
Personal, Social, and Environmental Correlates of Physical Activity in Urban African-American Women

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Background: African-American women are at risk of chronic diseases for which regular physical activity can provide benefits. This group, however, remains predominantly sedentary. Little research has been undertaken to elucidate the multiple factors that influence their physical activity levels. This study was designed to determine associations among personal, social environmental, and physical environmental factors with physical activity level in urban African-American women.

Methods: The Women and Physical Activity Survey, an interviewer-administered survey consisting of demographic, personal, and social and physical environmental factors, was given to 234 African-American women living in Baltimore, Maryland. Physical activity level was determined from the Behavioral Risk Factor Surveillance System survey. Women were divided into three groups: meeting current recommendations for moderate or vigorous physical activity, insufficiently active, and inactive. Comparisons were made between the group of women that met recommendations versus women who did not, and women who reported any activity versus women who were inactive.

Results: Twenty-one percent (48) of women met recommendations for physical activity, 61% (143) were insufficiently active, and 18% (43) were inactive. Women who had a partner or who had no children were less likely to engage in some physical activity. Inactive women were more likely than women who participated in some physical activity to know people who exercised. Women who belonged to community groups were more likely to be inactive than women who met current recommendations for physical activity. Women with fewer social roles were more likely to meet current recommendations. Physical environment factors were not associated with physical activity level.

Conclusions: Further exploration is needed to determine how personal and social environmental and physical environmental factors relate to physical activity in African-American women. (Am J Prev Med 2003;25(3Si):38–44) © 2003 American Journal of Preventive Medicine

It is well documented that African-American women, as a population subgroup, are predominantly sedentary. National surveys show that two thirds of African-American women engage in little or no leisure-time physical activity.^{1,2} This high prevalence of physical inactivity contributes to the disproportionate burden of obesity, hypertension, diabetes, and coronary heart disease in this group of women.³ Strategies are needed to engage African-American women in physical activity to reduce risk of chronic disease and premature mortality. To identify effective intervention strategies, however, researchers must learn more about factors that influence physical activity in these women.

Research in a variety of population groups has shown that physical activity is a complex behavior that is influenced by a multitude of variables, including those at personal, social, environmental, and policy levels.⁴ Results from focus groups conducted as part of the Women's Cardiovascular Health Network Project are consistent with this previous research.^{5–11} Eyer et al.¹² reported that the ability to be physically active was influenced by personal factors (time and lack of motivation); social factors (family responsibilities, lack of role models, and support from family and friends), environmental factors (safety from crime and need to travel to exercise facilities), and policies (few workplace policies that encouraged physical activity). However, because these qualitative results were obtained in a small sample of women, they need to be confirmed by using quantitative study methods in large samples.¹³ The purpose of this study was to determine associations among personal, social environmental, and physical environmental factors with physical activity level in

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urban African-American women. Results can be used to inform development of interventions.

Methods

The sample consisted of 234 African-American women aged 20 to 50 years who lived in Baltimore, Maryland. Census data for 2000 indicate that 67% of the population in Baltimore City were African Americans.¹⁴ A convenience sample of women were recruited to participate in the survey from health fairs sponsored by area churches, after church services, and from local businesses. Women were recruited from large African-American churches (e.g., weekly attendance greater than 500) and from businesses surrounding the study's project office, which was located in the Baltimore urban core. Eligibility was based solely on age between 20 and 50 years.

Instrument

The Women and Physical Activity Survey was developed on the basis of results from focus groups conducted as part of the Women's Cardiovascular Health Network Project.¹² The survey includes items that assess how the level of physical activity is affected by general health; sociodemographic, social, and environmental factors; and policies. Specific questions on social issues, social roles of women, and sense of community were included in the survey, because these factors were identified as important in the analyses of data from the focus groups. As described by Eyler et al.,¹⁵ previously validated scales assessing the factors were used when available. New items and scales were developed and pilot tested, so that dominant themes from the focus group data could be included in the quantitative survey. To determine test-retest reliability, intraclass correlation coefficients were used for each question. The values ranged from 0.4 to 1.0 for physical environment, from 0.4 to 0.8 for sense of community, from -0.1 to 0.6 for social issues, from -0.1 to 0.7 for social roles, and from 0.4 to 0.7 for motivation and self-efficacy. Physical activity level was assessed by using the Behavioral Risk Factor Surveillance System (BRFSS) survey instrument.¹⁶ This instrument was used because it captures both moderate and vigorous activity, can easily be administered in a variety of delivery formats, and is used in multiple population subgroups. Furthermore, results can be directly compared with data from national, representative surveys that have included the BRFSS questions. The three-item measure of physical activity had an intraclass correlation coefficient of 0.7 (95% confidence interval [CI], 0.4–0.9).

Data Collection

The survey was administered by trained interviewers, using a face-to-face interview, in the summers of 2001 and 2002. African-American women were approached to assess age eligibility and were invited to participate in the survey. Women who were interested in participating were given a consent form to read and sign, and the survey was administered in approximately 20 minutes. On completion of the survey, participants were given \$10 for their time. The institutional review board at the University of Maryland approved the study.

Statistical Analyses

The plan for data analysis was developed by collaboration among personnel at all field sites participating in the Women's Cardiovascular Health Network Project. The 234 participants were divided into 3 groups by level of physical activity, on the basis of previous work by Caspersen et al.¹⁷ The category of "meets current recommendations" included women who reported engaging in (1) moderate physical activity at least 5 days per week for at least 30 minutes at a time or (2) vigorous activity at least 3 days per week for at least 20 minutes at a time.¹⁸ The category of "insufficiently active" included women who reported engaging in some regular physical activity but not enough to meet recommendations. The category of "inactive" included women who reported no moderate or vigorous activity in a usual week.

Logistic regression analyses were used for comparisons between demographic, personal, social environmental, and physical environmental variables and physical activity groups. Odds ratios (ORs) with corresponding 95% CIs were generated for each variable included in the models. Models were generated to compare the following physical activity categories: (1) meets current recommendations versus insufficiently active and inactive combined and (2) meets current recommendations and insufficiently active combined versus inactive. Unadjusted analyses were generated. Models were also adjusted for age, income, education, marital status, the number of children aged 17 years or younger living in the home, and general health status. Because adjustment made little difference in the magnitude of ORs and did not influence statistical significance, ORs presented are unadjusted (Tables 1–3).

Results

Description of Sample

By the end of the 2002 summer, 234 women had completed the survey. The mean age of participants was 36.8 ± 8.9 years. The women in the sample were well educated; the majority had at least some college education, and nearly 35% were college graduates (Table 1). More than one half were unmarried or had no partner (59.0%). Almost one half (42.5%) had no children. Nearly 50% of the sample reported excellent or very good health.

Prevalence of Physical Activity

Approximately 21% ($n=48$) of the women met current recommendations for moderate or vigorous physical activity, a similar proportion (18%; $n=43$) was inactive, and the remaining 61% ($n=143$) were insufficiently active. Of the 234 women, approximately 90% reported that they knew people who exercised or that they saw people exercise in the neighborhood (Table 2). Approximately 94% reported that there were places in the neighborhood where they could walk or that there were sidewalks in the neighborhood (Table 3). More than two thirds (67.7%) of the women reported that there were places to exercise in the neighborhood, and more

Table 1. Personal correlates of physical activity in 234 urban African-American women aged 20–50 years: the Women and Physical Activity Survey, 2001–2002

