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Patterns and Correlates of Cervical Cancer Prevention Among Black Immigrant and African American Women in the USA: the Role of Ethnicity and Culture

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Abstract

Cervical cancer prevention disparities between Black and White women have been researched extensively, but less is known about disparities among Black subpopulations, despite increased risk, distinct cultures, and rapidly increasing numbers of Black immigrant women to the USA. A 74-item survey was used to conduct a cross-sectional descriptive study. Independent sample *t* tests, logistic multiple regressions, and chi-square tests were used to carry out all comparative analyses. The survey was administered via Psychdata from January 2020 to February 2020. The final sample included 450 eligible participants (African American women [AAW] = 335; Black immigrant women [BIW] from either West, Central, East Africa, or the Caribbean = 115). Compared to AAW, BIW demonstrated much lower knowledge of cervical cancer, AAW were more likely to visit a gynecologist, and to have had a well-woman exam every 3 years or less. A greater percentage of BIW reported not getting Pap smear test because they had no symptoms or because they feared bad results while AAW reported not receiving a Pap smear because it was not convenient, they did not trust any doctor/gynecologist, and lacked access to a gynecologist. Doctor and family advising had a much larger effect on cervical screening among BIW compared to AAW. This study provides evidence of crucial differences in CC knowledge, attitudes, and screening behaviors among BIW and AAW. Funding agencies, program planners and evaluators, and health policymakers are encouraged to require disaggregation of Black women in healthcare research to tease out specific ways interventions can be most effective.

Keywords Cervical cancer · Health disparities · Black/African American women · Cancer prevention and control · Immigrant health

Introduction

Cervical cancer is a significant public health problem that disproportionately impacts Black women. In the USA, Black women have a higher risk of developing and dying of cervical cancer (CC) than White women [1], conceivably because they are diagnosed at a later stage and have lower stage-specific survival rates. For example, the current incidence of CC in Black women is 10.3 per 100,000; and 7.2 in White women [1]. The CC mortality rate for Black women is also twice that of White women [1]. Although CC rates have decreased nationwide, significant racial disparities persist [1]. The literature has historically focused on the reduction of the Black-White CC disparity through the examination of differences between Black and White women [2]. Emergent trends in CC research and practice, however, demonstrate the need to disaggregate Black women based on ethnicity to gain better insight into the cultural factors that can be targeted to drive down disproportionately higher CC mortality and morbidity rates in Black women. In other words, in order to reduce the Black-White racial gap in CC mortality and morbidity, researchers and practitioners may need to shift from traditional approaches that examine Black women as a homogenous

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group towards culturally appropriate approaches that appreciate the heterogeneity of Black women as a patient population.

The Black female population in the USA is diverse. Black immigrant women (hereafter referred to as "BIW") immigrate from Africa, English-, French-, and Dutch-speaking Caribbean nations. African American women (hereafter referred to as "AAW") are Black women born in the USA. This population of Black women in the USA is both inter- and intra-culturally diverse [3] [4]; yet their distinctions are often excluded from public health discourse and thus interventions. In fact, there is very limited epidemiological data that disaggregate cervical cancer (CC) rates among BIW and AAW residing in the USA. Nevertheless, based on available evidence there are two primary reasons why the heterogeneity of Black women is crucial. First, there is a rapidly increasing BIW population immigrating to the USA with healthcare unique needs [5]. Black immigrant women immigrate to the USA mostly from African and Caribbean countries that generally lack the same comprehensive national policies and plans for the prevention of CC observed in the USA [6]. Accordingly, CC is the most frequently diagnosed cancer among African females, and the leading cause of cancer death, accounting for approximately 25% of total annual new cancer cases and deaths among this group [6]. In some regions of Africa and the Caribbean, the Pap smear, one of the primary cervical screening tests, is limited to wealthy women [6]. Consequently, lack of access and knowledge of preventive CC services in some of these countries, the focus is still on treatment which may explain the higher rates of late-stage CC diagnosis and mortality among BIW [6]. Cervical cancer screening often occurs during a preventive care visit—a concept new to many BIW who may have only previously been to a doctor after presenting with disease symptoms [7]. Second, despite the limited availability of epidemiological data that disaggregates BIW and AAW, research evidence suggests that both groups have different attitudes and perceptions towards health behavior and illness [3, 4]. For example, Black immigrants are more likely to consume a diet with more fruits and vegetables, and have lower body mass index (BMI) compared to African Americans. While African Americans are more likely to perform regular health screening compared to Black immigrants [8]. BIW and AAW maintain unique historical and cultural experiences which must be considered by healthcare professionals [9].

