

eHEALTH LITERACY, MEDICAL MISTRUST AND CERVICAL CANCER PREVENTION
KNOWLEDGE, BELIEFS AND BEHAVIORS AMONG AFRICAN AMERICAN WOMEN

by

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ABSTRACT

Cervical cancer (CC) is a major global public health problem and is the third most common cancer among women worldwide. In the United States, African Americans have the second highest incidence rates of CC, due to having the highest rates of Human papillomavirus (HPV) acquisition, lower likelihood of engaging in routine pap smears and persistently low vaccine uptake. Prevention and early intervention through HPV vaccination and pap smears, respectively are of paramount importance to reduce racial cancer disparities. Due to cultural mistrust of the health care system, many African Americans resort to non-traditional forms of health information. Considering the combined contributions of medical mistrust, increased reliance on electronic-based health information and the disproportionate burden of HPV susceptibility among young-adult African American women, this population warrants further attention in research informed by culturally relevant frameworks. The Health Literacy Skills Framework (HLSF) considers external factors (i.e., culture, media, and family) that impact the synthesis of health information. Black Feminist Thought scholarship complements the HLSF by

providing a frame through which to examine how Black women's oppressive intersecting identities (i.e., race, gender, and class) shaped their perspectives about women's health and added needed context for assessing Black women's health literacy.

This thesis sought to examine the relationship between eHealth literacy, medical mistrust, and CC preventive behaviors among African American college women. More specifically, this study explored relationships between the CC preventive behavior among African American college women and the following potential contributors to this behavior: 1) perceived eHealth literacy 2) CC knowledge/beliefs and 3) the Black female collective unique health experience related to provider recommendations regarding CC prevention, medical mistrust, and gendered-racial microaggressions.

A total of 146 African American women completed an online survey that assessed for self-perceived eHealth literacy, medical mistrust, gendered-racial microaggressions, and CC-related prevention behaviors, knowledge, and beliefs. Most participants had received at least one-dose of the HPV vaccine and all age-eligible participants had received a pap-smear once in their lifetime. A vast majority of participants considered themselves to have high eHealth literacy but did not demonstrate adequate CC knowledge. Additionally perceived eHealth literacy did predict CC knowledge and CC prevention related beliefs. Specifically, participants who were confident in their ability to understand online health information were more likely to have greater CC knowledge and more positive beliefs toward the HPV vaccine and pap-smears. A qualitative analysis of CC prevention behaviors among study participants yielded six overarching themes including: 1) Strong Black Woman, 2) Oppression, 3) Medical Mistreatment/Mistrust, 4) Health Literacy, 5) Medical Autonomy, and 6) Cultural Health Factors. Clinical implications of these findings and relevance to future research are discussed.

eHealth Literacy, Medical Mistrust, and Cervical Cancer Prevention Knowledge, Beliefs, and
Behaviors Among African American Women

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DEDICATION

This thesis is dedicated to my family. To my parents, Janice and Clarence Johnson Jr., you have both been supportive and influential in my educational pursuits. I will forever be grateful for your love and the values you have instilled in me and my sisters.

To my sisters, Christina, Monica, and Alicia your level of support throughout my academic journey is truly unmatched. My wins will forever and always be your wins.

Lastly, this thesis is dedicated to Black women who lost their lives to Cervical Cancer.

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CHAPTER 1: LITERATURE REVIEW

Introduction

Cervical cancer (CC) is a major global public health problem and is the third most common cancer among women worldwide (Paz-Zulueta, et al., 2018). In the United States of America, 13,960 new CC cases are predicted for 2023 with an estimated 4,310 women predicted to die from this disease (American Cancer Society, [ACS], 2023). CC forms in cervical tissue, the organ connecting the uterus and vagina (Centers for Disease Control and Prevention [CDC], 2020). The persistent infection of Human papillomavirus (HPV) is the leading cause of CC, accounting for 99.7% of cases worldwide (Johnson et al., 2019). HPV is a highly infectious, sexually transmitted disease (Park et al., 2019). In most immunocompetent women, the virus is transient, clearing naturally within two years (Banister et al., 2013; Vidal & Murphy, 2014). CC is one of few avoidable cancers, making prevention an integral component of cancer control. Actions taken to prevent CC include reducing the severity, stopping the progression, and reducing the spread of HPV (Zygmunt et al., 2020), through vaccination as well as receiving routine pap smears to identify cell changes that are precursors to CC (Aggarwal, 2014).

In the United States, African Americans (AA) have the second highest incidence rates of CC (9.1 per 100,000) following their Hispanic counterparts (9.6 per 100,000) but have the highest rates of CC mortality (3.6 per 100,000) across all racial/ethnic groups (Siegel et al., 2020). Furthermore, African American women (AAW) are considered the most vulnerable population for CC, due to having the highest rates of HPV acquisition (CDC, 2020; Kelloggvet et al., 2019), lower likelihood of engaging in routine pap smears (Gatos, 2018) and persistently low vaccine uptake (Madrigal et al., 2020).

These sobering statistics highlight the disproportionate burden AAW bear in CC diagnosis and management. Historically, non-adherence to screening protocols has been the parsimonious explanation for this disparity. However, research suggests additional biological factors drive this disparate prognostic trajectory, including AAW's predisposition to a prolonged HPV clearance time, increasing their risk for persistent HPV infections (Banister et al., 2015) and AAW's women increase vulnerability to cancer-causing HPV strains compared to women from other racial groups (Mendoza et al., 2021; Vidal et al., 2014). Additionally, medical mistrust has been a well-documented issue among AA populations (Adams et al., 2017; Martin et al., 2013). Notably, medical mistrust among AA has been associated with more frequent utilization of electronic platforms for health advice (Ray et al., 2017).

The widespread use of media-health communication platforms raises concerns that some media may contain health-compromising misinformation predicated on pseudoscience and anecdotal evidence (Jenkins et al., 2020). Considering the fact that young adults are the largest consumers of media (Pew Research Center, 2020), and are beginning their transition to autonomous medical decisions, they are the most vulnerable to this misinformation (Bynum et al., 2014). A better understanding of their confidence in which they can detect the difference between inaccurate and accurate information is essential in CC control. Moreover, HPV is most prevalent among college (18-26) aged women (Wowla et al., 2013), a population that overlaps with the electronic health platform users described above.

Despite AAW having high CC mortality rates, they have been historically under-represented in research (Brown-Speights et al., 2017). Prevention and early intervention are of paramount importance to reduce racial cancer disparities (Staples et al., 2018). Due to cultural mistrust of the health care system, many AA result to non-traditional forms of health information

(Martin et al., 2017; Ray et al., 2017). Considering the combined contributions of medical mistrust, increased reliance on electronic-based health information and the disproportionate burden of HPV susceptibility among young-adult AAW this population warrants further attention in research. This study aims to examine the relationship between perceived eHealth literacy, medical mistrust and cervical cancer-preventive behaviors among AA college women, guided by two theoretical frameworks: Health Literacy Skills Framework and Black Feminist Thought.

The Health Literacy Skills Framework (HLSF) highlights the complex relationship between health literacy and health-related outcomes. Specifically, HLSF considers external factors (i.e., culture, media, and family) that impact the synthesis of health information (Squiers, et al., 2012). Black Feminist Thought (BFT) scholarship complements the HLSF by providing a frame through which to examine how Black women's oppressive intersecting identities (i.e., race, gender, and class) shape their perspectives about women's health and add needed context for thinking about Black women's health literacy (Collins, 2000). This study will explore relationships between the CC preventive behavior (i.e., pap smears and HPV vaccination) among African American college women and the following potential contributors to this behavior: 1) perceptions of eHealth literacy 2) CC knowledge/beliefs and 3) the Black female collective unique health experience, with consideration to CC prevention provider recommendations, medical mistrust, and gendered-racial microaggressions. A better understanding of the relationship between these variables, provided insight for culturally tailored interventions to reduce the prevalence of CC among AAW.

Cervical Cancer

As mentioned previously, CC is a major global public health problem and is the third most common cancer among women worldwide (Paz-Zulueta et al., 2018). The prevalence of new CC cases in the United States, is predicted to be almost 14, 000 in 2023, with over 4,000 deaths attribute to this disease (ACS, 2023). CC, found in the tissues of the cervix, is caused by the persistent infection of the human papillomavirus (HPV) in 99.7% of the cases worldwide (CDC, 2020; Johnson et al., 2019). The virus is transient and clears naturally within two years in most immunocompetent women (Banister et al., 2013). However, infections that persist can manifest into cancerous lesions of the cervix (Demarco et al., 2020).

Cervical Cancer and Human Papillomavirus

HPV is a highly infectious sexually transmitted virus that can cause genital warts and HPV-related cancers. In the United States, approximately 80% of both men and women will have contracted HPV at least once in their lifetime (Zygmunt et al., 2020). HPV transmission can occur through vaginal, anal, or oral sex with an HPV infected person (Franco et al., 2019). The risk of HPV infection increases with the use of hormonal contraceptives, smoking, low-socioeconomic status (Zygmunt et al., 2020), comorbid sexually transmitted infections (i.e., human immunodeficiency virus, herpes simplex virus and chlamydia (Ewelina et al., 2020), and multiple sexual partners (Ribeiro et al., 2015). There are over two-hundred identified strains of HPV; however, a much smaller subset of strains has carcinogenic properties and are responsible for CC and a majority of oropharynx, penile, vulvar, and anal related cancers (Schiffman et al., 2007).

Carcinogenic HPV strains include 16, 18, 31, 33, 35, 39, 45, 52, 51, 56, 58 and 59 (Wang, et al, 2018). Among carcinogenic strains, HPV-16 and HPV-18 are the most frequently

acquired strains, accounting for more than 70% of CC (Park et al., 2019). These various strains are also referred to as high-risk HPV strains (Hr-HPV) and warrant continued surveillance by a medical professional (Park et al., 2019). Despite HPV being the leading causative agent of CC, there are rare cases of HPV-negative women with cancerous lesions. A study conducted by Rodriguez-Carunchio and colleagues (2015) determined that HPV-negative women had an increased rate of CC mortality compared to their HPV-positive counterparts. Given follow-up care is primarily recommended to women who are infected with the virus (Rodriguez-Carunchio et al., 2015), CC prevention practices are of paramount importance.

Cervical Cancer Prevention

CC is one of few avoidable cancers, making prevention an integral component of cancer control. Two prevention strategies are used in combination to mitigate the risk of developing this disease: vaccination (primary) and CC screening (secondary) (CDC, 2020). Primary prevention is aimed at avoiding the acquisition of Hr-HPV, and is achieved through prophylactic immunizations, abstaining from sexual activity, mutual monogamy between virgins or the use of condoms (Cohen et al., 2019). Secondary prevention is achieved through screening for abnormalities of the cervix (Grce, 2014).

Primary Prevention - Vaccines

The development of the HPV vaccine is responsible for preventing HPV infection in millions of women (Lei et al., 2020). Three vaccines were developed and approved by the Food and Drug Administration to decrease the prevalence of HPV-related diseases. Cervarix, Gardasil, and Gardasil 9 were developed in 2006, 2007, and 2014 respectively, to prevent cases of genital warts and HPV-related cancers (Ayesha et al., 2021). Cervarix is a bivalent vaccination that offers immunity from HPV 16 and 18 (Monie et al., 2008). Gardasil is a quadrivalent vaccine

that targets two additional HPV strains (HPV 6 and 11) that are not covered by the Cervarix vaccine (Siddiqui & Perry, 2006). Considering HPV strains 6 and 11 are responsible for over 90% case of genital warts, this vaccine affords additional STI protection (CDC, 2021). Although both first-generation vaccines are effective in preventing their respective HPV strains, further research indicated the presence of other HPV strains (31, 33, 45, 52, 58) that accounted for thirty percent of CC cases (Kitchner et al., 2006). In 2014, Gardasil-9 was developed to provide people with greater protection against the recently discovered HPV oncogenic strains, 31, 33, 45, 52 and 58 (Signorelli et al., 2017).

Like first-generation vaccines (i.e., Cervarix and Gardasil), Gardasil-9 provides protection against HPV strains 6, 11, 16, 18 in addition to 31, 33, 45, 52 and 58 (Lieblong et al., 2019). Currently, this second-generation vaccine (Gardasil-9) is the only HPV vaccine available in the United States (CDC, 2021), and has significantly contributed to the reduced incidence rates of CC (Franco et al., 2019). Numerous efficacy studies have indicated HPV vaccines are highly effective prevention tools against CC (Cherniak et al., 2019; Schiller et al., 2012; Signorelli et al., 2017). However, vaccines are only effective if they are taken in accordance with federal guidelines.

Primary Prevention: Vaccine Recommendations

The American Committee of Immunization Practices (ACIP) is a government-run taskforce of medical and public health experts, who provide vaccination guidelines for preventable diseases in the United States, including CC. According to ACIP, the first dose of the vaccine should be administered at age 11 or 12 years but can be initiated as early as age 9 (Sziliagyi et al., 2020). The HPV vaccine is delivered intramuscularly in a two or three dose series depending on patient age at their first vaccination (Petrosky et al., 2015). A two-dose

series is administered to girls ages 9 through 14 years, at the initial vaccination appointment the patient receives one shot, with a subsequent booster dose 6-12 months after the initial shot (Petrosky et al., 2015).

If the initial vaccine was administered after the age of 15 years, the patient will follow a three-dose series; the first shot will be administered, with subsequent shots given at two and six months past the initial vaccination date (Petrosky et al., 2015). If a schedule has been interrupted, the series can continue as previously scheduled and does not need to be restarted (Petrosky et al., 2015). If a woman has been partially vaccinated by first-generation vaccines (i.e., Cervarix and Gardasil) the ACIP recommends administration of Gardasil 9 to complete the series (CDC, 2016). Women who have not received a complete dose of the HPV vaccines have until the age of 26 to finish the series (Meites et al., 2019), due to reduced effectiveness. Surprisingly, people who completed the HPV vaccine series with first-generation vaccines are ineligible to receive booster shots via Gardasil 9 (Petrosky et al., 2015). As a result, this recommendation evoked significant discord within the medical community.

Many women who received first-generation (i.e., Cervarix and Gardasil) vaccines continue to test positive for the HPV strains that are not covered by their respective manufacturer (i.e., 31, 33, 45, 52 and 58). Given that these specific HPV strains account for over 30% of CC (Kitchner et al., 2006), this discovery draws considerable concern. Despite the first-generation vaccines not protecting women against the abovementioned strains, ACIP deems this population as adequately vaccinated (Meites et al., 2016). A significant portion of literature refutes ACIP's prohibitive vaccination recommendations (Lee et al., 2017; Van Damme et al., 2016), suggesting the need to revaccinate first-generation vaccine recipients with Gardasil 9 to reduce the prevalence of CC. However, while vaccines offer prophylactic benefits, they do not offer

protection against pre-existing infections. Despite the known effectiveness of HPV-vaccinations in reducing CC morbidity and mortality, there are various factors that preclude primary prevention adherence.

Primary Prevention Barriers

Due to the significant prophylactic benefits of the HPV-vaccine, it is important to discuss certain individual and system-level factors that prevent one from engaging in such preventive behavior. In terms of individual factors vaccination hesitancy is a well-documented concern, in which people have various attitudinal dispositions against HPV vaccines (Karafillakis et al., 2019). HPV-vaccine hesitant individuals are primarily concerned with the safety of the vaccine (Karafillakis et al., 2019), family history and shared beliefs of CC (Kumar, 2016), prior history of HPV (Russ et al., 2019) perceived low susceptibility (e.g., I'm not at risk for CC) (Krawczyk et al., 2015) and increased engagement in risky sexual behaviors (e.g., primary guardians are concerned that their vaccine-eligible children will have newly developed sexual intentions) (Ratanasiripong, 2012).

In terms of systemic issues, research has highlighted the discrepant differences between governmental vaccination guidelines (i.e., initiating HPV-vaccine by age 11-12) and health-care provider recommendations (i.e., health providers advising the patient to get the HPV-vaccine). Conversations about the importance of the HPV-vaccine is often stymied by the health care providers anticipation of interacting with a vaccine-hesitant patient (McRee et al., 2014). The discomfort, coupled with perceived inability to confidently address a patient who has reservations about the vaccine, causes providers to avoid the topic (HPV-vaccine) in its entirety (McRee et al., 2014). Although avoidance of primary prevention communication may be an easier alternative, inadequate recommendations by health-care providers can further exacerbate

the issue of vaccination adherence. Despite vaccination being an integral component of CC prevention, women are further advised to undergo routine screening to assess for cervical abnormalities (Meites et al., 2016).

Secondary Prevention: Pap Smears

Screening for CC is achieved through pap testing. Pap testing, colloquially referred to as pap smears, are the most widely used screening tests in the US (Lindau, et al., 2006). This simple, non-surgical procedure allows for the detection of abnormal cervical cells (Paz-Zueleta et al., 2018). During pap smears, a plastic or metal speculum is inserted into the vaginal cavity, allowing the health care professional to examine cervical cells (CDC, 2021). After obtaining the cells, the culture is then sent to a laboratory for examination of cervical irregularities (CDC, 2021). When precancerous or cancerous cells are suspected, diagnostic tests including cervical biopsies are performed (CDC, 2021). During a cervical biopsy, a small portion of the cervical tissue is removed and examined by a licensed pathologist, with the option of follow-up treatment if needed (Zueleta et al., 2018).

According to the United States Preventive Services Task Force (USPSTF), pap smears should be administered routinely for women between the ages of 21 years and 65 years, regardless of vaccination status (USPSTF, 2018). Both adequate and timely screening have significantly contributed to the reduction in CC mortality (Canfell et al., 2020). Screening recommendations reflect the age and risk level of the person being assessed. For women between the ages of 21 through 29 years, the USPSTF recommends triennial screening (USPSTF, 2018). Women who fall between the ages of 30 through 65 have the option of receiving pap smears every three years, or a combination of physician-collected HPV testing and a pap smear (co-testing) every five years (USPSTF, 2018). Routine screening is unnecessary for women under

the age of 21 and older than 65; this population is considered low risk for CC (USPSTF, 2018). Although women can be sexually active before the age of 21 and after 65, research indicates that a CC diagnosis in these two age populations is rare (Benard et al., 2012). Researchers contend that due to the ubiquity and the transient nature of this virus, initiating testing before the age of 21 would do more harm than good (Benard, et al., 2012), due to exposing young women to clinically unnecessary medical procedures.

