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"My hair or my health": Overcoming Barriers to Physical Activity in African American women with a focus on hairstyle-related factors

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Abstract

Physical activity disparities among African American (AA) women may be related to sociocultural barriers, including difficulties with restyling hair after exercise. We sought to identify physical activity barriers and facilitators in AA women with a focus on sociocultural factors related to hairstyle maintenance. Participants (n=51) were AA women aged 19–73 years who completed valid surveys and participated in structured focus groups, stratified by age and physical activity levels, from 11/2012 to 2/2013. The Constant Comparison method was used to develop qualitative themes for barriers and facilitators. The most frequently reported general physical activity barrier among exercisers was "lack of money" (27%) and among non-exercisers was "lack of self-discipline" (57%). A hairstyle-related barrier of "sweating out my hairstyle," was reported by 7% of exercisers and 29% of non-exercisers. This hairstyle-related barrier included the need for extra time and money to restyle hair due to perspiration. Hairstyle-related facilitators included: prioritizing health over hairstyle and high self-efficacy to restyle hair after perspiration. Participants were interested in resources to simplify hairstyle maintenance. AA women whose hairstyle is affected by perspiration may avoid physical activity due to time and financial burdens. Increasing self-efficacy to restyle hair after perspiration may help to overcome this barrier.

Keywords

Physical activity; barriers; facilitators; health disparities; African American women

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INTRODUCTION

Regular physical activity is important to reduce the cardiovascular disease risk that is disproportionately elevated for African American (AA) women compared to their female counterparts (Pate et al., 1995; Blair et al., 1996; Centers for Disease Control and Prevention, 2010). Only 36% of U.S. AA women met the Healthy People 2010 physical activity objectives, compared with 50% of Caucasian women (Centers for Disease Control and Prevention, 2007). These lower rates of participation appear to be partly due to cultural barriers (Harley et al., 2009; Im et al., 2011; Barnes et al., 2007; Railey, 2000; Brown, 2009; Hall et al., 2013).. One understudied and potentially important cultural barrier to exercise for some AA women is the effort needed for hairstyle maintenance after exercise (Railey, 2000; Brown, 2009; Hall et al., 2013).

In August 2011, then U.S. Surgeon General Regina Benjamin, an African American, called attention to the problem, "Oftentimes you get women saying, 'I can't exercise today because I don't want to sweat my hair back or get my hair wet (O'Connor, 2011).'" Popular culture sources have addressed this topic in more depth. The 2009 documentary movie titled, "Good Hair", focused on the sociocultural importance of hairstyle to AA women (Stilson, 2009). Other examples were the widely publicized social media criticisms about the hairstyle of AA gold medalist Gabrielle Douglas (Finlayson, 2012).. Finally, a recent article in Essence magazine included discussants who debated whether AA female professionals who wear natural or "locked" hairstyles may be prone to workplace discrimination (Andrews, 2014). These popular culture descriptions demonstrate that hairstyle concerns are more than an issue of personal vanity for AA women.

Although hairstyle maintenance barriers have remained largely "off the radar" of the medical and clinical research communities, some prior studies have preliminarily assessed them. In a clinical population of 40 overweight African American women, almost half (48.6%) of participants felt their hair care and hairstyle type was not "exercise friendly" and directly affected their conscious or subconscious exercise patterns (Railey, 2000). More recently, a survey of 103 AA women found 29% cited concerns about jeopardizing their hairstyle as a barrier to exercise (Hall et al., 2013). In addition, focus group studies with AA women identified hair maintenance as an important barrier to exercise and weight loss (Harley et al., 2009; Barnes et al., 2007; Railey, 2000; Brown, 2009).

To our knowledge, only one study has conducted focus groups to understand better the specifics of how and why hairstyle maintenance-related factors pose a barrier to physical activity in AA women (Brown, 2009), and we are aware of no studies on this topic in women of other racial and ethnic groups. The prior study by Brown limited its eligibility to older women (45–62 years old) who engaged in less than the recommended 150 minutes of moderate to vigorous weekly physical activity (Brown, 2009). Because it is likely that barriers to exercise differ by age range and usual physical activity levels, it is important to assess if hairstyle maintenance may be a barrier to physical activity in AA women of different age and physical activity strata. To inform future interventions to increase physical activity among AA women, we sought to identify physical activity barriers and facilitators in AA women with a focus on whether and why sociocultural hairstyle maintenance factors

influenced physical activity behavior. We also sought to describe the relative frequency of hairstyle maintenance barriers compared with more general barriers that have been observed in AA women, such as lack of time, child care needs, access to safe and affordable methods to be active, lack of enjoyment, and fear of injury (Harley et al., 2009; Harley et al., 2014; Baruth et al., 2014; Wilson et al., 2013; Orzech et al., 2013).

