



#### Geography

## Perceptions of One's Neighborhood and Mammogram Use among a Sample of Low-Income Women at Risk for Human Immunodeficiency Virus and Sexually Transmitted Infections



Melissa A. Davey-Rothwell, PhD, CHES\*, Janice Bowie, PhD, Laura Murray, BA, BSN, Carl A. Latkin, PhD

Department of Health, Behavior and Society, Bloomberg School of Public Health, Johns Hopkins University, Baltimore, Maryland

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#### ABSTRACT

Background: Neighborhood disorder, signs of physical and social disorganization, has been related to a range of poor mental and physical health outcomes. Although individual factors have been widely associated with getting a mammogram, little is known about the impact of the neighborhood environment on a woman's decision to get a mammogram.

*Methods*: In a sample of women at risk for human immunodeficiency virus and sexually transmitted infections, we explored the role of perceptions of one's neighborhood on getting a mammogram. The study included two samples: women 40 to 49 years (n = 233) and women 50 years and older (n = 83). Data were collected from May 2006 through lune 2008.

Results: Women age 50 years and older who lived in a neighborhood with disorder were 72% less likely to get a mammogram compared with women who lived in neighborhoods without disorder. There was no relationship for women age 40 to 49 years.

Conclusions: Interventions are needed to increase awareness and encourage women living in neighborhoods with disorder to get a mammogram. In addition to interventions to increase mammography, programs are needed to decrease neighborhood disorder. Increasing neighborhood cohesion, social control, and empowerment could integrate health promotion programs to both reduce disorder and increase health behaviors.

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In the United States, one in eight women will be diagnosed with breast cancer (American Cancer Society, 2013b) in their lifetime. Although breast cancer incidence is associated with higher individual socioeconomic status (Robert et al., 2004), screening rates are lower for women with lower socioeconomic

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\* Correspondence to: Melissa A. Davey-Rothwell, PhD, CHES, Department of Health, Behavior and Society, Bloomberg School of Public Health, Johns Hopkins University, 2213 McElderry Street, 2nd Floor, Baltimore, MD 21205. Phone: 410-502-5368; fax: 410-502-5385.

E-mail address: mdavey1@jhu.edu (M.A. Davey-Rothwell).

status (Bradley, Given, & Roberts, 2001; Katz & Hofer, 1994) and mortality is higher in poorer regions compared with wealthier regions of the United States (Singh, Miller, Hankey, & Edwards, 2003). Emerging research has explored the role of geographic factors on breast cancer incidence and screening.

Previous research has shown that area-level income and economic instability have strong influences on cancer screening rates (Grillo, Vallée, & Chauvin, 2012; Wee et al., 2012). Individuals living in low-income, poverty-stricken neighborhoods are less likely to participate in cancer screening (Elit et al., 2012; Mobley, Kuo, Urato, & Subramanian, 2010).

A substantial body of research has explored how neighborhoods or area of residence is associated with cancer screening (Bergamini et al., 2007; Luengo et al., 1996; Simou, Maniadakis, Pallis, Foundoulakis, & Kourlaba, 2010; Todorova, Baban, Alexandrova-Karamanova, & Bradley, 2009). Researchers have

shown that geographical access to mammography, such as distance to and transportation assistance, increases utilization (Akinyemiju et al., 2012; Eberth et al., 2014; Peipins et al., 2011). In addition, socioeconomic status within an area of residence has been associated with breast cancer screening (Pruitt, Shim, Mullen, Vernon, & Amick, 2009). Dailey, Kasl, Holford, Calvocoressi, and Jones (2007) reported that women who lived in impoverished neighborhoods were less likely to get repeat mammograms. Structural factors, such as neighborhoods, may influence individual level factors leading to mammograms.

Several studies have shown a strong link between perceptions of neighborhood disorder and psychological distress including anxiety, fear, and depressive symptoms (Casciano & Massey, 2012). Other studies have demonstrated that neighborhood disorder is associated with a number of other health outcomes such as human immunodeficiency virus (HIV) risk behavior (Latkin, Williams, Wang, & Curry, 2005; Latkin, Curry, Hua, & Davey, 2007), drug use (Latkin et al., 2007; Theall, Sterk, & Elifson, 2009), smoking (Miles, 2006), alcohol use (Hill & Angel, 2005; Kuipers, van Poppel, van den Brink, Wingen, & Kunst, 2012; Mulia, Schmidt, Bond, Jacobs, & Korcha, 2008; Reyes et al., 2006), and body mass index (Burdette & Hill, 2008; Burdette & Needham, 2012).