Pap smears remain one of the most powerful screening measures to detect cervical lesions. However, this test is not free from reporting a small percentage of false-positive test results (Morrison et al., 2003). Researchers have indicated minor malfunctions in the pap smear testing process. Specifically, *ThinSmear*, the unique staining procedures to evaluate cervical cells, has caused healthy cells to occasionally mimic the abnormal lesions of HPV, without having a true HPV infection (Morrison et al., 2003). Individual influences, beyond the tests control, have also been found to elicit misdiagnoses including the consumption of hormonal (i.e., estrogen and progesterone) oral contraceptives (Morrison et al., 2003).

False-positive test results can negatively impact the clinician's ability to accurately determine patients at risk for CC, let alone can cause an unnecessary emotional and financial burden for their clients (Schiffman et al., 2019). No screening test is perfect, to prevent future misdiagnoses physicians should consider other available non-surgical measures (i.e., HPV-testing or colposcopy) to confirm or deny an abnormal test result (Das et al., 2014). All women with abnormal test results are advised to follow-up with a medical professional for further diagnostic testing. However, due to a variety of reasons, pap-smear follow-up adherence rarely reaches a rate of full compliance (Fowler et al., 2017).

Secondary Prevention Barriers

Non-compliance to pap-smear follow-up appointments is a serious public health concern. A large rate of CC cases is due to infrequent screening, or to no screening at all (Spees et al., 2019). Reasons for screening non-adherence in pap-smears are multifaceted, which can include having a poor understanding of cervical screening procedures (Godfrey et al., 2018), lack of time and insurance (Miranda-Diaz et al., 2016), being younger than fifty, receiving inaccurate test results (i.e., false-positive or false-negative) (Philip et al., 2018; Neeves, 2009), and never receiving medical treatment related to CC screening (Lee et al., 2021). Importantly, the COVID-19 pandemic has significantly reduced CC screening, especially among women of color and women with low-income (DeGraff et al., 2021). With screening substantially reducing both CC incidence and mortality rates, the development of widespread screening programs has helped remediate this issue (Cohen et al., 2019). The National Breast and Cervical Cancer Early Detection Program is a federally funded screening initiative that targets American women who are at an increased risk for developing both breast and CC (Tangka et al., 2015). Since its inception, this program has provided millions of women, who have low incomes or who are uninsured, timely CC screening and diagnostic services (CDC, 2021b).

Other innovative methods to address screening barriers, such as transportation issues, include HPV self-collection kits. A newly piloted randomized control (MyBodyMyTest-3) investigated the use of an HPV self-collection kit (Spees et al., 2019). Self-collected HPV testing is a valid screening tool that has comparable sensitivity and specificity rates to physician-collected samples (Arbyn et al., 2018; Zhao et al., 2012). Participants in the intervention received a kit to self-collect a sample of cells from their cervix and return it to a designated lab for HPV-testing (Spees et al., 2019). After laboratory analyses, they received a phone call providing their

HPV results along with CC educational resources (Spees et al., 2019). Women who received a positive test were advised to follow up with the clinic for additional screening and diagnostic services (Spees et al., 2019). Although HPV self-testing has yet to be FDA approved (Spees et al., 2019), the high rates of participant follow-up (i.e., attending a subsequent diagnostic appointment) suggest a promising impact toward CC early detection (Kumar et al., 2011; MacLaughlin et al., 2023), especially among AAW, the most vulnerable ethnic group affected by this diagnosis.

Cervical Cancer Disparities and African American Women

In most literature, the terms AA and Black have been used interchangeably to identify persons of a specific racial or ethnic group. When comparing the two terms, AA is utilized more frequently in mass media (Blake, 2014). The racial and ethnic identifier, Black, is a more inclusive term that is representative of those with a different native origin (i.e., Nigeria, Jamaica, Dominican Republic etc.; Simms, 2018). For this thesis, the terms Black and AA will be used interchangeably to represent all women of African descent.

Despite the incidence of CC significantly decreasing over the past few years, AAW continue to bear the burden of this disease. AAW have a 60% higher rate of CC (MacGuire et al., 2017), and are twice as likely to die from the disease (Bynum et al., 2014), when compared to their non-Hispanic European American counterparts. From a prevention standpoint, African American college women have low rates of HPV vaccination (Wowla et al., 2013) as well as lower adherence to diagnostic colposcopy (Miller et al., 2017), a procedure recommended to women with abnormal pap test results. Although reasons for these disparities remain definitively unknown (Banister et al., 2014), the literature has examined probable explanations through a historical, social, and physiological lens.

Historical and Social Factors

The impactful history of the AA community is often dismissed as a contributing factor to health-related behaviors. The avoidance of incorporating such historical events in the conceptualization of health preventive behaviors, can preclude a comprehensive evaluation of the transgenerational legacy of Black women's health behaviors. As such, it is important to consider how historical factors, which have greatly influenced our social environment, shape contemporary health-decisions among AAW.

There is a paucity of literature that acknowledges the historical and social manifestations of current health disparities as they relate to the AA community (Sule et al., 2017). A historical and social context provides an outlook in which one can recognize the impact of slavery, segregation, racial discrimination, denied access to education, and other major life stressors that have significantly contributed to disparate health outcomes among the Black community (Taylor, 2020). Despite the Emancipation Proclamation and the 1964 Civil Rights Act granting some liberties to the Black community, systemic discriminatory practices continue to permeate the health care system (Sule et al., 2017). In 2020, the American Medical Association announced racism as a threat to public health, due to its associated negative impact among historically marginalized communities, especially Black women (American Medical Association, 2020)

There is limited literature that indicates the mistreatment of AAW in the healthcare system (Black et al., 2015; Dale et al., 2019). One disheartening finding is the high rates of maternal mortality among Black women, in which they are two to three times more likely to die from pregnancy-related causes in comparison to White women (Taylor, 2020). This wide disparity has been largely attributed to the historical oppressive nature of the health care system. Specifically, Black women were used as medical test subjects, subjected to forced sterilization

and were denied help for their pain (Taylor, 2020). Furthermore, after the termination of legalized slavery, Jim Crow laws reduced access to quality healthcare services among AA (Prather et al., 2018). Black women were also subjected to prejudicial attitudes and discrimination from physicians prior to hospital adherence of the Civil Rights Act of 1964 (Prather et al., 2018), further contributing to their marginalized status in health care settings. The oppression of Black women has perpetuated the racial inequalities in the health care system and has greatly contributed to their poor health outcomes (Taylor, 2020). To understand the transgenerational impact of such harmful institutional practices, one must consider the enduring effects of specific historical periods, such as the many generations that Black women lived under the yoke of chattel slavery.

Despite chattel slavery ending over 150 years ago, racism and gendered discrimination toward Black women continue to persist. Unfortunately, health care providers are well known perpetrators of such racial discriminative acts (Hall et al., 2015). In a recent qualitative study on the perceived levels of discrimination in a medical setting, a large portion of the participants (Black women) reported less than satisfactory patient care, an outcome that was further exacerbated by having a low-income (Okoro et al., 2020). The racial mistreatment from health providers is a well-documented contributor to low CC screening rates among Black women (Fuzzell et al., 2021). Stereotypical language elicited from health care providers (i.e., gendered - racial microaggressions) have been found to produce negative health outcomes among Black women, including traumatic stress symptoms (i.e., avoidance and increased vigilance toward health services) (Moody & Lewis, 2019).

Gendered-racial microaggressions are “subtle and everyday verbal, behavioral, and environmental expressions of oppression based on the intersection of race and gender” (Lewis et

al, 2016, p. 766). Most of the gendered-racism and health inequities literature focuses on its impact on mental health outcomes (Lewis et al., 2016; Williams & Lewis, 2019). Very few studies focus on gendered racism as it relates to physical health outcomes (Lewis et al., 2017; Wright & Lewis, 2020) and we are aware of no empirical evidence as it relates to gendered racism and CC prevention. Nonetheless, the available literature suggests that poor communication between patients and clinicians can lead to negative health outcomes and foster a sense of medical distrust.

Medical distrust is a significant social threat that plagues the Black community. Similar to the empirical evidence on patient-provider communication, high levels of medical distrust are also associated with poor breast and CC screening adherence (Kindrack et al., 2020; Yang, et al., 2011). AA have endured centuries of medical mistreatment including, but not limited to, being subjected to non-consensual hysterectomies (Jean-Jaques & Rowlands, 2018) and withholding life-saving treatment (i.e., Tuskegee Syphilis Study) (Brandt, 1978). Even more recently, the California Correctional Health Care Services forced incarcerated women who were disproportionately women of color to undergo sterilization procedures (i.e., hysterectomies) without an adequate informed consent process (California State Auditor Report, 2014). These and other instances of mistreatment can help to explain why Black women are distrustful of health care providers and services.

These historical discriminatory practices have reinforced the unequal distribution of power and resources in the medical field (Fair & Johnson, 2020), and prevented Black women's access to medically necessary cancer prevention services (Kolar et al., 2014). Structural barriers that preclude CC prevention behaviors among Black women must be addressed to reduce CC disparities (Vahabi et al., 2021). Findings from these studies indicate some explanations for the

disparate CC health outcomes among Black women. However, it is erroneous to attribute all CC disparities to underlying historical and social factors. Examining the disproportionate differences from a physiological perspective, provides a deeper understanding to this public health concern.

Physiological Factors

It is imperative to examine the physiological differences as contributing factors to this health inequity. As previously mentioned, persistent high-risk HPV infections increase one's susceptibility to CC (Shanmugasundaram & You, 2017). Although most infections are transient, and clear among most immunocompetent women, AAW experience a much longer clearance time to rid HPV infections in comparison to other racial and ethnic groups (Banister et al., 2014). Their prolonged clearance time explains the higher rate of abnormal pap tests among AAW. Additionally, empirical research has indicated a racial difference in HPV strain susceptibility as another physiological difference driving this health disparity (Vidal et al., 2014). Black women are more likely to be infected by HPV strains 33, 45, 35, 58 and 68 compared to their non-Hispanic White counterparts, who have an increased susceptibility to HPV strains 16 and 18 (Vidal et al., 2014). Although this study was unsuccessful in reaching a definitive explanation of this significant disparity (Vidal et al., 2014), the acknowledgment of systemic factors, chronic stress and disease could provide context when exploring the etiology of the aforementioned susceptibility differences.

The relationship between chronic stress endured by African Americans such as racism and socioeconomic adversity, on health outcomes has received increased attention in the literature (Geronimous et al., 2006; Simon et al., 2020). Specifically, stressful experiences can predispose Black women to certain diseases like diabetes and cardiovascular disease (Simons et al., 2018), and premature death (Geronimous et al., 2006). Considering the significance of such

disparate effects, a comprehensive exploration of why the disparities exist and continue to persist, is of paramount importance.

Currently, the only available HPV-vaccine (Gardasil 9) has immunogenic properties against only three of the abovementioned strains (Lieblong et al., 2019). This alarming discrepancy has sparked conversations among physicians regarding the possible development of ethnic-specific immunizations (Alter, 2013). However, given the projection of multi-ethnic identifying individuals and possible ethical violations, the development of ethnic-based vaccines may have limited value (Atler, 2013).

Despite the historical, social, and physiological factors that drive racial health disparities receiving minimal attention in present research (Prather et al., 2018), this complex issue continues to emotionally, physically, and financially tax marginalized populations. More research is needed to further explore the persistent effects of race and gendered based discrimination, especially as it relates to oppressive institutions like health care systems. As previously mentioned, the disproportionate effects of CC among Black women are a significant issue; however, it is important to note this problem can be further complicated by the influence of online health misinformation to which Black women may be particularly vulnerable.

Online Health Information and African Americans

YouTube is considered the most frequently used and trustworthy search engine for health information among the AA community (Muvuka et al., 2020). Although YouTube is a popular platform to disseminate patient education videos (Sahin et al., 2019), the content is not regularly monitored for accuracy and quality (Garbarron et al., 2013). Despite AAW utilizing online health information more frequently compared to their male counterparts, a large portion of credible online health information does not cater to women's health needs (Figueroa et al., 2021),

increasing their risk for encountering non-credible online health information. The relationship between the critical evaluation of health material and health decisions among young Black women remains largely unexamined. Considering that young adults are the largest consumers of media (Pew Research Center, 2021), more empirical attention is needed to the emerging adult population.

Online Health Information and College Students

Due to the widespread use of online health platforms, commonly referred to as electronic health platforms (eHealth), it is not surprising that some media may contain health compromising information, predicated on pseudoscience and anecdotal evidence (Jenkins et al., 2018). Given that young adults are the largest consumers of media (Pew Research Center, 2021) and are beginning their transition to autonomous medical decisions, they are the most vulnerable to this misinformation (Bynum et al., 2014). Being able to critically evaluate health information is an imperative skill, to prevent the perpetuation of maladaptive health behaviors (Jenkins, et al., 2018).

Before the advancement of media-technology, health information sources relied primarily on medical professionals (Ahmad et al., 2017). Research indicates that young people who have a higher level of education (i.e., college students) are more likely to use the internet to obtain health information (Koch-Weser et al., 2010). Now, with the growing demand of health-related information, social media, and other web-based sites (i.e., CDC, academic health websites) are effective platforms to disseminate health information and to encourage the adoption of health promoting behaviors (Cho & Lee, 2017). The convenience and efficiency of the internet is attractive to young adults, as it draws quick answers and feedback (Urista et al., 2009).

Responses can span from suggesting common health remedies, to providing emotional support on how to cope with various medical challenges (Stellefson et al., 2018).

Young adults (aged 18-29) have the highest rates of social media usage, with YouTube and Facebook being among the most frequented sites (Pew Research Center, 2021). In terms of health-related information, American college students report the internet as the single most attractive source for acquiring health information (Macias et al., 2018), with Google and Bing being the most preferred search engines (Fox & Duggan, 2013). The internet as a source of health information is not reduced to just search engines, but also includes social media websites (i.e., Twitter, Facebook) and other video media platforms (i.e., TikTok). The internet offers a dynamic transfer of health-related information compared to more traditional forms of health communication (i.e., medical professional) (Ahmad et al., 2017). Internet consumers can supplement health information from a medical professional, by interacting with others on social media blog posts. The interaction with health information on various social media platforms has been evidenced to encourage health promoting behaviors, such as engaging in stress reduction activities (DeAndrea et al., 2012) and physical activity (Goodyear et al., 2021).

Ahmad and colleagues (2017) conducted a study on different factors that influence health information seeking behaviors among college students. The results from the study indicated that perceived usefulness, online-health information quality, intentionality and feasibility were among the most significant predicting factors of internet information health seeking behaviors (Ahmad et al., 2017). College students who had a positive outlook on the quality of the online-health information were more likely to have the recently acquired information to influence their health-related decisions (Rowley et al., 2015; Zhang et al., 2012). Although a seemingly positive finding, some online health literature can lead to detrimental health effects. As a result, the

United States Department of Health and Human Services (USDHHS) has acknowledged eHealth literacy as a top health concern (USDHHS, 2021).

Health literacy and eHealth literacy

The latest National Assessment of Adults Literacy revealed that 58% of AA had basic or below basic health literacy, compared to 48% American Indian/Alaskan Natives, 31% Asian/Pacific Islanders, 66% Hispanics/Latinx and 28% of non-Hispanic Whites (Kutner et al., 2006). The high frequency of low health literacy among AA can be partially explained by centuries of racial discrimination that created systemic barriers to receiving formal education (Sule et al., 2017) and inadequate access to healthcare services (Levy et al., 2014; Mollie et al., 2021). Such discriminatory practices have stymied AA the opportunity to access the resources and skills needed to obtain, understand, and apply health information (Muvuka et al., 2020).

Electronic health literacy (eHealth literacy) emerged from the concept of health literacy. The Institute of Medicine defines health literacy as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions"(Graham & Brookey, 2008, p. 67). Like health literacy, eHealth literacy is conceptualized on a continuum, spanning from health information acquisition to health information application. Although health literacy is an essential skill when navigating digital health-related platforms, they are not interchangeable concepts. In 2006, Norman and Skinner coined the term eHealth literacy, defined as "the ability to seek, find, understand, and appraise health information from electronic sources and apply the knowledge gained to addressing or solving a health problem" (Norman & Skinner, 2006, p. 1).

Due to traditional health literacy scales (e.g., The Rapid Estimate of Adult Literacy in Medicine and Test of Functional Health Literacy in Adults) not fully encompassing all the

technical skills required to navigate eHealth resources, Norman and Skinner developed both a model (*The Lily Model*) and a scale Electronic Health Literacy Scale (*eHeals*) to assess eHealth literacy among both clinical and community populations. Specifically, *eHeals* was developed assess consumers comfort and perceived skills with eHealth information, and not their skills directly (Norman & Skinner, 2006). As shown in Figure 1, eHealth literacy consists of unique literacies that are reflected by the six different petals on the lily flower. The six unique components of eHealth literacy include: traditional literacy, health literacy, information literacy, scientific literacy, media literacy and computer literacy (Norman & Skinner, 2006).