METHODS

Study Design: Community-based participatory research (CBPR)

This cross-sectional study used mixed-methods to assess barriers and facilitators among AA women. A community co-Principal Investigator from the Center for African American Health in Denver, CO (LJC) partnered with an academic co-Principal Investigator (AGH) to design and conduct this work, consistent with the principles of Community-Based Participatory Research (Harley et al., 2009). To enhance the cultural relevance of the preliminary survey materials and focus group script, we worked with a community advisory board (CAB) to revise these materials (Mays and Pope, 2000). The CAB represented potential research participants, AA cosmetologists, and AA health advocates: two nurses and a personal trainer.

Study population

To recruit participants, we advertised a focus group study about physical activity motivations for AA women using print and radio advertisements that the Center for AA Health had used to recruit AA community members successfully for prior projects. During a screening phone call, trained staff from the Center for AA Health asked questions to exclude participants who reported functional inability to perform physical activity or pregnancy; staff also assessed age and physical activity to allow focus group stratification by these factors. None of the women that we screened (n=56) met our exclusion criteria, but five women that we screened who were eligible could not participate due to schedule conflicts (n=4) or lack of child care (n=1). We stratified age groups as younger women (aged 18–29 years), middle-aged women (aged 30–49 years), and older women (aged 50–75 years) and stratified physical activity as "exercisers" or "non-exercisers" according to a valid screening question (Blair et al., 1998). To categorize physical activity levels for the survey data, we used participants' self-report to characterize "exercisers" as those who met U.S. Physical Activity guidelines of performing ≥150 minutes of moderate intensity weekly physical activity **or** ≥60 minutes of vigorous intensity weekly physical activity; accordingly, "non-exercisers" reported <150 minutes of weekly moderate and <60 minutes of weekly vigorous intensity physical activity (Physical Activity Guidelines Committee, 2008). Due to an unexpected lower number of participants in the "non-exercisers" aged 18–29 years and 30–49 years, we conducted individual interviews and mini-focus groups for these strata.

Informed Consent

The Colorado Multiple Institutional Review Board approved the study protocol. Potential participants were invited to the Center for AA Health and provided written informed consent prior to participation.

Study measures

We used a structured facilitator guide adapted from a previous study (Brown, 2009) after feedback from our CAB. Valid surveys were used to assess general physical activity barriers and facilitators (Marcus, Rakowski, and Rossi, 1992; Steinhardt and Dishman, 1989), and we assessed hairstyle-related barriers to physical activity that were described in a prior study (Hall et al., 2013) after pilot-testing survey items and incorporating CAB feedback. To assess demographics and medical conditions, we used the relevant Behavioral Risk Factor Surveillance System survey (BRFSS) questions (www.cdc.gov/brfss). Participants' health status measures included: height and weight using a portable stadiometer and scale, respectively; hip and waist circumference using a flexible measuring tape to measure the widest hips and narrowest waist; blood pressure and heart rate using an automated sphygmomanometer in both arms and recording the highest reading.

Data Collection

Data were collected during study visits conducted from November 2012 to February 2013. After obtaining signed informed consent from each participant, a female health professional assessed health status measures in a private room. Participants self-administered the survey questions. Using a structured facilitator guide, culturally concordant AA female facilitators led each focus group discussion while an observer took notes and recorded non-verbal communication. Facilitators and observers received 3 hours of professional training. To ensure reliability of the information, we recorded all focus groups and interviews with a digital audio recorder (Olympus VN-702). A professional transcriptionist transcribed all recordings verbatim.

Data Analysis

We descriptively assessed the survey data and health status measures stratified by physical activity levels and age, using means and standard deviations for continuous variables and frequencies for categorical variables. We compared demographic measures and health status measures between "exercisers" and "non-exercisers" using Fisher's exact test and t test for categorical and continuous variables, respectively. Quantitative analyses were performed in SAS version 9.2.(SAS Institute, Inc., 2009). We analyzed the focus group data using a Grounded Theory approach that used the Constant Comparison method of analysis (Lincoln Y.S., 1985; Glaser B.G., 1967; Pope, Ziebland, and Mays, 2000). Briefly, after a "Familiarization" stage of observing the focus groups and reading the transcripts, a team of two coders (AGH, CSB), created a series of preliminary codes from phrases of similar meaning that emerged in the transcript. Next, each coder independently analyzed every transcript and assigned codes. Subsequent meetings allowed coders to refine and expand codes into a schema of emergent novel themes until final agreement was reached ("Developing a Thematic Framework" stage (Pope, Ziebland, and Mays, 2000)). Each coder independently recoded all transcripts according to this schema, and coders came to mutual agreement on any initial differences in coding ("Indexing" stage (Pope, Ziebland, and Mays, 2000)). As needed, another co-author (ALD) arbitrated differing interpretations by the two coders to reach a final consensus. Major themes representing participant's barriers and facilitators of physical activity were charted by physical activity subgroup, and evaluated

according to their importance to participants and their frequency of mention across focus groups/interviews (Pope, Ziebland, and Mays, 2000). We achieved thematic saturation: no new major themes were described in the final interview/focus group for each age/exercise strata.

