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Antecedents and Mediators of Community Connection in African American Women With Breast Cancer

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Abstract

Objective—To describe the theory of *community connection* defined as close relationships with women and men who are members of a neighborhood, a church, a work group, or an organization. Antecedent and mediator variables related to community connection are identified.

Design/methods—A cross-sectional design was used to assess for relationships among theorized antecedents and mediators of community connection in a sample of 144 African American women aged 21 years and older (mean 54.9) who had been diagnosed with invasive/infiltrating ductal carcinoma.

Measurement and Analyses—Community connection was measured with the relational health indices-community subscale. Mediator analysis was conducted to assess significance of the indirect effects of the mediator variables, which were fear, breast cancer knowledge, and isolation.

Results—Community connection was found to be associated with three of the four antecedents, cancer stigma, stress, and spirituality, but not associated with fatalism. Effects were mediated primarily through fear and isolation with isolation as was more dominant of the two mediators. Surprisingly, breast cancer knowledge showed no significant mediator role.

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Conclusions—The importance of isolation and fear as mediators of community connection is highlighted by this research. The study could serve as a model for other researchers seeking to understand connection in ethnic groups and communities.

Keywords

African American; breast cancer; community; connection; mediators

African American women with breast cancer have poorer quality of life (QOL) than European American women (Paskett et al., 2008; Russell, Von Ah, Giesler, Storniolo, & Haase, 2008), and a greater likelihood of dying from the disease (Albain, Unger, Crowley, Coltman, & Hershman, 2009). The importance of social support from a spouse/partner and/or family members has been documented as a determining factor in improved survival in cancer patients (Beasley et al., 2010). However, community connection has been poorly examined especially in African American women with breast cancer (Henderson, Gore, Davis, & Condon, 2003). *Community connection* was defined as close relationships with women and men who are members of a neighborhood, a church, a work group, or an organization. Connection is particularly salient for African American women with breast cancer because of the emotional, social, and practical support that comes from identifying with and being involved in a caring community environment (Hamilton, Moore, Powe, Agarwal, & Martin, 2010). To date, studies have neither described the theory of community connection nor explored relationships among variables theorized as antecedents or mediators in African American women with breast cancer. Therefore, the purpose of this study was to test theoretical relationships among antecedents (cancer stigma, fatalism, stress, and spirituality) and mediators of community connection (fear, breast cancer knowledge, and isolation). Figure 1 provides a graphic representation of the theorized antecedents and mediators of community connection.

Community connection is defined as supportive relationships that provide women with positive affective connections. The relationships are outside of extended family and within communities in which the women have frequent contacts such as churches and/or sororities. Connection implies more than a casual communication. Community connection involves a high level of communication that includes support and often empathy. In addition, community connection provides critical support and healing for stressful events, especially illnesses.

A new theory, the theory of community connection, is tested in this research. Our theory of community connection is derived from two sources. The construct “connection” is derived from the extensive work of Miller and her colleagues (Jordan, 1991a, 1991b; Miller, 1991; Miller & Stiver, 1997a, 1997b, 1997c; Turner, 1997). The construct “community” evolved from Heiney's 25 years of clinical experiences in oncology that includes work with African Americans (Heiney et al., 1995).

Miller and Stiver (1997b) developed a relational approach to understanding women that evolved into “connection.” Constructs used by Miller (1991) to partially describe the interactive dynamic communications between women were “agency-in-community,” “interconnected,” and “growth-fostering relationship.” The construct mutual empathy was used to describe mutually growth-fostering relationships (Miller & Stiver, 1997b). Furthermore, Miller and Stiver (1997b) identified the potential for mutual empowerment to evolve from this process of mutual empathy. This mutual empowerment included an increase in vitality, aliveness, and energy (Miller & Stiver, 1997a). These increases have direct positive consequences for the complex healing required by African American women with breast cancer.

In contrast, disconnection follows interaction(s) that do not have mutual empathy and mutual empowerment (Miller & Stiver, 1997a). Disconnection leads to a decrease in vitality, aliveness, and energy (Miller & Stiver). Unfortunately, these decreases exacerbate the negative consequences of breast cancer diagnoses as well as the negative side effects from the treatment practices for breast cancer. Disconnection leads to poorer health outcomes.

Heiney added the construct community to the theory of community connection based on extensive psychology-oncology nursing experiences. Specifically with African American women with breast cancer, the author repeatedly heard women describe community problems as a “disconnect.” This disconnect occurred when persons in the community who historically had been supportive, decreased their interactions and/or ignored the African American women with breast cancer. Heiney's viewpoint was that community persons failed to mention the cancer diagnosis and treatment because they did not know how to discuss it. Similarly, community persons did not want to say or do anything to hurt their friend who had breast cancer by discussing negative treatment effects such as loss of hair. However, these two areas—cancer diagnosis and treatment effects—were important topics of conversation for the African American women with breast cancer. The resulting decreased interaction and/or avoidance had a detrimental effect on the African American women with breast cancer. Heiney observed negative health consequences when the African American women with breast cancer felt “disconnected” from her community relationships. This included withdrawal, depression, and increases in reported negative symptoms from treatment. This lack of community connection seemed particularly onerous for African American women with breast cancer because connection is a vital element in their culture.

Several historical factors related to (a) disruptions in family, (b) churches, and (c) African American's organizations contribute to the importance of community connection for African Americans. African culture is tribal in nature; but the African diasporas separated tribes when Africans were brought to the Americas as slaves (Berlin, 1980; Holloway, 1990). Slaves were allowed to marry and have children but were sold without regard to kinship or marital status (Jones, 2010; Pargas, 2009).

This disconnection from tribe and close blood relatives may partially explain the African American cultural value of maintaining strong extended family and community relationships (Shaw & Coleman, 2000). During slavery and beyond, African American women acted as “other mothers” by educating orphaned children, socializing nonkin children to cultural beliefs, and helping women who were unable to care for their children (Guiffreda, 2005). These actions extended the definition of family to include nonkin individuals who resided in the community (Hamilton & Sandelowski, 2008).

The church became another community source of connection because it was the only sanctioned communal gathering. Thus, church meetings became a means of strengthening bonds with each other. Church members became another family—members refer to each other as “sister or brother.” Today, African American churches remain a strong source of community connection for African American women with breast cancer.

Although emancipated, segregation kept African American women from participating in white social clubs leading them to create black counterparts such as service clubs (Mitchell, 2010) and/or sororities (Phillips, 2005). These societies often had altruistic goals that mirrored the other mothering of slave days (Johnson, 2000). They also provided further community connections for African American women with breast cancer (AAWBCA; Phillips, 2001; Tessaro, Eng, & Smith, 1994).

Great variability exists in individual African Americans and their identification with African American culture. The reader is cautioned to remember that African American women are

not homogeneous; instead, like all Americans, they are quite diverse (Harrell & Bond, 2006). This diversity applies to our theory of community connection for African American women with breast cancer.

Antecedents of Community Connection

A literature review identified that the variables, stigma, fatalism, stress, and spirituality may be antecedents to community connection in conjunction with the diagnosis and treatment of breast cancer in the African American woman. The stigma of a cancer diagnosis may cause an African American woman with breast cancer to withdraw from activities, thus decreasing community connection (Hamilton et al., 2010). The impact of fatalism (as an African American cultural belief) on health practices has been investigated extensively (Franklin et al., 2007). Most research studies found that cancer fatalism negatively impacts early detection efforts for African American women (López, Khoury, Dailey, Hall, & Chisholm, 2009; Mayo, Ureda, & Parker, 2001). Conversely, Gullatte, Brawley, Kinney, Powe, and Mooney (2009) found that fatalism did not play a role in early detection. However, it is unknown if fatalism impacts interactions within the community following a cancer diagnosis. Stress may originate from the social environment and from cultural expectations (Woods-Giscombé & Lobel, 2008). The African American culture expects African American women to be “strong” and to carry burdens and stresses without complaint (Woods-Giscombé, 2010). Therefore, African American women with breast cancer may have increased stress but may feel pressured to be silent about stressors, which may lead to strained community relationships and decreased community connections. Conversely, the community connections may buffer stress and offer important coping resources. Unfortunately, no research has examined this problem. For purposes of this article, the last antecedent variable—spirituality—includes public and private religious activities. Members of faith-based groups interact with each other on a frequent basis and provide practical support during an illness (Gallia & Pines, 2009; Hamilton, Powe, Pollard, Lee, & Felton, 2007). Therefore, spirituality may be positively related to community connection.