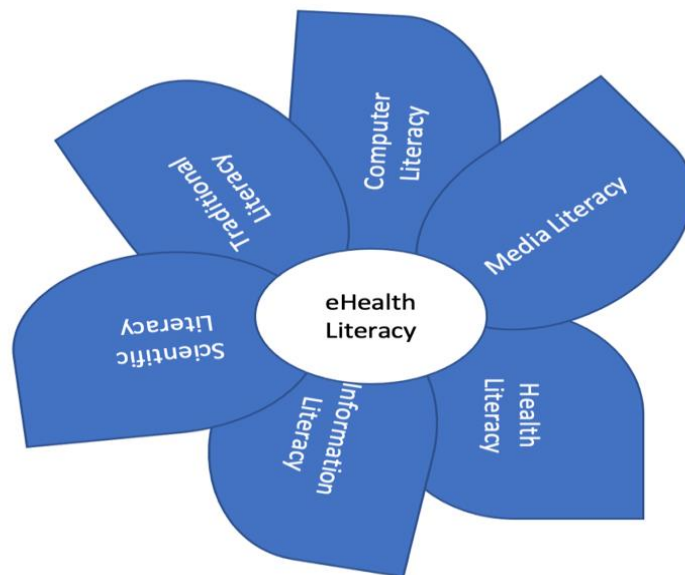


Figure 1. eHealth Literacy “The Lily Model” adapted from Norman & Skinner (2006)

Traditional literacy encompasses the basic literacy skills needed to comprehend written text (Norman & Skinner, 2006). Considering most websites are predominantly text dominant, these skills are essential to navigate digital health sources. As discussed earlier, health literacy is characterized by the skills needed to interact with the health system and engage in appropriate health behaviors (Norman & Skinner, 2006). Information literacy reflects an individual's ability

to find, organize and use information within the context of their environment. For example, an information literate person who wants to know more information about pap smears, will be able to develop an appropriate search strategy (i.e., web search), all while filtering through extraneous information (i.e., mammograms) (Norman & Skinner, 2006).

Media literacy describes the process to critically evaluate both the implicit and explicit messaging behind digital platforms (Norman & Skinner, 2006). With media messages influencing both health perceptions and practices (Bergsma & Carney, 2008), the ability to adequately censor harmful information can prevent negative health outcomes (Jenkins et al., 2020). Computer literacy focuses on the ability to use computers and solve problems (Logan, 1995) and adapt to new technologies to access eHealth resources (Norman & Skinner, 2006). Given the ubiquity of computers in our society, especially among college campuses, it is often assumed that most college students know how to use them. Lastly, scientific literacy is defined by the ability to conceptualize information through a systematic lens. A science literate individual will be able to understand science-based online health information (Norman & Skinner, 2006), and be able to discern empirical evidence from anecdotal evidence.

Since the conceptualization of eHealth literacy, different synonyms to health literacy have been proposed, including media health literacy (MHL). It is important to note eHealth literacy has incorrectly been used interchangeably with MHL. eHealth literacy is an extension of MHL and includes solely digital forms of media (internet, social media, media health apps), that provide sources of health information (Norman & Skinner, 2006). Conversely, MHL comprises both digital (internet, social media) and non-digital (radio, television) forms of communication (Levin-Zamir & Bertschi, 2019). The definition of eHealth literacy allows for an empirical exploration of how self-perceived critical analysis of digital-health platforms influence CC

prevention behaviors among college women. However, this definition is not sufficient when investigating the unique effects of online-health navigation as it relates to the health of Black women.

eHealth Literacy Criticism

Despite the important implications of eHealth literacy on health outcomes, Norman and Skinner's model neglects to incorporate the influence of socio-cultural norms on eHealth literacy (Chan & Kaufman, 2011). Neglecting cultural and societal factors precludes an adequate representation of the entire skillset needed to navigate online health information (Norman et al., 2011). Moreover, electronic health consumers are not a homogenous entity (Paige et al., 2017); it is imperative to explore both environmental (media) and cultural (race, gender, and class) influences of CC prevention behaviors. The current study aims to fill the gap in the literature by focusing on CC prevention behavior through an intersectional lens, with consideration to the Health Literacy Skills Framework and Black Feminist Thought.

Conceptual Framework

Health Literacy Skills Framework

Health literacy is a complex and important public health concern. This complexity is reflected in the variation among the respective theories (Squiers et al., 2012). In addition to the theory variability just noted, the concept of health literacy suffers from the absence of a clear operational definition. The lack of a consistent definition has led to discrepant research methodologies, which contributed to inconsistent findings (Squiers et al., 2012). Historically, a wide body of health literacy literature conceptualizes health literacy into separate constructs, specifically health acquisition, health interpretation, and health application (Baker, 2006;

Mancuso, 2008; Paasche-Orlow & Wolf, 2007; von Wagner et al., 2009), but rarely addressing the full continuum (Squiers et al., 2012).

The Health Literacy Skills Framework (HLSF) tries to bring existing frameworks together by acknowledging the multi-faceted nature of the synthesizing health information, with specific consideration to family and media (Squiers et al., 2012). The HLSF is an extension of earlier frameworks that took a socioecological approach to analyze health promotive behaviors (Stokoles et al., 1992). The integration of socio-ecological elements positions the framework to consider external factors that influence the relationship between the comprehension of health-related information and health behaviors (Squiers et al., 2012). The design of the present study is informed by two primary elements of this theoretical framework: 1) factors that influence the perception and use of health literacy skills and 2) health-related stimuli (i.e., demand and comprehension).

The development of health literacy skills is dynamic and characterized by one's ability to develop, refine and apply the health information to make health-related decisions (Squiers et al., 2012). Squiers and colleagues posit that the development of health literacy skills is influenced by demographic characteristics, prior knowledge (e.g., familial history of CC, exposure to CC literature) and educational resources (Squiers et al., 2012). The HLSF formulation can be applied to the role of intersectional identities among AA college-aged women in the development of CC health behavior competencies. Specifically, demographic characteristics represent the unique intersecting identities that significantly impact health care outcomes. For example, the literature indicates that when looking at the role of socioeconomic factors in health outcomes, Black and White health disparities are absent among the most socioeconomically disadvantaged subgroups (i.e., people with lower socioeconomic status [SES]), but are prevalent among those from

socioeconomically advantaged subgroups (i.e., people with higher SES), suggesting that other variables, such as the lived experience of race, may influence this health disparity (Bravemen et al., 2015). Additionally, there is literature that acknowledges the relationship between Black women's unique beliefs about CC and engaging in preventive practices (Bynum et al., 2014; Darensbourg et al., 2015). Specifically, some Black women indicate that they are more likely to receive the HPV vaccine if an influential person in their life (e.g., Mother, Grandmother, or a celebrity) would approve of the HPV vaccine (Darensbourg et al., 2015).

Access to health-related stimuli is also an important element to the HSLF. Health-related stimuli is conceptualized as the demand for certain sources of information and the ability to comprehend acquired health-related information (Squiers et al., 2012). This conceptual framework recognizes that health-related information can come from a variety of sources including, conversation with physicians, family, and friends, and through print and media health-based platforms (Squiers et al., 2012). Building off this element, there are certain demographic groups associated with increased demand for health-related platforms. For example, college students have more experience and access to digital media compared to older adults and use it as a source to seek health-related information (Percheski & Hargittai, 2011). Furthermore, the relationship between the messenger and the recipient has profound implications on health-seeking behaviors (Squiers et al., 2012). For example, AA are more reluctant to use physicians as a source of health information due to mistrust of the medical system (Ray et al., 2017).

HLSF supports the tenet that there is an interdependent relationship between the demand for health-stimuli and comprehension (Squiers et al., 2012). Although certain information is widely available for people to use (i.e., meeting demand), for information to have an impact on one's behavior, one must be able to understand and accept what is learned (i.e., comprehension)

(Squiers et al., 2012). The ability to critically evaluate sources of information, in terms of credibility, is crucial in the development of health-related behaviors (e.g., HPV vaccine uptake and pap-smears) and reducing disparate health outcomes. However, disparities persist beyond various structural factors such as cost and access to health care resources (Bourgois Holmes & Sue., 2017). As a result, it is important to identify other factors that may be contributing to inequitable health outcomes among Black women. To identify factors of particular relevance to Black women we consider perspectives from Black Feminist Thought as a complement to the HLSF.

Black Feminist Thought

As previously mentioned, HLSF acknowledges that demographic characteristics representing intersecting identities are fundamental aspects in health-related decision making (Squiers et al., 2012). Black Feminist Thought (BFT) can complement the HLSF framework by guiding examination of the unique health-related experiences of Black women linked to demographic factors that confer identity. BFT is a body of literature that acknowledges the distinctive and oppressive intersecting identities specific to Black women, identities such as race, gender, and class (Collins, 2002). A major limitation of previous research targeting racial/ethnic health disparities, is treating racial/ethnic groups as a monolith, precluding the examination of heterogenous differences in health outcomes (Lewis & Van Dyke, 2018). An intersectional approach helps to deconstruct Eurocentric frameworks by challenging widely held beliefs about Black women (Collins, 2002; Lindsay-Dennis, 2015). Black women are frequently under-represented in research (Speights et al., 2017) and when included, their lived experiences are often pathologized and/or reduced to stereotypes (Lindsay-Dennis, 2015). Black feminist scholarship places a greater emphasis on the lived experiences of Black women that positions

Black women as experts in the literature. Specifically, the lived experiences of Black women, which may be undermined by Eurocentric frameworks, are powerful agents of knowledge and should be placed at the center of analyses (Patterson et al., 2016).

BFT is imperative in scholarly work to understand the depth of racially oppressive structures (i.e., health care systems) and examine how these structures reinforce power and privilege of dominant groups (Few et al., 2003). AAW have been subjected to discrimination and mistreatment in various health care settings (Mays et al., 2018). Their perception of discriminatory experiences is associated with medical mistrust, a potential driver for poor health outcomes (Arnett et al., 2016).

Black feminism also creates space for other explanatory mechanisms, aside from race, that contribute to differences between Black women and women from dominant cultures (Harari & Lee, 2021). BFT literature highlights the gender disparities in health treatment (Kent et al., 2012), but also acknowledges the intersecting identity of class that has been reported to impact health outcomes (Okoro et al., 2021). By invoking race, gender, and class, the BFT paradigm provides a context to address the role of these elements in CC preventive behavior. The present study is guided by three central elements of BFT: 1) interlocking systems of oppression that stymie health promotion, 2) the Black female collective knowledge rooted in shared history and common lived experiences, and 3) challenging societal norms and stereotypical beliefs. Each element is discussed further below.

Oppression toward Black women is a systemic issue in the healthcare system. Black women experience unique stressors, that are specific to their gendered racial group (Abdou & Fingerhut, 2014). Both racially discriminative policies and unconscious biases of health care professionals are two significant drivers for racial disparities in medical care (Williams &

Rucker, 2000). Despite laws prohibiting discrimination, practices such as geographic maldistribution of resources continue to persist and further perpetuate racial inequities (Williams & Rucker, 2000). Moreover, research indicates that some physicians view their Black patients as less intelligent, more likely to engage in risky health behaviors and less likely to adhere to treatment (Ryn & Burke, 2000).

Another element of BFT in the present study is the Black female collective knowledge. Multiple qualitative studies on CC beliefs have indicated many cultural perceptions related to CC (Brown et al., 2011; Francis et al., 2011). For example, in past research some Black women were eager to get the HPV vaccines due to associated fear of being raped and being forced to have unprotected sex, consequently increasing their risk of acquiring HPV (Francis et al., 2011). In contrast, other Black women were less likely to get the HPV vaccine due to fear of being labeled as sexually promiscuous, a cultural phenomenon that can be attributed to the jezebel stereotype (Collins, 2002). Such beliefs can influence the Black female collective perceptions on CC prevention. To avoid misperceptions of the CC prevention benefits, the health beliefs and concerns of Black women should be a top priority for the American health care system.

In addition, there is both anecdotal and empirical evidence (Cox, 2020) that indicate different lived experiences between Black women attending a historically Black college/university (HBCU) compared to Black women attending a predominately White institution (PWI). Specifically, Black students at PWIs report challenges with embracing their authentic racial identities when having to navigate predominately white spaces (Cox, 2020). The inability for some women to solidify their Black authenticity (i.e., having to code-switch in front of their White peers to avoid being labeled as “ghetto”), may lead to negative cognitions toward predominately White and oppressive spaces (i.e., health care system). Considering the present

study is focusing on Black women enrolled at a PWI, examination of their unique experiences should be closely examined.

Furthermore, challenging societal norms and stereotypical beliefs are an important component of the present study. Considering that Black women are disproportionately affected by CC, research designs that accurately capture their unique experiences is of paramount importance. The use of BFT theoretical framework, will assess CC preventive behaviors through an anti-racist and anti-sexist lens to mitigate the perpetuation of negative stereotypes (Lindsay-Dennis, 2015), which often exacerbate racial inequities in CC preventive care among Black women (Mouton et al., 2010). CC prevention behaviors and health outcomes among Black women are a complex issue that warrant examination through comprehensive frameworks.

BFT has an iterative relationship with HSLF; it suggests unique ways Black women navigate electronic-health information, which in turn, can impact their CC prevention behaviors. Specifically, a Black women's lived experiences prior to interacting with the health care system, such as familial conversations related to beliefs about CC, can impact their own CC beliefs and prevention behaviors. Notably, this study is focused on college-aged women who may currently have more limited autonomous interactions with the health care system but may be more independent health care seekers in the future. Therefore, the iterative relationship between BFT and HSLF may also be useful in studying how future health care interactions may lead to the adjustment or solidification of Black women's thoughts and behaviors related to CC prevention. For example, if a Black woman reports a poor experience during her pap smear (i.e., gendered-racial microaggressions), it may compromise her subsequent pap testing behaviors.

Figure 2, illustrates the relationship between BFT and HSLF, emphasizing how Black female cultural factors (i.e., CC beliefs and insufficient provider recommendations, gendered

racial microaggressions, medical mistrust) provide a context in which to better understand eHealth literacy as it relates to CC prevention among Black women.

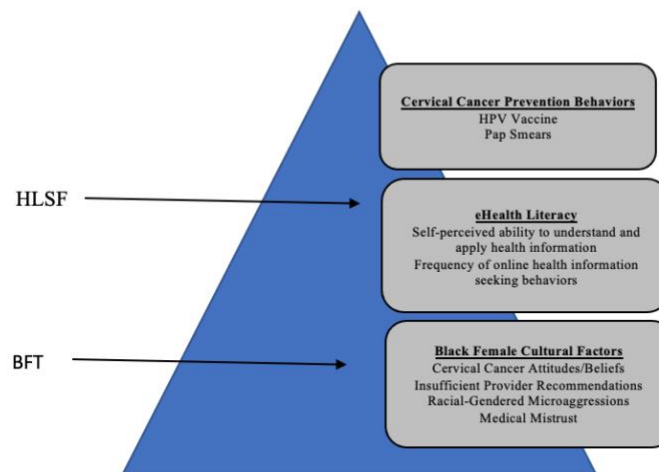


Figure 2. Factors that Impact Cervical Cancer Prevention Behaviors in Black Women

Potential Clinical Relevance

AAW have the lowest rates of HPV vaccine uptake and routine pap smears (Wowla et al., 2013). Given that CC is preventable through primary prevention and screening, CC related educational interventions are of paramount importance. Importantly, college reduces some barriers to accessing health care, as most students are required to have university-issued or private health insurance. Considering that lack of insurance is less of a significant barrier to health-care utilization in this population, interventions that can target modifiable CC prevention barriers, such as eHealth literacy, may be a better fit for college students. Findings from the present study can also provide insight to develop more culturally tailored prevention programs for Black college women.

Specific targets of these intervention programs may include addressing experiences of gendered racial microaggressions, and other experiences that engender medical mistrust as well as positively impacting CC beliefs that are most salient and impactful to Black women and their health-related decisions. Additionally, elements of BFT suggests the importance of challenging societal norms and stereotypical beliefs among Black women (Collins, 2002). By acknowledging elements of resiliency among the study participants, study findings can arm the priority audience with unique information to validate their negative health care experiences and reconceptualize the way we think about Black women's trauma as it relates to health outcomes (French et al., 2019).

Study Purpose

This study examined the relationships between CC preventive behaviors among African American college women and the following health literacy, attitudinal and cultural variables: 1) self-perceived eHealth literacy 2) CC knowledge, 3) cervical cancer prevention behaviors and beliefs and 4) Black female collective experiences related to medical mistrust, provider recommendations/affirmation, and gendered racial microaggressions. The 7 primary research questions can be organized into 3 focus areas: eHealth literacy, CC prevention and screening behaviors and Black female collective health experiences.

eHealth literacy. The first area focuses on links between perceived eHealth literacy and CC-related knowledge, beliefs, and screening behavior.

1. To what extent does the perception of eHealth literacy impact CC knowledge and prevention beliefs in Black women?
2. To what extent does the perception of eHealth literacy impact pap smear adherence in Black women?

CC prevention and screening behaviors. The second area focuses on the link between CC prevention status (having received HPV vaccination or not), CC screening status (pap-smear adherence or not) and CC related knowledge and beliefs.

3. How does CC knowledge impact CC prevention behaviors in Black women?

4. How does CC primary and secondary prevention (i.e., HPV vaccine and pap-smears) relate to CC prevention related beliefs of Black women?

Black female collective health experiences. The third area focuses on collective health care experiences amplified by BFT, specifically links between medical mistrust, quality of clinical encounter (i.e., clinician recommendations/affirmation or lack thereof) experienced by Black women and online health info seeking, CC related knowledge and beliefs, and screening behavior (i.e., pap smear).

5. What is the relationship between medical mistrust (a Black female cultural factor), online health information seeking frequency and perceived eHealth literacy in Black women?

6. What is the relationship between provider recommendation/acknowledgement of HPV vaccine (i.e., pro-vaccine encounter), CC knowledge and CC screening beliefs and HPV vaccination beliefs in Black women?

7. What is the relationship between provider recommendation/acknowledgment of pap-smears (i.e., pro pap-smear encounter) and reported pap smear adherence?

A visual depiction of how the seven primary research questions are categorized into three focal areas can be found in Figure 3.