RESULTS

Participants were African American women (n= 51), ranging in age from 19 to 73 years, with a mean age of ~50 years and living in the metropolitan Denver area. Study participants self-reported weight and height and had a mean BMI level in the obese range, and 90% of exercisers and 86% of non-exercisers had attained post-high school education (Table 1). As compared to non-exercisers, exercisers reported a significantly lower household income ($p = 0.01$) and tended less to wear chemically straightened hair ("relaxed"—sometimes described within the AA community as a "perm") or than non-exercisers ($p = 0.05$). Regarding health status measures, both exercisers and non-exercisers reported similar prevalence rates of diabetes, prediabetes, and arthritis. In addition, both exercisers and non-exercisers reported similar monthly hairstyle costs and time required to restyle hair after exercise.

The survey data demonstrated differences in the prevalence of barriers and facilitators by physical activity strata. Barriers to physical activity were generally more prevalent among non-exercisers (Figure 1a). The highest ranked barriers for non-exercisers were "lack of self-discipline" (57%) and "avoid activity because I am too exhausted at the end of the day" (48%). The highest ranked barriers for exercisers were "lack of money" (27%) and "lack of equipment" (23%). The most frequently reported sociocultural hairstyle maintenance barrier of avoiding physical activity because it "sweats out my hairstyle" was reported by 29% of non-exercisers and 7% of exercisers.

Physical activity facilitators were highly prevalent among both exercisers and non-exercisers (Figure 1b). The highest ranked facilitators for exercisers were "like my body better with consistent physical activity" (100%) and "feel good about myself for meeting my physical activity goals" (100%). The highest ranked facilitator for non-exercisers was "sleeping better" (90%).

By age strata of 18–49 years (n = 24) and 50–75 years (n =27), the prevalence of a sociocultural hairstyle maintenance barrier was fairly similar (12.5% and 18.5%, respectively, in the younger and older groups).

Barriers

We categorized physical activity barrier themes as sociocultural individual/intrapersonal, other individual/intrapersonal, environmental, and social support. We identified several major sociocultural barrier themes including hairstyle maintenance burdens of perspiration, sociocultural norms for hairstyle presentability, and environmental drying effects on AA hair. The sociocultural themes were described further with representative quotations separated by exercise strata (Table 2); we also included selected quotations from non-sociocultural categories, but we did not describe these further in the narrative as they have

been described more fully elsewhere (Harley et al., 2009; Harley et al., 2014; Baruth et al., 2014; Wilson et al., 2013; Orzech et al., 2013).

Perspiration: the burden of "sweating my hair out"—The main cultural barrier identified was that many women avoided perspiration due to the effects of exercise on their hairstyle. The subthemes of this barrier included: (a) the time burden of restyling hair in response to exercise that causes perspiration; and, (b) the financial burden of restyling hair in response to exercise that causes perspiration. The following subthemes emerged.

Time burden of "sweating my hair out." Many participants believed their hair maintenance needs differed from women of other races. Women reported that wearing chemically straightened hair or "natural" AA hair (without chemicals) required extra time to restyle after getting it wet through perspiration — "sweating it out", or after swimming. Among women who reported perspiration as a barrier to activity, they noted a need to avoid aerobic activities that led to perspiration, such as brisk walking and Zumba. Women uniformly agreed that they did not need to restyle their hair unless they perspired or otherwise got it wet. In contrast, certain hairstyles required no or minimal restyling after perspiration or getting wet, such as "locks" or braids — women described these hairstyles as providing a feeling of "freedom" from the maintenance required by other hairstyles.

Financial burden of "sweating my hair out": Some participants noted an increased cost due to the need for more hair products and more frequent hair salon visits if they were doing regular aerobic exercise. Many women explained a biologic phenomenon that AA women are prone to a dry scalp and thus needed to use specialized moisturizing hair products after washing their hair. "This biological phenomenon has also been described in basic science research with AA hair."(McMichael A.J., 2007).

Regular exercise was reported to increase the frequency of washing hair and led directly to greater use of these expensive hair moisturizing products. Additionally, several participants noted that "relaxed/permed" hairstyles and braids would deteriorate more quickly than usual in the face of regular exercise leading to a financial burden of additional hair salon visits. For example, a new "relaxer/perm" treatment would be required 2–3 weeks early due to the cumulative effects of perspiration on the chemically altered hair. In addition, braids would loosen up more quickly due to more frequent hair-washing. Wearing artificial hair clip-ins or weaves may present additional delayed barriers to perspiration, as one exerciser (18–29 years old) noted, "I don't spend $300 on a weave, but I wear artificial hair clip-ins and I don't want excessive water on hair that's not mine. I don't like sweating it out if it means I'll have to go buy some more."

