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Editor's Choice

Gender Disparities in Park Use and Physical Activity among Residents of High-Poverty Neighborhoods in Los Angeles

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A B S T R A C T

Introduction: Physical inactivity is more prevalent among women than men and is related to poor health outcomes. Neighborhood parks constitute an important resource for physical activity (PA), however, previous studies of park users have found fewer women being physically active.

Methods: We conducted a hierarchical mixed-effect regression analysis of the independent associations between gender and park use and PA among a population-based sample in high-poverty neighborhoods in Los Angeles. Data sources included 1) structured interviews with adults (≥18 years of age) in randomly selected households within 1 mile of study parks ($n = 2{,}973$), 2) systematic observations of study parks ($n = 48$), and 3) neighborhood characteristics from the 2010 U.S. Census.

Results: After controlling for race/ethnicity, education, body mass index of 30 kg/m^2 or greater, health status, proximity to park, having children under the age of 18, perceived park safety, estimated screen time, and park- and neighborhood-level variables, statistically significant differences were found between women and men on all outcomes. Compared with men, women reported fewer park visits in the past week (−0.28 times/week; $p < .001$) and shorter durations of a typical park visit (−11.11 min/visit; $p < .001$). Women were also less likely than men to report levels of PA that meet national guidelines (≥150 minutes of moderate to vigorous PA per week; risk difference = −0.06; $p < .01$) or to exercise in the park (risk difference = −0.13; $p < .001$) or elsewhere (risk difference = −0.13; $p < .001$).

Conclusions: Women living in high-poverty neighborhoods use parks less for PA than men. Improved park-level design, programming, and other policy interventions may be needed to mitigate disparities in park use and PA for all.

Physical inactivity is an important public health challenge worldwide. When measured through accelerometers, a majority of the U.S. population—58% of children, 92% of adolescents, and 95% of adults—does not meet the current physical activity (PA) recommendations (Troiano et al., 2008). Further, across all age groups, females are less active than males and activity decreases with advancing age (Troiano et al., 2008). Finding ways to increase regular PA, in particular among girls and women, is imperative to addressing chronic diseases such as hypertension, diabetes, osteoporosis, particular forms of cancer, obesity, and some psychological disorders (Van Tuyckom, Van de Velde, & Bracke, 2013).

In urban areas, parks constitute an important resource for community-based PA (Bedimo-Rung, Mowen, & Cohen, 2005; Han, Cohen, & McKenzie, 2013; Han et al., 2014), but there are disparities in access and use across geographic settings and populations. Approximately 70% of persons in the United States live within walking distance to a park (Mowen, Graefe, Barrett & Godbey, 2016). Recent estimates among the 100 most populous cities show great variation in the percentage of their respective populations living within a 10-minute walk of a park, ranging from 26% to 99% (Harnik, McCabe, & Hiple, 2017). Further, studies using systematic observations of parks consistently find gender

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disparities in park use and park-based PA. A review of 24 observational studies in parks using the System for Observing Play and Recreation in Communities found that, across all age groups, on average, more males than females were observed in parks, and males were typically more physically active in parks than females (Evenson, Jones, Holliday, Cohen, & McKenzie, 2016). Another review including studies with a broader range of assessment methodologies reported equal numbers of men and women using parks, but did find that men engaged in more park-based moderate to vigorous PA than women (Joseph & Maddock, 2016). Qualitative research has suggested that women may be discouraged from using parks (McCormack, Rock, Toohey, & Hignell, 2010). For example, in one study African American women were afraid to use their neighborhood parks owing to safety concerns (Wilbur, Chandler, Dancy, Choi, & Plonczynski, 2002), and in another, Latino women reported PA barriers such as insufficient lighting and fear of crime (Cronan, Shinew, Schneider, Stanis, & Chavez, 2008).