Mediators

A mediator is an intervening or underlying variable that conveys the effects of an antecedent variable on the outcome (dependent) variable (MacKinnon, 1994). Thus, the outcome variable is contingent on the state of the mediator. In Figure 1, the potential mediators identified from a literature review are fear (Bradley, 2005; Russell et al., 2008), breast cancer knowledge (Bickell, Weidmann, Fei, Lin, & Leventhal, 2009), and isolation (Rosedale, 2009).

Fear may arise from cancer myths within the African American culture and concerns about reactions of others to the diagnosis and visible side effects (López, Eng, Randall-David, & Robinson, 2005). These beliefs and concerns may lead to distancing from church and community members. In addition, fear of recurrence of the cancer may occur in community settings when encountering other cancer patients who express symptoms such as pain (Gill et al., 2004). Thus, fear may decrease community connection.

The primary author's clinical experience identified that a lack of knowledge about breast cancer is a problem for African American women, especially following diagnosis. Increased knowledge is known to improve breast cancer screening in African American women (Harris, Miller, & Davis, 2003). Similarly, increased knowledge might empower African American women with breast cancer to disseminate accurate cancer knowledge to community members and thus increase community connection.

Rosedale (2009) described cancer survivor's experience of loneliness or isolation, which parallels the author's clinical experience with African American women with breast cancer. Rosedale's sample reported a changed sense of connection and a feeling of their situation not being validated by others. Isolation has been associated with embarrassment over visible side effects from treatment such as hair loss or arm swelling (Rosedale, 2009). Distress from side effects may lead to decreased interactions with community members (Rosedale). In addition, the taboo against discussing breast cancer may create a sense of being alone in the midst of other African American women. The woman with breast cancer may feel that her community does not understand what she is experiencing. In addition, because the incidence of breast cancer in African American women is low, she may not know or have interactions with breast cancer survivors. Therefore, isolation may decrease community connection (Hamilton et al., 2010).

Based on the previous discussion, there is qualitative data, anecdotal reports, and clinical experiences to support the proposed relationships between community connection and the antecedents and moderators. Therefore, based on these linkages, we hypothesized that the antecedents, stigma, fatalism, and stress may decrease community connection and that spirituality may increase community connection. Further, we hypothesized that community connection may be mediated by fear, breast cancer knowledge, and isolation.

METHOD

Design

This correlational study was derived from a larger study, "Teleconference Group: Breast Cancer in African Americans" (Heiney, Underwood, Hazlett, Wells, & Parrish, 2010). Our aim was to test the hypothesized relationships to better understand what factors influence community connection. Pertinent study procedures and human subject information are summarized in the following text.

Institutional Review Board

The research was approved by the Institutional Review Board (IRB) of the primary research site—Palmetto Health in Columbia, South Carolina. Additional IRB approval was obtained from multiple community recruitment sources. In addition, a Certificate of Confidentiality was obtained from the National Institute of Health.

Inclusion and Exclusion Criteria

Inclusion criteria for the study were African American women aged 21 years or older who had invasive/infiltrating ductal carcinoma, including the following subtypes: medullary, tubular, and colloid (mucinous). Other inclusion criteria were women who had to be treated surgically with excisional biopsy or lumpectomy, and who had or would receive adjunctive chemotherapy and/or radiation therapy. Further inclusion criteria included being diagnosed within the past 6 months and being treated with radiation, chemotherapy, or a combination. All women were U.S. born and could speak English. Women with ductal carcinoma in situ, metastatic, inflammatory, lobular, or cystic were excluded, as well as women who had had a total mastectomy. Women who had a past diagnosis of any cancer other than basal cell or squamous cell of the skin were also excluded. Other exclusion criteria were being enrolled in some other behavioral trial. Finally, women with identified psychosis or major cognitive impairment were excluded.

Instruments

Community connection was measured with the relational health indices (RHI)-community subscale (Liang et al., 2002). The 14-item RHI-community subscale is based on Miller's

relational theory (Jordan, 1991a, 1991b; Miller, 1991; Miller & Stiver, 1997a, 1997b, 1997c; Turner, 1997) and measured community connection, including (a) engagement, (b) authenticity, and (c) empowerment in the participant's community. Each participant defined community from an individual perspective based on the following directions: "Community is whatever you define it. This includes your neighborhood, church, family, or groups you belong to that are important to you." Two sample items are "I feel better about myself after my interactions in my community" and "I have a greater sense of self-worth through my connection with my community." The range of responses is *never* to *always* (1–5). The final score is the mean with scores ranging from 1 to 5. Higher scores indicate greater community support. Convergent and concurrent validity, as well as overall internal consistency (0.90) have been established (Liang et al., 2002). The tool was tested in a sample of 4.3% African American. (Liang et al.). For the present sample, Cronbach's alpha was .88.

Cancer stigma was operationalized as negative reactions by family and friends and was measured with seven items from Helgeson's Negative Interaction scale (Helgeson, Cohen, Schulz, & Yasko, 1999). The questions capture the patient's perception of being treated differently by family and friends because of a cancer diagnosis. A sample question is "How often does your family or friends change the subject when I try to discuss my cancer?" The range of responses, 1–5, measured *never* to *very often*, with the higher mean scores indicating greater cancer stigma. Helgeson's Negative Interaction scale has been used in a sample with 7% African Americans (Helgeson et al.). Helgeson et al. (1999) reported a reliability of 0.71. For the present sample, Cronbach's alpha was .83.

Fatalism was measured using the modified Powe Fatalism Inventory (Mayo et al., 2001; Powe, 1995, 1997). Mayo's modification scale reduced the scale from 15 to 11 items; the maximum score is 11 (Mayo et al., 2001). A sample item is "I believe if someone gets breast cancer it was meant to be." The original tool measures the defining characteristics of fatalism: God's will and eventual death (Powe, 1994, 1995). The reported reliability for the Powe Fatalism Inventory was 0.84–0.87 during pilot testing and other studies found a range from 0.84 to 0.89 (Powe, 1995). Powe (1995) reported that content validity was evaluated by four nursing experts. A reliability of 0.89 was reported for the revised Powe Fatalism Inventory (Mayo et al., 2001). Mayo et al. reported that a score of greater than 5 was indicative of high fatalism and Gullatte et al. (2009) concurred. For the present sample, Cronbach's alpha was .75.

Stress was measured with a modified version of the Urban Life Stress Scale (S. P. Harrell, personal communication, 1994) and later used with an all African American sample (Jipguep, Sanders-Phillips, & Cotton, 2004). The scale assesses the social and environmental burdens that are stressful, specifically for disadvantaged groups (S. P. Harrell, personal communication, 1994). It included items concerning money, housing, job, neighborhood environment, family situation, public services, and crime and violence. The items were measured on a scale of 0–4; responses range from *no stress at all/does not apply to me* (0) to *extreme stress/more than I feel I can handle* (4). Jipguep et al. (2004) reported a reliability of 0.76 with an African American sample. The scale was modified based on feedback from a focus group by the primary author, deleting two items and adding one item; this ultimately created a 20 item scale. For the present sample, the Cronbach's alpha was .60.

Spirituality was measured with the eight-item Religiousness Scale (Strayhorn, Weidman, & Larson, 1990). We used the measurement of public and private religious activities as a proxy to measure spirituality. The authors acknowledged the limitation of this proxy; but at the time measurement decisions were made, instruments that had an established reliability in an African American sample were limited (Strayhorn et al.). The original scale contained 12 items. Based on focus group feedback, we eliminated 4 items from our data collection. This

8-item scale measures both internal, solitary use of spiritual activities, as well as participation in organized religious groups (Strayhorn et al.). The responses to the items varied and certain items were reverse scored. A sample item is “How spiritual would you say you are?” Response options were *not at all*, *not very much*, *somewhat*, *pretty much*, and *very much*. The five option responses were coded 1–5 with reverse coding dependent on the item. The range of possible scores is 8–40. Higher scores indicated more spiritual activities. Further testing on two occasions with 158 cases and 101 cases revealed Cronbach's alpha: .88 and .89, respectively. In addition, it was valid as revealed by factor analyses, which indicated two factors. The sample used to establish psychometrics was 89% African American (Strayhorn et al.). The scale was used with 352 African American women and the reliability was reported as 0.90 (Facione, Dodd, Holzemer, & Meleis, 1997). For the present sample, the Cronbach's alpha was .76.

Fear was measured with five items comprising the tension-anxiety (TA) subscale of the Profile of Mood States-Brief (POMS-B; McNair, Lorr, & Droppleman, 1992). For this research, fear was operationalized as scores from the TA subscale. The POMS-B has been used extensively in cancer patients (Heiney, McWayne, Ford, & Carter, 2006) and is reported to be a sensitive indicator of a cancer patient's response to psychosocial interventions. A sample question for tension anxiety is “Choose the answer that you have been feeling during the past week about the feeling, nervous.” Response options were *not at all*, *a little*, *moderately*, *quite a bit*, or *extremely*. The range of responses was 0–4, with the higher scores indicating greater tension and anxiety. Cronbach's alpha for the TA subscale was .90. Test-retest reliability of the subscales ranged from 0.65 to 0.74. Reliability for the overall short-form in our pilot study with a 27% African American sample was 0.88 (Heiney et al., 2003). Repeated testing using factor analysis demonstrated validity (McNair & Heuchert, 2007). For the present sample, Cronbach's alpha was .80.

Breast cancer knowledge was measured with the 17-item Breast Cancer Knowledge scale, which ascertains the amount of correct information one has about breast cancer symptoms and treatment side effects (Braden, Mishel, & Longman, 1995). The possible answers to each item were “True,” “False,” and “Don't Know” with “Don't Know” being considered a wrong answer. The score was the percentage of correct answers that was obtained by counting the number of correct answers and dividing it by 17 to obtain a percentage. Thus, the range of scores was 0%–100%. A sample item was “Lymphedema is a word used to describe loss of appetite.” Cronbach's alpha was .77 from a sample of 163 women younger than the age of 65 years (C. J. Braden, personal communication, June 8, 2010; Braden et al., 1995). For the present sample, the Cronbach's alpha was .60.

Isolation was measured with 20 items from the UCLA Loneliness Scale Version 3 (Russell, 1996) that measures loneliness symptoms. The authors acknowledge that isolation and loneliness are not synonymous. However, the items in this scale approximated the descriptions provided by African American women with breast cancer in the first author's clinical practice when discussing their experience with breast cancer. The use of this scale as a proxy for isolation was supported by its use in the Nurses' Health Study (Kroenke, Kubzansky, Schernhammer, Holmes, & Kawachi, 2006). Two sample items are “People are around me but not with me” and “I feel isolated from others.” The range of responses, 1–4, measured *never* to *often*, with the higher scores indicating greater isolation. The score is obtained by summing items and using reverse coding for negatively worded items (Russell). Possible range of scores is 20–80. The reliability is reported to range from 0.89 to 0.94 across samples and extensive validity testing has reported strong validity (Russell). The scale has been used in a sample that included African American women with breast cancer in which Cronbach's alpha was .93 (Samarel, Tulman, & Fawcett, 2002). For the present sample, the Cronbach's alpha was .88.

Procedures

Recruitment has been described elsewhere (Heiney, Adams, Wells, & Johnson, 2010). For the participants in this subsample, recruitment occurred for more than 33 months (between August 2006 and April 2009). There were 784 patients in the initial pool from which to recruit. Of those patients, 6 were deceased and 29 could not be contacted, leaving 749 patients from which to recruit. Of those 749 patients, 206 were eligible for the study. A total of 62 women refused (41 before eligibility screening and 21 posteligibility screening, including 2 patients who consented, but then refused later). Thus, the total sample was 144 women.

Patients consented to participate in the research at a location of their choice, which was usually their home. All consents were read to patients regardless of their reading level to assure consistency and avoid embarrassment issues associated with low literacy. Patients were given a small gift such as a plant and a gift card from a chain store in recognition of their time and effort for the study.

After the consent was obtained, data were gathered from all patients in individual meetings at a site determined by the patient. In a similar manner, data collection instruments were read to all patients. Patients were given a copy of the data collection booklet to follow the verbal information from the data collector. Data collection consisted of gathering demographic, personal, and clinical data and administering all testing instruments.

DATA ANALYSIS

Demographics and descriptive statistics (mean, range, standard deviations) were computed. Pearson product-moment correlations were computed for all pairs of variables, along with p values to assess statistical significance. Correlations between the dependent variable of community connection and each of the independent (i.e., antecedent) variables (cancer stigma, fatalism, stress, and spirituality) were computed. In addition, partial correlations between the dependent and independent variables adjusted for each mediator variable (fear, breast cancer knowledge, and isolation) were computed. A statistical analysis was conducted to assess significance of the indirect effects of the mediator variables on the dependent variable of community connection in accordance with Hayes' mediation analyses methodology (Hayes, 2009).

With the mediation analysis methodology, there are potentially both indirect effects and direct effects. An indirect effect measures the influence of an independent variable (X) on the dependent variable (Y) when acting through the mediator variable (M). A direct effect is that portion of the independent variable's influence that does not act through a mediator. The independent variables are the antecedents: cancer stigma, fatalism, stress, and spirituality. In the Hayes (2009) method, the direct and indirect effects of an independent variable are estimated using a bootstrap resampling approach that also permits confidence intervals for these coefficients to be constructed. Statistical significance of an indirect effect is assessed by observing whether the confidence interval includes zero; if not, this indicates significance. The Hayes method is generally consistent with the Baron and Kenney's approach (Baron & Kenny, 1986).

The Hayes method has two key advantages over other types of analyses such as the Baron and Kenny (1986) approach. The Hayes (2009) method does not require that the mediator variable be significantly associated with the independent variable. It also does not rely on an assumption of normality for testing or for confidence interval construction. The primary mediator analysis was conducted by considering each variable in a single-mediator model. In addition, a single-step multiple-mediator model was considered in which all mediators

were included in the model simultaneously. All coefficients from these models represent the expected change in the dependent variable score caused by a one-unit change in the independent variable value. Nonzero coefficients for indirect effects served to identify significant independent and mediator variables of the community connection outcome.

RESULTS

Sample Description

The 144 African American women had a mean age of 54.9 years ($SD = 10.9$; range of 35–78 years old). In this sample, 45% had a high school education or less, 35.8% earned less than \$19,999 per year, 56% were employed, and 34% were married. The most commonly reported comorbidity was high blood pressure (63.2%) and arthritis (36.1%).

Means of Variables and Correlation Analysis

Means of all variables, including antecedents and mediators, are given in Table 1. Correlations with independent variables are given in Table 2. Community connection was significantly negatively correlated with the antecedents, cancer stigma ($r = -0.23$) and stress ($r = -0.33$); whereas, it was positively correlated with spirituality ($r = 0.25$).

ASSOCIATION WITH ANTECEDENT VARIABLES NOT ACCOUNTED FOR BY THE MEDIATOR VARIABLES

For community connection, as shown in Table 2, the partial correlations with cancer stigma were significant after adjusting for fear ($r = -0.16$) and breast cancer knowledge ($r = -0.25$). Breast cancer knowledge continued to be a significant mediator for both stress and spirituality. The partial correlation with stress was significant after adjusting for breast cancer knowledge ($pr = -0.34$) and the partial correlation with spirituality was significant after adjusting for breast cancer knowledge ($pr = -0.25$). Fatalism did not exhibit associations with any antecedent variable, with or without mediator adjustment. Isolation did not mediate community connection in relation to any of the antecedent variables.

Mediator Analysis

Table 3 shows the results for fitting single-mediator models in which the direct and indirect effects of the independent variable were estimated for community connection. Bias-corrected 95% bootstrap confidence intervals were used to assess whether the indirect effects were statistically significant. Fear and isolation were found to mediate the effects of three of the four antecedent variables—cancer stigma, stress, and spirituality—on community connection, but not to mediate the effect of fatalism. These results were similar for the mediator of fear with cancer stigma for the correlations reported in Table 2. Similarly, no variables were identified as mediators of fatalism. However, the results reported in Table 3 were different from the rest of the correlations reported in Table 2. Specifically, breast cancer knowledge was not significant and isolation was significant with three of the independent variables (cancer stigma, spirituality, and stress).

When we included all three mediator variables—fear, breast cancer knowledge, and isolation—simultaneously in a multiple mediator model, results were similar to the results shown already in Table 3. As before, there was no evidence of mediation for the effect of fatalism on community connection. However, the mediation of the effect of fear on the relationship between stress and community connection was no longer statistically significant in the multiple-mediator model. In summary, effects were observed for (a) cancer stigma ($r = -0.25$; $p = .005$) acting through fear and isolation, (b) stress ($r = -0.59$; $p < .001$) acting through isolation, and (c) spirituality ($r = 0.04$; $p = .003$) acting through fear and isolation.

DISCUSSION THEORY DISC

This research provided an innovative perspective regarding African American women with breast cancer by testing a theory of community connection, an important theory in African American culture that has been poorly examined in the context of a cancer diagnosis. We report three antecedents and two mediators that are highly correlated with community connection in a cohort of African American women with breast cancer. Our results support maintaining cancer stigma, spirituality, and stress as antecedent variables for a theory of community connection. In contrast to previous research suggesting their importance in African American women with breast cancer, our analysis did not support the retention of fatalism as an antecedent and breast cancer knowledge as a mediator in our theory of community connection.

There was no evidence of any effect because of fatalism as an antecedent variable. A possible explanation is that the level of fatalism in our sample (mean of 3.4) fell between that reported by previous research. Gullatte et al. (2009) reported a mean of 2.8 in an African American sample of women recently diagnosed with breast cancer. Mayo et al. (2001) reported a mean of 5.42 in a sample of African American women being screened for breast cancer. Our participants were past diagnosis and beginning treatment when assessed and may have received education and support that might have decreased fatalistic beliefs.

There are two possible explanations for our finding that breast cancer knowledge was not a significant mediator for the antecedents for community connection. The lack of association between knowledge and the antecedents may be caused by the relatively high knowledge level in this sample (mean = 71.5; range 29.4–100). Similarly, the focus of this research on treatment is different from most of the previous research on breast cancer knowledge that has focused on prevention, not treatment (Avis-Williams, Khoury, Lisovicz, & Graham-Kresge, 2009; Conway-Phillips & Millon-Underwood, 2009; Wujcik et al., 2009).

Limitations Of The Study

Three measurement limitations merit discussion. Measurement weaknesses included the use of a religiousness scale to measure spirituality and a loneliness scale to measure isolation. In addition, the participants had a mean score of almost 72 (out of a maximum of 100) on the cancer knowledge scale. The researchers believe that the cancer knowledge scale tested basic breast cancer information and did not adequately discriminate against advanced knowledge related to cancer treatment, side effects, and survivorship. A more complex knowledge scale may have differentiated the mediating effects of knowledge on our antecedents.

Our study is limited in that our sample was composed of African American women with breast cancer residing in a narrow geographic area of the southeast United States. This study focused on an unexplored aspect of social networks—community connection. In our sample, community connection was relatively high. However, the level of community connection in African American women with breast cancer in other regions or cultural groups is unknown.

Implications for Future Research

Our study demonstrated difference in results when using a single-step versus multiple-step mediator analysis. When individual correlations were performed with one antecedent variable (as opposed to all four antecedent variables), knowledge was significant (Table 2). In contrast when all variables were considered in one statistical equation, knowledge was no longer significant. Similarly, isolation, which was not significant when testing only one antecedent variable, was significant when testing all of the antecedents and mediator variables. Thus, the final theory for community connection is more parsimonious than we

have proposed. Further research is needed to explore this model with additional samples to determine if the model holds up to further testing.

This study suggests the need for longitudinal research to measure community connection for African American women with breast cancer to determine if it remains constant or changes over time. Further greater knowledge is needed to determine if community connection is associated with health maintenance, treatment adherence, comorbidities, or survival. Even though cancer fatalism may influence health practices, it does not mediate factors related to community connection. Whether the reverse is true is an important question to help determine if cultural beliefs can be modified by relationships with community members.