Sociocultural norm for hairstyle appearance—Some women felt uncomfortable being seen in public after getting hair wet through perspiration or swimming unless they could use a ponytail style or a hat/wrap accessory to cover their "messy" hair before getting home to restyle it. Women described a strong AA sociocultural norm to have presentable hair in public. Even if women felt comfortable restyling their hair after aerobic exercise, some were reluctant to schedule aerobic exercise within a few hours of an important social event or meeting, as they may not be able to completely redo their style. In contrast to the

above descriptions, some exercisers did not agree that a sociocultural norm existed for AA women's hair that was different than other women, and a few women thought that hairstyle maintenance may be used as an "excuse" to avoid activity.

Environment - Drying effects on Hairstyle—Several women noted that the dry climate in Colorado made AA women's hair particularly prone to damage with more frequent shampoo treatments, and this can impede regular aerobic exercise because it requires washing one's hair more frequently. This was described as an environmental exaggeration in Colorado of a general problem for AA women's hair and scalp to dry out more easily than women of other races.

Facilitators

Similar to reported barriers, we observed major sociocultural and other facilitator themes. The major sociocultural facilitator themes that emerged included: 1) hairstyle preserving factors, 2) Evolving sociocultural norms to accept low-maintenance hairstyles 3) perceived health benefits, and 4) social support (Table 3).

Hairstyle preserving factors—Several subthemes of factors that would preserve one's hairstyle during physical activity emerged, including: 1) wearing a "low-maintenance" hairstyle that required less time to restyle after perspiration; 2) high self-efficacy to restyle hair after perspiration; 3) modulating the intensity of physical activity to "safe" levels that avoid sweating; and 4) bringing a head covering such as a wrap or hat to wear after exercise before having a chance to restyle one's hair. Some examples of "low-maintenance" hairstyles that required less time to restyle included wearing hair in a ponytail, short natural or "relaxed/permed" hairstyles, "locks", braids, and wigs. One participant noted, "I got the afro because of water aerobics. I say, 'I have wash and wear hair now.' I wash it. I go anywhere, and I love it." (exerciser, age 50–75 years)Modulating the intensity of physical activity to preserve one's hairstyle included walking at a slower pace to avoid perspiration or doing low-intensity activity such as Pilates, yoga, or resistance exercise (e.g. weight lifting) that does not cause perspiration. Also, many exercisers could confidently restyle their own hair after perspiration. One exerciser (age 50–75 years) noted "I just blow dry it and flat iron it and I just go." Another exerciser (age 50–75 years) noted, "When it is close to time to needing a perm, I have an afro in the back [where the natural new hair grows in more quickly at the nape of the neck - this area is sometimes referred to as the "kitchen" in the AA community]. I can still get away with it, and I make sure I have the products I need to maintain my hair until I get back to the hair stylist."

Evolving sociocultural norm to embrace a variety of hairstyles—Some women reported that the emerging acceptability of a variety of hairstyles in mainstream culture provides more opportunities for women to wear low-maintenance styles that make it easy to exercise. For example, one exerciser (age 50–75 years) observed that a greater variety of AA hairstyles are allowable in professional workplaces, "Now you can wear braids and you can wear an afro but when I was working for the airlines [20–30 years ago] you couldn't [do that] and be in customer service and be a flight attendant or anything." Another exerciser (50–75 years) disagreed, "I know my one daughter tends to go at night for her exercise

because during the day it would be a problem with her appearance in the corporate environment." A third participant (exerciser, age 50–75 years) saw both sides, "When I was the only black court reporter there and there was all this attitude that you are black so I was very prone to assimilate and look like them…I wonder if that isn't something that now we are breaking away from feeling so inclined to assimilate and look like our white peers in the name of appearing to be professional. Maybe we are not under that pressure anymore." Going beyond the societal shifts, several participants in an exerciser focus group for 50–75 year olds felt that over time they had personally "evolved" to no longer let their hairstyles interfere with being physically active.

In addition, participants noted that many websites have emerged on how to style your hair naturally. One exerciser, 50–75 years commented, "There are more websites because there are more people that are going natural. There are more people that are teaching you how to do things with your hair…if you're being more physical… that were not available before the internet."

