post high school ($\beta = -1.00, p = .02$) and gender ($\beta = .18, p = .68$). Similar to the univariable setting, increases in organized religion and emotional support scores result in decreases in depression scores. Conversely, increases in collectivism scores result in increases in depression scores. Although significant in univariable analysis, stigma was not significantly associated with GDS-SF15 scores in the multivariable model ($\beta = .02, p = .56$). This model consisting of organized religion, emotional support, collectivism, stigma, education, and gender explained 52% (adjusted R^2) of the variation in depression scores.

Discussion

This study investigated the influence of psychosocial factors on depression in a sample of older African American cancer patients receiving care at outpatient oncology clinics. The 12% rate of older African American cancer patients scoring possibly depressed on the GDS-SF15 in this study was lower than the 27% previously reported with other older African American cancer patients (Agarwal et al., 2010) and also lower than the estimated 15–25% depression rate among the general cancer population (Reyes-Gibby et al., 2012). Consistent with other research conducted among older African American cancer patients, we found that social factors likely to influence higher depressive scores included low socioeconomic levels, being male and unmarried (Agarwal et al., 2010).

In spite of the lower depression rates among these older African American cancer patients, this study addresses a gap in the literature as to whether a broader range of psychosocial factors (emotional support, stigma, and collectivism) in addition to religious involvement influence the psychological well-being of this population. Studies have examined the influence of each of these factors on depression singularly; however, psychosocial factors do not operate in isolation. Therefore, the important contribution of this study is the examination of the combined influence of a group of psychosocial factors on depressive symptoms in a population of older African American cancer patients.

A substantial body of literature shows the significant relationship of religiosity on depression (Koenig, King, & Carson, 2012). However, findings from these studies have been mixed. This study adds to those studies supporting the inverse and significant relationship of increased religious involvement to decreased depressive symptoms, but also adds to the evidence that cancer patients who are possibly depressed are less likely to be engaged in religious activities. Among African Americans, the importance of participation in religious activities associated with some religious institutions is that these activities allow for the expression of emotions and sharing of stressful life events with others (Raboteau, 2001) that reduces depressive symptoms and stressors associated with being sick (Bradshaw & Ellison, 2010; Lawler-Row & Elliott, 2009).

Another interesting finding of this study relates to the importance of emotional support derived from the physical and/or emotional presence of others to the psychological well-being of older African American cancer patients during treatment. Researchers have reported that older African American cancer patients lack support (Tsigaropoulos et al., 2009) and are less likely to seek social support as a coping strategy for cancer (Deimling et al., 2006). In this study, the emotional support from family and friends had a moderately strong, significant and inverse relationship to depression. This finding suggests that the value of seeking out and giving support through complex and dynamic networks of family, friends, and neighbors is important to mental health (Hamilton et al., 2009). Through this type of emotional support, the older African American cancer patient is assured that regardless of their struggle, others will be there with them to share their burden (Hamilton et al., 2010). This emotional presence and the conversations that occur during these encounters (e.g., positive encouragement, distracting conversations) serves to minimize feelings of loneliness and sadness associated with functional limitations that can occur during cancer chemotherapy and radiation treatments (Graca Pereira, Figueiredo, & Fincham, 2012).

Historically, collectivism has been recognized as a value critical to the survival of African Americans (Billingsley, 1992). Extended social networks and the associated social support from such that developed out of a concern for one's fellow man functioned to enable African Americans to survive hardships through the sharing of material resources and caring for each other when sick (Carlton-LaNey, 1992; Stack, 1974). However, the findings from this study show that a concern for the welfare for others during a diagnosis and treatment for cancer is likely an additional strain, contributing to depressive symptoms. For example, the older African American cancer patient may withhold information about their illness or even drop out of treatment out of concern for other family members or concerns related to the impact of a cancer diagnosis on the family's financial resources. Therefore, collectivism can promote negative attitudes toward emotional expression of worries and concerns, leading to anxiety, insomnia, and depression (Chu, 2012).

Our finding that a greater perception of stigma was associated with increased depressive symptoms is similar to that of other cancer patients (Gonzalez & Jacobsen, 2012; LoConte, Else-Quest, Eickhoff, Hyde, & Schiller, 2008). Stigma among cancer patients generally emphasizes guilt and self-blame (Else-Quest et al., 2009; Gonzalez & Jacobsen, 2012; Lebel et al., 2011) as well as differential treatment within one's network (Phelan et al., 2011). Our measure of stigma captures primarily the notion that cancer is perceived as a death sentence and this attitude results in members of their social networks responding with pity, inappropriate comments, or the complete withdrawing of support. In spite of the educational programs and advances in cancer care, it appears that the perspective of cancer being equated with death persists within the African American community (Swinney & Dobal, 2011).

To our knowledge this is the first study to examine the influences of these sociocultural factors on the psychological well-being of older African American cancer patients. Although all four factors were associated with depression, we did not expect the direct or positive associations of collectivism to depression. This finding is in contrast to other research that collectivism is a protective factor and source of social support during adverse situations. African American cancer survivors have expressed worries and fears that their illness, demand for physical care needs, and/or inability to maintain social roles is burdensome for their families (Kleiboer et al., 2011). This study lends support to the ideas that disruption to social roles and concerns for the well-being of family members are sources of distress for the older African American cancer patient.