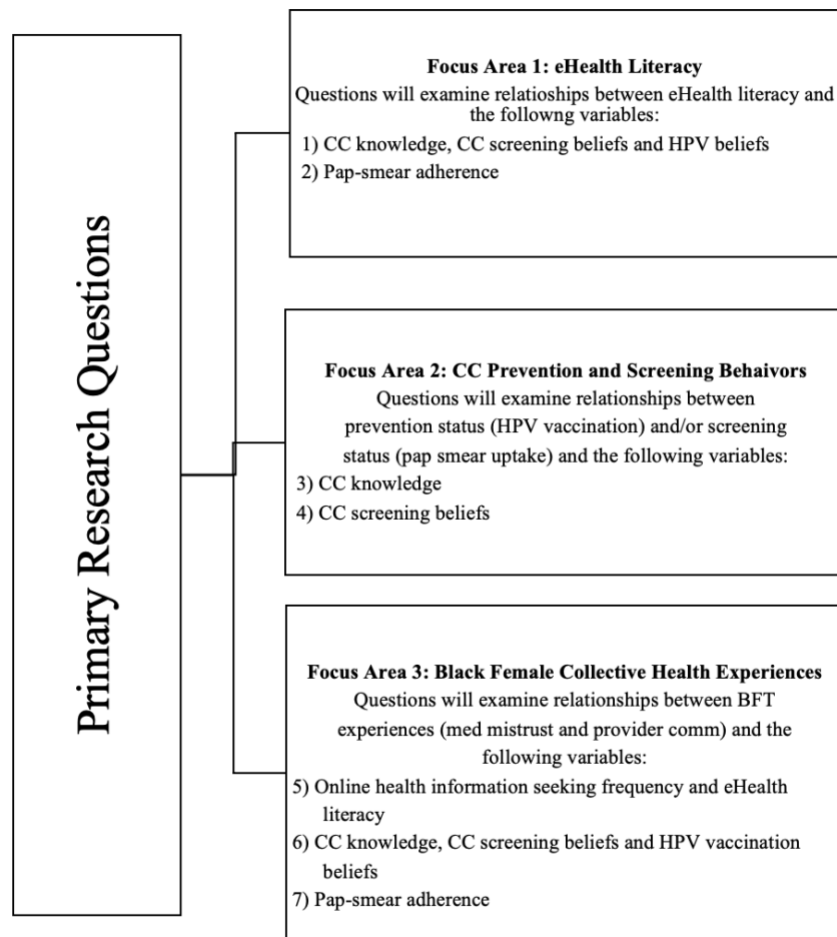


Figure 3. Primary Research Questions Focal Areas

A secondary goal of this study was to examine the experience of gendered racial microaggressions and potential relationship to CC secondary prevention behaviors (i.e., pap smears).

8. To what extent does the experience of gendered-racial microaggressions (i.e., strong/angry Black women, silence and marginalization, and sexual objectification) relate to pap smear adherence in Black women?

In addition to the quantitative approach, the present study qualitatively explored CC prevention, to gain an intimate understanding of the unique experiences among AAW as it relates to the engagement of CC preventive behaviors.

CHAPTER 2: METHODS

Participants

Individuals were eligible for the study if they self-identified as Black/African American female college students ages 18-26. Per the USPSTF, this age group is eligible to receive the HPV vaccine (USPSTF, 2018) and has the highest risk of HPV acquisition (Wowla et al., 2013). Participants were excluded from statistical analyses if they did not have a uterus. Participants were recruited from East Carolina University (ECU), which is comprised of approximately 59% undergraduate females, with 10% identifying as Black/African American (ECU Institutional Planning Assessment and Research, n.d.).

Two recruitment methods were implemented to target two specific demographic groups. The first group of AAW were recruited from the ECU SONA research participation system. The SONA system is a portal that allowed eligible students enrolled in Introductory Psychology to take the study survey in exchange for research credit for their course. The second method consisted of recruiting through an email, after the survey was approved by the ECU Survey Review and Oversight Committee (SROC). This email was sent out to female ECU students who identified as African American/Black, who were juniors and seniors and therefore unlikely to be enrolled in Introductory Psychology. This list was provided by the SROC. Potential participants were informed about why they had been contacted and that the study is about eHealth literacy and CC prevention. After participants were identified and presented with the opportunity to participate in the study, they were directed to complete the study measures via a Qualtrics survey. Upon completion of the survey, participants were eligible to be entered into a gift card lottery for a chance to win 1 of 5 \$25.00 Amazon gift cards.

Research Design

The current study used a mixed method research approach. The combination of both quantitative and qualitative assessment was used to foster a deeper understanding of CC prevention behaviors among AAW, compared to the sole use of either method (Creswell et al., 2011). As previously mentioned, qualitative research was an appropriate analytic tool for assessing the lived experiences of AAW (Lindsay-Dennis, 2015), whose voices are muted or not fully reflected using solely quantitative measures. The qualitative approach used in the current study helped to provide additional context to Black women's lived experiences that were being assessed quantitatively, such as medical mistrust and gendered-racial microaggressions.

Measures

Sociodemographic

Demographic information including biological sex, gender, race (African American/Black), ethnicity, age, year in school, parental educational attainment (as a proxy for socioeconomic status [SES]), and sexual orientation were collected. Parental educational attainment has been a widely used proxy indicator for SES in adolescent health behavior research (Aaro et al., 2009). In addition, parental educational attainment is a strong predictor of young adult health outcomes (Wickrama & Baltimore, 2010). As a result, both mothers' and fathers' educational attainment were used as the proxy indicator for SES. Other demographic variables and potential covariates related to CC prevention are described below.

Medical Demographics

Familial cancer history. Participants were asked about familial history of cancer without reference to any specific type of cancer. The item inquired, "*Has anyone in your family been diagnosed with cancer?*" Response options included yes, no and I don't know.

Personal history of cervical cancer. Participants were asked about personal history of CC diagnosis in their lifetime, using a single item. Response options included yes, no and I don't know.

Insurance. Participants insurance coverage status was also requested. Response options included University issued insurance, Private insurance, Medicaid, No insurance and I don't know.

Sexual history. Four items assessed their current sexual experiences. The respective questions asked 1) if they were currently sexually active (yes/no), 2) the number of sexual partners within their lifetime, 3) the use of contraceptives (yes/no), and 4) if they have ever been diagnosed with HPV within their lifetime.

Online health information seeking behaviors. Three survey questions assessed the frequency and source of online-based health seeking behaviors. The respective questions included:

1. *In the past month, how often did you use media-based platforms (i.e., social media, academic medical websites, governmental websites) to search for medical information?*
 - Never
 - 1 to 5 times a month
 - 6 to 10 times a month
 - More than 10 times a month
2. *In the past month, what was your **most** frequented electronic platform to search for health information?*
 - Internet search engines (i.e., google, safari)
 - Video platforms (YouTube, TikTok)
 - Social media platforms (i.e., Facebook, Twitter, Instagram)
 - Governmental medical website (e.g., CDC, WHO, NIH)
 - Academic medical websites (e.g., MayoClinic, MD Anderson)
 - Health website geared to the general public (e.g., WebMD)
 - Other: (please specify)_____

3. *In the past month, what electronic platforms have you used to search for health information?*

- Internet search engines (i.e., google, safari)
- Video platforms (YouTube, TikTok)
- Social media platforms (i.e., Facebook, Twitter, Instagram)
- Governmental medical website (e.g., CDC, WHO, NIH)
- Academic medical websites (e.g., MayoClinic, MD Anderson)
- Health website geared to the general public (e.g., WebMD)
- Other: (please specify)_____

After collection of data on sociodemographic, medical demographics, and online health information seeking, data were collected on the following variables informed by the HLSF and BFT frameworks in the order presented below.

Health Literacy Skills Framework Variables

Cervical cancer knowledge. Items from the Centers for Disease Control and Prevention Cervical Cancer fact sheet (CDC, 2018) were administered to assess knowledge of CC, specifically HPV risk, HPV vaccine, and pap smears. An example item included, “*A pap smear is a test to find out if a woman is pregnant?*” Response options included, true, false, or I don’t know. Each correct response received 1 point. Responses were summed to yield scores for overall CC knowledge, where higher scores indicated greater CC knowledge.

eHealth literacy. eHealth literacy was operationalized as the skills and competency an individual believes they possess to access, appraise and apply acquired electronic-based health information when solving a health problem (Norman & Skinner, 2006). This construct was assessed using the eHealth Literacy Scale (eHEALS) designed by Norman and Skinner (2006). This scale has been validated on a youth/young adult American population (Norman & Skinner, 2006). This scale has yielded robust validity in past research and has been widely administered

among both African American (e.g., James & Harville, 2016) and undergraduate populations (e.g., Britt et al., 2015) and was used in cancer-related information seeking behaviors (Kim et al., 2020) and cancer prevention research (Mitsutake et al., 2012).

This eight-item measure used a five-point Likert scale from 1 (strongly agree) to 5 (strongly disagree). The items were summed for a total score, with higher scores indicating higher perception of eHealth literacy. The items were designed to assess knowledge, evaluation, and use of online health resources. Example items included: “*I have the skills I need to evaluate the health resources I find on the internet,*” and “*I feel confident in using the information from the internet to make health decisions*”. The eHEALS measure yields high ranges of internal consistency, indicated in previous research (Cronbach’s alpha range =.87-.93) (Britt et al., 2015; Kim et al., 2020). Internal consistency analyses were conducted to establish reliability of this measure in the present study.

Cervical Cancer Prevention and Screening Behaviors

Previous health screenings and abnormal test results. Participants were asked if they received a pap-smear within the past three years (yes, no, I don’t know, no because I’m under 21), and if non-adherence was endorsed, the reason why they were not up to date on their pap smear (i.e., COVID-19, no insurance, no health care-provider, discomfort with pelvic exams due to sexual assault history, other). The item assessing routine pap smear adherence (yes/no, etc) was used as the variable for analyses. As previously mentioned, the USPSTF does not recommend pap smears until the age of 21. Despite this federal recommendation, it is ultimately under the physician’s discretion if they recommend pap smears to their clients under the age 21. Considering this discrepancy, participants had the option to indicate if they were under the age of 21, as a reason for not being up to date on pap-smears, to avoid mischaracterizing women who

were underage as nonadherent. Additional questions examined participants' history of an abnormal pap test and subsequent follow-up care. Participants who reported having a pap test, were asked two further questions:

1. *Did the result of your pap smear show a problem that required further assessment or treatment (i.e., an abnormal pap test result)?* Response options include yes, no, I don't know, and I don't remember.
2. *If yes, did you follow up with your health care professional?* Response options include yes, no or I don't remember.

HPV vaccination status. Two items assessed participants HPV vaccination status:

1. *There is a vaccine that targets HPV, the virus that causes cervical cancer. The CDC recommends women and men to receive the HPV vaccine (Gardasil) between the ages of 9 through 26. Have you received the HPV vaccine?*
2. *The CDC recommends two doses of the HPV vaccine (i.e., Gardasil) for girls at ages 11-12; if you wait until you are older, you may require three doses instead of two. Did you receive the complete series of the vaccine?*

Participants had the option to select either, yes, no, or I don't know to both items.

Variables Relevant to Black Feminist Thought

Cervical cancer screening beliefs. CC screening beliefs were defined as beliefs about the benefits and barriers of pap smears, and the perception of personal vulnerability to CC (Ackerson et al., 2014). This construct was assessed using the Pap Smear Belief Questionnaire (PSB-Q). This twenty-five-item measure has been administered on both undergraduate college women (Cronbach's $\alpha = .84$; Ackerson & Doanes, 2017) and an African American sample (Christensen, 2021).

This measure had four subscales: Benefits, Barriers, Vulnerability and Experience. Items were measured on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The survey yielded a cumulative score, with higher scores indicating more positive beliefs toward pap smear uptake (Ackerson & Doanes, 2017). Both positive and negatively worded items were included in the survey to control for potential bias. Negatively worded items were reverse coded prior to scoring and analysis. An example item included, “*I have other problems more important than getting a Pap smear.*”.

A limitation of this measure was that the questionnaire was normed on a predominately White sample (Ackerson & Doanes, 2017), and a study on an African American sample did not report reliability psychometrics (Christensen, 2021). However, due to the dearth of measures with robust psychometrics on predominately African American samples, this was the most well-established tool to measure women’s beliefs toward Pap testing (Ackerson & Doanes, 2017). To address the psychometric limitations noted above, internal consistency of the measure (PSB-Q) was conducted for the current study sample.

HPV vaccine beliefs. Items from Darensbourg and colleagues’ study were adopted for the present study to measure beliefs about the HPV vaccine (Darensbourg et al., 2015). An example item from this measure included, “*When it comes to getting vaccinated, my family’s opinion is important*”. This 11-item measure used a seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree), with one reverse coded item. Higher summed scores indicated positive attitudes toward the HPV vaccine.

Notably, Darensbourg and colleagues’ study was comprised of participants enrolled in a HBCU (Darensbourg et al., 2015) and no psychometric properties were reported. Given the lack

of information on prior psychometric performance of the measure and the different educational context for the study, reliability analyses were conducted with the current study sample.

Medical mistrust. The present study defined medical mistrust as viewing healthcare providers with suspicion or distrust. Medical mistrust was assessed using the Medical Distrust Index Scale (Corbie-Smith et al., 2002). This seven-item scale examined respondents' perceptions of potential discrimination in clinical research (Corbie-Smith et al., 2003). There is research which indicates that medical mistrust among African Americans stems from experiences of implicit biases toward them of health care professionals (Cuevas et al., 2016; Thompson et al., 2021), the historical and contemporary medical exploitation of African Americans in medical research (Prather et al., 2018), and poor-patient provider communication (Zhang et al., 2020). This seven-item scale has been normed on a sample representative of the present study population. Summed items possible overall scores range from 0-7, with higher scores indicating greater levels of distrust (Corbie-Smith et al., 2003). A sample item from this questionnaire included, "*Do you believe that you can freely ask your physicians any questions that you want?*" This measure has yielded modest internal consistency in past research ($\alpha = 0.6-0.7$) and has been normed and used in other studies with African American participants (Durant et al., 2011; Rajakumar et al., 2009).

CC related provider recommendation. The present study defined HPV-related provider recommendation as conversations health care professionals have with their Black female patients related to CC prevention behaviors. The following two survey items assessed the conversations physicians have with their patients about CC prevention behaviors.

1. *Has a doctor or health care professional recommended the HPV vaccine, or positively acknowledged your receipt of the HPV vaccine during your lifetime?*

2. *Has a doctor or health care professional ever recommended cervical cancer screening (i.e., pap smears/pap test) or positively acknowledged your receipt of cervical cancer screening, during your lifetime?*

Response options included yes, no, I have never seen a health care professional, I don't know, and I don't remember, with responses of no indicating insufficient provider recommendation/affirmation for both of the items.

Gendered racial microaggressions. The term gendered racial microaggressions was defined as the “subtle and everyday nonverbal, verbal, behavioral, and environmental expressions of oppression based on the intersection of one’s race and gender” (Lewis & Neville, 2015m p. 291). This 26-item questionnaire was used to assess the frequency and stress appraisal of racial and gender discriminatory experiences endured by Black women (Lewis & Neville, 2015). Example items from the scale included, *“I do not see women of my shape and size represented in the media”* and *“I have been perceived to be an angry Black woman”*.

Items in this measure were on two different six-point Likert-type scales, ranging from 0 (never) to 5 (once a week or more), when assessing frequency, and ranging from 0 (this never happened to me) to 5 (extremely stressful), when assessing stress appraisal. Higher total mean scores indicated a greater frequency and stressful appraisal of gendered racial microaggressions (Lewis & Neville, 2015). Both GRM frequency and stress appraisal scores will be independently assessed. Additionally, this scale was comprised of four subscales: Assumptions of Beauty and Sexual Objectification ($\alpha=.85$), Silenced and Marginalized ($\alpha=.88$), Strong Black Women (SBW) ($\alpha=.74$) and Angry Black Women (ABW) stereotype ($\alpha=.79$). An example item from the SBW subscale included, *“I have been told that I am a strong Black woman”*. This full questionnaire yields high rates of internal consistency, Cronbach’s $\alpha=.92$ (Lewis & Neville, 2015).

Qualitative Questions Exploring CC Prevention and Screening Behaviors from Black Women's Perspective

At the end of the study, participants were asked open-ended questions related to CC prevention and screening behaviors. Open-ended questions allowed Black women to thoroughly contribute to the study and shed light on their unique lived experiences that may be limited with solely quantitative measures (Lindsay-Dennis, 2015). Seven open-ended items, informed by principles of BFT, were created to broaden the researchers understanding of both primary and secondary prevention behaviors. Participants were asked the following questions:

- 1) *What factors do you think influence your parent's/guardians' decision regarding the HPV vaccine?*
- 2) *How has your racial identity influenced your decision regarding receiving a pap smear?*
- 3) *From your perspective how has the media portrayed Black women?*
- 4) *How has that portrayal impacted your perspective on the HPV vaccine?*
- 5) *How has that portrayal impacted your perspective on routine pap smear adherence?*
- 6) *How does your perceived portrayal of Black women in media impact familial conversations surrounding the HPV vaccine?*
- 7) *How does your perceived portrayal of Black women in media impact familial conversations surrounding pap smear adherence?*

Validity check. A conscientious responders measure by Marjanovic and colleagues (2014) was used to detect participants who were not following instructions. Participants were randomly presented with five items that assessed for attentiveness while taking the survey. An example validity item included, "To answer this question, please choose option number five, *strongly agree*." Scores ranged from 0 (all incorrect responses) to 5 (all correct responses), with each correct response scored as a 1. A total score was generated by adding all items; respondents

who incorrectly responded to three or more items were deemed invalid and were removed from subsequent analyses.

Procedure

Recruitment/Data Collection

Institutional Review Board approval was obtained prior to the start of data collection. Eligible participants (Black/African American women) participated in an online survey (via Qualtrics) about CC preventive behaviors and were required to give consent before beginning the survey. Participants aged 18-26, who self-identified as a Black/African American woman were recruited from Introduction to Psychology courses at ECU. Participants received research credit upon completion of the survey. Additional eligible students (Black, Women, 18-26) were recruited through ECU targeted email outreach in coordination with ECU SROC. All students recruited from both the ECU SROC and the SONA system were given the option to participate in a gift-card lottery, as an incentive for participation in the present study.

Debriefing

After completing the survey, participants were directed to informational resources about CC from the Centers for Disease Control and Prevention (CDC Cervical Cancer Fact Sheet, 2018). In addition, participants received both internal and external resources that they were able to access if they experienced any distress in relation to completing the survey. Resources from ECU included the East Carolina University Center for Counseling and Student Development. In addition, external emotional support resources from Therapy for Black Girls and Melanin and Mental Health were provided to study participants.