Perceived health benefits—From a sociocultural standpoint of a racial group that bears high rates of obesity and chronic disease, women often reported using physical activity to either prevent or treat chronic diseases such as high blood pressure or diabetes mellitus. One exerciser, aged 50–75 years, commented, "Well, after a couple of diagnoses, I had to make a decision – my hair or my health." This theme showed some potential variation among other participants. For instance, rather than considering their own health problems, some younger participants were motivated by family members' health issues: "I have a lot of family members that have had difficult health issues, and so we (in immediate family) try to avoid those issues." (exerciser, 18–29 years)

Social support—Social support aspects of encouragement and accountability were motivating to participants. From a sociocultural perspective, women often wanted to do physical activity with other AA friends or family, reporting group exercise classes, walking, or biking together as preferred activities.

Future Interventions

We asked participants about what strategies would be most promising to include in a 10-week physical activity intervention. Participants described several general factors that would motivate them to participate in a future intervention: 1) fun activities, such as dance classes; 2) options that include social support from other AA women, such as group classes and walking groups; 3) logging physical activity on an online system that partnered participants with an "exercise buddy" and included incentives for tracking activity. In terms of sociocultural factors that interested them in a future intervention, women suggested providing resources to women such as websites or training sessions about moisturizing hair products and hairstyles for AA women to promote physical activity. Of note, many women reported considerable distrust regarding working with hair stylists to adjust their hairstyle due to a perception that hair stylists are generally sedentary and not necessarily aware of what hairstyles would promote physical activity optimally.

DISCUSSION

In these surveys and qualitative assessments of this sample of AA women, we observed the presence of sociocultural barriers to physical activity related to hairstyle maintenance, and we note that these barriers occurred in relationship to physical activity that causes hair to get wet through scalp perspiration or immersion in water. These barriers were quite different in frequency by physical activity strata, as only 7% of AA women exercisers reported a hairstyle maintenance barrier, compared with 29% of AA women non-exercisers. Although hairstyle maintenance barriers were reported less frequently than the most highly rated general barriers of "lack self-discipline" (non-exercisers) and "lack money" (exercisers), they are important to understand to inform future interventions for the substantial number of AA women who do not meet the U.S. physical activity guidelines (Physical Activity Guidelines Committee, 2008).

Our qualitative data described how and why perspiration is a barrier to physical activity participation for AA women and suggested ways to address these barriers. The time burden to restyle hair after perspiration was more problematic if women needed a friend or stylist to restyle their hair for them. Perspiration also led to a cost burden because women needed to purchase specialized hair moisturizers more frequently, and/or because women needed to visit a hair stylist more frequently. In addition, AA sociocultural norms led some women to avoid aerobic exercise if they would be seen in public with their hair "sweated out' rather than styled appropriately. Women reported overcoming these barriers in various ways: 1) performing "safe" physical activity where the intensity could be varied to avoid perspiration, 2) wearing low-maintenance hairstyles that required less time and money to redo after exercise, and 3) wearing a wrap-type of hair covering, hat, or wig after exercise so they would look appropriate in public until they could fully restyle their hair. The broad categories of barriers and facilitators described by our participants suggested that future interventions should target multiple levels (Stokols D., 1996), as we identified physical behavior influences at the level of individuals, communities, and the environment.

Prior studies conducted in clinical populations found that hairstyle maintenance barriers affected 29–49% of AA women (Railey, 2000; Hall et al., 2013). In our community sample of AA women with a mean BMI in the obese range, we found fewer hairstyle barriers among regular exercisers (7%), and a similar number of barriers among non-exercisers (29%) as were observed in prior studies. Similar to our qualitative findings, the participants in a prior qualitative study of older AA women (Brown 2009) reported that perspiration during exercise and low self-efficacy to restyle one's own hair were key hairstyle-related barriers to physical activity. Also, Brown reported an important facilitator theme similar to our "hairstyle preserving factors" — their participants reported interest in avoiding perspiration during activity by a couple of strategies: walking at a slow-to-moderate pace or wearing a "cooling cap" that inhibits scalp perspiration.

The finding that physically active women reported significantly lower incomes was intriguing and somewhat unexpected, as higher-income individuals are generally more likely to be physically active than less active individuals (Trost et al., 2002). The significance of this finding in a small sample is unclear, and should be explored in future studies, but we

speculate that lower-income AA women may tend to select lower-maintenance hairstyles that pose a lower time/cost barrier to restyle after exercise, as compared to high-income women. Another interesting difference between study groups was the higher prevalence of permed/relaxed hairstyles in non-exercisers that was nearly doubled as compared to exercisers — this finding along with the key theme of "perspiration" leading to greater hairstyle maintenance suggests that a permed/relaxed type of hairstyle may pose a particular barrier to physical activity for AA women.

A strength of this study was that we included participants who were physically active and those who were not. Women who were physically active provided further insight into ways to address the cultural barrier of hairstyle maintenance, as they have successfully overcome that barrier through the use of low-maintenance hairstyles and high self-efficacy to restyle their own hair after exercise. In contrast, women who were not physically active provided further insight into whether and why hairstyle maintenance-related factors are barriers. A limitation of this study was that our study sample was a small one which only included AA women in the metropolitan Denver region so that the results may not be representative of AA women in other states and thus may limit generalizability. Another limitation was that we were unable to link the hairstyles worn by women to their responses, and the types of barriers and facilitators related to hairstyle are likely to vary by the type of hairstyle. However, the variety of hairstyles worn by the exercisers in our study demonstrated that hairstyle choice alone did not limit some of the AA women in our sample from exercising regularly.

CONCLUSION

Because AA women are less physically active than women of other races (Pate et al., 1995), it is important to develop and test interventions that address the culturally relevant hairstyle maintenance barriers and facilitators that we identified in this study. To optimize the potential success of future interventions, counseling and other program elements should be tailored to the unique barriers and facilitators of each individual (Kreuter and Wray, 2003) — general factors such as promoting enjoyable physical activity, social support, and overcoming lack of self-discipline should be assessed and addressed (Harley et al., 2009; Harley et al., 2014; Baruth et al., 2014; Wilson et al., 2013; Orzech et al., 2013; Pekmezi et al., 2013). In addition, sociocultural factors, such as time barriers to hairstyle maintenance after physical activity, should be assessed and addressed. In this formative research, we learned that successful intervention components to address hairstyle maintenance barriers for AA women would include: 1) building self-efficacy to restyle hair after aerobic exercise through the use of wraps, wigs, or hats to cover hair after perspiration; 2) promoting low-maintenance hairstyle options (e.g., braids, locks, wigs, etc.); or, 3) providing hairstyle maintenance resources of moisturizing hair products and headbands that use dry-wicking technology to preserve AA hairstyles during aerobic exercise. Self-efficacy to restyle hair could be increased through guided practice with AA female exercisers; low-maintenance hairstyle options could be reviewed with AA female exerciser in-person or could be accessed online (Versey, 2013). As part of an overall effort to improve the current physical activity and cardiovascular health disparities experienced by AA women, future studies should develop and test physical activity interventions for AA women that include methods

to overcome hairstyle maintenance barriers for the substantial minority of women who experience these barriers (Liu et al., 2012; Wilcox et al., 2008).

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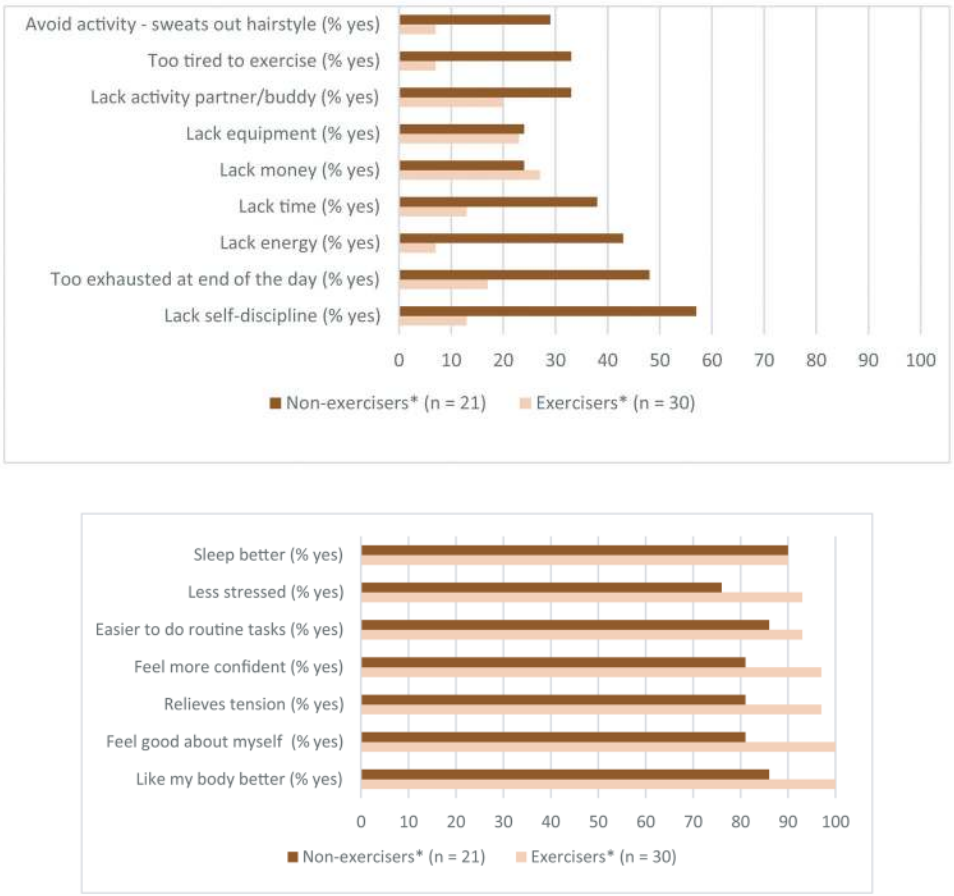

Figure 1.

Figure 1a–1b. Barriers and Facilitators of Physical activity among African American women by physical activity strata

Note: Non-exercisers reported <150 minutes of moderate intensity weekly activity or <60 minutes of vigorous intensity weekly activity; Exercisers reported ≥150 minutes of moderate intensity weekly activity or ≥150 minutes of vigorous intensity weekly activity.

Table 1

Study Population by Exercise Status

Variable	Exercisers* (n = 30)	Non-exercisers* (n = 21)	*p* value
Age, years, mean (sd)	47 (14)	52 (13)	.25
Education (% post-high school)	90	86	.99
Household income (% <$20,000)	48	10	.01
Spend ≥$50/month on hairstyle maintenance (%)	26	29	.99
Time required to restyle hair after most common type of physical activity (% ≥30 minutes)	17	14	.99
Hairstyle type worn most often			
Relaxed/Permed (%)	13	24	.05
Braids (%)	7	10	.99
”Locks” (%)	17	10	.99
Natural but not in braids or “locks” (%)	43	38	.37
Wig (%)	7	5	.99
Other/Missing (%)	17	14	.77
Measured weight, lb, mean (sd)	181 (38)	199 (52)	.18
Measured BMI, kg/m^2, mean (sd)	30 (6)	35 (9)	.04
Ratio of Waist to Hip Circumference, mean (sd)	0.82 (0.08)	0.82 (0.07)	.94
Measured Blood Pressure, mm Hg, mean (sd)	133/82 (16/13)	143/87 (19/11)	.07 for SBP; .15 for DBP
DM diagnosis (% current or gestational)	13	10	.99
Hypertension diagnosis (% current or gestational)	43	62	.26
Arthritis diagnosis (% current)	13	14	.99

Abbreviations: lb (pounds), Body Mass Index (BMI), Diabetes Mellitus (DM); SBP, Systolic Blood Pressure; DBP, Diastolic Blood Pressure.

*Exerciser status was ascertained by response to the question: “““Do you currently do consistent physical activity?” We defined consistent physical activity as meeting U.S. physical activity guidelines by doing: 1) Consistent moderate intensity activity of ≥150 minutes per week of moderate intensity physical activity per week or 2) Consistent vigorous intensity physical activity of ≥60 minutes of weekly vigorous intensity physical activity.

Table 2

Major Barrier Themes by Exerciser/Non-exerciser status

Theme	Exercisers	Non-Exercisers
BARRIERS		
Sociocultural – Effects of physical activity on hairstyle maintenance		
Time burden to restyle hair	"If I am going to a luncheon, I probably am not going to exercise that morning. " (age 50–75 years)	"I don't have a perm or anything so it will sweat out. I mean if I really worked out, it would be rising like this. I would have my little afro growing up under, but I have a girlfriend who takes care of my hair so if it messes up, then I will flat iron it but I try not to let it. I try not to let that be a problem." (age 50–75 years)
Cost burden to restyle	N/A	"Now if I sweat, if I just got my hair done, I wasn't trying to sweat. I could exercise but I wasn't trying to sweat the style out. But I could do moderate exercise to not waste my money" (age 50–75 years)
Sociocultural –Recognition of Sociocultural norm for hair to be presentable in public	"As a teacher during recess time, I noticed that the little black girls were not out on the playground playing, and they did not want to go in the gym, you know bounce the ball and do all of that because they were wearing braids and they had long hair and they said 'no mama said don't go out there and play because I will mess up my hair." (age 50–75 years)	"Culturally, what kind of images we have as African American women about our hair, I mean hair was stressed… when you are growing up as a black girl. You know what I mean, it stays with you forever. So you know, we don't want nappy hair or we don't want this kind of hair or, you know, those types of things really are things that are really imbedded in us, you know. They have not gone away." (age 50–75 years)
Sociocultural - Environment Concerns about drying hair out in Colorado due to frequent shampooing/washing.	"It is bad for your hair in Colorado [to wash it too much] since it is so dry, you know, that it can just dry your hair out" (age 50–75 years)	N/A
Individual/intrapersonal –Competing Demands	"It is difficult because I worry about if I will have enough energy, you know, once I get to school, and then I definitely don't have energy to run at the end of the day so I try to do it in the morning." (age 18–29 years)	"Well I was doing water aerobics but I just stopped doing it just because it is a hassle when I finish working 8 hours a day and then to go and change clothes, get in the pool, dry off, go home and by that time I am exhausted and then I still have to fix dinner and get everything ready for the next day so it was wearing me out." (age 50–75 years)
Individual/intrapersonal – Excuses and Priorities		
Scheduling Conflicts	"I mean like tonight is my ballroom dancing night so, you know, sometimes I have conflicts with scheduling that I have to move around, so that is the biggest barrier for me." (age 50–75 years)	N/A
Lack motivation	N/A	"Weather, time and laziness, in a nutshell, [are my barriers]." (age 50–75 years)