The most important finding in this study was from the regression model examining the influence of religious involvement, emotional support, collectivism, and stigma on depression while controlling for education and gender. In a multivariate analysis, the influence of stigma became insignificant, the influence of religious involvement was weak, and the sociocultural factors with the most predictive influence on depression were emotional support and collectivism. Although we did not specifically ask about network members involved in social interactions associated with these sociocultural factors, it may be that the stronger influences on depression from emotional support and collectivism involved close family and friend networks.

Limitations

One limitation was the small sample size that restricted the number of demographic and clinical variables placed into the regression model. A second limitation was the low reliability of the Collectivism scale in this study. However, this scale has previously been used in research with African American cancer screening populations and also with African Americans with a confirmed cancer diagnosis. However, while the low reliability of the Collectivism scale is of concern, collectivism measured with this scale had a moderate and significant correlation to depression. Given the performance of the tool and the importance of the concept to African American culture, it may be worthwhile to examine the tool further in future studies. Finally, the third limitation was the cross-sectional nature of this study that limited our ability to make causal statements about the findings.

Conclusions

Our findings suggest that organized religion and emotional support are psychosocial factors that protect older African Americans against depression; collectivism places them at higher risk for depression regardless of education and gender. Stigma is also a risk factor for depression; yet, that influence is no longer present when the cancer patient is able to participate in organized religious activities and has emotional support from family and friends. These factors are therefore important to psychological well-being of older African American cancer patients and should be considered when developing and implementing patient centered culturally appropriate interventions.

Implications for nurses

As nurses develop treatment plans for older African American cancer patients, these psychosocial factors (organized religiosity, emotional support, collectivism, and stigma) and their influence on depressive symptoms should be considered. Treatment plans should be patient and family centered whereby the family members assisted to gain additional knowledge about the cancer diagnosis, treatment, side effects, and prognosis empowering them to provide the necessary emotional support to the patient especially during treatment. Knowing that collectivism exists within African American culture, nurses should consider a holistic perspective of the impact that cancer treatments have on the patient and family as a

unit. Specifically, nurses need to discuss the older African American cancer patients' feelings of being a burden among their family members that is often associated with an increased use of resources and time commitments/restraints associated with cancer treatments. When possible, older African American cancer patients and their family members should be referred to a social worker for assistance to locate community resources. Consideration should be placed on how a proposed treatment plan may impact older African American cancer patients' participation in organized religion and offer alternative clergy resources whenever possible.

Future studies would include a larger sample size that would allow for the analysis of these psychosocial factors on depression among subgroups of African American cancer patients. For example, whether there are differential influences of these factors among those cancer patients who are younger, less educated, with limited financial resources, newly diagnosed, and receiving cancer care at community healthcare settings. A longitudinal study would allow for the causal determination of the direction of influences of these psychosocial factors on depression and whether these relationships fluctuate during the period from diagnosis through to the end treatment for cancer. Finally, to better target intervention studies to address negative stereotypes and misinformation about cancer, as well as to understand the conversations underlying the emotional support provided to the older African American cancer patient, it would be helpful to clarify the relationships of the network members involved in these social interactions.

References

- Agarwal M, Hamilton JB, Moore CE, Crandell JL. Predictors of depression among older African American cancer patients. *Cancer Nursing*. 2010; 33(2):156–163. [PubMed: 20142741]
- Akincigil A, Olfson M, Walkup JT, Siegel MJ, Kalay E, Amin S, Crystal S. Diagnosis and treatment of depression in older community-dwelling adults: 1992–2005. *Journal of the American Geriatric Society*. 2011; 59(6):1042–1051.
- Almeida J, Molnar BE, Kawachi I, Subramanian SV. Ethnicity and nativity status as determinants of perceived social support: Testing the concept of familism. *Social Science & Medicine*. 2009; 68(10):1852–1858. [PubMed: 19303184]
- Billingsley, A. *Climbing Jacob's Ladder: The enduring legacy of African-American families*. New York: Simon & Schuster; 1992.
- Block SD. Diagnosis and treatment of depression in patients with advanced illness. *Social Psychiatry and Psychiatric Epidemiology*. 2010; 19(2):103–109.
- Boyd CA, Benarroch-Gampel J, Sheffield KM, Han Y, Kuo YF, Riall TS. The effect of depression on stage at diagnosis, treatment, and survival in pancreatic adenocarcinoma. *Surgery*. 2012; 152(3):403–413. [PubMed: 22938900]
- Bradshaw M, Ellison CG. Financial hardship and psychological distress: Exploring the buffering effects of religion. *Social Science & Medicine*. 2010; 71(1):196–204. [PubMed: 20556889]
- Burki T. Cancer and cultural differences. *Lancet Oncology*. 2010; 11(12):1125–1126. [PubMed: 21174378]
- Carlton-LaNey I. Elderly farm women: A population at risk. *Social Work*. 1992; 37(6):517–523. [PubMed: 1448696]
- Chatters LM, Levin JS, Taylor RJ. Antecedents and dimensions of religious involvement among older black adults. *Journal of Gerontology*. 1992; 47(6):S269–S278. [PubMed: 1430864]
- Chen ML, Chen MC, Yu CT. Depressive symptoms during the first chemotherapy cycle predict mortality in patients with advanced non-small cell lung cancer. *Support Care Cancer*. 2011; 19(11):1705–1711. [PubMed: 20839011]
- Chu LC. The effects of cultural values on mental health among the Taiwanese people: Mediating of attitudes toward emotional expression. *Asia Pacific Journal of Public Health*. 2012

- Deimling GT, Wagner LJ, Bowman KF, Sterns S, Kercher K, Kahana B. Coping among older-adult, long-term cancer survivors. *Psycho-Oncology*. 2006; 15(2):143–159. [PubMed: 15880638]
- DeJesus SA, Diaz VA, Gonsalves WC, Carek PJ. Identification and treatment of depression in minority populations. *International Journal of Psychiatry in Medicine*. 2011; 42(1):69–83. [PubMed: 22372025]
- Else-Quest NM, LoConte NK, Schiller JH, Hyde JS. Perceived stigma, selfblame, and adjustment among lung, breast and prostate cancer patients. *Psychology & Health*. 2009; 24(8):949–964. [PubMed: 20205038]
- Fann JR, Fan MY, Unutzer J. Improving primary care for older adults with cancer and depression. *Journal of General Internal Medicine*. 2009; 24:S417–S424. [PubMed: 19838842]
- Gonzalez BD, Jacobsen PB. Depression in lung cancer patients: The role of perceived stigma. *Psycho-Oncology*. 2012; 21(3):239–246. [PubMed: 22383265]
- Graca Pereira M, Figueiredo AP, Fincham FD. Anxiety, depression, traumatic stress and quality of life in colorectal cancer after different treatments: A study with Portuguese patients and their partners. *European Journal of Oncology Nursing*. 2012; 16(3):227–232. [PubMed: 21783416]
- Gullatte MM, Phillips JM, Gibson LM. Factors associated with delays in screening of self-detected breast changes in African-American women. *Journal of National Black Nurses' Association*. 2006; 17(1):45–50.
- Gutman, HG. *The Black Family in slavery and freedom: 1750-1925*. New York: Vintage Books; 1974.
- Hamilton JB, Moore CE, Powe BD, Agarwal M, Martin P. Perceptions of support among older African American cancer survivors. *Oncology Nursing Forum*. 2010; 37(4):484–493. [PubMed: 20591808]
- Hamilton JB, Stewart BJ, Crandell JL, Lynn MR. Development of the Ways Of Helping Questionnaire: A measure of preferred coping strategies for older African American cancer survivors. *Research in Nursing & Health*. 2009; 32(3):243–259. [PubMed: 19259991]
- Heiney SP, Hazlett LJ, Weinrich SP, Wells LM, Adams SA, Underwood SM, Parrish RS. Antecedents and mediators of community connection in African American women with breast cancer. *Research & Theory for Nursing Practice*. 2011; 25(4):252–270. <http://dx.doi.org/10.1891/1541-6577.25.4.252>. [PubMed: 22329080]
- Holt CL, Caplan L, Schulz E, Blake V, Southward P, Buckner A, Lawrence H. Role of religion in cancer coping among African Americans: A qualitative examination. *Journal of Psychosocial Oncology*. 2009; 27(2):248–273. [PubMed: 19337932]
- Institute of Medicine (Ed.). *Cancer care for the whole patient: Meeting psychosocial health needs*. Washington, DC: The National Academies Press; 2008.
- Jones, J. *Labor of love, labor of sorrow*. New York: Vintage Books; 1995.
- Kagawa-Singer M, Dadia AV, Yu MC, Surbone A. Cancer, culture, and health disparities: Time to chart a new course? *CA Cancer Journal for Clinicians*. 2010; 60(1):12–39.
- Kane KD, Yochim BP, Lichtenberg PA. Depressive symptoms and cognitive impairment predict all-cause mortality in long-term care residents. *Psychology & Aging*. 2010; 25(2):446–452. [PubMed: 20545428]
- Kleiboer A, Bennett F, Hodges L, Walker J, Thekkumpurath P, Sharpe M. The problems reported by cancer patients with major depression. *Psycho-Oncology*. 2011; 20(1):62–68. [PubMed: 20336636]
- Koenig, HG.; King, DE.; Carson, VB. *Handbook of religion and health*. NY: Oxford University Press; 2012.
- Kroenke K, Theobald D, Wu J, Loza JK, Carpenter JS, Tu W. The association of depression and pain with health-related quality of life, disability, and health care use in cancer patients. *Journal of Pain Symptom Management*. 2010; 40(3):327–341. [PubMed: 20580201]
- Lawler-Row KA, Elliott J. The role of religious activity and spirituality in the health and well-being of older adults. *Journal of Health Psychology*. 2009; 14(1):43–52. [PubMed: 19129336]
- Lebel S, Castonguay M, Mackness G, Irish J, Bezjak A, Devins GM. The psychosocial impact of stigma in people with head and neck or lung cancer. *Psycho-Oncology*. 2011
- Lo C, Zimmermann C, Rydall A, Walsh A, Jones JM, Moore MJ, Rodin G. Longitudinal study of depressive symptoms in patients with metastatic gastrointestinal and lung cancer. *Journal of Clinical Oncology*. 2010; 28(18):3084–3089. [PubMed: 20479397]

- LoConte NK, Else-Quest NM, Eickhoff J, Hyde J, Schiller JH. Assessment of guilt and shame in patients with non-small-cell lung cancer compared with patients with breast and prostate cancer. *Clinical Lung Cancer*. 2008; 9(3):171–178. [PubMed: 18621628]
- Lukwago SN, Kreuter MW, Bucholtz DC, Holt CL, Clark EM. Development and validation of brief scales to measure collectivism, religiosity, racial pride, and time orientation in urban African American women. *Family & Community Health*. 2001; 24(3):63–71. [PubMed: 11563945]
- Mbiti, JS. *African religions and philosophy*. Portsmouth, NH: Heinemann; 1999.
- Mills TL, Lichtenberg PA, Wakeman MA, Scott-Okafor H. Correlates of rehabilitation hospital length of stay among older African-American patients. *Journal of National Medical Association*. 2002; 94(9):846–855.
- Nelson CJ, Weinberger MI, Balk E, Holland J, Breitbart W, Roth AJ. The chronology of distress, anxiety, and depression in older prostate cancer patients. *Oncologist*. 2009; 14(9):891–899. [PubMed: 19738000]
- Perkins EA, Small BJ, Balducci L, Extermann M, Robb C, Haley WE. Individual differences in well-being in older breast cancer survivors. *Critical Reviews in Oncology/Hematology*. 2007; 62(1): 74–83.
- PewForum. A religious portrait of African-Americans. Pew Forum on Religion & Public Life. 2007. Retrieved from pewforum.org
- Phelan SM, Griffin JM, Jackson GL, Zafar SY, Hellerstedt W, Stahre M, van Ryn M. Stigma, perceived blame, self-blame, and depressive symptoms in men with colorectal cancer. *Psycho-Oncology*. 2011
- Poussaint, AF.; Alexander, A. *Lay my burden down: Unraveling suicide and the mental health crisis among African Americans*. Bostn, MA: Beacon Press Books; 2000.
- Raboteau Albert, J. *Canaan Land*. New York: Oxford University Press; 2001.
- Reese AM, Thorpe RJ Jr, Bell CN, Bowie JV, Laveist TA. The effect of religious service attendance on race differences in depression: Findings from the EHDICSWB Study. *The Journal of Urban Health*. 2012; 89(3):510–518.
- Reyes-Gibby CC, Anderson KO, Morrow PK, Shete S, Hassan S. Depressive symptoms and health-related quality of life in breast cancer survivors. *Journal of Women's Health*. 2012; 21(3):311–318.
- Sayles JN, Hays RD, Sarkisian CA, Mahajan AP, Spritzer KL, Cunningham WE. Development and psychometric assessment of a multidimensional measure of internalized HIV stigma in a sample of HIV-positive adults. *AIDS and Behavior*. 2008; 12(5):748–758. [PubMed: 18389363]
- Stack, C. *All our kin: Strategies for survival in a black community*. New York: Harper & Row; 1974.
- Swinney JE, Doba MT. Older African American women's beliefs, attitudes, and behaviors about breast cancer. *Research in Gerontological Nursing*. 2011; 4(1):9–18. [PubMed: 21210573]
- Taylor, RJ.; Chatters, LM.; Levin, J. *Religion in the lives of African Americans. Social, psychological, and health perspectives*. Thousand Oaks, CA: Sage Publication, Inc; 2004.
- Tsigaropoulos T, Mazaris E, Chatzidarellis E, Skolarikos A, Varkarakis I, Deliveliotis C. Problems faced by relatives caring for cancer patients at home. *International Journal of Nursing Practice*. 2009; 15(1):1–6. [PubMed: 19187163]
- U. S. Census Bureau. *Black Alone Population in the United States*: 2010.
- van Olphen J, Schulz A, Israel B, Chatters L, Klem L, Parker E, Williams D. Religious involvement, social support, and health among African-American women on the east side of Detroit. *Journal of General Internal Medicine*. 2003; 18(7):549–557. [PubMed: 12848838]
- Wells AA, Palinkas LA, Qiu X, Ell K. Cancer patients' perspectives on discontinuing depression treatment: the “drop out” phenomenon. *Journal of Patient Preference and Adherence*. 2011; 5:465–470.
- White, DG. *Ar'n't I a woman?*. New York: W. W. Norton & Company; 1985.
- Wray RJ, McClure S, Vijaykumar S, Smith C, Ivy A, Jupka K, Hess R. Changing the conversation about prostate cancer among African Americans: Results of formative research. *Ethnicity & Health*. 2009; 14(1):27–43. [PubMed: 19152157]

- Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey M, Leirer VO. Development and validation of a geriatric depression screening scale: A preliminary report. *Journal of Psychiatric Research*. 1982; 17(1):37–49. [PubMed: 7183759]
- Yoo GJ, Aviv C, Levine EG, Ewing C, Au A. Emotion work: Disclosing cancer. *Support Care Cancer*. 2010; 18(2):205–215. [PubMed: 19434430]
- Zhang AY, Gary F, Zhu H. What precipitates depression in African-American cancer patients? Triggers and stressors. *Palliative Supportive Care*. 2012:1–8. [PubMed: 22436086]

