Gerontology & Geriatric Medicine
January-December 2015: 1–11
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DOI: 10.1177/2333721415607314
ggm.sagepub.com
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Neighborhood Environment and Self-Rated Health Among Urban Older Adults

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Abstract

Objective: This study examines associations between neighborhood environment and self-rated health (SRH) among urban older adults. **Method:** We selected 217 individuals aged 65+ living in a de-industrialized Midwestern city who answered questions on the 2009 Speak to Your Health survey. The relationship between neighborhood environment and SRH was analyzed using regression models. Neighborhood variables included social support and participation, perceived racism, and crime. Additional models included actual crime indices to compare differences between perceived and actual crime. **Results:** Seniors who have poor SRH are 21% more likely to report fear of crime than seniors with excellent SRH (p = .01). Additional analyses revealed Black seniors are 7% less likely to participate in social activities (p = .005) and 4% more likely to report experiencing racism (p < .001). **Discussion:** More than 80% of older adults live in urban areas. By 2030, older adults will account for 20% of the U.S. population. Given the increasing numbers of older adults living in urban neighborhoods, studies such as this one are important. Mitigating environmental influences in the neighborhood that are associated with poor SRH may allow urban older adults to maintain health and reduce disability.

Keywords

neighborhoods, older adults, urban health, social capital, crime

During the last decade, there has been a resurgence of interest in the impact of neighborhoods on health (Roh et al., 2011; Subramanian, Kubzansky, Berkman, Fay, & Kawachi, 2006). Growing epidemiological and sociological evidence link the residential environment to an individual's health (Diez-Roux, 2001; Ellaway, Macintyre, & Kearns, 2001). The effect of neighborhood on health is particularly salient among older adults because older individuals are most likely the longest dwelling residents in the community, and they have increased reliance on resources in their immediate neighborhoods (Diez-Roux, 2001). Poor neighborhood conditions, which include a lack of social support, social networks, social cohesion, and low perceptions of safety (DeJesus, Puleo, Shelton, & Emmons, 2010), may contribute to physical inactivity (Centers for Disease Control and Prevention, 1999), obesity (Gallagher et al., 2010), and mental health disorders (Roh et al., 2011).

The geographic area mostly commonly referred to as the neighborhood is not precise. In health research, the terms *neighborhood* and *community* are often used interchangeably to refer to a person's immediate residential environment, which is hypothesized to have material and social characteristics related to health (Diez-Roux, 2001). Administratively defined areas, such as census tracts, block groups, and zip codes have been used as rough proxies for neighborhoods. Other criteria used to define a neighborhood can be historical, based on residential characteristics, or based on people's perceptions (Diez-Roux, 2001). The size and definition of the relevant geographic area may vary according to the outcomes being studied. For example, neighborhoods defined on the basis of people's perceptions may be relevant when the characteristics of interest relate to social interaction or social cohesion (Wen, Hawkley, & Cacioppo, 2006); however, administratively defined neighborhoods may be relevant when the researching policies (Diez-Roux, Borell, Haan, Jackson, & Schultz, 2004), and geographically defined neighborhoods may be relevant when features of the physical environment are theorized to be important (Bracy et al., 2014).

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The Neighborhood Environment

Although studies examining neighborhood effects on older adults are limited, existing studies show that neighborhood socioeconomic status is related to general health status (Poortinga, Dunstan, & Fone, 2007), mortality (Anderson, Sorlie, Backlund, Johnson, & Kaplan, 1997), and survival rate (Gerber et al., 2008) for individuals with specific health conditions. Also, depressive symptoms are highest among those residing in neighborhoods characterized by high historical unemployment (Wight et al., 2013). A limited number of studies have examined the relationship between socioeconomic conditions and perceived racial discrimination. Previous studies show a large variation in reports of racial discrimination (Dailey, Kasl, Holford, Lewis, & Jones, 2010). Racial composition of the neighborhood may influence perceived racial discrimination (Welch, Sigelman, Bledsoe, & Combs, 2001). Ethnic minorities who live in neighborhoods where there are few like themselves are likely to have increased material resources but may also experience psychosocial stigma associated with belonging to a minority group (Pickett & Wilkinson, 2008). Racial/ethnic discrimination influences the health of racial and ethnic populations through association with mental and physiological changes (Shavers & Shavers, 2006). Studies that examine racial bias on mental health show that discrimination is associated with poor self-assessed mental health, a decreased sense of well-being, hopelessness, anxiety, and anger (Williams, Neighbors, & Jackson, 2003). Racial discrimination also influences available opportunities and behavior in social situations and, as a consequence, can be a significant source of stress for racial and ethnic minorities (Stuber, Galea, Ahern, Blaney, & Fuller, 2003; Williams et al., 2003).