Table 3

Major Facilitator Themes by Exerciser/Non-exerciser status

FACILITATORS		
	Exercisers	**Non-exercisers**
Sociocultural – Hairstyle Preserving Factors after physical activity		
Low-maintenance hairstyle	"I still exercise. Even though you sweat, it's okay. I might pull it back in a ponytail and go on. " (age 50–75 years)	"if I have it in my little protective styles, I am okay… because I don't have it out. but if I have it flat ironed…I am not going to exercise." (age 50–75 years)
High self-efficacy to restyle hair oneself	"If I do a good workout and I sweat and I know it kind of frizzes up, when I get home I just wash it." (age 50–75 years)	" when I do…sweat it out then I go and do the braids with the twist… to hold it over until I can get to a beauty shop" (age 50–75 years)
"Safe" physical activity that doesn't cause hair to get sweaty or wet	N/A	"Walking would probably be the safest because I can walk at a moderate speed and that doesn't really cause me to sweat, but Zumba…makes you sweat a lot, so I stay away from Zumba even though it is fun." (age 50–75 years)
Using headbands during exercise to minimize perspiration effects	"I wear a bandana when I am really sweating my hair. I might sweat more in my forehead than over my body so I just tie that with a bandana." (age 50–75 years)	N/A
Wearing hats/wraps after exercise	"[after perspiring"], I will just put a rag on it and go." (age 18–29 years)	"Well when…sweat, I wouldn't necessarily go out or go somewhere unless I had a hat. I would put a hat on…or wear a sweat band on my hair and afterwards I could just move it around and make it look good." (age 50–75 years)
Sociocultural – Evolving sociocultural norm to embrace a variety of hairstyle options	"I got this book [and the title is] 'Happy to be Nappy', and it is about little girls with their hair, and it shows all the different ways that you can wear your hair. It is a cartoon-type book. I had a special session with all my little girls [in our school], and we went over and read the book, and after that these little girls started going out on the playground and playing." (age 50–75 years)	"Newer stylists are more hip to different types of hair care regimens, and maybe I am being stereotypical but maybe from my experience I have found those who are 'old school' 'you pressed your hair out, now you know stay away from the water' kind of you know situation. And 'girl you know you're going to sweat out them edges' so you know that kind of conversation." (age 30–49 years)
Individual/intrapersonal – Health		
Physical Health	"Well after a couple of diagnoses, I had to make a decision, my hair or my health" (age 50–75 years)	"Physical activity means a lot because I am on the borderline of diabetes...and I am trying to control my weight so I can get off the medications and feel better." (age 50–75 years)
Emotional Health	"I feel so much better when I finish exercising." (age 50–75 years)	"It will help with some of the stress that I have at work and kids and being a parent." (age 50–75 years)
Individual/intrapersonal-Enjoyable	"But with the girls growing up, part of just having fun, I would jog [to the park] and they would follow me on the bicycle." (age 50–75 years)	"I do gardening which is my love." (age 50–75 years)
Individual/intrapersonal-Personal commitment	"Twice a week [I take Zumba] and we walk around a high school track	"And that is kind of why I walk because I know if I am on a treadmill I will just get off

FACILITATORS		
	Exercisers	**Non-exercisers**
	about 3 times on Saturday morning because I work two jobs. " (age 50–75 years)	but if I walk 2 miles, I had better walk back or catch the bus back so I just take a deep breath and turn around and start walking back." (age 50–75 years)
Environment Convenient and accessible activity options	"I love to walk, I like to go outside in the fresh air." (age 50–75 years)	"Where I live and where I work is walking distance so I take advantage of trying to do that when I can, weather permitting, energy permitting and motivation permitting." (age 50–75 years)
Social Support		
Social interaction or Encouragement	"I think one of the biggest things about some of the classes I go to are the relationships, and it is a great time to connect with people." (age 50–75 years)	"Well for riding the bike, my granddaughter motivates me because she always wants to go riding." (age 50–75 years)
External Accountability	"There are a lot of us in there [exercise class]. We actually take attendance, 'where were you at?' "(age 50–75 years)	N/A
Education	N/A	"I like group exercises like Zumba where I have someone in front helping me figure out what to do" (age 50–75 years)