Data Analysis

Power analysis. The present study was powered to answer the primary research question of interest (i.e., research question 1). While CC, beliefs, knowledge, and eHealth literacy have not been widely examined in the context of African American college women, there are other studies assessing eHealth literacy and cancer knowledge, which yielded small to medium effect sizes. One study assessing eHealth literacy and colorectal cancer (CRC) knowledge, suggested eHealth literacy was positively associated with CRC knowledge ($\beta = .116, p < .001$) (Mitsutake et al., 2012). Using a medium effect size, an a priori sensitivity analysis was conducted using G*Power 3.1.9.3, where a linear multiple regression was used to determine sample size. The power analyses indicated that a total of 55 participants are required for a power of 0.80, at the .05 level of significance would detect a medium effect size of $d=.15$.

Quantitative data analysis. At conclusion of the study, data were downloaded from Qualtrics and analyzed using IBM SPSS Statistics 26 Software. A series of preliminary analyses were conducted to test for reliability of measures, normality, and potential covariates. Non-parametric tests and appropriate transformations were employed to control for non-normality when needed. Additionally, covariates of significance were controlled for in analyses predicting key dependent variables. Descriptive statistics were obtained (i.e., mean, median, standard deviation, percentages) for demographic and key study variables including eHealth literacy, CC knowledge, CC screening beliefs, HPV vaccination beliefs, pap smear adherence, HPV vaccine status, medical mistrust, provider recommendation and gendered racial microaggressions.

Qualitative data analysis. The study's qualitative approach assisted in the decolonization of research methodologies that inadequately represent the unique lived experiences of Black women (Barlow & Johnson, 2021). A thematic analytic technique from

Braun and Clarke (2006), was employed to analyze the qualitative portion of the present study. Participants responses were transcribed verbatim and entered to a password protected document. Subsequent analyses used a hybrid approach of inductive and deductive coding (Braun & Clarke, 2006) and used participants' words to summarize a detailed description of their responses. Recurring sentiments were extracted from participants' responses and collated into similar thematic groups (Braun & Clarke, 2006).

Primary Research Questions

Primary analyses consisted of a series of linear regression analyses, independent sample t-tests and chi-square tests. More details on primary and secondary analyses conducted are described below. Primary analyses are presented into the three previously discussed focal areas (see Figure 3).

Focus Area 1: eHealth literacy

Research question 1. To what extent does perceived eHealth literacy related to CC knowledge and CC prevention beliefs in Black women? Three separate linear regression analyses were conducted to determine the association of eHealth literacy with CC screening beliefs, HPV vaccine beliefs, and CC knowledge.

Research question 2. To what extent does perceived eHealth literacy relate to pap smear adherence in Black women? An independent samples t-test was conducted to determine whether mean eHealth literacy scores differed significantly across pap-smear adherent and non-adherent groups (i.e., participants who were 21-years of age or older).

Focus Area 2: CC Prevention and Screening Behaviors

Research question 3. How does knowledge of CC relate to CC screening behavior in Black women? Due to restricted sample size of pap-smear eligible participants precluding robust

regression analysis, descriptive analyses (percentages) were employed to compare CC knowledge between older (i.e., 21 or older) and younger students.

Research question 4. How does CC primary and secondary prevention (i.e., HPV vaccine and pap-smears) relate to CC prevention related beliefs of Black women? Two separate analyses were administered to test for differences in both HPV vaccination beliefs and CC screening beliefs. An independent samples t-test was conducted to test for differences in HPV vaccine beliefs among Black women who received the HPV vaccine compared to Black women who have not received an HPV vaccine. An ANCOVA was used to assess for differences in CC screening beliefs among age-eligible Black women who were pap-adherent compared to their non-adherent counterparts, while controlling for sexual activity.

Focus Area 3: Black Female Collective Health Experiences

Research question 5. What is the relationship between medical mistrust (a Black female cultural factor), online health information seeking frequency and perceived eHealth literacy in Black women? Two separate analyses were conducted to answer this research question. An ANOVA was used to assess for differences in medical distrust across online health information seeking behavior. A linear regression analysis was then conducted to assess if medical mistrust predicted perceptions of eHealth literacy.

Research question 6. What is the relationship between provider recommendation/acknowledgement of HPV vaccine (i.e., pro-vaccine encounter), CC knowledge and CC prevention and screening behaviors beliefs and HPV vaccination beliefs in Black women? Two linear regression analyses were conducted to assess each hypothesis. The first linear regression entered a dummy-coded provider recommendation as the IV and set CC

knowledge as the outcome variable. The second linear regression dummy-coded provider recommendation and entered it as the IV and set HPV vaccine beliefs as the DV.

Research question 7. What is the relationship between provider recommendation/acknowledgment of pap-smears (i.e., pro pap-smear encounter) and reported pap smear adherence? A chi-square analysis was conducted to answer this research question, setting provider recommendation as the IV and secondary prevention adherence as the DV. Categories for provider recommendation included sufficient or insufficient. The DV was dichotomized into two categories including, pap smear adherent and pap-smear non-adherent.

Secondary Research Questions

Research question 8. A secondary goal of this study was to examine the experience of gendered racial microaggressions and relationship to CC related beliefs. Descriptive analyses (mean, standard deviation, percentages) were employed to determine the frequency and stress appraisal of the different types of gendered racial microaggressions. Four separate linear regression analyses were conducted to assess the relationship between both GRM frequency and GRM stress on HPV vaccination beliefs and CC screening beliefs, respectively.

Qualitative Research Questions

A thematic analytic technique (Braun & Clarke, 2006) was used to code and interpret participant responses to the qualitative questions inquiring about CC prevention behaviors, Black media portrayal of women and familial conversations related to CC.

CHAPTER 3: RESULTS

Participant Demographics

A total of 200 participants were recruited for this study. Eighteen participants were excluded as their scores on the validity items were below the cutoff value for inclusion, and thirty-six were excluded for completing less than 70% of the survey. Therefore, a total of 54 participants were excluded from further analysis resulting in a final sample of 146 participants. Participant's ages ranged from 18 to 26 years ($M = 19.21$, $SD = 1.77$). Participants were primarily first-year undergraduates (69.9%), Non-Hispanic Black (89.7%), Cis-gender women (74.8%) who identified as heterosexual/straight (66.4%).

Mothers' highest education achieved was as follows: Master's, Professional, Doctorate Degree (18.3%), 4-year/Bachelor's Degree (25.4%), Associates Degree (17.6%), Some College (15.5%), High School Diploma/GED (17.6%), and 12th grade or less (4.9%). Additionally, fathers' highest education achieved across the same categories was reported as: Master's, Professional, Doctorate Degree (9.3%), 4-year/Bachelor's Degree (15.7%), Associates Degree (10.2%), Some College (20.5%), High School Diploma/GED (29.1%), and 12th grade or less (11.8%). More information on participant demographic characteristics is shown in Table 1.

Descriptive Statistics for Medical Demographics

Out of the total 146 participants, only two (1.4%) indicated a previous diagnosis of HPV infection and three participants (2.1%) reported a history of CC. A majority of the participants indicated that they had received at least one dose of the HPV vaccine ($n = 86$, 77.5%). Of the 86 participants that indicated their receipt of the HPV vaccine, 86% indicated receiving the complete HPV vaccine series. With regard to pap smear uptake, most of the respondents were under the age of 21, so many participants had yet to reach the recommended age for pap-smears. Considering participants were inquired about their pap-smear behaviors within the past three

years—which is consistent with USPSTF guidelines—individuals who were 24-years of age or older during the time of data collection were included in the following analyses on pap-smear receipt. Of those that were eligible ($n = 7$), all but one indicated receiving a pap-smear, but only 2 noted receiving a pap-smear within the past three years. Only 2 of the 7 participants indicated receiving an abnormal pap-smear, all of whom followed up with their health care provider. More than half of the participants are currently sexually active (60.3%) with the number of disclosed sexual partners over the lifetime ranging from 0-19, ($M = 2.71$, $SD = 3.56$). More information on medical demographics and CC related descriptive statistics is found in Table 2- 3.

Descriptive Statistics: Healthcare Variables Relevant to Health Literacy Skills

Framework

Cervical cancer knowledge. In terms of CC knowledge, 131 participants (90.3%), were unable to accurately identify CC related facts ($M = 7.73$, $SD = 2.66$). Fourteen participants (9.7%) answered at least 75% of the CC related facts correctly and were considered to demonstrate adequate CC knowledge. However, it should be noted between 25-138 participants (17.1% -94.5%) endorsed responses of “*I don’t know*” across the different CC questions, instead of directly answering each CC literacy item (i.e., rating item as true or false). The highest endorsed “*I don’t know*” item was in response to the question, “*A pap-smear is a test to find out if a woman is pregnant*” (94.5%, $n = 138$).

Internet use and perceived e-Health literacy. Eighty-nine participants (61%) endorsed internet search engines, including Google and Safari as their most frequented e-health platform and social media, such as Facebook and Instagram, as their least frequented platform (4.8%, $n = 7$). Of the total 146 participants, 69.2% reported searching electronic-based platforms at least one to five times a month, with 78.1% indicating that they perceived themselves to have

adequate e-health literacy, or confidence in their ability to navigate online health information. The mean score on the measure of perceived e-health literacy was 30.73 ($SD = 5.80$) out of the highest possible score of 40. More information on online health information is found in Table 4.

Descriptive Statistics: Healthcare Variables Relevant to Black Feminist Thought

Provider recommendation. Over half of participants reported inadequate provider recommendations or pro-vaccine conversations for the HPV vaccine 54.1% ($n = 79$), suggesting that providers may have neglected conversations related to the importance of the HPV vaccine, despite the CDC providing clinicians with communication guidelines to boost HPV vaccination rates at their respective practices (CDC, 2023b).

CC screening beliefs. In terms of pap-smear beliefs many participants indicated moderately positive beliefs toward this secondary preventive behavior ($M = 69.68$, $SD = 11.58$, with highest possible score of 120). Notably, survey results indicated a low level of perceived barriers to CC screening ($M = 13.79$, $SD = 4.25$, with highest possible score of 30) and reported moderate levels of perceived vulnerability to CC ($M = 10.79$, $SD = 2.68$, with highest possible score of 20). In terms of participants' feelings regarding the physical exam component of pap smears, most participants felt moderately comfortable with CC screening experiences, in which they felt secure with their provider ($M = 29.32$, $SD = 7.74$, with highest possible score of 50). Survey results also indicated moderately high levels of perceived benefits of CC screening ($M = 23.43$, $SD = 3.62$, with highest possible score of 30), suggesting participants were in favor of the health promotive behavior.

HPV vaccine beliefs. Participants' beliefs toward the HPV vaccine hovered around the mid-point ($M = 31.45$, $SD = 12.54$, with highest possible score of 66), suggesting their beliefs were neither strongly negative nor positive.

Medical mistrust. On average participants did not strongly endorse distrust toward their health care professional or the medical system ($M = 0.70$, $SD = 1.15$, with highest possible score of 7).

Gendered-racial microaggressions (GRM). The mean score of GRM frequency was 1.98 ($SD = 1.14$), with a range from 0 to 5 with higher scores indicating higher frequency of experiencing gendered racism. Additionally, the mean score of GRM related stress appraisal was 2.18 ($SD = 1.34$), with a range from 0 to 5, with higher scores indicating higher stress related to experiencing gendered racism. Results of BFT and HLSF descriptive data are reported in Table 5.

Preliminary Analyses

Internal Consistency Reliability

Internal consistency reliability was assessed for eHealth literacy, CC screening beliefs, HPV vaccination beliefs, medical mistrust, and dimensions of gendered racial microaggressions: stress appraisal and frequency.

eHealth Literacy. The eHeals scale was used to determine perceptions of eHealth literacy. Cronbach's alpha for this scale was .91., indicating strong internal consistency ($\alpha > .70$).

CC screening beliefs. PSB-Q scale was used to assess attitudes and beliefs toward pap-smear procedure. Internal consistency yielded a Cronbach's alpha of .82, indicating strong internal consistency ($\alpha > .70$).

HPV vaccination beliefs. Items adapted from Darrensborg et al (2014) were used to assess HPV vaccination beliefs. Cronbach's alpha for this questionnaire was .75, indicating moderate internal consistency ($\alpha > .70$).

Medical mistrust. The Corbie-Smith (2002) Medical Distrust Index was used to assess for potential distrust within health care system and medical research. Cronbach's alpha for this questionnaire was .63, indicating weak internal consistency relative to the consensus cutoff of $\alpha > .70$. However due to the preliminary nature of the current research, this variable will be examined in subsequent analysis but analyzed with considerable caution.

Gendered racial microaggressions. The GRMS (Lewis & Neville, 2014) was used to assess for the intersection of gender and race-based microaggressions experienced by Black women. This scale consisted of two dimensions (frequency and stress), which both demonstrated strong internal consistency ($\alpha > .70$). Cronbach's alpha for GRMS frequency and GRMS stress were .95 and .97, respectively. Reliability analyses are reported in Table 6.

Covariate Analyses

Age, sexual orientation, gender, mother and father's educational attainment, family history of cancer, sexual partner history and current sexual activity status were analyzed as potential covariates to be controlled in predictive analyses testing the study hypotheses. Tests of normality indicated that age, e-health literacy, medical mistrust, CC knowledge, and number of sexual partners data were nonnormally distributed. As such, non-parametric tests and appropriate statistical adjustments were employed to control for non-normality. These adjustments will be discussed in the context of specific analyses below. ANOVA and chi square analyses were also conducted for analyses using categorical variables, including sexual orientation, gender, mother and father's educational attainment and family history of cancer.

The following covariate analyses were utilized to assess the relationships between potential covariates (i.e., age, sexual orientation, gender, mother and father's educational attainment, family history of cancer, sexual partner history and current sexual activity status) and

key dependent variables (i.e., eHealth literacy, CC screening beliefs, HPV vaccination beliefs, CC knowledge, medical mistrust, provider recommendations for pap-smear/HPV vaccines and gendered racial microaggressions).

Age and key dependent variables. Age was nonnormally distributed; therefore, Spearman's correlation analyses were employed to determine if age would need to be controlled for in the primary analyses. Results from Spearman's ρ revealed that age was not associated with most primary BFT and HLSF dependent variables. However, age was significantly positively associated with GRM appraisal total, $p < .05$, and was used as a covariate in subsequent predictive analyses.

Sexual orientation and key dependent variables. eHealth literacy, medical mistrust and CC knowledge were non-normally distributed, therefore a Kruskal-Wallis test was employed to determine if sexual orientation would need to be controlled for in primary analyses predicting these variables. In addition to Kruskal-Wallis tests, ANOVAs, and chi-square indicated that sexual orientation did not need to be controlled in subsequent predictive primary analyses.

Gender and key dependent variables. ANOVAs, a chi-square test of independence and Kruskal-Wallis tests indicated that there was not a need to control for gender in subsequent analyses predicting key dependent variables.

Mother and father's education and key dependent variables. ANOVAs and chi-square test of independence were employed for covariate analyses. Additionally, separate Kruskal-Wallis tests were conducted to account for nonnormally distributed variables and to determine if mother or father education attainment (used as proxies for SES) would need to be controlled. Results indicated that mother's education was not related to key dependent variables. However, CC screening beliefs differed across father's education categories, $H(5) = 11.24$, $p = .05$, and

therefore fathers' education was used as a covariate in subsequent analyses predicting CC knowledge.

Family history of cancer and key dependent variables. ANOVAs, a chi-square test of independence and Kruskal-Wallis tests revealed that family history of cancer does not need to be controlled in subsequent predictive analyses.

Personal CC history. Due to the small sample of participants with a CC history ($n=3$), a covariate analysis for this variable was not warranted.

Sexual partner history (i.e., number of sexual partners during lifetime) and key dependent variables. A chi-square test of independence, Spearman's correlational analyses and Mann Whitney U tests suggested that sexual partner history does need to be controlled for in analyses predicting GRM frequency, stress, and medical mistrust. Correlational results indicated that as the number of sexual partners increased, there was a significant increase in reported medical distrust, and a significant increase in both exposure to and stress appraisal of GRM.

Current sexual activity status (i.e., occurrence of sexual intercourse within the past year) and dependent variables. ANOVAs, a chi-square test of independence and Mann-Whitney U tests revealed that sexual activity status does need to be controlled for in subsequent analyses predicting CC screening beliefs and both GRM frequency and stress. Women who reported being sexually active within the last year had significantly lower CC screening beliefs, significantly greater frequency of GRM, and significantly greater GRM stress compared to their non-sexually active counterparts.

Summary of covariate analyses. In summary, covariate analyses indicated that there was a need to control for age when predicting GRM stress appraisal, father's educational attainment when predicting CC knowledge, sexual partner history when predicting medical mistrust, GRM

frequency and stress, and current sexual activity when predicting CC screening beliefs, GRM frequency and stress. Results from covariate analyses are shown in tables 8-14.

Primary Analyses

Primary analyses are presented and discussed within the context of their respective area of foci noted in Figure 3: eHealth literacy, CC prevention and screening behaviors and Black female collective health experiences.

Focus Area 1: eHealth Literacy

Research question 1: To what extent does the perception of eHealth literacy relate to, HPV vaccine beliefs, CC screening beliefs and CC knowledge. Three separate linear regression analyses were employed to determine whether perception of eHealth literacy had a predictive relationship on the respective CC-related variables.

Hypothesis 1a: Higher scores on perception of eHealth literacy will predict more positive HPV vaccine beliefs.

Linear regression indicated that perceived eHealth literacy predicted HPV vaccination beliefs, $R^2=.04$, $F(1,144) = 6.55$, $p=.012$. Specifically, the hypothesis that greater perception of eHealth literacy would predict more positive beliefs toward the HPV vaccine was supported.

Hypothesis 1b: Higher scores on perception of eHealth literacy will predict more positive CC screening beliefs.