Previous studies suggest that neighborhoods defined on the basis of people's perceptions may be relevant when neighborhood characteristics of interest relate to social interactions or social cohesion (Austin, Furr, & Spine, 2002; De Donder, Verte, & Messelis, 2005). Social dynamics in the neighborhood appear to affect perceptions of neighborhood conditions. The relationship between neighborhood conditions and perceptions of safety appears more pronounced in heterogeneous neighborhoods. Residents of neighborhoods with dramatic changes in racial, youth, and older adult composition expressed higher levels of fear than those with less change (Pitner, Yu, & Brown, 2011). An earlier study by Taylor suggested that fear was higher because social and physical problems arose in response to past changes in the racial composition of the community (Taylor, 1993).

Neighborhood disorder is perceived by residents as lack of order and social control (Ross & Jang, 2000). Visible signs of social disorder include the presence of people hanging out on streets, drinking, takings drugs, and panhandling. Physical disorder has also been identified as having a direct impact on perceptions of safety (Austin et al., 2002). Visible signs of disorder include deteriorating buildings, trash, graffiti, vandalism, noise, and dirt. Although some aspects of neighborhood disorder fall into the realm of criminal activity, other aspects, such as teenagers hanging out, buildings in disrepair, noise, litter, and grime do not. Previous research has attempted to separate crime from types of disorder; however, according to Lewis and Salem (1986), perceived increases in crime are among the clearest indicators of social disorder in an area. Social and physical conditions of neighborhoods have also been linked to mental and behavioral health outcomes of neighborhood residents. Residents in neighborhoods that are quiet, drug-free, where buildings are in good repair, people take good care of their houses and apartments, and there are not people hanging around (particularly unsupervised youth) report higher levels of neighborhood satisfaction (Baba & Austin, 1989) and greater levels of safety (Marshall, 1991). However, in low-income communities, violent crime may affect depressive symptoms (Wilson-Genderson & Pruchno, 2013).

Crime

In many urban neighborhoods where social conditions are deteriorating, older residents also contend with crime. Despite continuing declines in overall trends (Unified Crime Report, 2013), concern about crime is still important for many people, and fear of becoming a victim of criminal misconduct remains central to American consciousness (Weitzer & Kubrin, 2004). Worries over safety are further reinforced by the prominence of crime stories (Romer, Jamieson, & Aday, 2003; Weitzer & Kubrin, 2004) and pledges of politicians in the media to curb violence by introducing various pieces of legislation (Altheide, 2006). Past research on fear of crime and perceptions of safety can be divided into three general areas of focus—demographic effects, victimization experiences, and neighborhood and urban conditions (Austin et al., 2002). We focus on demographic effects and neighborhood and urban conditions. The demographic variables shown to influence attitudes on crime and safety are gender, age, and socioeconomic status. Although women are less likely to be crime victims, they are more likely to indicate increased levels of fear than men; however, the focus of the fear is different. Men reported worrying about women, and women reported worrying about children (Moore, 2010). Over the last two decades, much of the research regarding older adults and fear of crime revolves around the confirmation or negation of the "victimization or crime paradox." According to this paradox, older adults report comparatively high levels of fear of crime despite low levels of victimization. Ziegler and Mitchell (2003) reported 16 studies found greater levels of fear among older adults, 2 studies found no difference between younger and older people, and 7 studies found older adults were less afraid than younger adults.

Although extensive literature exists on fear of crime, few of these studies examine how it relates to health; and none of these studies examine how fear of crime varies among older adults. Given the increasing numbers of older adults living in urban neighborhoods, studies such as this one are needed. In the United States, the number of people above the age of 65 is expected to account for roughly 20% of the population by 2030 (Centers for Disease Control and Prevention, 2013). More than 80% of older adults live in urban areas (Administration on Aging, 2014).

Social Capital

Two main approaches to examining social capital and health have emerged: social cohesion and network capital. These are also called individual and collective social capital (Ferlander, 2007). Social cohesion approaches tend to theorize and measure social capital as resources available to social groups (i.e., trust and norms), while network approaches focus on resources (i.e., social support) embedded within an individual's social networks (Kawachi, Subramanian, & Kim, 2008). Recent research suggests that network resource indicators are better indicators for linking social capital and health (Carpiano & Hystad, 2011; Kawachi et al., 2008). These resources consist of norms of civic participation, trust in others, and reciprocity. Because older individuals report greater residential stability and spend larger amounts of leisure time at home, we expect that they are more likely to be influenced by their neighborhood environment (Mohnen, Groenewegen, Volker, & Flap, 2011). Therefore, we expect that if neighborhood conditions are poor, individuals will have fewer resources and support—especially older people who live alone (Subramanian et al., 2006; Verhaeghe, et al., 2012). Having social capital by being an active member of a community has a positive effect and can decrease vulnerability to health risks (Eilers, Lucey, & Stein, 2007).

Self-Rated Health

Self-rated health (SRH) is a way of evaluating the state of health in individuals, which integrates information on the biological, mental, functional, and spiritual dimensions of the person's health (Ocampa, 2010). SRH represents the perception individuals have of the different dimensions of their state of health. Included in research studies since the 1950s, the concept of SRH is useful in documenting the current state of health self-reported by older adults and also in predicting future health-related events (Ocampa, 2010). Numerous studies have documented the validity of its measurement (Griffiths, Ullman, & Harris, 2005), and it is widely accepted as a reliable measurement of overall health (Idler & Beyamini, 1997; Ocampa, 2010). Our study, in addition to others, suggests that SRH may be influenced by demographics (Kawachi, Kennedy, & Glass, 1999) and neighborhood factors (Wen et al., 2006). Therefore, the perception of health is the result of multiple and complex interactions of variables determining its outcome at any given time. SRH follows systems theory and the bio-psychosocial models of health. Previous studies have shown it to be a significant predictor for development of morbidity, mortality, and disability in basic physical and instrumental daily life activities among older adults (Idler & Beyamini, 1997; Lee, 2000). In addition to reflecting overall health status in older adults, SRH can provide information to assist in the development and implementation of community health promotion and disease prevention programs as well as planning and providing adequate levels of care for older adults.

The purpose of this study is to examine associations between the neighborhood environment and SRH in older adults living in an urban environment. This study is based on a theoretical framework for understanding social inequalities in health and aging proposed by House (House, 2005). House graphically depicts how social, political, and economic conditions and policies as well as ascribed status and position in terms of race, gender, and age are believed to affect a wide range of health outcomes (including SRH) among older adults. SRH is a sensitive measure of overall health in older adults (Ocampa, 2010). Similar to Diez-Roux's neighborhood model (Diez-Roux, 2001), which suggests that disadvantaged neighborhoods may lead to poor health outcomes, House proposes that social and environmental hazards such as lack of safety particularly at home may "get under the skin" causing changes in blood pressure or immune response. Our study uses variables from House's framework to examine how neighborhood environment, which includes social support/participation, fear of crime, and perceived racism, affects SRH among older adults. Our study also examines how demographic characteristics such as race and gender affect older adults' perceptions (fear) of crime in comparison with actual neighborhood crime.

Method

This study uses secondary data extracted from the 2009 Speak to Your Health Community survey (Prevention Research Center of Michigan, 2009). Speak to Your Health is a telephone survey conducted by the Prevention Research Center of Michigan to collect demographic, environmental (i.e., neighborhood characteristics), services, and health information from a cross-section of individuals living in Genesee County, Michigan. The survey uses random digit dialing to select a sample of households throughout the county. The Prevention Research Center of Michigan is a community–university partnership, which includes the University of Michigan School of Public Health, the Genesee County Health Department, and the Greater Flint Health Coalition. Additional details

on the Speak to Your Health survey were published in an earlier article (Kruger et al., 2010).

The study also used crime statistics from Location, Inc. Location, Inc. is a provider of location-based statistical data, which includes crime statistics, lifestyle, and demographic data on neighborhoods across the United States. The actual crime indices for each neighborhood are based on data from the FBI and the U.S. Justice Department. The crime indices used in this study are the same as the FBI defined crime index, which is composed of the eight offenses the FBI combines to produce its annual index. These offenses include willful homicide, forcible rape, robbery, burglary, aggravated assault, larceny, motor vehicle theft, and arson.

Setting

Flint, Michigan, the urban center of Genesee County, is a de-industrialized city whose economy and population declined during the latter part of the 17th century. Flint has high unemployment and, based on local crime rates, was recently ranked in the top five most dangerous cities in the United States (Adams, 2013).

Subjects

From 1,698 participants who answered questions on the 2009 Speak to Your Health survey, we focused on the 217 individuals above 65 years of age who lived within the city of Flint Michigan. Because of the low number of survey participants from other races (<5), we selected only White and Black participants and stratified the study participants by racial categories. The terms *Black* and *African American* are used interchangeably and refer to the same group. Basic demographic characteristics collected as background information on participants included age, gender, education, marital status, and health status (see Table 1).

The proposal for this study was submitted for review to the university's Institutional Review Board (IRB) and was determined to be exempt because of its use of de-identified survey data. The survey committee of the Prevention Research Center of Michigan also reviewed the manuscript to evaluate appropriate use of the data.

Outcome Measure

Self-rated health. Individuals were assessed on health status using self-report indicators (see Table 1). The Speak to Your Health survey asked participants to self-rate their health. The indicators *excellent, very good, good, fair*, and *poor* were then converted to numeric values 1 through 5 with higher values indicating excellent health. For our analysis, we combined participants who rated their health as excellent or very good into a single category labeled *excellent SRH*. We also merged participants who rated their health as fair or poor into one category labeled *poor SRH*.

Neighborhood Environment

Social capital. To measure individual and collective social capital, the researchers selected 11 items from the Speak to Your Health survey. Social support (individual social capital) was measured by using six items from the Speak to Your Health survey. Individuals were asked about their relationships with relatives, friends, community members, and the religious community (Carpiano & Hystad, 2011). Social participation (collective social capital) was measured with five items. Survey respondents were asked whether they were "involved in neighborhood clean-up, beautification, or community garden project," "involved in meeting of a block or neighborhood group," "took action with neighbors to do something about a neighborhood problem," and "volunteer in a program at a local school" (Carpiano & Hystad, 2011).

Physical and social environment

Actual neighborhood crime. The crime rate in the neighborhood was measured using an index, which ranged from 1 to 100 with 1 being the most dangerous. Crime indices for each neighborhood were based on data from the FBI and the U.S. Justice Department. The crime indices used in this study gathered from Location, Inc. are the same as the FBI-defined crime index composed of eight offenses the FBI combines to produce its annual index.

Perception of neighborhood crime. Perceptions of neighborhood crime and safety were assessed with a four-item scale (Smith, Steadman, Minton, & Townsend, 1999). Survey responses were collected from the following questions: "How fearful are you about crime in your neighborhood?" (*very fearful, somewhat fearful, not very fearful, and not at all fearful*), "How safe is it to walk around alone in your neighborhood during the daytime?" (*extremely dangerous, somewhat dangerous, fairly safe, completely safe*), and "How safe is it to walk around alone in your neighborhood after dark?" (*extremely dangerous, somewhat dangerous, fairly safe, completely safe*). The response indicators were then converted to numeric values 1 through 4 with high values indicating very fearful or extremely dangerous. For the final item, "Compared to other neighborhoods, the crime rate in my neighborhood is" (*very high, high, about the same, low, and very low*), the indicators were converted to numeric values 1 through 5 with higher values indicating very high or high crime. Although using crime rates in a neighborhood is a more objective measure of neighborhood safety, subjective experiences and perceptions are more directly related to health (Christie-Mizell, Steelman, & Stewart, 2003) and are highly correlated with objective measures (Austin et al., 2002; Booth, Ayers, & Marsiglia, 2012; Ellaway et al., 2001; Sampson, Raudenbush, & Earls, 1997).

Perceived racism. We assessed perceived racism using multiple items (Wilson-Genderson & Pruchno, 2013).

Table 1. Descriptive Statistics of the Study Population.

Total (*N* = 217)	White	African American	Range
Demographics			
Race (*N*)	112	105	
Age[a] (years)	74.26	74.18	65-91
Gender (%)			
Male	30	27	
Female	70	73	
Social/economic			
Education (%)			1-4
<High school	7	27	
High school or GED	40	29	
College/Tech/Assoc. degree	30	28	
Bachelor's or above	22	15	
Marital status (%)			0-1
Single	67	59	
Married/committed relationship	32	40	
Health status			
Self-rated health[b]	2.10	2.04	1-3
No. of chronic conditions[c]	2.22	2.08	0-5
Psychological conditions[d]	<1.0	<1.0	0-3

Note. GED = general education development.
[a]The average age in years is reported for each group.
[b]The average self-rated response is reported for each group.
[c]The average number of chronic conditions is reported for each group.
[d]The average number of psychological conditions is reported for each group.

Respondents indicated the degree to which they were ignored, overlooked, or not given services; were treated rudely or disrespectfully; and were treated as if they were "stupid" or "talked down to" because of their race (*never, rarely, sometimes*, or *often*).

Health Status

The study included two additional physical and mental health outcome measures because of their relationship to SRH. Participants were also asked whether or not they had been diagnosed with high blood pressure, heart disease, stroke, cancer, and diabetes (yes or no). For our analysis, each participant received a score based the number of chronic conditions reported. For the final assessment of health status, we measured our study population on psychological conditions. Participants reported (yes or no) whether they had been diagnosed with depression, anxiety, or sleep disorders. As with our assessment of chronic conditions, each participant received a score based on the number of psychological conditions reported.

Demographic Variables

Demographic variables collected for our study population included race, gender, age, education, and marital status. Race included only Black and White participants because of the limited number of other races (<5). Age was examined as both a continuous and a categorical variable. The researchers subdivided the older adults into three groups—younger old (ages 65-75), older old (ages 75-85), and oldest old (ages 85+). In addition to looking at variations among populations by gender and race, researchers also examined differences between older adults from youngest old to oldest old. Education was collected as a categorical variable. For the purpose of this study, it was collapsed into four categories: less than high school, high school graduate, some college/technical school/associate's degree, and bachelors' degree or above. The study also included marital status—single (includes divorced, or widowed) and married or in a committed relationship.

Statistical Analyses

We stratified our study population by race (White and African American) and calculated the average age for each group. Then we assessed the proportions of each group based on gender, education level, and marital status (see Table 1). For the analysis of the neighborhood environment on SRH, we used a multinomial logistic regression model, which included SRH as our variable of interest with demographic, socioeconomic, neighborhood, and health status variables. We used psychological and chronic conditions as health status variables in the model to control for differences between groups in addition to controlling for their effect on self-rated health (see Table 2). Because results of our analysis showed a strong association between poor SRH and fear of crime, we

Table 2. Neighborhood Environment and SRH.

	Excellent SRH versus Poor SRH			Excellent SRH versus Average SRH		
Variables	OR	95% CI	*p* value	OR	95% CI	*p* value
Demographic						
Race						
White	1.00	Reference		1.00	Reference	
Black	0.85	[0.34, 2.16]	.74	0.63	[0.27, 1.48]	.29
Gender						
Male	1.00	Reference		1.00	Reference	
Female	0.57	[0.21, 1.51]	.26	0.66	[0.28, 1.57]	.35
Social/economic						
Marital status						
Single[a]	1.11	[0.47, 2.66]	.81	1.30	[0.59, 2.85]	.51
Married	1.00	Reference		1.00	Reference	
Education						
<High school	5.12	[1.10, 23.8]	.03	2.85	[0.82, 9.91]	.09
High school graduate	4.60	[1.33, 15.86]	.02	1.46	[0.54, 3.97]	.46
College/associate deg.	2.16	[0.59, 8.01]	.25	1.05	[0.39, 2.83]	.92
Bachelor's and above	1.00	Reference		1.00	Reference	
Neighborhood environment						
Social support	0.87	[0.65, 1.17]	.35	0.80	[0.60, 1.06]	.12
Social participation	1.33	[0.96, 1.85]	.08	1.01	[0.77, 1.34]	.90
Racism (chronic stress)	0.66	[0.84, 1.12]	.97	1.06	[0.93, 1.20]	.36
Fear of crime	1.21	[1.05, 1.39]	.01	1.10	[0.96, 1.25]	.14
Health outcome						
Psychological conditions	3.18	[1.65, 6.12]	.001	1.69	[0.87, 3.26]	.12
Chronic conditions	2.88	[1.84, 4.49]	<.001	1.34	[0.90, 2.00]	.15
N	213					

Note. SRH = self-rated health; OR = odds ratio; CI = confidence interval.
[a]Single includes widowed, separated, and divorced participants.

conducted additional analyses to examine this relationship (see Table 3). To evaluate fear of crime in our study population, we used a Poisson regression model. The model included fear of crime as our variable of interest. Similar to our previous model, we included demographic, socioeconomic, neighborhood, and health status variables. Because this analysis revealed differences based on race, we stratified the participants by race and re-analyzed the data for each racial group. We reported adjusted odds ratios, confidence intervals, and *p* values for each group. For our final analysis, we wanted to evaluate whether actual crime in the community had the same relationship to SRH as fear of crime (see Table 4). To analyze these data, we used a multinomial logistic regression model, which included all variables in our initial analysis, except we replaced fear of crime with actual crime rate categories (low, medium, and high). All regression models were analyzed using SPSS, Version 19.

Results

Our study population consisted of 217 individuals ranging in age from 65 to 91 years. The average age was similar for Whites and Blacks at 74.26 and 74.18 years, respectively. Among White seniors, 70% were female and 73% among Blacks. Seven percent did not complete high school or general education development (GED) compared with 27% of Blacks. Of those with the highest levels of education, 22% of Whites held a bachelor's degree or higher, while 15% of Blacks had an equivalent level of education. Only 32% of Whites were married or in a committed relationship compared with 40% of Blacks. There were no significant differences between White and Black seniors on the previous demographic variables. The mean scores for SRH were not significantly different between Whites (2.10) and Blacks (2.04). For psychological conditions, 37.5% of White seniors reported one or more of the listed conditions, but only 24% of Black seniors did the same. Finally, the average number of chronic conditions was not significantly different (2.22 for Whites and 2.08 for Blacks).

Table 2 summarizes our analysis of neighborhood environment and self-rated health among older adults. Seniors with poor SRH were 21% more likely to report fear of crime compared with seniors with excellent SRH ($p = .01$). They were also twice as likely to have chronic conditions and 3 times more likely to report psychological conditions such as depression, anxiety, or sleep disorders. Seniors with poor SRH were also 4 to 5 times more likely to have a high school education or less. Because of

Table 3. Fear of Crime and Race.

	Fear of Crime Total			White			Black		
Variables	OR	95% CI	*p* value	OR	95% CI	*p* value	OR	95% CI	*p* value
Demographic									
Race									
White	1.00	Reference							
Black	0.87	[0.78, 0.97]	.01						
Gender									
Male	1.00	Reference		1.00	Reference		1.00	Reference	
Female	1.04	[0.93, 1.15]	.51	1.04	[0.90, 1.20]	.58	1.05	[0.89, 1.23]	.30
Social/economic									
Marital status									
Single	1.01	[0.91, 1.12]	.81	1.09	[0.94, 1.26]	.27	0.91	[0.79, 1.05]	.22
Married	1.00	Reference		1.00	Reference		1.00	Reference	
Education									
<High school	1.17	[1.00, 1.38]	.04	1.01	[0.76, 1.33]	.96	1.38	[1.09, 1.75]	.01
High school graduate	1.12	[0.98, 1.28]	.10	1.09	[0.91, 1.29]	.34	1.17	[0.94, 1.46]	.33
College/Assoc. degree	1.11	[0.97, 1.28]	.13	1.06	[0.88, 1.27]	.56	1.21	[0.69, 1.50]	.18
Bachelor's and above	1.00	Reference		1.00	Reference		1.00	Reference	
Neighborhood environment									
Social support	1.02	[0.98, 1.05]	.37	1.01	[0.97, 1.06]	.62	1.03	[0.98, 1.08]	.30
Social participation	0.95	[0.92, 0.98]	.002	0.95	[0.90, 1.00]	.06	0.93	[0.89, 0.98]	.006
Racism (chronic stress)	1.03	[1.02, 1.05]	<.001	1.03	[1.00, 1.06]	.05	1.04	[1.01, 1.05]	<.001
Health outcome									
Psychological conditions	1.03	[0.97, 1.08]	.36	1.04	[0.96, 1.12]	.33	1.00	[0.92, 1.09]	.93
Chronic conditions	1.03	[0.98, 1.09]	.16	1.03	[0.98, 1.09]	.27	1.01	[0.94, 1.08]	.76
N	213			110			103		

Note. OR = odds ratio; CI = confidence interval.

the significant relationship between fear of crime and poor SRH, we conducted further analysis of this neighborhood effect. Results are shown in Table 3.

Table 3 shows fear of crime as our outcome measure. For seniors overall, social participation ($p < .005$) and racism ($p < .001$) are strongly associated with fear of crime. Seniors who report fear of crime are 6% less likely to participate in social activities in the neighborhood and 3% more likely to experience racism. Also, these seniors are 18% more likely to have lower levels of education (less than high school). Results also show there is also a racial difference between Black and White seniors ($p = .01$) reporting fear of crime. Black seniors are 7% less likely to engage in social activities in their neighborhood ($p = .005$) and 4% more likely to report racism ($p < .001$). Although White seniors are less likely to participate in neighborhood activities, the difference is not significant. However, like Black seniors, they are more likely to report racism ($p = .04$). Furthermore, Black seniors reporting fear of crime are 38% more likely to have less than a high school education.

Our final model examined associations between actual neighborhood crime and SRH. Again, we used SRH as our outcome measure. When we added actual neighborhood crime indices to our model, we found no significant relationship between actual crime and SRH. However, as expected, we found a relationship between SRH, chronic and psychological conditions, and level of education. Seniors with poor SRH health were twice as likely to have chronic conditions and 3 times more likely to report psychological conditions. In addition, seniors with poor SRH were 5 to 6 times more likely to have a high school education or less.

Discussion

In summary, fear of crime was strongly related to poor SRH among older adults. This study supports the conceptual framework for understanding social inequalities in health and aging proposed by House (2005). This framework, based on a stress and adaptation model from social epidemiology, theorizes that socioeconomic position and race/ethnicity shape individuals' exposure to and experience of virtually all known psychosocial and environmental risk factors. These risk factors explain the size and persistence of social disparities in health. Our study also supports similar findings between neighborhood factors and psychological distress (Booth et al., 2012). Booth et al. (2012) found that neighborhood factors are associated with mental health outcomes but concluded that more research was needed. Both studies support the social stress theory that chronic stressors outside the individual become internalized. Our findings provide additional information to previous studies by showing a relationship between fear of crime and poor SRH among older adults.

Table 4. SRH and Actual Neighborhood Crime.

	Excellent SRH versus Poor SRH			Excellent SRH versus Average SRH		
Variables	OR	95% CI	*p* value	OR	95% CI	*p* value
Demographic						
Race						
White	1.00	Reference		1.00	Reference	
Black	0.64	[0.25, 1.63]	.35	0.56	[0.24, 1.31]	.18
Gender						
Male	1.00	Reference		1.00	Reference	
Female	0.64	[0.25, 1.65]	.35	0.74	[0.31, 1.67]	.44
Social/economic						
Marital status						
Single[a]	1.06	[0.45, 2.50]	.84	1.29	[0.59, 2.83]	.52
Married	1.00	Reference		1.00	Reference	
Education						
<High School	6.39	[1.38, 29.64]	.02	3.32	[0.93, 11.81]	.06
High School graduate	5.29	[1.54, 18.18]	<.01	1.62	[0.61, 4.44]	.33
College/Associate deg.	2.42	[0.66, 8.94]	.18	1.13	[0.41, 3.13]	.80
Bachelor's and above	1.00	Reference		1.00	Reference	
Neighborhood environment						
Social support	0.90	[0.66, 1.19]	.44	0.80	[0.60, 1.06]	.11
Social participation	1.19	[0.87, 1.62]	.28	0.96	[0.73, 1.26]	.96
Racism (chronic stress)	1.03	[0.89, 1.18]	.68	1.09	[0.96, 1.22]	.18
Actual crime rate						
High	0.73	[0.22, 2.43]	.61	0.87	[0.30, 2.50]	.80
Moderate	1.19	[0.47, 3.05]	.71	1.24	[0.41, 3.74]	.70
Low	1.00	Reference		1.00	Reference	
Health outcome						
Psychological conditions	3.18	[1.69, 5.97]	<.001	1.65	[0.87, 3.14]	.13
Chronic conditions	2.95	[1.89, 4.61]	<.001	1.37	[0.92, 2.04]	.13
N	213					

Note. SRH = self-rated health; OR = odds ratio; CI = confidence interval.
[a]Single also includes widowed, separated, and divorced participants.

Our study built on these previous studies by also comparing fear of crime and actual crime indices with poor SRH among seniors. Although actual rates of crime victimization among older adults is much lower than younger people (Austin et al., 2002), older individuals express higher levels of fear of crime and lower levels of perceived safety (Booth et al., 2012). Among both White and Black seniors, this results in lower social participation and perceptions of higher levels of racism. The relationship was even stronger among Black seniors. Furthermore, Black seniors with less than a high school education are 38% more likely ($p = .01$) to fear crime in their community. This study also shows although women are more likely than men to experience fear of crime, the differences were not significant. We are unable to say from these results whether increased fear causes lack of participation or whether increased fear is the result of lack of involvement in neighborhood activities. Individuals who are involved in neighborhood activities are more likely to meet their neighbors and establish relationships. Previous studies have shown that knowing one's neighbors can decrease vulnerability to health risk by increasing social capital. The strength of this study is that it uses subjective and objective measures of the neighborhood's environment, particularly for crime. However, several limitations of the study should be noted.

The first limitation is that the data are cross-sectional. Because the data are cross-sectional, we cannot allege that the findings of the study are causal in nature. However, the evidence is consistent with the conceptual frameworks of Diez-Roux (2001), which suggests that a disadvantaged neighborhood environment is related to poor health, and House (2002), which suggests that neighborhood environment can and does "get under the skin" causing biological changes, which increase poor health. More studies are needed to further analyze the reciprocal influences of neighborhood as a place of residence, perceptions of the neighborhood, and self-rated health. The second limitation of the study is that although our sample is population-based, our analysis is focused on only Black and White urban residents above the age of 65 living in Flint, Michigan. The study could be strengthened by examining additional races or ethnicities

in urban centers in other regions. However, because of the characteristics of this geographic area, the numbers of participants of other races or ethnicities was too small to analyze. However, metropolitan areas, especially in the Midwest, are similar in population characteristics and socioeconomic structure. Also, the contextual neighborhood effects have been examined in other settings (Everson-Rose et al., 2011; Pickett & Pearl, 2001; Wen et al., 2006). Therefore, we believe that this study may provide information for other urban settings with inequities in neighborhood environments. In addition, self-rated health rather than actual measures of health as an outcome variable may have introduced response bias. People in poor health may feel more negative about their neighborhoods (Wen et al., 2006). Although these findings give insight into the relationship between fear of crime and SRH, it still raises questions that should be explored—mainly, whether there is a causal link between fear of crime and poor SRH. Future research should assess what creates fear of crime and whether this fear substantially changes an individual's health behaviors or health status. It is reasonable to assume that fear is caused by objective measures such as actual neighborhood crime, but it appears that other influences such as the media, neighborhood history, and/or history of victimization may play greater role.

Implications for Neighborhood Environment and Health

Aging populations within urban neighborhoods will create a series of challenges to the provision of health and social care. As the population ages, the total amount of ill health and disability in the population will increase unless there is considerable improvement in the health of current and future urban seniors (Harper, 2014). These changes are expected to occur because of the shift from acute infectious disease to complex chronic long-term illness and disability. This shift is expected to cause dramatic changes in the allocation of health care resources and the configuration of services (Howse, 2012). It has also been predicted that even if increases in the urban older adult population do not exert pressure for additional resources in the health care system, they may create the need for the development and improvement of community services for seniors with complex health needs. Mitigating environmental influences in the neighborhood that are associated with poor SRH may allow urban older adults to maintain health and reduce disability. Extending healthy lives within this population will reduce costs associated with long-term health and social care (Harper, 2014).

Conclusion

A growing body of literature has reported associations between neighborhoods and health (Yen, Michael, & Perdue, 2009). As the literature expands, it is worthwhile to consider populations such as older adults because the proportion of people aged 65 and older is growing. In the United States, the number of people above the age of 65 is expected to reach 72 million—which will account for roughly 20% of the population (Centers for Disease Control and Prevention, 2013). Previous research relating neighborhoods to health in older adults examined mortality (Diez-Roux et al., 2004), mental health (Beard et al., 2009), and health behaviors (Legh & Moore, 2012). This study adds to existing literature by examining perceived versus actual effects of neighborhood environment among urban older adults. We were able to show a relationship between fear of crime and poor SRH among urban seniors. In addition, we were able to show that poor SRH is not related to objective measures of actual crime but is related to perception of crime. This suggests that self-rated health is more affected by perception of the neighborhood. This finding supports the suggestion that self-rated health may be improved by improving senior adults' attitudes about their neighborhood environment. Specific strategies may include reducing fear by creating activities that focus on meeting other individuals in the neighborhood. We also found that race is a determinant in older peoples' perceptions. Understanding specific neighborhood influences on health will enable us to improve the lives of older adults, many of whom are aging in place (Kochera, Straight, & Guterbock, 2005), and is crucial in addressing growing populations of urban older adults.

Acknowledgments

This study was supported by a pilot grant from the National Institutes of Health (5P30 AG015281) and the Michigan Center for Urban African American Research. The Speak to Your Health! community survey was supported by the Prevention Research Center of Michigan (Centers for Disease Control and Prevention Grant N. U48/DP000055) and the Genesee County Health Department.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article: This study was supported by a pilot grant from the National Institutes of Health (5P30 AG015281) and the Michigan Center for Urban African American Research. The Speak to Your Health! community survey was supported by the Prevention Research Center of Michigan (Centers for Disease Control and Prevention Grant N. U48/DP000055) and the Genesee County Health Department.

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