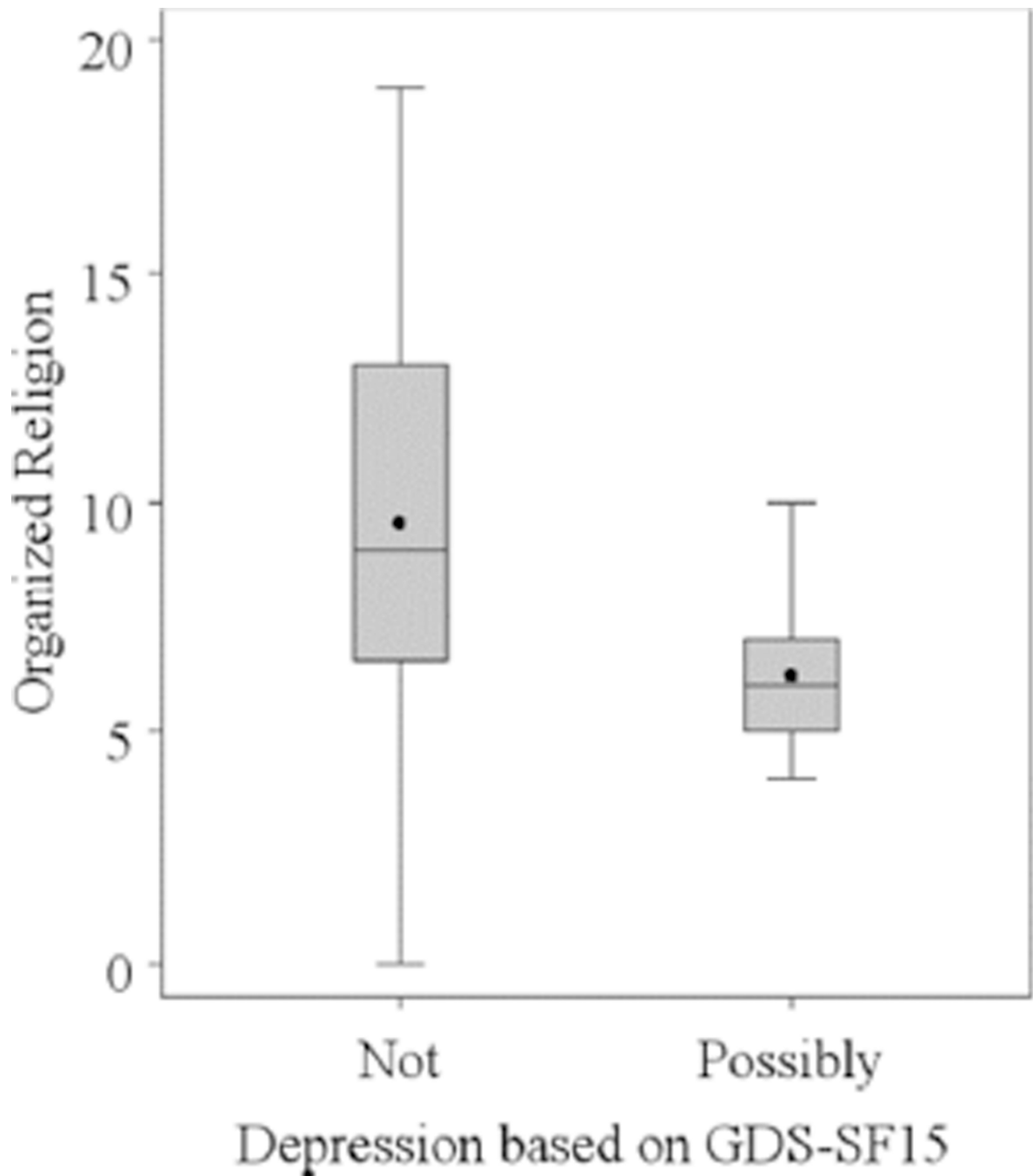


Figure 1. Boxplot shows organized religious involvement scores for not depressed and possibly depressed patients. The top, middle, and bottom lines of the box show the 75th percentile, median, and 25th percentile, respectively. The vertical lines are drawn from the box to the most extreme point and any point more extreme to this is marked with a dot.