Neighborhood poverty level has a strong negative association with park use and park-based PA (Cohen et al., 2012). Parks in low-income areas may have fewer park resources and staffing, and/or residents in these areas may choose to use park-based resources less than those in more affluent areas. Parks in low-income communities can also be affected by crime, conflict, and discrimination, and sometimes have poorly maintained facilities (Stodolska, Shinew, Acevedo, & Izenstark, 2011) and are therefore often less attractive and appealing for PA (Kaczynski et al., 2014). Women often feel more physically vulnerable than men in such settings and have more concerns about personal safety, and thus crime-related safety may constrain their PA to a greater extent (Foster & Giles-Corti, 2008). For this reason, the physical environment's influences on meeting PA requirements are likely to be secondary to individual and social environmental determinants (Giles-Corti & Donovan, 2002). For example, individuals' use of screen time has been shown to affect PA, including park-based PA (Cohen et al., 2012; Derose, Han, Williamson, & Cohen, 2015). Prior research has also found that access to recreational facilities (parks, walking trails, etc.) and neighborhood characteristics (e.g., sidewalks, streetlights) were more highly correlated with PA among women than among men (Brownson, Baker, Housemann, Brennan, & Bacak, 2001).

The previous literature has found that men tend to use parks more for PA than women; however, much of the evidence for gender disparities in park-based PA comes from park-based observations (i.e., among those who use the park). Few population-based samples of urban residents (including those who use the park and who do not) have examined whether there is a gender difference in park use and park-based PA among those with approximately equal access to parks and after controlling for other factors.

This paper examines the independent associations between gender and various measures of park use and PA among a population-based sample of adults in high-poverty areas within walking distance (<1 mile) to neighborhood parks in the City of Los Angeles. Our analytic approach is guided by the social ecological model, which conceptualizes multiple levels of influences on PA, including intrapersonal, interpersonal, cultural, organizational, physical environmental, and policy influences (Sallis et al., 2006). Our primary research question is: Among a population-based sample in high-poverty neighborhoods with equal access to parks, are there gender differences in park use and PA after controlling for other factors (individual, park, neighborhood)?

Methods

Study Sample

The primary data for these analyses come from a larger study of 48 parks in high-poverty neighborhoods in Los Angeles (where >19% of households were living below the poverty line) (Cohen et al., 2016). The parent study was a cluster randomized controlled trial with two waves of data collection and its purpose was to examine factors associated with park use and park-based PA, and to test whether park-based interventions could increase park use and PA. Specifically, it was a four-arm study with three different interventions offered at the park being compared with a control condition: free adult exercise classes, a frequent user program, and free classes plus a frequent user program (parks were randomized to control [business as usual] or one of the three interventions). Because we found no differences among study arms in park-level use and PA between the two waves in all primary outcomes (Cohen et al., 2017), we combined the overall study arms for the present study to increase power.

For this substudy, three data sources are used from the parent study that represent three levels in our multilevel model: 1) individual factors were obtained through structured interviews with adults (≥18 years of age) in randomly selected households within 1 mile of the study parks ($n = 2{,}973$); 2) park-level factors were obtained through systematic observations of study parks ($n = 48$); and 3) neighborhood factors were obtained from the 2010 U.S. Census. For the interviews, we planned to survey 30 households in each park's neighborhood per wave (60 total). The 60 households were randomly selected within 1.00 mile of each park, stratified by distances of 0 to 0.25 mile, 0.25 to 0.50 mile, and 0.50 to 1.00 mile to interview 20 individuals in each stratum, where half of sampled individuals were measured in each wave. The average refusal rate across waves was 17%. Trained, bilingual community health promoters (*promotoras*) conducted structured interviews with one adult per household about their use of the subject park, frequency of exercise, sociodemographics, health-related factors, perceptions of park safety, and estimated screen time. These same *promotoras* conducted systematic observations in study parks using System for Observing Play and Recreation in Communities, a validated method using momentary time sampling to assess the characteristics of parks and their users, including their PA levels (McKenzie, Cohen, Sehgal, Williamson, & Golinelli, 2006). Observations were conducted in each park three times on 1 day per month over a 6-month period at baseline and follow-up (12 days total, 6 weekend days, and 6 weekdays, or 36 one-hour observation periods per park). Specific measures collected through the interviews and systematic observations or obtained from the 2010 U.S. Census are listed elsewhere in this article.

The RAND Human Subjects Protection Committee approved the study and an oral consent procedure for the resident survey.

Measures

Dependent variables

Park use was defined as the number of times residents stated visiting their neighborhood park in the previous 7 days, which has been validated with global positioning system monitoring in a racially and ethnically diverse sample (Evenson, Wen, Golinelli, Rodríguez, & Cohen, 2013). Typical duration of a park visit was determined by asking residents, "On a typical day when you go to the park, how long do you stay there?" with response options: