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The role of social capital in African–American women's use of mammography

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ABSTRACT

Black/African–American women are more likely to get breast cancer at a young age and/or be diagnosed at a late disease stage, pointing to a greater need to promote mammography for Black women at earlier ages than are currently recommended. This study explores how perceived neighborhood social capital, that is, perceptions of how tight-knit a neighborhood is and what power that confers to neighborhood members, relates to use of mammography for Black women in Philadelphia. Living in a community with tight social ties (social cohesion) or that have a collective motivation for community change (collective efficacy) may increase the likelihood that an individual woman in that community will hear health messages from other community members and neighbors (diffusion of information) and will have access to health-related resources that allow them to engage in healthy behaviors. No prior studies have explored the role of social capital in decisions for mammography use. Using multilevel logistic regression, we analyzed self-report of mammography in the past year for 2586, Black women over age 40 across 381 Philadelphia, Pennsylvania USA census tracts. Our study included individual demographic and aggregates of individual-level social capital data from the Public Health Management Corporation's 2004, 2006, and 2008 Community Health Database waves, and 2000 US Census sociodemographic characteristics. Individual perceptions that a Black woman's neighborhood had high social capital, specifically collective efficacy, had a positive and statistically significant association with mammography use (OR = 1.40, CI: 1.05, 1.85). Our findings suggest that an individual woman's perception of greater neighborhood social capital may be related to increased mammography use. Although this analysis could not determine the direction of causality, it suggests that social capital may play a role in cancer preventive screening for African–American women in Philadelphia, which warrants further study.

Introduction

The importance of cancer preventive health behaviors for African–American women

In 2013, breast cancer and prostate cancer were named the top sites for new cancer cases for Blacks/African–Americans (American Cancer Society, 2013). Black/African–American women have a 1 in 9 lifetime risk of developing breast cancer (IR = 118.1/100.000) (American Cancer Society, 2013). While this rate is lower than the lifetime risk for White women, Black women have a 41% higher breast cancer mortality rate than White women (American Cancer Society, 2009; American Cancer Society, 2013; Merkin, Stevenson, & Powe, 2002; Myers et al., 1996; Shen et al., 2007; Smith-Bindman et al., 2006). Reductions in breast cancer mortality rates since 2000 are attributed to increases in mammography use (American Cancer Society, 2013; National Cancer Institute, 2009), yet mortality disparities still exist, largely because Black women are more likely to develop breast cancer at younger ages and be diagnosed at later disease stages based on the age at which screenings are recommended (American Cancer Society, 2013, Surveillance, Epidemiology and End Results (SEER) Program). Tumors diagnosed at younger ages may be more aggressive, and less responsive to treatment, leading to higher mortality rates among Black women who are also more likely to have lower frequency and longer intervals of time between mammograms and follow-up (DeSantis,

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Jemal, & Ward, 2010; Carey et al., 2006; Smith-Bindman et al., 2006; Press, Carrasquillo, Sciacca, & Giardina, 2008). Screening guidelines used to target women starting at age 40, but the most recent recommendations from the US Preventive Services Task Force (USPTF) in 2012 no longer recommend routine screening for women under 50. Black women under the age of 45 are more likely than White women to be diagnosed with breast cancer (Surveillance, Epidemiology, and End Results (SEER) Program), meaning that cancer may have already developed and progressed prior to the first recommended screening at age 50, putting Black women at increasingly higher risk of late-stage detection. Under the most recent guidelines for mammography, Black women would face increased risk of not being diagnosed in a timely manner, perpetuating the disparities in the mortality rate. These facts point to the need for Black women to have routine screening at younger ages than are currently recommended, and to the increasing importance of knowing which social factors encourage or discourage screening.

Neighborhood-level factors, like living in a poor or disadvantaged neighborhood with a high minority health concentration is associated with not receiving cancer screening (Kawachi & Lochner, 1997). Others factors, like urban residence, are associated with higher mammography rates (Anderson & May, 1995; Makuc, Breen, & Freid, 1999; Rakowski, Rimer, & Bryant, 1993), making the context of neighborhoods an important factor to screening. Individual-level factors like low-income, older age, lack of health insurance and less education are each associated with less cancer screening (Hoffman-Goetz, Breen, & Meissner, 1998; Lane, Zapka, Breen, Messina, & Fotheringham, 2000; Mandelblatt et al., 1999; Potosky, Breen, Graubard, & Parsons, 1998). The combination of being poor, living outside of a metropolitan statistical area, and being a Black female is a high-risk profile for not getting a mammogram (Calle, Flanders, Thun, & Martin, 1993). Knowledge of cancer screening (Jepson, Kessler, Portnoy, & Gibbs, 1991; Michielutte & Diseker, 1982; Robinson, Kessler, & Naughton, 1991) and having trust in a personal physician are salient social factors that are linked to increased usage of mammography (O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004). According to one study using the Peters–Belson scale, which is often used for measuring wage discrimination, even if Black women and White women held the same covariate composition (demographic characteristics, physical resources, etc), Black women would still be less likely to be screened. The fact that demographic characteristics and physical resources fail to explain the disparity in screening suggests that other social factors may be at work (Rao, Graubard, Breen, & Gastwirth, 2004), warranting further investigation of what those social factors might be for Black women.