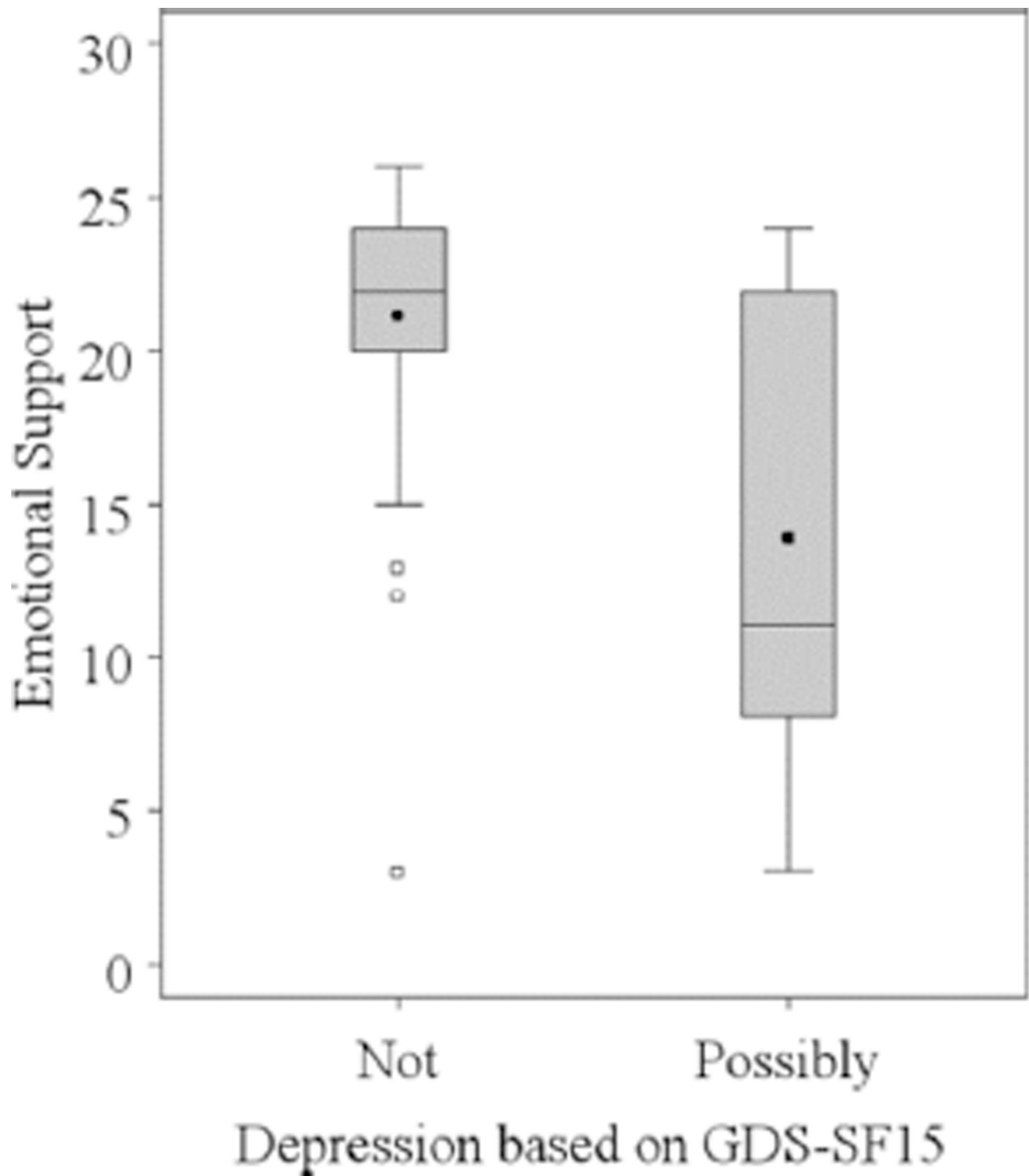


Figure 2. Boxplot shows emotional support scores for not depressed and possibly depressed patients. The top, middle, and bottom lines of the box show the 75th percentile, median, and 25th percentile, respectively. The vertical lines are drawn from the box to the most extreme point and any point more extreme to this is marked with a dot.