Study Objectives and Hypotheses

To address existing knowledge gaps, the present study examines differences in knowledge of cervical cancer, cervical cancer screening behaviors and barriers, family history of cervical cancer, and influence of family and provider advice among BIW and AAW. To the best of our knowledge, this is the first quantitative study to demonstrate key differences in cervical cancer knowledge, attitudes, and screening behaviors among BIW and AAW in an effort to inform culturally tailored interventions.

In this study, we hypothesize that AAW will have more knowledge of cervical cancer (CC) than BIW. The rationale for this hypothesis is based on the reality that the USA has more widespread availability of educational resources on CC compared to most countries from which BIW emigrates. Our second hypothesis is that the barriers to CC screening will be different based on embedded cultural differences and struggles [9]. For example, evidence suggests that both communities experience stressors associated with differences in culture and practices. AAW often experience stress related to racism and discrimination [10], while BIW attribute stress to acculturation [11]. Our final hypothesis is that healthcare provider and family advising will have a greater impact on CC screening behaviors for BIW than for AAW. This hypothesis is based on previous research demonstrating that AAW generally lack trust of healthcare providers [10].

Methods

Ethical Review

This study received ethical approval from the Institutional Review Board at Texas Woman's University.

Study Design, Sample Recruitment, and Data Collection

This is a cross-sectional descriptive study. Participants were recruited through Prolific Academic, a crowdsourcing website that helps people participate in online studies which has been used in numerous peer-reviewed publications [12]. Previous research has shown that the Prolific platform is less biased than alternatives such as in-person survey panels of students and Mechanical Turk [12]. Once a survey is posted to Prolific Academic, eligible participants either receive notification that a new study has been posted or they regularly check the site for new studies. Potential participants then click the survey link, read the consent form, and if they agree to the study, complete the survey. The survey was administered via Psychdata from January 2020 to February 2020. Eligibility criteria included women who were at least 18 years of age, resided in the USA, and self-identified as Black or African American. The exact number of BIW in the USA is unclear; thus, it was difficult to calculate the sampling frame from the BIW population using Dillman's method [13]. Therefore, it was important to collect enough responses to reflect the estimated distribution of the population and to have a large enough sample size for comparisons between BIW and AAW.

Measures

A 74-item survey was used to measure Black women's current knowledge of cervical cancer, cervical cancer screening behaviors, patient-provider experiences, and various social and demographic factors. Participants were asked if they were born in the USA, and were labeled as AAW if they said yes, and BIW if they said no. The majority of the survey (45-items) were adapted from the National Health Interview Survey (NHIS) which addresses relevant socio-demographic information and personal health history related to illness, injury, chronic disease, family history, and overall perception of personal health [14]. This study also utilized the portion of the NHIS cancer control supplement which addresses the CC screening rate for adult women. Participants were asked nine binary questions about CC-related knowledge, behaviors, and family history such as "Have you heard about cervical cancer?," "Have you ever had a pap smear?," and "Has your mother or your sister been diagnosed with cervical cancer?." Possible responses to these questions were, yes = 1 and no = 0.

The 12-item Group-Based Medical Mistrust Scale (GBMMS) scale was used to measure ethnic-based medical mistrust, with specific focus on perceived mistreatment due to racial or ethnic background [15]. Participants were asked to indicate their level of agreement with statements such as "Doctors and healthcare workers sometimes hide information from patients who belong to my ethnic group." GBMMS response options ranged from 1 to 5 (strongly disagree to strongly agree). The Everyday Discrimination Scale (Short Version) was adapted to specifically focus on experiences within the healthcare system with three questions used to supplement the GBMMS [16]. Responses were coded 1 to 4 (a lot less to as much) and questions such as "Would you say that the doctor spends as much time with you as you wanted, almost as much as you wanted, less than you wanted, or a lot less than you wanted" were posed.