Correlate	% (n) ^a	Physical activity status	
		Meets recommendations (v insufficient + inactive) (n=48 v 186) OR (95% CI)	Meets recommendations + insufficient (v inactive) (n=191 v 43) OR (95% CI)
Age, years			
20–29	22.7 (53)	1.29 (0.59–2.82)	1.63 (0.70–3.79)
30–39	32.9 (77)	0.88 (0.41–1.86)	2.88 (1.22–6.77)
40–50	44.4 (104)	1.00 (referent)	1.00 (referent)
Education			
College graduate	34.6 (80)	0.52 (0.16–1.76)	0.79 (0.16–3.91)
Some college	45.0 (104)	0.46 (0.14–1.50)	0.91 (0.19–4.50)
High school/general equivalency diploma	15.6 (36)	0.23 (0.05–1.02)	0.38 (0.07–1.99)
Less than high school	4.8 (11)	1.00 (referent)	1.00 (referent)
Annual income			
≥\$35,000	59.6 (134)	0.44 (0.16–1.20)	0.81 (0.22–2.96)
\$15,000–<\$35,000	35.1 (79)	0.55 (0.19–1.57)	0.61 (0.16–2.31)
<\$15,000	5.3 (12)	1.00 (referent)	1.00 (referent)
Employment			
Employed	90.0 (208)	0.58 (0.16–2.03)	1.06 (0.34–3.30)
Not employed	10.0 (23)	1.00 (referent)	1.00 (referent)
Marital status			
Partner	41.0 (95)	0.88 (0.46–1.69)	0.43 (0.20–0.90)
No partner	59.0 (137)	1.00 (referent)	1.00 (referent)
Number of children^b			
0	42.5 (97)	1.19 (0.57–2.50)	0.44 (0.20–0.97)
1	26.8 (61)	0.89 (0.38–2.12)	1.00 (0.37–2.72)
≥2	30.7 (70)	1.00 (referent)	1.00 (referent)
General health			
Excellent/very good	48.3 (112)	2.10 (0.67–6.60)	2.49 (0.93–6.62)
Good	41.4 (96)	0.86 (0.26–2.90)	1.93 (0.72–5.12)
Fair/poor	10.3 (24)	1.00 (referent)	1.00 (referent)
Self-efficacy			
Very confident	63.0 (145)	1.07 (0.27–4.14)	2.95 (0.82–10.69)
Somewhat confident	33.5 (77)	0.30 (0.07–1.37)	1.64 (0.44–6.08)
Not at all confident	3.5 (8)	1.00 (referent)	1.00 (referent)

Note: Odds ratios (ORs) and 95% confidence intervals (CIs) are unadjusted.

Meets recommendations: engages in moderate physical activity (five times per week for ≥30 minutes at a time) or vigorous activity (three times per week for ≥20 minutes at a time), insufficient: does not meet recommendations for either moderate or vigorous physical activity, inactive: does not engage in any moderate or vigorous physical activities.

^aSample sizes vary because of missing values.

^bChildren aged 17 years or younger living in the home.

than three fourths (80%) reported that the neighborhood was either extremely or somewhat safe from crime.

Personal Correlates

In this sample, there were few statistically significant associations between personal factors and physical activity level (Table 1). Compared with women older than 40 years, women aged 30 to 39 years were more likely to be classified as meeting current recommendations for physical activity or as having insufficient activity than to be classified as inactive (OR=2.88). Women who had no partner (OR=0.43) and women who had no children (OR=0.44) were less than half as likely to be classified as engaging in some activity. There was no

statistically significant association between physical activity and educational level, income level, employment status, general health, or self-efficacy.

Social Environmental Correlates

Few of the social environmental factors showed statistically significant associations with physical activity level (Table 2). Women who engaged in no physical activity were more likely than women who participated in some physical activity to know people who exercised (OR=0.31). Furthermore, women who belonged to community groups were more likely to be inactive than women meeting current recommendations for physical activity (OR=0.37). Women with fewer social roles were more than 2 times as likely to meet current activity

Table 2. Social environmental correlates of physical activity in 234 urban African-American women aged 20–50 years: the Women and Physical Activity Survey, 2001–2002

Correlate	Percent (n) ^a	Physical activity status	
		Meets recommendations (v insufficient + inactive) (n=48 v 186) OR (95% CI)	Meets recommendations + insufficient (v inactive) (n=191 v 43) OR (95% CI)
Know people who exercise			
Yes	88.7 (204)	0.50 (0.14–1.76)	0.31 (0.13–0.74)
No	11.3 (26)	1.00 (referent)	1.00 (referent)
See people exercise in neighborhood			
Yes	91.7 (187)	0.51 (0.11–2.31)	1.11 (0.30–4.08)
No	8.3 (17)	1.00 (referent)	1.00 (referent)
Belong to community groups			
Yes	39.4 (91)	0.42 (0.22–0.80)	0.73 (0.36–1.47)
No	60.6 (140)	1.00 (referent)	1.00 (referent)
Attend religious services			
Yes	72.0 (167)	1.16 (0.5–2.35)	0.67 (0.33–1.36)
No	28.0 (65)	1.00 (referent)	1.00 (referent)
Social issues score	3.10 ± 0.38 ^b	0.72 (0.30–1.70)	0.67 (0.28–1.61)
Social roles score	3.01 ± 0.49 ^b	2.77 (1.40–5.47)	1.15 (0.58–2.28)
Sense of community score	3.22 ± 0.55 ^c	1.21 (0.67–2.19)	1.10 (0.61–2.00)

Note: Odds ratios (ORs) and 95% confidence intervals (CIs) are unadjusted unless otherwise specified.

Meets recommendations: engages in moderate physical activity (five times per week for ≥30 minutes at a time) or vigorous activity (three times per week for ≥20 minutes at a time), insufficient: does not meet recommendations for either moderate or vigorous physical activity, inactive: does not engage in any moderate or vigorous physical activities.

^aSample sizes vary because of missing values.

^bMean ± SD; range, 1–4 (1 = strongly agree; 4 = strongly disagree). Higher score indicates fewer social issues and fewer social roles.

^cMean ± SD; range, 1–4 (1 = strongly agree; 4 = strongly disagree). Higher score indicates higher sense of community.

recommendations. When asked why participants thought people exercised in the neighborhood, the most common reasons given were for health (61%), to control weight (52%), and to feel better (20%).

Physical Environmental Correlates

There were no statistically significant associations between the physical environmental factors and physical activity (Table 3).

Interventions

When asked what changes in the community would be most helpful for increasing the exercise levels of women, approximately one third of the women suggested providing a gymnasium or a place to exercise that was close to home (Table 4). Another 20% suggested providing more programs, groups, and clubs. More than 20% did not know what could be done. When the women were asked what could be changed in the workplace to increase the exercise levels of women, 37% did not know. Suggestions included providing a gymnasium or a place to exercise in the workplace (22%), allowing time for exercise at work (16%), and programs or groups (12%).

Discussion

Results from this study indicated that few personal, social, or environmental factors were associated with

the physical activity levels of well-educated, urban African-American women living in Baltimore. The results were unexpected because data from focus groups of African-American women with a demographic profile similar to that of our sample indicated that these factors were important contributors to participation in physical activity. Survey questions had been designed to quantify factors that women in minority groups told us influenced their physical activity levels.^{5–11} For example, survey items included topics on social roles, such as household tasks, responsibilities for childcare and eldercare, and work, and community obligations. These topics were major responsibilities that the African-American women participating in the focus groups told us either facilitated or hindered the ability to be physically active.¹¹ Thus, we anticipated that the association of these factors with physical activity would be confirmed in a large survey of women with similar demographic characteristics.

Some, but not all, previous research suggests that accessibility to environments and opportunities conducive to physical activity are associated with the level of activity.¹⁹ Our results did not concur. We used the following question to evaluate accessibility: “In your community, are there places you could go to exercise if you wanted to?” Humpel et al.,¹⁹ in their review of associations between physical activity and environmental variables, suggested that accessibility to specific facilities, such as a cycle path, park, or beach, is more predictive of positive associations than is a general

Table 3. Physical environmental correlates of physical activity in 234 urban African-American women aged 20–50 years: the Women and Physical Activity Survey, 2001–2002

Correlate	Percent (n) ^a	Physical activity status	
		Meets recommendations (v insufficient + inactive) (n=48 v 186) OR (95% CI)	Meets recommendations + insufficient (v inactive) (n=191 v 43) OR (95% CI)
Traffic			
Light	17.3 (40)	0.75 (0.28–1.96)	0.59 (0.20–1.78)
Moderate	56.3 (130)	0.68 (0.33–1.39)	0.71 (0.30–1.68)
Heavy	26.4 (61)	1.00 (referent)	1.00 (referent)
Presence of sidewalks			
Yes	94.0 (218)	0.30 (0.04–2.32)	0.82 (0.22–3.09)
No	6.0 (14)	1.00 (referent)	1.00 (referent)
Street lighting at night			
Very good/good	54.4 (123)	0.51 (0.21–1.23)	1.29 (0.47–3.55)
Fair	35.8 (81)	0.38 (0.15–1.00)	0.94 (0.33–2.67)
Poor/very poor	9.7 (22)	1.00 (referent)	1.00 (referent)
Presence of unattended dogs			
Not much problem	83.5 (192)	0.58 (0.2–1.57)	0.49 (0.22–1.09)
Big/somewhat problem	16.5 (38)	1.00 (referent)	1.00 (referent)
Safety from crime			
Extremely/somewhat			
Safe	80.0 (184)	1.00 (0.44–2.26)	0.93 (0.41–2.11)
Slightly/not at all safe	20.0 (46)	1.00 (referent)	1.00 (referent)
Places within walking distance			
Yes	94.2 (178)	0.88 (0.18–4.24)	2.28 (0.28–18.40)
No	5.8 (11)	1.00 (referent)	1.00 (referent)
Places to exercise			
Yes	67.7 (151)	1.06 (0.53–2.13)	0.94 (0.46–1.93)
No	32.3 (72)	1.00 (referent)	1.00 (referent)

Note: Odds ratios (ORs) and 95% confidence intervals (CIs) are unadjusted unless otherwise specified.

Meets recommendations: engages in moderate physical activity (five times per week for ≥ 30 minutes at a time) or vigorous activity (three times per week for ≥ 20 minutes at a time), insufficient: does not meet recommendations for either moderate or vigorous physical activity, inactive: does not engage in any moderate or vigorous physical activities.

^aSample sizes vary because of missing values.

question similar to that in our survey. The question about accessibility elicited a high positive response (94%), which suggests that the question may not have had sufficient specificity. However, many women from our focus groups also reported that they had plenty of places to be physically active and cited shopping malls, playgrounds, and other local spots as facilities that were accessible to them.¹¹

Results from our study are consistent with those of other studies indicating that the presence of sidewalks,^{20,21} safety from crime,^{20,22} street lighting, traffic,^{20,22} and unattended dogs²⁰ were not associated with physical activity level. Although those factors are intuitively appealing as potentially important correlates of physical activity, they are not consistently confirmed in cross-sectional studies. Factors that can contribute to nonsignificant associations include unvalidated instruments, differing measures of physical activity, and perceptions of study participants about the variables. Because environmental factors can encourage physical activity, efforts to refine conceptualization and assessment of these factors is ongoing.²³

Most of the urban African-American women in our study knew people who exercised and saw people

exercising in the neighborhood. They also, as a group, disagreed that social roles, such as childcare, work, family, or community obligations, would get in the way if they wanted to exercise; the mean score for social roles was 3.0, indicating “disagree.” Results of logistic regression analyses indicated that social environmental influences were not significantly associated with physical activity levels. The majority of women (59%) was unmarried or had no partner; more than 40% had no children, and more than 60% did not belong to a community group. Perhaps, these women did not have life circumstances in which social roles influenced their physical activity.

Other studies have found inconsistent associations among demographic characteristics and physical activity level for African Americans.^{24–26} Postulated reasons for the inconsistent associations include lack of standard assessments of physical activity.²⁴ In our study, we used a standardized physical activity assessment instrument designed for national surveys.¹⁶ A narrow age range in this sample, along with high education and income levels, may have resulted in a homogeneous sample in which there is insufficient variability in

Table 4. Suggested interventions to increase physical activity in urban African-American women: the Women and Physical Activity Survey, 2001–2002

Intervention	Number of women	Quote(s) as an example of the theme
In your community		
Put a gym/place close to do exercise with facilities	80	Need a gym or space with more facilities and flexible hours.
Develop programs/exercise classes	26	Church programs should be more active.
	4	Motivate women to exercise; personal visits might give extra push.
Focus on increasing motivation		
Improve on neighborhood environment and security	18	Make my community safe from drugs and gunfire.
	13	Bringing women together and discussing exercise/support network.
Providing information and communication		
Women's club/exercise groups and organizations	20	Create community exercise groups, neighborhood associate.
Childcare programs/services	7	Have a daycare center to care for the children.
Develop social support and sense of community	4	More help to communities providing exercise programs.
	2	Provide cheap programs affordable for poor communities.
Increase access to free/low-cost facilities		
Need for park facilities	2	Develop parks with appropriate equipment.
More time to exercise	2	Dedicate more time for physical activities.
Don't know or missing	62	I don't know.
At work^a		
Flexible working schedule/more break time	31	Need longer lunch time to do exercise.
Change the nature of work	2	Need to lighten the work load, work less.
Involve employees/employers at physical activity events	11	Provide aerobics classes on worksite, need more available programs.
Provide health education at work	10	Have an orientation so the significance of exercising can be explained.
Have space for physical activity with facilities available on worksite	50	Have more facilities for exercise and more workout rooms.
Build support networks among employees/employers	7	Get partners to exercise together.
Financial	11	Provide discount gym membership.
Provide daycare on worksite	2	Put in a daycare.
Don't know or nothing or missing	111	I don't know.

^aThese questions were asked of women who worked outside of the home.

demographic characteristics to detect potential associations.

Our previous work with men and women living in Baltimore indicated a high prevalence of physical inactivity, particularly when activity related to work or transportation was not assessed.²⁴ The BRFSS questions about physical activity do not exclude work and transportation activity if the activity is performed at a moderate intensity level for at least 10 minutes at a time. Even with inclusion of these types of physical activities, only 20% of the women met recommendations for physical activity. This level of activity compares closely with other reports of prevalence of physical inactivity among African-American women.^{1,2}

One primary purpose of the Women's Cardiovascular Health Network Project was to identify important factors that influence physical activity levels, which would assist in developing interventions. The results

suggest that social and environmental factors did not significantly influence physical activity level. Nonetheless, previous research has shown that social factors, particularly personal and family obligations²² as well as support from family and friends, are important influences. Interventions that focus on modifiable intrapersonal factors (e.g., time management and motivational issues), in combination with strategies to provide social support and structural environmental changes facilitating access to settings in which physical activity can take place, show promise and should be explored.

The limitations of the study include a convenience sampling strategy in which data were collected over short periods of time (2- to 3-month intervals). The sample of women was well educated and predominantly churchgoers. Those characteristics may not be representative of the female African-American population. However, results from the other studies in the Women's

Cardiovascular Health Network Project that used sampling strategies designed to reach a more representative sample were strikingly similar to our results.¹⁵ Surveys were administered in the spring and summer months, when people are more likely to be active. The prevalence of physical activity that we reported, thus, may have been biased, although the low prevalence of activity and the similarities with other published findings limit this potential source of bias.

Conclusions

The purpose of this study was to identify personal, social, and environmental influences on the physical activity level in urban African-American women. Our results did not identify the association of any physical environmental factor with physical activity. In addition, we found no consistent association between physical activity level and typical social roles for women, such as work, childcare, other household responsibilities, or involvement with community groups. These results are not consistent with previous findings and must be further explored.

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