Perceived eHealth literacy predicted CC screening attitudes, $R^2=.05$, $F(1,144) = 8.35$, $p=.004$. Specifically, the hypothesis that greater perception of eHealth literacy would predict more positive CC screening beliefs was supported.

Hypothesis 1c: Higher scores on perception of eHealth literacy will predict greater CC knowledge.

Linear regression indicated that higher perception of eHealth literacy predicted CC knowledge, $R^2=.05$, $F(1,144) = 7.97$, $p<.001$. Greater perception of eHealth literacy predicted greater accuracy in CC knowledge, therefore the hypothesis was supported.

Across all three CC related variables, participants who were confident in their eHealth literacy skills were more likely to have greater CC knowledge and more positive beliefs toward the HPV vaccine and CC screening. More information on the three linear regression analyses is found in Table 15.

Research question 2: To what extent does the perception of eHealth literacy relate to pap smear adherence in Black women?

Hypothesis 2: Higher perceived eHealth literacy scores will predict routine pap-smear adherence.

As there were only 7 participants within the sample that met age criteria to receive a pap-smear, this restricted sample size precluded regression analyses to determine if eHealth literacy was predictive of pap-smear adherence. Therefore, alternative analyses were conducted. Participants (21 or older) who received a pap-smear within the past three year ($n=17$) were categorized as pap-smear adherent. Conversely, participants (21 or older) who neglected to receive a pap-smear within past three year ($n=12$) were deemed pap-smear non adherent. An independent sample t-test indicated no statistically significant difference in perceived eHealth literacy scores in pap-smear adherent participants as compared to pap-smear non-adherent participants, $t(27) = -.31$, $p = .76$. The mean eHealth literacy scores for pap-smear adherent ($M=30.52$, $SD=5.20$) was relatively similar to pap-smear non-adherent participants ($M=29.83$, $SD=7.06$). Results of t-test is reported in Table 16.

Focus Area 2: CC Prevention and Screening Behaviors

Research question 3: How does CC knowledge relate to CC screening behaviors in Black women?

Hypothesis 3: There will be a difference in CC knowledge between pap-smear adherent and pap-smear non-adherent participants.

Due to the limited sampled participants ($n=7$) that were eligible to receive a pap-smear, predictive analyses to test this hypothesis were unable to be conducted. Therefore, alternative analyses were conducted to compare CC knowledge between older (i.e., 21 or older) and younger students. Participants who incorrectly responded or provided a response of “*I don’t know*” were considered to have inadequate knowledge. Older students had similar rates of inadequate CC knowledge ($M = 7.60$, $SD = 2.20$) when compared to younger students ($M = 7.19$, $SD = 2.43$). In terms of participants knowledge of the associated benefits of pap-smears, 26 (86.7%) older students were aware that pap-smears are an important measure to prevent a diagnosis of CC compared to 95 (82%) younger students. However, the entire sample of older students and 109 (94.5%) of younger students inaccurately responded to the inquiry if a pap-smear was a test to determine if a woman is pregnant. Despite receiving a pap-smear, older students were unable to identify the purpose of this procedure. Results suggests a large percentage of both older and younger sampled students lack CC related knowledge.

Research question 4: *Research Question 4.* How does CC primary and secondary prevention behaviors (i.e., HPV vaccine and pap-smears) relate to CC prevention and screening related beliefs of Black women?

Hypothesis 4a: Black women who received the HPV vaccine will have more positive beliefs toward the HPV vaccine, compared to Black women who did not receive the HPV vaccine.

The present study had a limited sample of participants who indicated their vaccination completion status (i.e., completed their vaccination series with two or three doses. As such, the following analysis compared participants who have received at least one HPV vaccine dose ($n=86$) to participants who have yet to receive the HPV vaccine. Results from an independent samples t-test indicated a significant difference in HPV vaccine beliefs in Black women who received at least one dose of the HPV vaccine ($M = 36.26$, $SD = 10.05$) compared to Black women who have not received the HPV vaccine ($M = 24.80$, $SD = 10.17$), $t(109) = 5.00$, $p < .001$, therefore the hypothesis was supported. Specifically, individuals who received at least one dose of the HPV vaccine had more positive beliefs toward the HPV vaccine compared to their unvaccinated counterparts. More information on the vaccination adherence and beliefs t-test is reported in Table 17.

Hypothesis 4b: Black women who adhere to routine pap smears, will have more positive beliefs toward CC screening, compared to Black women who did not routinely adhere to pap smears.

An ANCOVA did not indicate a significant effect of pap-smear adherence on CC screening beliefs after controlling for current sexual activity, $F(1,25) = 3.44$, $p = .08$. Results indicate similar CC screening beliefs between eligible Black women (i.e., 21 and older) who adhered to routine pap smears and eligible Black women who did not adhere to routine pap-smears; therefore, the hypothesis was not supported. More information on pap-smear adherence analysis is in Table 18.

Focus Area 3: Black Female Collective Health Experiences

Research question 5. What is the relationship between medical mistrust (a Black female cultural factor), online health information seeking frequency and perceived eHealth literacy in Black women?

Hypothesis 5a: Greater distrust toward the medical system will be associated with increased frequency in online health information seeking behaviors.

When controlling for sexual partner history an ANCOVA did not indicate a significant difference in mean medical mistrust scores across the four frequency categories in online health information seeking behaviors, $F(3,140) = 2.15, p = .10$. Results did not support the hypothesis that the frequency participants spent navigating online health information was related to their level of distrust toward the medical system. Results from medical mistrust and online health information seeking behaviors is in Table 19.

Hypothesis 5b: Greater distrust toward the medical system will predict higher reported eHealth literacy scores.

When controlling for history of sexual partners, a linear regression did not support the hypothesis that greater distrust toward the medical system would predict higher perceived eHealth literacy scores, $R^2 = .01, F(1,144) = 1.55, p = .22$. Results of this analysis is reported in Table 20.

Research question 6 What is the relationship between provider recommendation/acknowledgement of HPV vaccine (i.e., pro-vaccine encounter), CC knowledge, CC screening beliefs and HPV vaccination beliefs in Black women? Two separate linear regression analyses were employed to test specific hypotheses, with pro-vaccine encounter set as the reference variable.

Hypothesis 6a: A pro-vaccine encounter with a health care provider will predict greater CC knowledge.

Linear regression results indicate that pro-vaccine encounter predicted greater CC knowledge, $R^2 = .08(1, 143) = 13.14, p < .001$. Individuals who were positively acknowledged for receiving the HPV vaccine or individuals whose providers recommended the HPV vaccine, demonstrated greater adequacy in CC knowledge.

Hypothesis 6b: A pro-vaccination encounter from their health care provider will predict more positive HPV vaccine beliefs.

Linear regression results indicate that pro-vaccine encounters did predict more positive HPV vaccine beliefs, $R^2 = .17, F(1, 144) = 29.58, p < .001$. Individuals who were positively acknowledged for receiving the HPV vaccine or individuals whose providers recommended the HPV vaccine, reported more positive beliefs toward the HPV vaccine. More information on both linear regressions analyses is found in Tables 21-22.

Research question 7. What is the relationship between provider recommendation/acknowledgment of pap-smears (i.e., pro pap-smear encounter) and reported pap smear adherence?

Hypothesis 7: Women who report having a pro pap-smear encounter with their health care provider will report a higher frequency of routine pap smear adherence than women who do not report a pro pap-smear encounter.

A chi-square test of independence was performed to examine the relation between providers' recommendation/acknowledgement of pap-smear adherence and reported pap-smear adherence among eligible participants (i.e., 21 or older). There was not a significant relation between these variables, $\chi^2(1, N = 29) = .051, p = .82$. Results suggests that there was not a

relationship between providers recommending or positively acknowledging pap smears and pap smear uptake, therefore the hypothesis was not supported. Results of chi-square analysis of provider recommendations and pap-smear adherence can be found in Table 23.

Secondary Analyses

Research question 8. To what extent does the experience of gendered-racial microaggressions (GRM) (i.e., strong/angry Black woman, silence and marginalization, and sexual objectification) relate to CC prevention attitudes and beliefs of Black women?

Descriptive statistics were employed to examine the total mean scores and means for each of the four respective gendered-racial microaggression subscales: Strong Black Woman, Angry Black Woman, Silence and Marginalization and Sexual Objectification (see Table 24). There were comparable scores to both exposure to or frequency of GRM ($M = 1.98$, $SD = 1.14$) and appraisal of stress secondary to the GRM encounters ($M = 2.18$, $SD = 1.34$), scores range from 0 to 5 on both scales, with higher scores indicating higher levels of GRM frequency and GRM stress appraisal. The Angry Black Woman stereotype was the most frequently experienced GRM ($M = 2.43$, $SD = 1.37$), and was also appraised as the most stressful GRM ($M = 2.51$, $SD = 2.33$). Four linear regression analyses were conducted to explore the association between experienced GRM totals (both frequency and stress appraisal) and pap smear beliefs and HPV vaccination beliefs, respectively.

GRM frequency/stress and CC screening beliefs. Per the covariate analyses, the regression model predicting CC screening beliefs from frequency of GRM experiences controlled for sexual partner history and current sexual activity status. The regression model predicting CC screening beliefs from GRM stress appraisal controlled for current sexual partner history, current sexual activity status, and age.

Results indicated that exposure to GRM ($R^2=.08$, $F(3,143) = 4.05$, $p=.009$) and GRM stress appraisal ($R^2=.09$, $F(4,142)=4.63$, $p=.002$) were significant predictors of CC screening beliefs. For both models more frequent experiences of GRM and higher levels of stress related to GRM predicted more positive CC screening beliefs. Results indicate that GRM does not negatively relate to beliefs relevant to engaging with the healthcare systems where women report negative experiences. This finding corresponds with earlier findings in which participants had low scores of medical mistrust suggesting that interactions with the healthcare system may not be a source of concern for participants in this study.

GRM frequency/stress and HPV vaccination beliefs. Per the covariate analyses, the regression model predicting HPV beliefs from GRM frequency controlled for sexual partner history and current sexual activity status. The model predicting HPV vaccine beliefs from GRM stress appraisal controlled for sexual partner history, current sexual activity status, and age.

Results indicated that GRM frequency was not associated with HPV vaccination beliefs ($R^2=.03$, $F(3,144)=1.21$, $p =.31$), however GRM stress was significantly positively associated with HPV vaccine beliefs ($R^2=.08$, $F(4,143) = 3.73$, $p =.006$). Specifically, the more stress someone experienced related to GRM the more positive their beliefs were toward the HPV vaccine. This finding parallels the finding above that GRM does not appear to negatively relate to HPV beliefs and may drive positive attitudes for reasons that are unclear. More information on both GRM stress appraisal and GRM frequency predictive analyses is found in Table 25-26.

Quantitative Findings Summary

The lack of adequate CC knowledge was a widespread issue among many of the participants. Despite their CC knowledge inadequacy, over half of the participants received at

least one dose of the HPV vaccine, which was associated with more positive perceptions of the vaccine compared to their unvaccinated counterparts.

Against this backdrop of limited CC knowledge overall, perceived eHealth literacy was a significant predictor of CC knowledge, CC screening beliefs and HPV vaccination beliefs. Specifically, the more confident participants were in their ability to navigate and evaluate health information, the more knowledge, and greater beliefs they had toward CC and CC prevention behaviors, respectively.

Furthermore, provider recommendations for and/or acknowledgement positively relate to HPV vaccination beliefs, suggesting that providers' positive stance on HPV vaccinations is important to patients' vaccine views. However, provider recommendation for pap-smears did not affect pap-smear adherence, a finding which may be due to the restricted sample size.

Participants in the study had minimal endorsement of medical mistrust, which did not relate to their online health seeking behavior or perceptions of eHealth literacy. However, the previously noted limitations to the reliability of medical mistrust instrument may have impacted this finding.

Finally, both GRM frequency and stress appraisal was associated with more positive beliefs toward CC screening. However, only GRM stress appraisal was associated with greater positive HPV vaccination beliefs. This relationship between GRM and CC prevention beliefs suggests that the racial and gendered microaggressions Black women participants experienced does not serve as a barrier to engaging in CC prevention behaviors.

Qualitative Results

Approximately one-third ($n= 45-52$) of the collected qualitative data were extracted for subsequent analyses. The principal investigator extracted responses that were answered the respective question and reflected a diverse set of demographic and medical characteristics (i.e.,

age, HPV-vaccine status, pap-smear uptake, etc.). All participants' responses were extracted verbatim to avoid compromising the integrity of data. However, brackets were used to ensure clarity of certain narratives. Following extraction of transcriptions, all data were coded and analyzed via Dedoose qualitative management software. Qualitative analyses were conducted using Interpretative Phenomenological Analysis (IPA), a commonly used analytic approach in qualitative psychological studies (Eatough & Smith, 2017). In the present study, an IPA using a BFT lens aimed to deconstruct the generalized perceptions of Black women by taking a close examination of how participants make sense of their unique experiences navigating healthcare and other oppressive systems (Smith & Shinebourne, 2012).

The coding team was comprised of three cis-gendered women. Two of which self-identified as African American/Black with the third woman self-identifying as White. All coders completed a reflexive journal during the analysis process in which thoughts, biases and assumptions of the data were noted and discussed during subsequent group coding sessions. Considering researchers are the sole instrument in qualitative research and are susceptible to bias, reflexive journals are commonly used to enhance the trustworthiness of study findings (Goodell et al., 2016). All coders noted their reactions to participants' responses that resonated with them. Highlighted reflective journal excerpts can be found in Table 27.

A codebook was used to capture thematic elements of participants' comments in alignment with BFT and IPA frameworks. During the first step of the coding process all three coders familiarized themselves with the data then independently open-coded all transcriptions (Goodell et al., 2016), in which initial themes and phrases were identified. Next, the primary investigator (PI) reviewed the other two coders' evaluations and identified discrepant coded items in need of further evaluation. Following the PI's review of independently coded

transcripts, all three coders met to reconcile coding discrepancies until a verbal consensus of overarching themes was met (Armstrong et al., 2019; Goodell et al., 2016).

Based on inter-coder agreement a total of six overarching themes were developed: 1) Strong Black Women, 2) Oppression, 3) Medical Mistrust/Mistreatment, 4) Health Literacy, 5) Medical Autonomy, and 6) Cultural Health Factors (see Table 28), with several related subthemes emerging as well. In keeping with core tenets of BFT, in which Black women have collective experiences but are not a monolithic group, highlighted passages will reflect similar, yet nuanced differences of participants' understandings of their own lived experiences. The following verbatim quotations have been highlighted to provide context for the emergent themes.

Themes and Subthemes

Considering Black women are the sole focus of the present project, a portion of the qualitative research methods inquired about participants perspectives on the ways in which the media portrays Black women. As such, the first two themes discussed will highlight the two thematic elements most salient to the participants' narratives of Black women's identity: *Strong Black Woman* and *Oppression*. Selected participant quotes were used to exemplify the following themes. Additional content on the respective themes and subthemes are in Table 28-31.

Strong Black Woman

The Strong Black Woman (SBW) theme is characterized by culturally specific feminine expectations from Black women, that can be perceived as both favorable and unfavorable. The five relevant subthemes of this theme were 1) *Internal Struggles*, 2) *Independence*, 3) *Education*, 4) *Selflessness* and 5) *Masculinity*. Participants reflected on ways in which the SBW narratives have impacted their lived experiences.

Internal struggles. A few participants noted some of the emotional conflicts they endured were largely due to the intersection of their race and gender. Participants discussed internal struggles primarily focused on stereotyped sexualization, perceived inferiority, and lack of protection for Black Women. Quotes exemplifying these struggles include:

“Black women aren’t protected.”

“We are seen below are [our] true capabilities. We are always stereotyped before we get an opportunity to do anything.

“... perceived as ghetto because we [Black women] believe in different things and wear things differently than others of the outside races.”

Another participant highlighted how such inner conflicts are maintained by the messages from the Black male collective to whom they attribute messages like, *“they [Black women] are always trying to cause problems.”* Comparisons to Black men, other races and overall stereotypical generalizations of a Black woman are direct sources participants highlighted as driving internal struggles among Black women.

Independence. The portrayal of Black women as being overly self-sufficient was a recurring theme in many participants responses. Interestingly, independence was often conceptualized through a dichotomized (i.e., good, or bad) and context specific lens. Specifically, in terms of relationships independence was seen as a barrier when navigating romantic partnerships, but possibly a protective factor within an academic setting. Results indicate the narrative that Black women are immune from needing assistance has a potential impact on overall well-being. In keeping with this theme, participants noted phrases like *“overly, or hyper independent”*. Another participant noted,

“... these characteristics can be damaging because we [Black women] are not seen as needing help and don't get the help that we [Black women] may need”

Education. Participants reflected on increases in educational attainment and career advancement among Black women, and how being well-educated was a favorable trait. Like prior SBW related subthemes, there were also contradictory reflections. Participants noted how educational attainment in Black women is sometimes overlooked and undermined by their physical appearances. In keeping with this theme, participants noted phrases as “*Black excellence*,” “*uneducated*,” and “*ignorant*”. Other participant responses exemplifying this narrative include,

“I've been seeing Black women on a climb up in wealth, schooling, and jobs, being at the top of their class, and graduating early.”

“[Black women] are portrayed as incompetent sexual objects, when we really are smart, more than just a nicely shaped body.”

“I hate the way we bash and uplift different parts of us. I wish black women were respected no matter how they are portrayed.”

Selflessness. Several participants reflected on the narrative of Black women prioritizing others before themselves. Other participants sentiments related to the dismissal of Black women and being socialized to take a caregiver role, suggests that selflessness is a core feature of their identity that is likely to cause mental taxation and viewed as an additional internal struggle. One participant stated,

“... black women are always there for those who need it but sometimes it seems like no one is there for black women...”

Masculinity. Phenotypical and personality descriptions of the Black women were often reflected as aggressive or having masculine characteristics. In reference to anger, which is often viewed as an unfavorable trait for women, participants noted the unique challenges their marginalized identity created in their personal and professional lives. The media portrayal of Black women as masculine, angry, manly, and aggressive continues to perpetuate the misconceived narrative that Black women continue to face interpersonal difficulties due to their “*angry and masculine*” disposition. One participant noted that,

“... *black men think that black woman are ‘masculine’ and aggressive more than any other race...it's really your own people.*”

Oppression

The oppression theme is characterized by participants descriptions of their experiences marked by unjust treatment and reference to the overlapping and interdependent systems of discrimination. The four relevant subthemes include 1) *Racism*, 2) *Sexism*, 3) *Colorism* and 4) *Misogynoir*. Participants reflected ways in which “*black women are the most oppressed person [people] in society.*”

Racism and sexism. Considering the significant overlap between gender and race, the subthemes of racism and sexism will be described together. Racism describes the endured discriminatory experiences due to participants’ racial identity. Participants highlighted racism in different settings including churches, work, and schools. The related sexism theme indicates how the media often portrays Black women as inferior compared to men and White women. For many participants, due to their battles with racism and sexism, their authenticity comes at a psychological and potentially physical cost. In keeping with this theme, participants noted phrases like “*underdogs*” and being seen “*in a negative light.*” One participant noted,

“... [Black women] aren't on the same level as a white person, the media looks at a black person as someone that has to run the extra mile to get to the same spot as a white people [person] that only took two steps to get where they are.”

Misogynoir. Misogynoir refers to anti-Black misogyny (Bailey, 2011). Some of the participants' responses reflected their experiences regarding the intersection of race and gender. Participants noted how anti-Black misogynistic comments come from both non-Black individuals and Black men. Participant narratives also noted situations of internalized misogynoir, suggesting that anti-Blackness from same gendered and racial peers was another pressing concern. Quotes that exemplify this theme include,

“... black men and or nonblacks that feel that black women aren't worthy of love or should seek love elsewhere.”

“...there is always a negative connotation around them [Black women], and black women are usually the ones who say it.”

Colorism. The media portrayal of dark-skinned women as a mere commodity was reflected in some participants responses. Specifically, participants highlighted ways in which Eurocentric features are more of a societal preference compared to Afrocentric features. In addition to gender and race, discrimination based on darker skin complexion was another difficult experience among some participants. One participant stated,

“The media only portrays Black women with a lighter skin tone and more Eurocentric features (small nose, loosely curled hair, etc) in a positive light and they're portrayed a lot more. Black women with a darker skin tone or with more Afrocentric (larger nose, more coily or afro hair, etc) features are portrayed more negatively if they're even portrayed at all..

Medical Mistreatment/Mistrust

The third theme was Medical Mistreatment/Mistrust which reflects negative attitudes, beliefs and experiences within the healthcare system that add barriers to health care access. Contrary to the quantitative assessment of medical mistrust in clinical research, skepticism toward the medical system was a salient concern among many participants. When queried about racial identity in relation to CC prevention behaviors participants spoke to their increased risk for disparate outcomes and their preference for Black health care providers. Additionally, poor patient-provider interaction was another factor that effected CC prevention adherence. Despite such less-than-ideal experiences some participants reflected on their resilience and their ability to overcome such mistreatment in efforts to prioritize their health. Fortunately, such interactions did not preclude some participants' ability to engage in health promotive behaviors. Quotes that exemplify medical mistreatment/mistrust include,

“My health care provider is an African American woman it has made me more proud to receive a pap smear without fears of being hurt.”

“It is no mystery how some hospitals may treat black women. Some believing they have a higher tolerance than others. I am all for a vaccine. But you never know how you will be treated”.

Health Literacy

This theme was defined as the ability to find, use and understand health information. The two related subthemes include 1) *Adequate Health Literacy* and 2) *Inadequate Health Literacy*.

Adequate Health Literacy. Some participants were able to identify the causative agent behind this disease, were knowledgeable about Black women's heightened risk toward CC, and expressed the importance of engaging in both primary and secondary preventive measures. Other

participants highlighted the lack of transparency from their health care providers and discussed actions taken to prioritize their health. Quotes used to exemplify health adequacy include,

“HPV is so transmittable there is no reason not to get it [HPV vaccine]”

“[HPV Vaccine] it will possibly protect me in the long run”.

“As a black woman, it seems as if I have a higher risk of things wrong when it comes to the medical field, so I get everything I can do to prevent those problems from arising”.

“...they [Providers] don’t try to warn black women of preventive measures. . . take steps to ensure my protection.”

“... doing more research about providers” and “... need to further research on the topic [CC].”

Inadequate Health Literacy. Although several participants acknowledged their health, safety, and recommendations from the doctor as primary reasons for getting the vaccine, there were also some participants who expressed their aversions and unique perceptions of the vaccine. In terms of inadequate health literacy there were some participants who mis-identified the purpose of the HPV vaccine. Limited exposure to CC information was identified as a potential precipitant toward inadequate knowledge. Furthermore, the age of the participants was also highlighted as an obstacle for CC related conversations with family. Quotes used to exemplify health inadequacy include,

“I believe that HPV is given to many of those who receive the vaccine.”

“You’re still a baby.”

“... too young to speak in detail about going to the obgyn.”

Medical Autonomy

Medical autonomy refers to the ability to make one's own health-related decisions. Due to the recommended age to begin the HPV vaccination series (9 years-old), many participants reflected on their limited role in HPV-vaccine decision making. However, for some participants getting the vaccine was their decision. Additionally, medical autonomy was precipitated by medical mistrust. Participants reflected on their sense of agency when navigating the healthcare system. The ability to prioritize their health during such a formative period in terms of healthcare utilization served as a protective factor for many participants. Quotes used to exemplify medical autonomy include,

“Increased personal health advocacy and importance of communicating with doctors because I know how negatively black women are impacted in the health system.”

“I’m always having to ask more questions, get data and statistics on it before I follow through.”

Cultural Health Factors

Cultural health factors include the Black collective shared attitudes and behaviors that impact health decisions and behaviors. Participants noted the negative experiences of Black women in media as a contributing factor to their fear of pap-smears. The strength of the Black women and poor delivery of health information from providers were identified as barriers when navigating the medical system. Media portrayal and stereotypical narratives among the Black collective had an interdependent relationship on participants' health behaviors and experiences. Quotes used to exemplify cultural health factors include,

“... [in the] black household it was really rare to discuss anything sexual.”

“. . . [STIs are a] taboo topic that get brushed over by families. . . conversations make the situation worse and could lead to stress in the families.”

“... although we are thought to be so strong, I understand that this is not the case when it comes to healthcare and that all issues need to be taken seriously.”

“a black woman is talked down to or is talked to in a way that goes over her head she may seem like she isn’t supposed to be there.”

Qualitative Summary

In sum, qualitative analyses highlighted the different types of oppressive experiences endured by the Black female collective. Despite awareness of direct experiences with mistreatment from the healthcare system, their racial/gender counterparts and even among other Black women, participants were able to reflect on how such unjust experience catalyzed their sense of resiliency. Qualitative findings also indicated a heightened sense of awareness of disparate outcomes in Black women, and their eagerness to advocate for themselves when navigating oppressive systems.

Quantitative and Qualitative Summary

Qualitative results complimented the quantitative findings, such that participants’ narratives added additional context to their experiences of GRM. Specifically, their exposure to GRM and secondary stress appraisal was reflected in participants’ responses in which they discussed discriminatory experiences related to their gender and racial identity. Despite quantitative findings indicating a lack of CC related knowledge, qualitative data highlighted ways in which participants overcome their health literacy barriers. Participants’ noted ability to increase their exposure to health information platforms, confidence to address health concerns with their provider and their developing commitment to better understand disparate health outcomes, likely serve as protective factors.

CHAPTER FOUR: DISCUSSION

The previous chapter presented the results of the quantitative data analysis and highlighted several qualitative themes relevant to the experiences of Black women, their health care experiences, and CC prevention behaviors. This current chapter will summarize those findings through a cultural lens, specifically relying on relevant literature and elements of BFT and HLSF. The limitations of the current study, clinical and research implications and future directions will also be discussed.

The purpose of this study was to explore the relationships between CC prevention behaviors among African American college women and the following potential contributors to these behaviors: 1) perceived eHealth literacy 2) CC knowledge & beliefs and 3) the Black female collective unique health experience, specifically medical mistrust, provider recommendations/affirmations, and gendered-racial microaggressions. The researcher's interest in cancer disparities, health literacy, Black women's health issues and personal experiences as a self-identified Black woman inspired this project. The known fact that CC is one of few preventable cancers, and the paucity of literature on the experiences of Black women navigating the medical system served as additional elements of inspiration. The current study adds to the current body of literature, by examining CC prevention behaviors through intersectional and comprehensive complementary frameworks.

Review of Key Findings

Findings Related to the Health Skills Literacy Framework

HPV vaccine uptake. The findings from this analysis indicated that participants in this sample reported high rates of vaccine initiation (77.5%, $n = 86$), as well as high rates of completion of a HPV vaccine series among those who had initiated vaccination (86%, $n = 74$).

The reported vaccination rates of the present study are similar or greater than rates reported in other studies (Bednarczyk et al., 2011; Okafor et al., 2015) and with similar samples (Coffie et al., 2022; Laz et al., 2010). Notably, the most recent data from the National Health Interview Survey (NHIS) indicates that among adults aged 18-26, the percentage of individuals who have received at least one dose of the vaccine increased from 22.1% in 2013 to 39.9% in 2018 (Boersma & Black, 2020). The same survey reports that participants who completed the series increased from 13.8% in 2013 to 21.5% in 2018 (Boersma & Black, 2020), indicating that participants in the present study surpassed the average rates of HPV vaccine uptake.

Considering the recommended age to begin the HPV vaccination series (9-years-old), unsurprisingly both qualitative and quantitative results indicated that uptake of this vaccination was largely the decision of their parents/guardian or a requirement for school. In an effort to leverage the benefits of parental/guardian awareness of HPV, global interventions have been implemented to educate parents about HPV/CC (Bennett et al., 2022; Kaufman et al., 2013) with a particular focus to create culturally tailored interventions for racial/ethnic, high-risk populations (Batista, 2016; Downs et al., 2010). Despite most study participants acknowledging uptake of at least one-dose of the HPV vaccine, some reported not receiving the vaccine. Perceptions of vaccine ineffectiveness, insufficient information to make informed decisions and uncomfortable encounters with health care professionals are health stymieing factors highlighted in other qualitative studies that used a predominately Black women sample (Allen et al., 2012; Leath et al., 2020; Ko et al., 2019).

Pap-smear uptake. The 7 participants who met the age criteria indicated receiving a pap-smear within their lifetime, however only 2 of the 7 indicated receiving a pap-smear within the past three years. With consideration to the restricted range in eligible CC screening

participants, pap-smear adherence rates in the present study are comparable to the U.S. current average adherence rate. Using the most recent NHIS, the percentage of individuals who are not up to date on their pap-smear increased from 14% in 2005 to 23% in 2019 (National Cancer Institute, 2022). Similarly, participants' pap-smear adherence rates are comparable compared to data from other studies that prioritize racial/ethnically high risk and college-age populations (Ahmed et al., 2020; Fuzzell et al., 2021).

Despite inappropriate follow-up to abnormal pap-tests being a known driver for increased CC mortality among Black women (Sage et al., 2020), all participants who indicated receiving an abnormal pap-test result reported following up with their provider. In the current study sample, high rates of insurance coverage, educational attainment and positive familial values toward CC prevention behavior likely serve as health promoting factors, that are also well documented in cancer prevention literature (Cohen et al., 2019; DeGraff et al., 2021). Interestingly, in a study comparing CC screening services between HBCU's and non-HBCU's, fewer HBCUs offered pap-testing compared to non-HBCU's (Barnett et al., 2016). Considering the present study did not question the location in which pap-smears were received, it is unclear if attending a PWI influenced their pap-smear adherence.

eHealth literacy. Findings indicate that 78.1% of participants endorsed high rates of confidence in their ability to successfully navigate online health platforms. Additionally, 61% ($n=89$) of the current study sample indicated using internet search engines (safari and google) as their most frequented e-health platform, with roughly 70% ($n=101$) using online health platforms between 1-5 times a month. eHealth literacy literature indicates nearly two-thirds of online-users report using the web to search health-related information (Fox & Duggan, 2013), with roughly 40% of internet users using similar platforms to research health problems for

themselves or family within the past month (Horrigan, 2016). Although there are data that increased internet use among college students is associated with higher perceptions of eHealth literacy (Paige et al., 2017; Stellessfson et al., 2011) there is literature that also suggests college students lack the ability to locate, use and evaluate eHealth information (Early et al., 2021; Stellefson et al., 2011). The present study results indicated a disconnect between participants' confidence in their ability to navigate online health information and knowledge of CC health information. Despite perceptions of high eHealth literacy, participants were unable to demonstrate adequate CC knowledge. Such gaps between relatively high levels of perceived eHealth literacy and actual health knowledge have been found among other college students (Stellefson et al., 2011).

Cervical cancer knowledge. 90.3% of participants ($n=131$) were unable to accurately identify CC information. Similarly low CC literacy rates were found in other studies with AAW (Brown et al., 2011; Ojeaga 2019). The qualitative results noted that conversations related to sex were taboo in some Black households, which likely results in limited exposure to discussion of a cancer that is caused by a sexually transmitted virus. Although avoidance of sexual conversation may seemingly protect young Black girls from the jezebel stereotype, in which Black girls and women are hypersexualized, it can come at a cost (Collins, 2002). Limited knowledge of HPV and CC prevention behaviors is a well-documented determinant of CC morbidity and mortality among Black women (Brown et al., 2011; Godfrey et al., 2018). Fortunately, educational interventions have been employed to foster the understanding of CC among Black college women and increase their motivation and commitment to get vaccinated and receive pap-smears when eligible (Staples, 2018).

Findings Related to Black Feminist Thought

Medical mistrust. The distrust the AA community has with the medical system is a longstanding issue that has created a legacy of low rates of health care-seeking behaviors. Despite noted limitations with the medical mistrust questionnaire, in which nearly two-thirds of the participants denied negative perceptions of health care providers and the clinical research medical system, medical distrust was a salient theme in qualitative findings. Such findings highlight the importance of a supplemental qualitative approach to adequately represent the unique experiences of Black women (Barlow & Johnson, 2021).

As discriminatory practices continue to permeate the healthcare system, uncomfortable interactions with health care providers were an inevitable discussion point among many participants. Despite their sentiments of being overlooked, feeling unsafe with their non-Black providers, and perceptions of their intelligence being questioned, many participants were able to overcome such barriers and engage in CC prevention behaviors. The resilience of the Black women as it relates to health behaviors and status is an understudied phenomenon. As reported in the current literature, resilience in Black women is fostered by having a supportive network and experiences of belongingness (Catabay et al., 2019; Dale & Safren, 2019). The social support that catalyzes medical adherence comes in a variety of forms including community outreach programs, policy changes and interpersonal connections. The ability to establish perceived emotional, tangible or informational support is essential to help Black women thrive in the medical system, as well as in other structurally oppressive organizations (Dale & Saften, 2019). Considering the impact of social support on medical resilience, more health care providers should make a concerted effort to prioritize socially and culturally informed communication approaches to optimize health behaviors.

Provider recommendations. Although visits to health care providers are associated with increased recommendations for pap-smears and initiation of pap-testing (Guo et al., 2017; Kue et al., 2017), the present study analyses suggested that provider recommendation/acknowledgement for pap-smears were often inadequate. Fortunately, even with limited communicative efforts from providers and previously noted limited CC knowledge among participants, there was 100% pap-smear uptake in age-appropriate students, such that all pap-smear eligible participants indicated receiving a pap-smear within their lifetime. Reasons for improper provider pap-smear recommendations are poorly understood. However, in past research many health care providers have expressed avoidance of initiating sex related topics with their patients due to their fear of patient privacy invasion and provider embarrassment (Zeler et al., 2020).

Additionally, both provider fear of perpetuating the “Jezebel” stereotype and patient fear of being labeled as a jezebel, a harmful category that depicts Black women as sexually promiscuous and sexually aggressive (Collins, 2002), is a documented dual barrier to satisfactory patient-provider sexual health communication among Black women (Thorpe et al., 2022). Although sexually related topics may heighten discomfort, it does not serve as a justification for providers and patients to avoid sexual health communication. Contrastingly, some patients even welcome such conversations and express the desire for providers to include sexual communication at every visit (Fuzzell et al., 2016; Zeler et al., 2020). Health care providers need to be more intentional with providing safe and inclusive environments to increase sexual health communication.

Gender racial microaggressions. The Angry Black Woman (ABW) was the most frequently experienced GRM and was also perceived as most stressful. The requirement to be composed during times of heightened distress is a popular recipe for being labeled as an ABW,

known to jeopardize a Black woman's mental and physical health (Lewis et al., 2016; Wright & Lewis, 2020). The use of this pejorative stereotype describes Black women as loud, argumentative, emasculating and verbally assaultive (King, 2019). To avoid the mental taxation, Black women silence themselves by diluting or suppressing their true emotions to avoid being labeled as an ABW (Lewis et al., 2016). In addition to the prominence of the ABW microaggression, as the age of college students increased, the GRM related stress also increased. Unfortunately, exposure to GRM can begin as early as adolescence in which 14–17-year-old girls face tone-policing (Gadson & Lewis, 2022), and continues throughout later adulthood, compounded by the intersectionality of ageism (Smith-Tran, et al., 2022).

To our knowledge this study is the first to empirically explore the relationship between GRM and CC prevention beliefs. Interestingly, perceived stress toward GRM was associated with more positive pap-smear and HPV vaccination beliefs. This suggests the capacity to blunt the potential for GRM to negatively influence important prevention-seeking behaviors and speaks to the depth of resiliency in Black women. As previously mentioned, resilience in Black women serves as a protective factor against prejudice and discrimination (Dale & Safren, 2019). Black women who have learned to not internalize such GRM are more likely to have higher levels of self-esteem (DeFrancisco & Chatham-Carpenter, 2000). This finding may be another benefit of not internalizing GRM.