Knowledge of CC was assessed via asking respondents a series of 14 truths about CC with questions adapted from a previous study [17]. Statements such as "HPV-positive women may not have cervical cancer" were presented to test participant knowledge. Options were true = 1, false = 0, do not know = 0, a composite cervical cancer knowledge score was created with higher scores indicating higher CC knowledge. Consistent with previous literature, each correct response was scored as 1, with incorrect or "do not know" responses scored as 0, and a cutoff point of 50% correction rate was used to categorize respondents into 2 groups: the total score ranging from 7 to 14 was defined as a high level of knowledge, and the total score ranging from 0 to 6 was defined as a low level of knowledge. Reliability score for CC knowledge was good (a = 90). Furthermore, participants were asked how often they did a well-woman exam on a scale of never doing it coded as 1, every 5 years coded as 2, 4 years coded as 3, 3 years coded as 4, 2 years coded 5, or every year coded as 6. Participants were asked how convenient they think getting a Pap smear is. Responses were coded on a 5-point Likert scale of not at all convenient coded 1 up to very convenient coded as 5. If participating women indicated they had not done a Pap test the past 3 years, they were asked to indicate the reason why and to select all that applied to their circumstance. Based on prior research, we included possible reasons such as not being aware of the test, convenience and lack of time, lack of trust for a doctor or gynecologist, lack of access to a gynecologist, fear of bad results, no symptoms so no test needed, and other [3].

Statistical Analysis

Independent sample t tests, logistic multiple regressions, and chi-square tests were used to carry out all comparative analyses between BIW and AAW. To analyze the statistical differences between the means of age, BMI, cervical cancer knowledge among BIW and AAW, independent t tests were used. Chi-square tests were used for categorical and binary variables. Logistic regression was performed to test the association between being advised by a doctor and family to get a Pap smear and receipt of a Pap smear, controlling for socio-demographics.

Results

Sample Demographics of African American Women and Black Immigrant Women

A total of 474 participants completed the survey. Individuals who responded uniformly throughout the survey were removed from the sample. The final sample included 450 eligible participants. Three-hundred and thirty-five women self-identified as African American and 115 self-identified as Black Immigrants from either West, Central, East Africa, or the Caribbean. Among Black Immigrant women, the average number of years lived in the USA was 10.66 (SD = 6.85). Also, BIW reported emigrating from West Africa (50.4%), Central Africa (10.4%), East Africa (20%), West Indies/Caribbean (8.7%), Europe (3%), and other regions (3%). Table 1 provides an overview of demographic characteristics among African American women (AAW) and Black immigrant women (BIW) .

Compared to AAW, BIW were statistically significantly older, $t(352) = 2.011$, $p = .045$, $d = 0.29$; had a higher education level, $t(234.951) = 12.016$, $p < .001$, $d = 1.28$; and a higher income, $t(402) = 11.959$, $p < .001$, $d = 1.35$. Additionally, BIW had statistically significantly lower BMI than AAW, $t(128.308) = -5.763$, $p < .001$, $d = -0.69$. Compared to BIW, AAW rated: (1) their overall health worse,

Table 1 Demographic characteristics by immigration status

	Black immigrant women (BIW) (*N* = 115)	African American women (AAW) (*N* = 335)
Age mean (SD)	36.24 (9.13)	32.97 (11.87)
Education		
High school diploma/GED or less	0 (0%)	40 (11.9%)
Some college, no degree	8 (7%)	98 (29.3%)
Associate degree (occupational, technical, vocational, or academic program)	8 (7%)	48 (14.3%)
Bachelor’s degree	40 (34.8%)	110 (32.8%)
Graduate/professional degree	57 (50.4%)	38 (11.3%))
Missing	2 (1.7%)	1 (0.3%)
Insurance status		
Uninsured	18 (15.7%)	57 (17%)
Insured	97 (84.3%)	278 (83%)
Missing	0 (0%)	0 (0%)
Household income		
$49,999 or lower	19 (16.5%)	192(57.3%)
$50,000 to $79,999	9 (7.8%	77 (22.9%)
$80,000 or higher	85 (73.9%)	53 (15.8%)
Don’t know	1 (0.9%)	10 (3%)
Missing	1 (0.9%)	3 (0.9%)
Employment status		
Full-time	82 (71.3%)	145 (43.3%
Part-time	23 (20%)	92 (27.5%)
Retired	0 (0%)	13 (3.9%)
Not-currently employed	6 (5.2%)	84 (25.1%)
Missing	4 (3.5%)	1 (0.3%)
Residence type		
Rural	2 (1.7%)	46 (13.7%)
Urban	23 (20%)	150 (44.8%)
Suburban	65 (56.5%)	128 (38.2%)
Other	0 (0%)	1 (0.3%)
Missing	25 (21.7%)	10 (3.0%)