Implications for Nursing Practice

Findings from this research have applicability to clinical nursing. However, nurses should use caution in interpretation of the findings because associations are weak among variables. Our study suggests that patient education likely increases patients' knowledge of cancer and its treatment and decreases fatalism. These efforts should continue. Our study adds to the evidence that cancer fatalism may be lower than suggested by previous research. This may reflect the effects of numerous education programs and media campaigns to reduce fatalism and increase accurate knowledge about breast cancer. Further, our study documented that African American women with breast cancer are receiving and retaining information about their cancer.

Our study suggests that some important patient issues require more focus in assessment and care of African American women with breast cancer. In particular, nurses should assess for fear and isolation in their patients because these problems influence cancer stigma and community connection—a vital resource for African American women with breast cancer. Interventions to reduce cancer stigma should address the patient's worries and concerns as well as the level of community support they report. Stigma, with its underlying emotions, may inhibit community connection and cut the patient off from church members, neighbors, and others in the community who might offer practical and emotional assistance.

Similarly, nurses should explore stress experienced by their patients and their level of isolation because these factors are associated with community connection. Stress was mediated by isolation, suggesting that nurses should develop interventions to decrease isolation and help patients develop supportive bonds with other patients and community members.

This study points to the need to further study community connection in African American women with breast cancer to better understand what factors increase or decrease community connection and what mediates community connection. Our research provides critical insights for nursing practice as well as raising important questions for future research.

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Figure 1. Proposed model for testing antecedent and mediator variables associated with community connection in African American women with breast cancer.

TABLE 1Sample Means and Standard Deviations for Variables ($N = 144$)

Variable	Mean (SD)	Range
Antecedents		
Cancer stigma	1.7 (0.73)	1–4.1
Fatalism	3.4 (2.05)	0–10
Stress	0.5 (0.43)	0–2.4
Spirituality	33.4 (4.44)	17–40
Mediators		
Fear	3.0 (3.2)	0–16
Breast cancer knowledge	71.5 (14.03)	29.4–100
Isolation	27.9 (7.31)	20–57
Outcome		
Community connection	3.9 (0.77)	2.1–5

TABLE 2

Product-Moment Correlations Between Community Connection (Dependent Variable Y) and Antecedent Variables, and Partial Correlations Adjusting for Mediator Variables

Antecedent Variable (X)	Correlation $r(X, Y)$	Partial Correlation, $r(X, Y M)$		
		Mediator (M)		
		Fear	Knowledge	Isolation
Cancer stigma	-0.235*	-0.165*	-0.246*	-0.118
Stress	-0.329*	-0.131	-0.336*	-0.155
Spirituality	0.249*	0.140	0.249*	0.151

Note. $N = 144$.

* Denotes significance level of .05.

TABLE 3

Results of Fitting Single-Step Mediator Models for Community Connection, With 95% Bias-Corrected Bootstrap Confidence Intervals (CI) for Indirect Effects

Antecedent Variable	Effect Type	Coefficient $\pm$ SE (CI)		
		Mediator		
		Fear	Knowledge	Isolation
Cancer stigma	Direct	-0.16 ± 0.08	-0.26 ± 0.09	-0.11 ± 0.08
	Indirect	-0.09 ± 0.04	0.01 ± 0.01	-0.14 ± 0.05
		$(-0.19, -0.02)^*$	$(-0.00, 0.06)$	$(-0.25, -0.06)^*$
Fatalism	Direct	0.00 ± 0.03	-0.01 ± 0.03	0.03 ± 0.03
	Indirect	-0.01 ± 0.02	-0.00 ± 0.00	-0.04 ± 0.02
		$(-0.04, 0.02)$	$(-0.01, 0.00)$	$(-0.07, 0.00)$
Stress	Direct	-0.25 ± 0.16	-0.60 ± 0.14	-0.25 ± 0.13
	Indirect	-0.33 ± 0.11	0.01 ± 0.03	-0.33 ± 0.09
		$(-0.58, -0.15)^*$	$(-0.02, 0.11)$	$(-0.53, -0.17)^*$
Spirituality	Direct	0.02 ± 0.01	0.04 ± 0.01	0.02 ± 0.01
		$(0.01, 0.04)^*$	$(-0.00, 0.01)$	$(0.01, 0.04)^*$

Note. $N = 144$.

* Denotes significance level of .05.