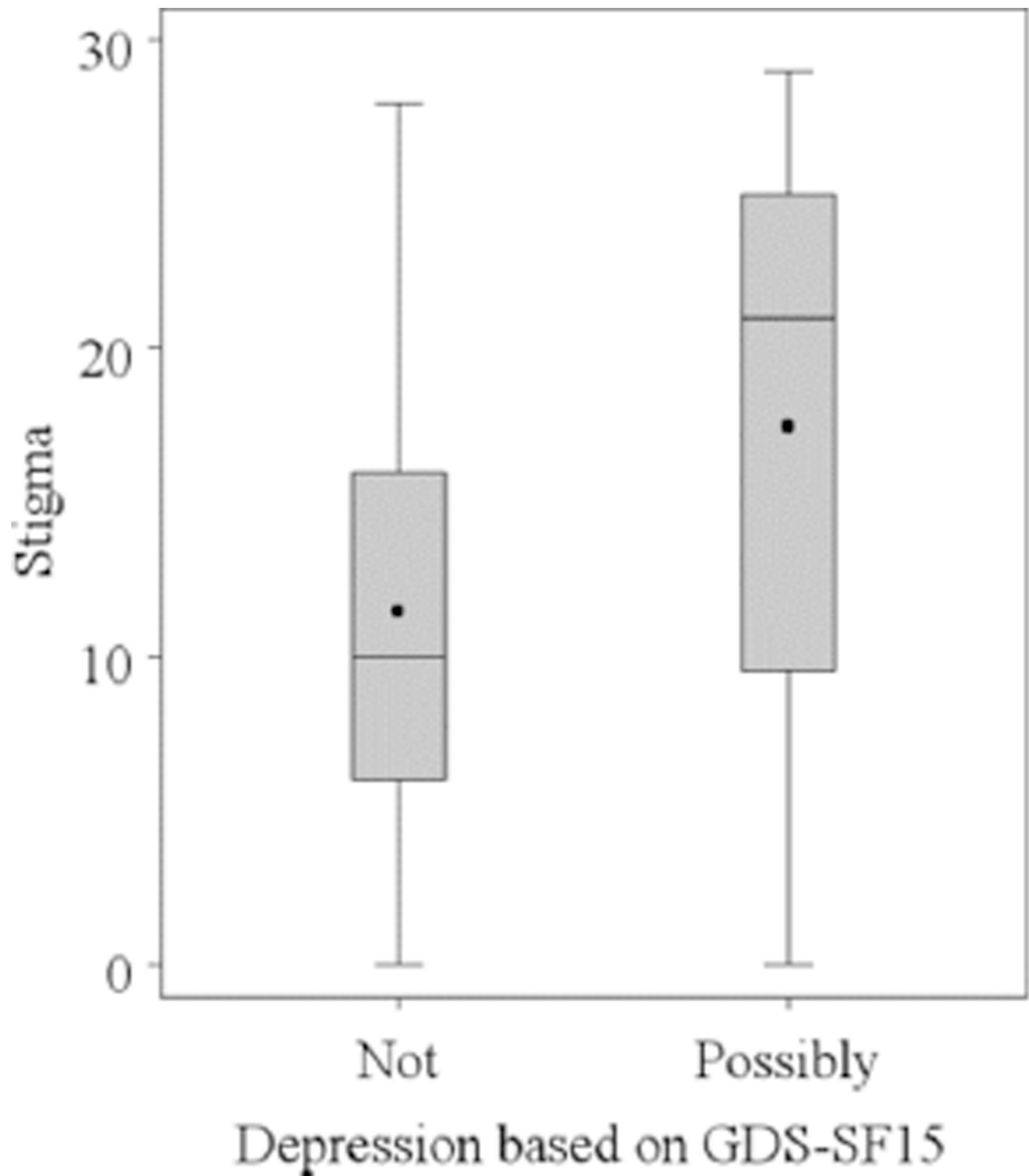


Figure 3. Boxplot shows stigma scores for not depressed and possibly depressed patients. The top, middle, and bottom lines of the box show the 75th percentile, median, and 25th percentile, respectively. The vertical lines are drawn from the box to the most extreme point and any point more extreme to this is marked with a dot.

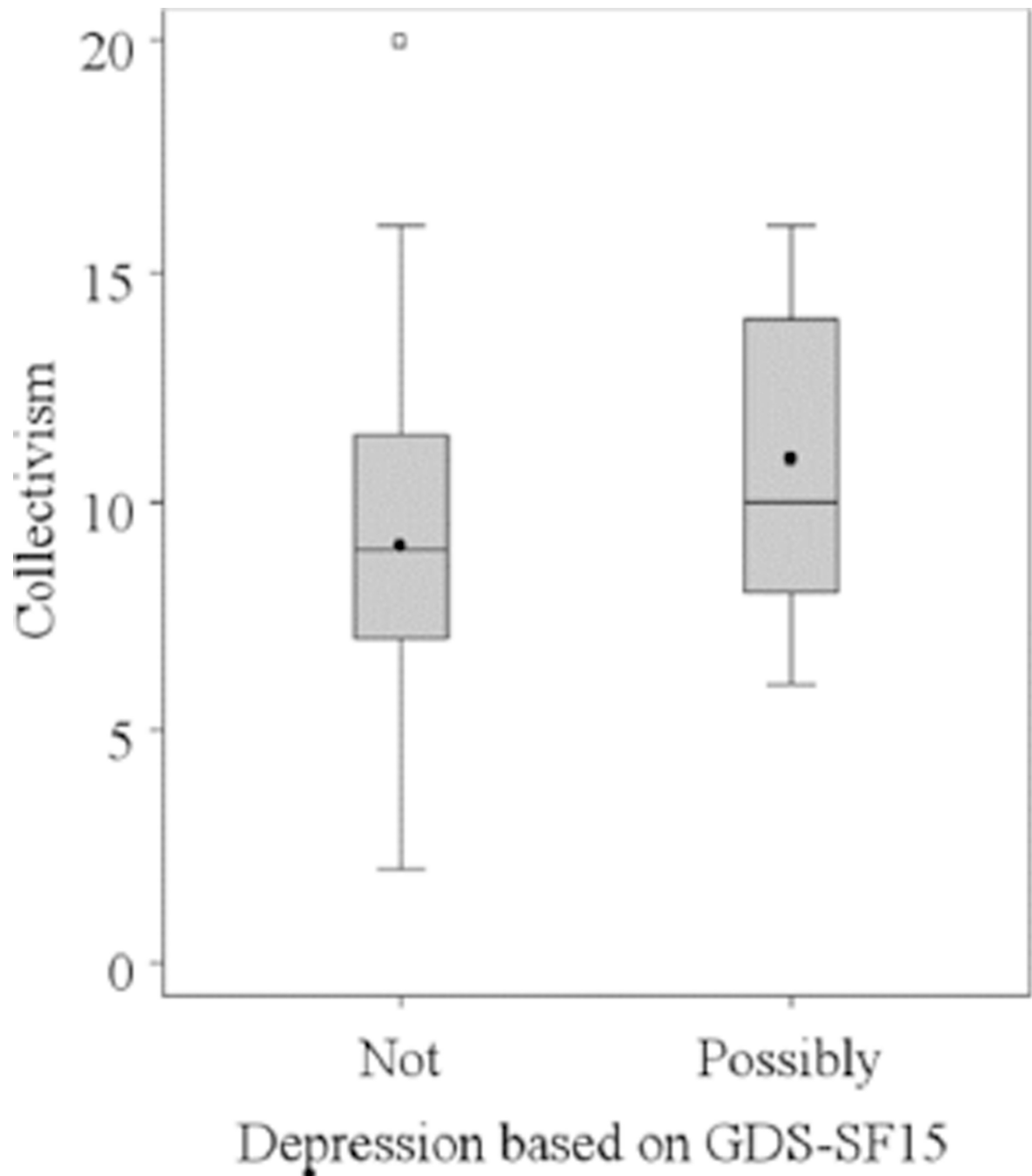


Figure 4.