$t(392) = 11.165$, $p < .001$, $d = 1.34$; (2) their physical shape worse, $t(299.713) = 15.008$, $p < .001$, $d = 1.51$; and (3) were less pleased with how they feel, $t(276.738) = 13.359$, $p < .001$, $d = 1.38$. BIW perceived that their physical health needed more attention in comparison to AAW, $t(217.367) = -7.366$, $p < .001$, $d = -0.80$.

Knowledge of Cervical Cancer and Cervical Cancer Screenings

Among all Black women, 81.4% and 44.1% reported they have heard of cervical cancer and well-woman exams, respectively. Compared to African American women (AAW), Black immigrant women (BIW) demonstrated statistically significantly lower knowledge of cervical cancer, $t(379) = -13.461$, $p < .001$, $d = -1.49$. AAW were also more likely than BIW to report ever hearing of a well-woman exam, $b = 0.699$, OR = 0.497, $p = .002$, and a Pap smear, $b = 2.229$, OR = 9.293, $p < .001$.

Cervical Cancer Screening Behaviors and Barriers

Overall, 35.7% (n = 161) of participants reported visiting a gynecologist routinely, 12.7% (n = 57) reported having a well-woman exam every 3 years or less, and only 38.8% (n = 175) reported having a Pap smear in the last 3 years. Compared to BIW, AAW were statistically significantly more likely to visit a gynecologist, $b = 1.453$, OR = 4.275, $p < .001$, and to have had a well-woman exam every 3 years or less, $b = 1.847$, OR = 6.344, $p < .001$. AAW were seven times more likely to have had a Pap smear in the last 3 years, $b = 2.058$, OR = 7.827, $p < .001$ compared to BIW.

Among participants reporting no Pap smear in the last 3 years, the most common reason included not having any symptoms (73%) and fear of bad results (44%). However, when disaggregated, a greater percentage of Black immigrant women (BIW) reported not receiving a Pap smear because they had no symptoms or because they feared bad results (see Fig. 1). Conversely, a greater percentage of African American women (AAW) reported not receiving a Pap smear because it was not convenient; they did not trust any doctor/gynecologist, they did not have access to a gynecologist, or because they did not have any symptoms (see Fig. 1). Moreover, compared to AAW, BIW were statistically significantly less likely to perceive receipt of a Pap smear as uncomfortable or painful, $t(379) = -10.138$, $p < .001$, $d = -1.20$.

Family History of Cervical Cancer

There were no significant differences in family history of cervical cancer, $t(402) = .630$, $p = .529$, $d = 0.08$. However, BIW reported significantly less family history of cervical cancer compared to AAW, $t(126.538) = 3.703$, $p < .001$, $d = 0.45$. A family history of cervical cancer did not increase the probability of getting a Pap smear, $b = -.196$, OR = .822, $p = .713$ or a well-woman exam, $b = -.321$, OR = .725, $p = .576$.

Health Insurance

Eighty-eight percent of all respondents reported having health insurance. There were no differences between BIW and AAW on having health insurance, $b = -.307$, OR = .736, $p = 346$.

However, AAW were more likely to have government or state-issued health insurance, $b = -2.326$, OR = .098, $p < .001$, while BIW were more likely to have private or employer health insurance, $b = 2.351$, OR = 10.500, $p < .001$.

Having health insurance was a significant factor in predicting the likelihood of having a regular gynecologist, $b = 1.343$, OR = 3.832, $p < .001$. However, when separated by group, this only remains significant in AAW, $b = 1.533$, OR = 4.631, $p < .001$, and not BIW, $b = 1.067$, OR = 2.908, $p = .319$. Having health insurance was a significant factor in predicting the likelihood of getting a Pap smear in the last 3 years, $b = .802$, OR = 2.231, $p = .010$. However, when separated by groups, health insurance was only significant for AAW, $b = .979$, OR = 2.662, $p < .001$. Having health insurance was a significant factor in predicting the likelihood of having a well-woman exam, $b = 0.649$, OR = 1.913, $p = .022$. However, this only remains significant in AAW, $b = 1.233$, OR = 3.431, $p = .040$, and not BIW, $b = 0.437$, OR = 1.547, $p = .177$, when separated by group.

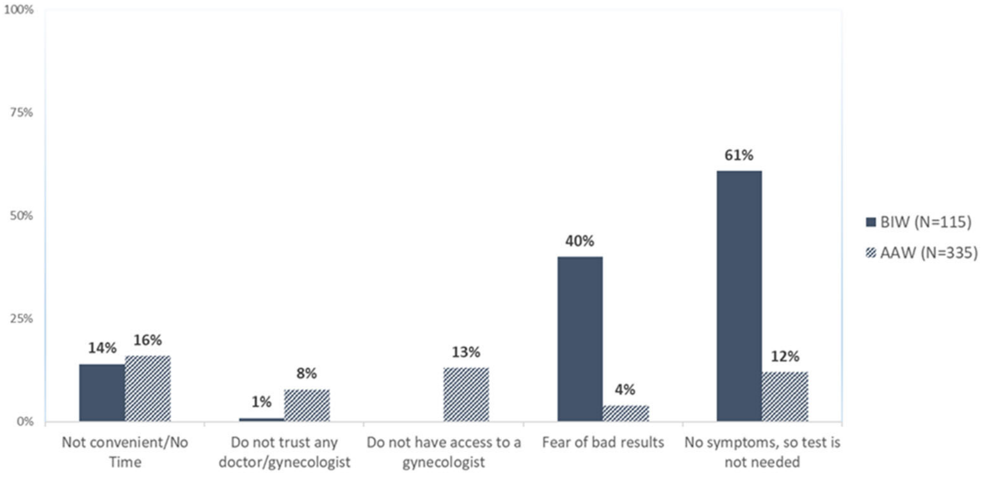
Patient-Provider Interaction and Experience

Patient-provider interaction and experiences were measured on a 5-point Likert scale with 4 questions asking about participants' experience with doctors and other healthcare professionals. Specifically, we asked if participants felt they (1) were treated with respect and dignity, (2) given enough time during visits, (3) involved in decision making concerning their health, and (4) satisfied with the quality of care. A total score was assigned to each participant by averaging her scores for the 4 items ranging from 20 to 4. A score of 20 means having a very positive experience and 4 meaning having a very negative experience. The mean score was 7.23 (SD = 5.33). The index's internal consistency showed good reliability ($\alpha = .90$). Among BIW and AAW, there was a statistically significant association between having a positive doctor/healthcare professional experience and getting a Pap smear ($r = .129$, $p = .038$) and a well-woman exam ($r = .183$, $p = .005$).

Provider and Family Advising

Logistic regression was performed to test the association between being advised by a doctor to get a Pap smear and receipt of a Pap smear, controlling for body mass index (BMI), education level, age, and household income. Demographic factors explained approximately 6.6% of the variance in getting a Pap

Fig. 1 Reasons for not getting a Pap smear in the last 3 years by immigration status



smear with BMI, *b* = .037, OR = 1.039, *p* = .013, and education, *b* = .177, OR = .960, *p* = .01, being the only statistically significant factors. After including a doctor or other healthcare professional advising to get a Pap smear into the model, the variance explained increased by 19.8%. Additionally, being advised by a doctor became a significant predictor, *b* = − 1.872, OR = .154, *p* < .001. The results remain significant when analyzed by groups. However, doctor advising can explain more variance in BIW (26% variance, *b* = − 2.961, OR = .052, *p* = .015) versus AAW (16.5% variance, b = − 1.741, OR = .175, p < .001). Additionally, BMI is only a statistically significant predictor in the AAW model.

Demographic factors explained approximately 6.6% of the variance in getting a Pap smear with BMI, *b* = .037, OR = 1.039, *p* = .013, and education, *b* = .177, OR = .960, *p* = .01, being the only significant factors. After including a family advising getting a Pap smear into the model, the variance explained increased by 2.7% with family advising being a statistically significant predictor, *b* = − .634, OR = .530, *p* = .013 of getting a Pap smear. When examining each group separately, being recommended by a family member was not significant in AAW, *b* = − .422, OR = .652, *p* = .125, or BIW, *b* = − 1.652, OR = .192, *p* = .074.

Discussion

The goal of this study was to contribute to the prevention and control of cervical cancer (CC) among Black women in the USA. Specifically, we examined CC knowledge differences, CC screening behaviors and barriers, influence of provider experience on Pap testing, family history of CC, and influence of family and provider advice among Black immigrant women (BIW) and African American women (AAW). The majority of CC research and practice treat Black women as a monolith largely devoid of distinct ethnicities and cultures [3]. These results make an important and unique contribution to the literature by exploring the diversity that exists in the CC knowledge, attitudes, and healthcare behaviors of BIW and AAW.

As hypothesized, the findings demonstrated greater knowledge of CC, well-woman exams, and Pap smears among AAW compared to BIW, which is consistent with a previous study [8]. Also, as hypothesized, our findings show that barriers to recommended CC screenings varied significantly by immigration status. Prior studies that have not distinguished between BIW and AAW groups have found similar barriers (e.g., lack of knowledge) to CC screening (Smith et al. 2016). However, there are specific areas in which we see differences emerge regarding how much a barrier impacts screening for Black women in the USA. A greater percentage of BIW reported fear of bad results and no symptoms as reasons for not getting a Pap smear. This is consistent with previous literature which suggests that BIW have specific barriers to CC screening that differ from AAW [8]. On the other hand, inconvenience (time constraints), doctor mistrust, pain/discomfort, and lack of access to a gynecologist were barriers among AAW. Being more trusting of the healthcare system, having a trusting relationship with a doctor/healthcare professional, has been found to influence health behaviors [18].

Our third key finding is that doctor and family advising to get a Pap smear had a larger influence on BIW and not AAW. This is likely due to the hypothesized mistrust that AAW generally have for doctors and the healthcare system [10], and the higher likelihood for BIW to be married [19], which facilitates healthy outcomes, and spousal involvement in their health care decisions [20]. Doctor advising was associated with receipt of Pap smear among both groups. However, doctor advising explained a relatively large variance in BIW compared with AAW. Family advising was also associated with getting a Pap smear. Although small, getting a Pap smear explained more variance in BIW than AAW. While there is ample research on how kinship support is vital for Black women and general health behaviors, there is limited research on the effects of close family relationships on cervical health screening behaviors for BIW and AAW [19]. Future research should address the potential differences in family support and engagement and its potential impact on health status, health outcomes, and preventative care.

Other findings from this study show that family history of CC was not associated with receipt of CC screenings. Notably, BIW were less likely than AAW to report having a family history of CC. Considering that CC is the most frequently diagnosed cancer among African women, this finding suggests potential gaps in awareness about CC and family history of CC [21]. Furthermore, health insurance coverage was positively associated with having a gynecologist, getting a well-woman exam, and getting a Pap smear. However, after disaggregating by immigration status, these associations were only significant among AAW. In this sample, AAW were more likely to have government-assisted insurance such as Medicaid and had lower levels of educational attainment compared with BIW. Previous research shows that Medicaid patients are more likely to report negative healthcare experiences [22]. Our findings suggest that BIW's positive experiences with providers were related to their private insurance which grants greater access to better benefits and provider options. Future studies should further explore these differences with additional questions addressing the potential discrepancy in care for AAW and BIW receiving Medicaid/Medicare.

The findings from this study underline important differences in CC knowledge, attitudes, and screening behaviors among BIW and AAW, which should be considered when developing interventions. For instance, our findings suggest that BIW may benefit from interventions focused on increasing education and awareness about CC as well as leveraging family and provider relationships in order to increase CC screenings. On the other hand, AAW may benefit from interventions focused on, addressing medical mistrust, and structural barriers such as access to care. Positive patient-provider interactions were predictive of CC screening for both AAW and BIW. This finding is consistent with previous research which suggests that improving patient-provider interactions is imperative in increasing CC screening for Black women regardless of immigrant status [8]. However, as our results indicate, providers should address the specific concerns of BIW (e.g., fear) and AAW (e.g., medical mistrust) to improve interactions. Ultimately, it is essential for providers and practitioners to recognize commonalities and differences between BIW and AAW; and tailor CC interventions accordingly [3, 8, 23]. To the best of our knowledge, this is the first quantitative study to demonstrate key differences in CC knowledge, attitudes, and screening behaviors among BIW and AAW in an effort to inform culturally tailored CC interventions.

Limitations

Despite its strengths, the present study has some limitations that should be considered. First, although we provide suggestions for tailored intervention approaches with Black immigrant women (BIW) and African American women (AAW), one limitation of this research involves the correlational nature of these data. Future intervention research using random assignment is needed to understand if and how these suggested approaches may influence CC knowledge, attitudes, and screening behaviors. Second, while immigrant status is predictive, there are differences among BIW in the USA, which need to be addressed. Specifically, level of acculturation, time in the USA, and the demographics of the community they live in are all relevant characteristics that may determine outcomes for BIW. Prior research suggests that extended residency in the USA results in a decline in health status for BIW [24]. Thus, future research should also include the descendants of BIW who were born in the USA to see if CC norms persist in subsequent generations. Also, there are different levels of CC knowledge for BIW relevant to the country of origin. African women are reported as the least knowledgeable about CC [8], while also being the most frequently diagnosed [21]. Exploring the nuances within BIW populations could highlight potential areas of need for specific subpopulations. Third, while the current study addresses CC knowledge and screening behavior, it does not address other psychosocial characteristics that may influence outcomes related to CC. Subsequent studies should assess the specific cultural norms and traditional beliefs that are impacting screening behavior and health beliefs regarding CC. Finally, the present study relied on women's self-reported health status, screening behaviors, and healthcare experiences. For example, self-report surveys potential issues related to recall or response bias.

Conclusions

This study provides evidence of crucial differences in cervical cancer (CC) knowledge, attitudes, barriers, beliefs, and screening behaviors among Black immigrant women (BIW) and African American women (AAW). Compared to BIW, AAW demonstrated greater knowledge of CC, well-woman exams, and Pap smears; and were more likely to report receipt of CC screenings. BIW and AAW reported different barriers to CC screenings. BIW were more likely than AAW to report positive patient-provider interactions and positive healthcare experiences. Although provider and family advising appears to be important for both BIW and AAW, it may be especially effective for BIW. Funding agencies, program planners/evaluators, and health policymakers are encouraged to require disaggregation of Black women in healthcare research to tease out specific ways public health interventions can be most effective.

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Authors' Contributions Dr. Ann Amuta-Jimenez served as the principal investigator of the study and was responsible for study conceptualization and design, data collection, data analysis and data analysis oversight, and manuscript development and writing. Dr. Gabrielle P.A. Smith served as the co-principal investigator of the study and contributed to study design, data collection, interpretation of findings, and manuscript development and writing. Dr. Kyrah K. Brown contributed to manuscript writing and editing.

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Compliance with ethical standards

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References

1. Society AC. Cancer Facts & Figures for African Americans, 2019-2021. Atlanta, GA: American Cancer Society; (American Cancer Society, Inc.)
2. Silver M, Korbin S (2019) Exacerbating disparities?: Cervical cancer screening and HPV vaccination. Preventive Medicine 130: 105902–105902. Available from: https://europepmc.org/article/med/31730943
3. Amuta-Jimenez AO, Cisse-Egbounye N, Jacobs W, Smith GPA (2019) Two peas in a pod? An exploratory examination into cancer-related psychosocial characteristics and health behaviors among Black immigrants and African Americans. Health Education and Behavior 46(6):1035–44

4. Amuta-Jimenez AO, Jacobs W, Smith GPA (2019) Health disparities and the heterogeneity of Blacks/African Americans in the United States: why should we care? Health Promotion Practice 26;152483991989550–1524839919895507. Available from: https://search.proquest.com/docview/2330791524
5. Anderson M, Lopez G (2018) Key facts about black immigrants in the U.S. [Internet]. Pew Research [cited 2020 Jul 1]. (Pew Research Center). Available from: https://www.pewresearch.org/fact-tank/2018/01/24/key-facts-about-black-immigrants-in-the-u-s/
6. Lim JNW, Ojo AA (2017) Barriers to utilisation of cervical cancer screening in Sub Sahara Africa: a systematic review. Eur J Cancer Care 26(1):e12444. Available from: https://doi.org/10.1111/ecc.12444
7. Anaman-Torgbor JA, King J, Correa-Velez I (2017) Barriers and facilitators of cervical cancer screening practices among African immigrant women living in Brisbane, Australia. Eur J Oncol Nurs 31:22–9
8. Brown DR, Wilson RM, Boothe MAS, Harris CES (2011) Cervical cancer screening among ethnically diverse Black Women: knowledge, attitudes, beliefs, and practices [Internet]. Journal of the National Medical Association 103, 719–28. Available from: http://www.sciencedirect.com/science/article/pii/S0027968415304119
9. Griffith DM, Johnson J, Zhang R, Neighbors HW, Jackson JS (2011) Ethnicity, nativity and the health of American Blacks. J Health Care Poor Underserved 22(1):142–56. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3326411/
10. Barlow JN, Smith GPA (2019) What The Health (WTH)?: theorising Southern Black feminisms in the US South. Agenda 33 (3):19–33. Available from: https://doi.org/10.1080/10130950.2019.1668725
11. Clarke AV. Black and immigrant in America: ethnic misidentification, acculturation, and psychological distress. American Psychological Association AnnualConference. In San Francisco, CA
12. Palan S, Schitter C. Prolific.ac—A subject pool for online experiments. 2018 Mar 1 [cited 2020 Jul 8]; Journal of Behavioral and Experimental Finance 17:22–7. Available from: http://www.sciencedirect.com/science/article/pii/S2214635017300989
13. Dillman DA, Smyth JD, Christian LM. Internet, phone, mail, and mixed-mode surveys: the tailored design method [Internet]. Wiley; 2008 [cited 2020 Aug 27]. (Wiley.com). Available from: https://www.wiley.com/en-us/Internet%2C + Phone%2C + Mail%2C + and + Mixed+Mode + Surveys%3A + The+Tailored+Design +Method%2C + 4th + Edition-p-9781118456149
14. Statistics NC for H. National Health Interview Survey, 2018. Adult sample. Hyattsville, Md; 2018. (U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics)
15. Thompson HS, Valdimarsdottir HB, Winkel G, Jandorf L, Redd W (2004) The group-based medical mistrust scale: psychometric properties and association with breast cancer screening. Prev. Med 38 (2):209–18
16. Sternthal MJ, Slopen N, Williams DR (2011) Racial disparities in health. Du Bois Rev 8(1):95–113. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5993442/
17. Liu T, Li S, Ratcliffe J, Chen G (2017) Assessing knowledge and attitudes towards cervical cancer screening among rural women in Eastern China. Int J Environ Res Public Health 14(9). Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5615504/
18. Birkhäuer J, Gaab J, Calnan M (2017) Is having a trusting doctor-patient relationship better for patients' health? European Journal for Person CenteredHealthcare 5(1):145–7. Available from: http://www.ejpch.org/ejpch/article/view/1251
19. Forsythe-Brown I, Taylor RJ, Chatters LM, Govia IO, Matusko N, Jackson JS (2017) Kinship support in Jamaican families in the USA and Jamaica. Journal of African American Studies 21(2):187–202. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5639907/
20. Modibbo FI, Dareng E, Bamisaye P, Jedy-Agba E, Adewole A, Oyeneyin L, et al (2016) Qualitative study of barriers to cervical cancer screening among Nigerian women. BMJ Open 6(1): e008533. Available from: https://bmjopen.bmj.com/content/6/1/e008533
21. Ndejjo R, Mukama T, Kiguli J, Musoke D (2017) Knowledge, facilitators and barriers to cervical cancer screening among women in Uganda: a qualitative study. BMJ Open 7(6):e016282. Available from: https://bmjopen.bmj.com/content/7/6/e016282
22. Wilkins V, Elliott MN, Richardson A, Lozano P, Mangione-Smith R (2011) The association between care experiences and parent ratings of care for different racial, ethnic, and language groups in a Medicaid population. Health Serv Res 46(3):821–39. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1475-6773.2010.01234.x
23. Forney-Gorman A, Kozhimannil KB (2016) Differences in cervical cancer screening between African-American versus African-Born Black women in the United States. J Immigr Minor Health 18(6): 1371–7
24. Hamilton TG, Hummer RA (2011) Immigration and the health of U.S. black adults: does country of origin matter? Soc Sci Med 73 (10):1551–60. Available from: https://www.sciencedirect.com/science/article/pii/S0277953611004989