While it is apparent that social factors play a role in cancer preventive screening, there is little research that has attempted to disentangle which factors are the most salient for Black women, and whether or not neighborhood-level or individual-level factors matter more. Understanding the modifiable neighborhood social factors, like social capital, that contribute to whether or not a Black women woman will undergo cancer preventive screening can help identify the roots of the racial/ethnic cancer disparities.

The mechanism linking social capital and health

The concept of social capital grows from the observation that social relationships can create a form of capital that can have positive effects on multiple outcomes, including health (Hanifan, 1916; Kawachi, Kennedy, & Glass, 1999; Putnam, 1993, 1995). Social capital may be considered the ecological analog to individually-based social support, and is considered to be a social determinant of health and health behaviors. It is distinguished from social support because social support relates to interpersonal relationships among individuals, while social capital is about resources embedded within groups, making it a collective-level construct. Social capital is based on properties of groups and the space of interactions that exist among group members like expectations of reciprocity, trust, capacity for information flow, and norms and sanctions; it is distinguished from human capital, which represents the formal education and experiences of an individual (Coleman, 1988, 1990; Kawachi, Subramanian, & Kim, 2007a; Kawachi, Subramanian, & Kim, 2007b, 294 pp.).

Social capital indicators cover five main areas that are properties of groups that can be perceived by individuals: social engagement, neighborliness, social networks, social support, and perception of the local area (Morgan & Swann, 2004). These indicators are often used in survey data, and at both individual-level and community level-units of analysis. Inclusive of these indicators, measures of community-level social capital focus on collective efficacy, social cohesion, and social participation. Collective efficacy refers to the collective willingness of residents to intervene on behalf of the common good, and largely depends on mutual trust and solidarity among residents (Kawachi et al., 2007a; Sampson, Raudenbush, & Earls 1997). Social cohesion measures how tight-knit the group is, while social participation measures how active the group is. It is important to measure both individual-level perceptions and community-level perceptions of social capital, as they represent different characteristics of the group. An individual perception is in part a function of that individual's personality, but when perceptions are aggregated to the community-level, the characteristics of that entire community may be different. As a crude example, one member of a community may not choose to participate in community events, but that is entirely different from whether or not the community offers opportunities to participate. Tools such as multilevel modeling help determine whether community-level social capital (contextual effect) influences individual health over and above perceptions at the individual-level (compositional effect). Contextual influences refer to the influences of the collective that are exerted on the individual (Kawachi & Berkman, 2001), while compositional effects are the influences that the individual contributes to the collective. It is important to measure both compositional and contextual components of social capital, as each has been found to have different associations with health (Kawachi et al., 2007a).

Although social capital has been conceptualized and measured in different ways – e.g. using measures of trust, norms of reciprocity, and sense of belonging – the fundamental premise is that social relationships create a form of capital that can affect health. Social capital measures these constructs as properties of a group or population and would, for example, involve the amount of social support across a group's members, rather than between two group members. Public health researchers have offered the following suggested mechanisms by which social capital may be related to health and health behaviors: (1) diffusion of information sharing messages about health-promoting and preventive behaviors; (2) maintenance of health behavioral norms or deterrence of risky behaviors through informal social control; (3) promotion of access to services; (4) effective support or other psychosocial pathways that act directly or indirectly; and (5) empowerment to engage political policies that impact community health (Berkman & Kawachi, 2000; Kawachi & Berkman, 2001; Kawachi et al., 2007a). While mechanisms 1 and 2 reflect influences on individuals, mechanisms 3–5 suggests that social capital has benefits for the health of the community over and above impacts on the individual.

Health behaviors have been less studied in relationship to social capital than health outcomes, despite that the same mechanisms may be at work (Lindstrom, 2007). Although no studies have explicitly attempted to use social capital to explain cancer