Boxplot shows collectivism scores for not depressed and possibly depressed patients. The top, middle, and bottom lines of the box show the 75th percentile, median, and 25th percentile, respectively. The vertical lines are drawn from the box to the most extreme point and any point more extreme to this is marked with a dot.

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Thank you for the thoughtful review. Changes reflected in this table are highlighted in yellow in the manuscript.

Table 1

Demographics of African American Cancer Survivors (Total Sample N=77)

Variable	Range
Age, y Median (IQR)	58 (55–65)
Gender n (%)	
Men	26 (34)
Women	51 (66)
Marital Status n (%)	
Married	41 (53)
Widowed	8 (10)
Divorced	15 (19)
Separated	3 (4)
Never Married	9 (12)
Partnered	1 (1)
Education n (%)	
6 th grade	3 (4)
7 th –9 th grade	2 (3)
10 th –11 th grade	10 (13)
High School or GED	23 (30)
Partial college	12 (16)
College	17 (22)
Graduate professional training	10 (13)
Income n (%)	
< \$20,000	26 (34)
\$20,000–\$49,000	28 (36)
>= \$50,000	23 (30)
Employment Status n (%)	
Not employed	5 (6)
No, retired	23 (30)
No, looking for work	1 (1)
No, quit work because of health	26 (34)
Yes, part time	7 (9)
Yes, full time	15 (19)
Insured n (%)	
No	14 (18)
Yes	63 (82)

Variable	Range
Religious Affiliation <i>n</i> (%)	
Baptist	48 (62)
Holiness	6 (8)
Methodist	13 (17)
Muslim	1 (1)
No religious affiliation	2 (3)
Christian	7 (9)
Type of Cancer <i>n</i> (%)	
Breast	32 (42)
Colorectal	5 (6)
Lung	15 (19)
Hematologic	7 (9)
Prostate	3 (4)
Other	15 (19)
Tumor Stage <i>n</i> (%)	
1	10 (17)
2	13 (22)
3	18 (30)
4	19 (32)
Currently in Treatment <i>n</i> (%)	
No	17 (22)
Yes	60 (78)

Note. Because of rounding, not all percentages total 100.

Table 2

Associations of Demographic Factors with Raw Depression Score

Variable	Level	Median (Interquartile Range)	<i>p</i> value
Gender	Male	3.0 (2.0–5.0)	0.0725
	Female	2.0 (1.0–3.0)	
Marital Status	Married	2.0 (1.0–3.0)	0.0405
	Not Married	2.5 (2.0–4.5)	
Education	High School Grad	2.0 (1.0–3.0)	0.1955
	Not High School Grad	3.0 (1.0–6.0)	
Income	<\$20,000	3.0 (2.0–5.0)	0.0062
	\$20,000-\$49,000	2.0 (1.0–3.0)	
	>=\$50,000	2.0 (0.0–2.0)	
Employment Status	Employed	2.0 (1.0–2.0)	0.1283
	Not Employed	3.0 (2.0–3.5)	
	Retired	2.0 (1.0–4.0)	
Insurance Status	Insured	2.0 (1.0–3.0)	0.1224
	Not Insured	3.0 (2.0–5.0)	
Religious Affiliation	Baptist	2.0 (1.0–4.0)	0.5877
	Non Baptist	2.0 (1.0–3.0)	
Cancer Type	Breast Cancer	2.0 (1.0–3.0)	0.2292
	Not Breast Cancer	2.0 (1.0–4.0)	
Tumor Stage	1	2.0 (1.0–4.0)	0.9830
	2	2.0 (1.0–3.0)	
	3	2.0 (1.0–3.0)	
	4	2.0 (0.0–4.0)	
Currently in Treatment	In Treatment	2.0 (1.0–3.0)	0.5806
	Not in Treatment	2.0 (1.0–4.0)	

Note: Wilcoxon Rank Test for 2 groups, Kruskal- Wallis Test for >2 groups

Table 3

Pearson's Correlation Coefficients of Socio-Cultural Factors with Raw Depression Score

Variable	Pearson Correlation Coefficient	p-value
Stigma	0.3145	0.006
Collectivism	0.2770	0.014
Emotional Support	-0.4515	<0.0001
Organized Religion	-0.3365	0.003
Time Since Diagnosis	0.1655	0.15
Age	-0.1354	0.24

Table 4

Multivariable Regression of Socio-Cultural Factors and Raw Depression Score

	Parameter Estimate	p-value
Stigma	0.02	0.56
Collectivism	0.25	<0.0001
Emotional Support	-0.26	0.0001
Organized Religion	-0.10	0.037
Education post HS	-1.00	0.021
Male v Female gender	0.18	0.68

Note: Model Adjusted $R^2 = 0.52$