Poor mental health has also been associated with lower levels of breast cancer screening among several populations. A study among healthy postmenopausal women found that depressive symptoms (Aggarwal et al., 2008) were associated with lower levels of mammography. In another study of women participating in a mammography screening program, researchers examined women who did not participate in the program. These women were more socially isolated and exhibited higher levels of anxiety and depression (Aro, de Koning, Absetz, & Schreck, 2001).

In other studies, fear and anxiety associated with the procedure itself or with the possibility of a cancer diagnosis were identified as major barriers to breast and cervical cancer screening (Ahmed, Winter, Albatineh, & Haber, 2012; Andrasik, Rose, Pereira, & Antoni, 2008; Watson-Johnson et al., 2011). In a study that included both men and women, fear of cancer diagnosis seemed to be a barrier for cancer screening for women but not for men (Ramos, Taltavull, Pineiro, Nieto, & Llagostera, 2013). This study also found that women were more likely than men to ignore symptoms (Ramos et al., 2013). Watson-Johnson et al. (2011) reported that although fear was a barrier to cancer screening, some women simply did not consider their own health a high priority. In neighborhoods where fear and anxiety are provoked by high levels of disorder, women may feel less inclined to undergo a screening procedure that could produce additional fear and anxiety.

There is a paucity of research that has explored how perceptions of one's neighborhoods are related to mammography. We sought to examine the relationship between neighborhood disorder and receiving a mammogram among a sample of predominantly impoverished African American women. We conducted analyses with women 40 to 49 years old and women 50 years and older.

#### Methods

Data for this study were collected from participants in the CHAT study, a social network-oriented HIV prevention intervention. Participants were recruited through street outreach, newspaper advertisements, and referrals from community

agencies. Because the focus of the parent study was on HIV prevention peer education, two types of study participants (Index and Network) were enrolled in the study. Inclusion criteria for index participants were female, aged 18 to 55 years old, did not inject drugs in the past 6 months, self-reported sex with at least one male partner in the past 6 months, and at least one HIVrelated sexual risk behavior in the past 6 months (i.e.,  $\geq 2$  sex partners, recent sexually transmitted infection diagnosis, and having a high-risk sex partner). Index participants referred social network members to the study. Inclusion criteria for network participants included injected heroin or cocaine, being a sex partner of the index participant, or being people the index participant felt comfortable talking to about HIV or sexually transmitted infections. Index participants were randomized into the peer education or control conditions (see Davey-Rothwell, Tobin, Yang, Sun, & Latkin [2011] for details on the intervention and parent studies).

After providing written consent, participants were interviewed. Although most of the survey was administered by a trained interviewer, one section on risk behaviors was administered through audio computer-assisted self-interview. Participants were compensated \$35 for completion of the interview. Interviews were conducted from May 2006 through June 2008. Although male network members were enrolled, the present study focuses solely on women.

We focused on two samples in this study based on recommendations for getting a mammogram. First, we focused on women 40 to 49 years old (n=233; 75.6% index participants), because several organizations, such as the American Cancer Society and National Cancer Institute, continue to recommend screening for women 40 and older (American Cancer Society, 2013a; National Cancer Institute, 2014). We then analyzed the sample women 50 years and older (n=83; 66.2% index participants) based on updated recommendations by the U.S. Preventive Services Task Force recommending mammography screening for this age (U.S. Preventative Services Task Force, 2009). Study protocols were reviewed and approved by the Johns Hopkins Bloomberg School of Public Health Institutional Review Board.

#### Measures

#### Mammogram

Participants were asked about their history of receiving a mammogram: "A mammogram is an x-ray of the breast to look for breast cancer. When was the last time you had a mammogram?" Responses were recoded as had a mammogram versus never a mammogram.

#### Neighborhood disorder

Neighborhood disorder was measured by an adapted 10-item scale developed by Perkins, Meeks, and Taylor (1992) to assess physical and social disorder. Participants were asked to what extent the following 10 neighborhood features were a problem in their neighborhood: 1) vandalism, 2) vacant housing, 3) people who do not keep up their property or yards, 4) people who say insulting things or bother other people when they walk down the street, 5) litter or trash in the street, 6) groups of teenagers hanging out on the street, 7) people fighting or arguing, 8) burglary like people's houses or stores getting broken into, 9) selling drugs, and 10) people getting robbed or beaten up on the street. Response options include not a problem (0) somewhat of a problem (1), and a big problem (2). Response

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