Furthermore, the study participants' experience of GRM stress suggests the importance of finding ways to overcome future prejudicial and discriminatory interactions. Self-care practices including the establishment of supportive networks (Dale & Safren, 2019), positive self-affirmations, relations with the traditional Black church (DeFrancisco & Chatham-Carpenter,

2000) and use of resistance strategies in which they directly confront the perpetrator (Lewis et al., 2017) are important ingredients to foster a sense of resiliency.

Key qualitative findings. Many overarching themes highlighted unique experiences most salient to the Black female collective. Specifically, being a SBW was a central component to participants' lived experiences. The SBW is a race-gender archetype that defines how the ideal Black women should behave (Wood-Giscombe, 2010). Participants in the present study reflected on how holding this trait is both an asset and liability. Like other studies that explored the SBW phenomenon, the expectation to be hardworking and immune from vulnerability comes at a cost (Castelin & White, 2022) that is known to increase their risk for negative physical and mental health outcomes (Castelin & White, 2022; Watson & Hunter, 2016).

Additionally, participants' reflections corroborated findings in the current literature in which being a SBW can be a protective factor, increasing self-efficacy and self-preservation. (Watson & Hunter, 2016; Wood-Giscombe, 2010). Moreover, participants related educational attainment as a favorable trait among Black women. Participants' commitment to further their education may likely be influenced by their mothers' educational attainment, (over half of participants reported their mothers 'obtained an associate degree or higher).

Integration of Qualitative and Quantitative Findings

The qualitative component of the research helped to add needed context to quantitative findings. Specifically, quantitative results indicated a direct association between GRM stress and positive beliefs toward CC screening and HPV vaccinations. Although seemingly counterintuitive, participants' narratives related to some providers withholding important health information from Black women which required them to take matters into their own hands. The lack of transparency in provider health promotive recommendations is a longstanding concern

among Black women (Cooper & Koch, 2007; Greene et al., 2021; Phillips et al., 2001).

Fortunately, like many participants in the present study, more Black women are starting to exercise agency in an effort to receive appropriate health care (Greene et al., 2021).

As previously mentioned, the quantitative and qualitative exploration of medical mistrust yielded contradictory findings. This disconnect highlights the importance of using measures that are culturally sensitive with robust psychometric properties and assess provider mistrust. Moreover, a mixed-method approach can serve as a preventive measure to reduce the likelihood of researchers missing relevant experiences and drawing erroneous conclusions.

Study Limitations

Sample size. The present study had a small sub-sample of pap-smear eligible participants, which was a limitation. Most participants identified as 18-year-old, college freshmen who did not meet age-requirements for pap-smears. With a subset of only 7 pap-smear eligible participants, there were not enough participants to employ robust CC knowledge/belief comparative analyses between age-eligible pap-adherent and age-eligible non-adherent participants. Considering the reduced barriers to CC related preventive services among college students, this population should continue to be further examined. Future research should recruit a larger sub-sample of participants who meet pap-smear age criteria in an effort to test the relationships between CC knowledge/beliefs and prevention behaviors more rigorously. Potential recruitment strategies could include primary outreach to older students (i.e., junior/seniors) that are enrolled in upper-level courses as compared to an introductory psychology course, largely comprised of freshmen who are likely to be under the age of 21.

Generalization to other populations of Black women. Although Black women college students are a developmentally and racially important group to prioritize in terms of CC

prevention, findings from the study cannot be generalized to the larger Black female collective, including similarly aged women who are not attending college, women at mid-life and older women. Additionally, a large portion of the participants identified as straight, cis-gender women. Due to the unique challenges gender and sexual marginalized populations face with the healthcare system, future research should prioritize individuals from these under-studied intersectional populations who may have more barriers to health care access.

Medical mistrust measurement. The medical mistrust instrument (Corbie-Smith et al., 2002) used for this present study yielded weak reliability ($\alpha = 0.63$) and analyses utilizing this measure were therefore interpreted with caution. Additionally, this measure conceptualized mistrust toward medical research. Assessing perceptions mistrust toward both direct patient-provider interactions and systemic medical discrimination is needed to get a more comprehensive understanding of how perceptions of distrust present in this unique population.

eHealth literacy measurement. The present study explored the perceptions of an individual's ability to confidently navigate online health information. Future research should employ objective assessment to better assess the relationship between acquired eHealth appraisal skills and the actual ability to navigate making actual health decisions. Although perceived eHealth self-efficacy is an important factor in health decision making, unpacking the unique ways in which eHealth skills are applied may capture a fuller conceptualization of eHealth literacy as the ability to locate, evaluate and use acquired health information.

Clinical Implications

Black women have the lowest rates of HPV vaccine uptake and are less likely to receive routine pap smears (Wowla et al., 2013). Findings from the present study indicate that low CC knowledge remains a significant issue among undergraduate Black women. Given that CC is one

of few preventable cancers, CC related educational interventions are of paramount importance. Interventions should leverage widely used media platforms (i.e, Facebook, Twitter) and culturally salient community spaces (HBCUs, Black churches) to disseminate relevant CC prevention information. Importantly, undergraduate institutions have an integral role in both pap-smear and HPV vaccine uptake. As most students are required to have university-issued or private health insurance, students enrolled at respective institutions can overcome some barriers to accessing CC prevention services. Considering the previously mentioned disparity in CC screening services at HBCUs in comparison to PWI (Barnet et al., 2018) combined with the heightened risk for CC among Black women, the allocation of associated screening resources should prioritize HBCUs in an effort to reduce CC disparities.

Despite experiencing GRM and poor interactions with health-care providers, Black women in this study persevered in seeking health care. With the sobering statistics of CC mortality rates among Black women combined with racial trauma, provider education should acknowledge such elements of resiliency in effort to validate the unique experiences of Black women. Reconceptualizing the way in which we view anti-Black trauma is likely to improve patient-provider interaction and reduce the need to overcome barriers in order to engage in healthcare behaviors.

Research Implications

While participants denied medical mistrust in clinical research when quantitatively assessed, they endorsed medical mistrust when qualitative methods were employed. These seemingly disparate results may indicate that supplemental qualitative approaches should be used to understand the nuanced experiences of medical discrimination among Black women that may go unrecognized when relying solely on quantitative measures. Additionally, the perceived stress

of GRM increased with the age of participants, suggesting that as women get older exposure to GRM becomes more mentally taxing. Although few studies have explored the intersection of age and GRM (Gadson & Lewis, 2022; Smith-Tran et al., 2022), more research is needed to understand the different GRM experiences across age groups and ways in which such populations develop resilient coping strategies. Furthermore, considering the intersection of racism and sexism is ubiquitous and the slow rate in which oppressive systems are being dismantled, more research is needed to explore ways in which Black women thrive in a world that views them as inferior.

Future Directions

Given that CC is one of few preventable cancers that disproportionately affects Black women, it is important to broaden our understanding of how the lived experiences of Black women, including the exposure to anti-Black racism and sexism, continue to perpetuate this disparity. As concerns about hypersexuality influence parental denial of the HPV vaccine and fear that providers will perceive them as uneducated and angry somewhat dominates the Black female collective, conversations to deconstruct such “Jezebel” and ABW archetypes are of paramount importance. As this was the first study to conceptualize CC prevention behaviors through an intersectional lens by employing BFT and HLSF conceptual frameworks, future research on similar populations should continue to prioritize culturally sensitive methodologies that challenge widely held stereotypical beliefs of Black women.

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APPENDIX A: IRB APPROVAL



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board
4N-64 Brody Medical Sciences Building· Mail Stop 682
600 Moyer Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 · redc@ecu.edu · redc.ecu.edu/umcirm/

Notification of Exempt Certification

From: Social/Behavioral IRB
To: [Angela Johnson](#)
CC: [Lisa Campbell](#)
Date: 2/11/2022
Re: [UMCIRB 21-002821](#)
Cervical Cancer Prevention Behaviors Among Black Women

I am pleased to inform you that your research submission has been certified as exempt on 2/11/2022. This study is eligible for Exempt Certification under category # 2b.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

Document	Description
Cervical Cancer Fact Sheet(0.01)	Additional Items
Debriefing Form (0.01)	Additional Items
Email Recruitment (0.01)	Recruitment Documents/Scripts
Incentive Survey(0.01)	Surveys and Questionnaires
Informed Consent(0.02)	Consent Forms
Recruitment Flyer(0.01)	Recruitment Documents/Scripts
Study Survey (0.01)	Surveys and Questionnaires
Thesis Proposal (0.01)	Study Protocol or Grant Application

For research studies where a waiver or alteration of HIPAA Authorization has been approved, the IRB states that each of the waiver criteria in 45 CFR 164.512(i)(1)(i)(A) and (2)(i) through (v) have been met. Additionally, the elements of PHI to be collected as described in items 1 and 2 of the Application for Waiver of Authorization have been determined to be the minimal necessary for the specified research.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: CONSENT FORM

You are being invited to participate in a **research** study titled “*eHealth Literacy, Medical Mistrust and Cervical Cancer Prevention Knowledge, Attitudes and Behaviors Among African American Women*” being conducted by Angela Johnson, a graduate student at East Carolina University in the Psychology department. The faculty sponsor for the study is Dr. Campbell. The goal is to survey 200 African American/Black women at East Carolina University. The survey will take approximately 60 minutes to complete. It is hoped that this information will assist us to better understand the unique experiences African American/Black women face when navigating the healthcare system, specifically as it relates to cervical cancer prevention. Your responses will be kept confidential, and no data will be released or used with your identification attached. Your participation in the research is **voluntary**. You may choose not to answer any or all questions, and you may stop at any time. To compensate you for your time, you may be entered into a drawing for one of five \$25 gift cards. If you would like to participate in the gift card drawing, you will be directed to a separate survey where you will be asked to provide your contact information. This information will be stored separately from your survey responses. If you do not wish to participate in the gift card drawing, you may exit at the end of the survey. There is **no penalty for not taking part** in this research study. Please call Angela Johnson at (252) 689-7563 or Dr. Campbell at (252) 328-5519 for any research related questions or the University & Medical Center Institutional Review Board (UMCIRB) at (252)744-2914 for questions about your rights as a research participant.

APPENDIX C: DEBRIEFING DOCUMENT

This is the end of the survey. We thank you for your participation! Your interest is appreciated, and we hope that this study will provide further insight to the unique health care experiences among African American/Black women in the United States.

Cervical cancer is a preventable disease, yet African American/Black women are the most vulnerable to infection and death. The present study was interested in understanding how cultural and eHealth literacy factors influence cervical cancer prevention behaviors (i.e., HPV vaccine and pap smears). To maintain the integrity of the data, we ask that you do not share this information with other students. If you have questions about this study, do not hesitate to contact the researcher at johnsonang20@students.ecu.edu.

You were asked to disclose potential sensitive information. If you feel that this study has affected, you psychologically or emotionally we strongly encourage you to make use of the mental health resources provided below:

* Center for Counseling and Student Development
137 Umstead Hall
East Carolina University, Greenville NC, 27858
Phone: (252) 328-6661

* ECU Psychological Assessment and Specialty Services Clinic
311 Rawl
East Carolina University, Greenville NC, 27858
Phone: (252) 737-4186

*Mobile Crisis
Phone: 1 (866) 437-1821
2269 Stantonsburg Rd., Greenville, NC 27834

*Therapy for Black Girls
<https://therapyforblackgirls.com/>

*Melanin & Mental Health
<https://www.melaninandmentalhealth.com/>

*You may print this page for your records.

APPENDIX D: RECRUITMENT DOCUMENTS

Email Recruitment

Hello <student name>,

We are seeking to learn about the health care experiences of African American women in the United States. Specifically, we hope to learn more about how eHealth literacy influences cervical cancer prevention behaviors. If you identify as an African American/Black woman, we invite you participate in a brief survey.

- You must be a African American/Black, undergraduate at East Carolina University between the ages of 18 and 26, who identifies as a woman to participate.
- Participating in this survey study should take about 60 minutes.
- Participants will have the chance to win one of five \$25 gift cards

Please contact the principal investigator Angela Johnson at (252) 689-7563 or johnsonang20@students.ecu.edu or faculty sponsor Dr. Lisa Campbell at (252) 328 - 5519 or campbellll@ecu.edu for any research related questions or the University & Medical Center Institutional Review Board (UMCIRB) at 252-744-2914 for questions about your rights as a research participant.

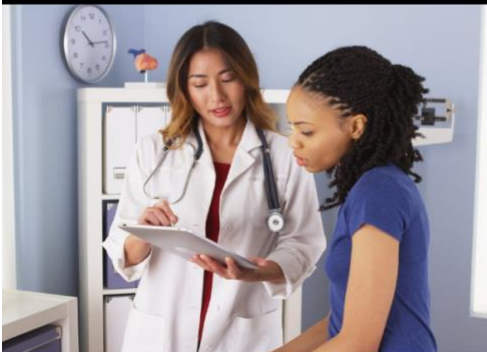
APPENDIX E: RECRUITMENT FLYER

Questions? Contact Angela Johnson @ johnsonang20@students.ecu.edu



RESEARCH STUDY RECRUITMENT

CALLING ALL BLACK WOMEN



WE WANT TO HEAR FROM YOU!

This research study explores eHealth Literacy and Cervical Cancer Prevention Behaviors, and is open to students who are:

- Ages 18-26
- Black, African, or African American women, including multiracial and/or "mixed" women
- All individuals who have a uterus

Share your experiences with preventive healthcare for chance to win one of five \$25 gift cards!

Access the study via QR code below:



APPENDIX F: TABLES

Table 1
Participant Demographics

	%	<i>n</i>
Ethnicity		
Hispanic/Latinx	10.4	15
Non-Hispanic/Latinx	89.6	131
Age		
18	52.1	76
19	19.9	29
20	7.5	11
21+	20.5	30
Gender		
Agender	19.6	28
Cisgender Woman	74.8	107
Gender Nonconforming	4.9	7
Transgender Man	0.7	1
Sexual Orientation		
Asexual	7.5	11
Bi/Pansexual	6.4	19
Lesbian/Gay	1.4	4
Heterosexual/Straight	68.5	100
Queer, Questioning, Other	0.9	2
Mothers' education status		
12 th grade or less	4.8	7
High school diploma/GED	17.1	25
Some college	15.1	22
Associates	17.1	25
4-year/bachelor's degree	24.7	36
Master's, professional or doctorate	17.8	26
Father's education status		
12 th grade or less	11	16
High school diploma/GED	25.3	37
Some college	19.9	29
Associates	8.9	13
4-year/bachelor's degree	13.7	20
Master's, professional or doctorate	8.2	12

Note. Mother and father education status was used as a proxy indicator for SES.

Table 2

Medical Demographics

	%(M)	n(SD)
Insurance		
University issued	4.8	7
Private	51.4	75
Medicaid	52	35.6
Unsure/other	12	8.2
Sexual activity status		
Yes	60.3	88
No	39.7	58
Number of sexual partners		
	(2.72)	(3.56)
0	32.2	47
1	17.1	25
2	10.3	15
3	13.7	20
4	6.8	10
5+	19.9	29
Family history of cancer		
Yes	29.5	43
No	64.4	94
Personal history of cervical cancer		
Yes	2.1	3
No	94.5	138
Unsure	5	5
Personal history of HPV		
Yes	1.4	2
No	98.6	144
Contraception/pregnancy prevention use		
None	39.7	58
Birth control	32.2	47
Male condom	34.2	50
Female condom	0.7	1
Withdrawal	17.8	26
Hormonal contraceptives (i.e., IUD, shot)	15.1	22

Note. Participants had option to select more than one contraceptive used in the past 12 months.

Table 3

Cervical Cancer Prevention Behaviors

	%	<i>n</i>
HPV vaccine uptake		
Yes	77.5	86
No	22.5	25
Completion of series (percentage of vaccine recipients, not of total sample)	86	74
Pap smear uptake		
Within past three years	19	27
Not within past three years	12	17
Never, under 21	69	98
Abnormal pap		
Yes	17.2	5
No	79.3	23
Unsure	3.4	1
Abnormal pap-follow up (<i>n</i>=5)		
Yes	100	5

Note. HPV vaccine uptake includes receipt of at least one dose. Participants under 21 were included in pap-smear descriptive statistics.

Table 4

Online Health Information Demographics

	%	<i>n</i>
Online Health Information Seeking Behavior		
Never	6.2	9
1 -5 times a month	69.2	101
6-10 time a month	13	19
More than 10 times a month	11.6	17
Online Health Information Platforms Use		
Internet search engines	89	130
Video platforms	41.1	60
Social media platforms	37.7	55
Governmental medical websites	34.9	51
Academic medical websites	32.9	78
Health websites geared to the public	39	57
Other	0	0
Never used	2.1	3
Most Frequented Online Health Platform		
Internet search engines	61	89
Video platforms	8.2	12
Social media platforms	4.8	7
Governmental medical websites	5.5	8
Academic medical websites	6.8	10
Health websites geared to the public	8.9	13
Other	0.7	1
Never used	4.1	6

Note. Participants had option to select more than one online health information platform use.

Table 5

Key Study Variables Descriptive Statistics

	M (%)	SD (n)	Range
eHealth literacy	30.73	5.80	11-40
CC screening attitudes	69.68	11.58	36-120
HPV vaccination attitudes	31.45	12.54	0-66
CC knowledge	7.38	2.76	0-14
Medical mistrust	.70	1.15	0-7
Provider pap-smear recommendation	(16.4)	(24)	
Yes	(19.9)	(29)	
No	(56.2)	(82)	
No, under 21	(7.5)	(11)	
Unsure			
Provider HPV vaccine recommendation	(45.9)	(67)	
Yes	(11.6)	(27)	
No	(34.9)	(51)	
Unsure	(.7)	(1)	
Never seen health care provider			
Gendered-racial microaggressions			
Frequency	1.98	1.14	
Stress appraisal	2.18	1.34	

Table 6

Internal Consistency Reliability Coefficients for Key Study Measures

Scale	Cronbach's α
eHealth Literacy Scale	.91
Pap Smear Belief Questionnaire	.82
HPV Vaccination Belief Scale	.75
Medical Mistrust Index	.63
Gender-racial Microaggressions Scale	
Frequency	.95
Stress appraisal	.97

Note. Medical distrust index has a weak Cronbach's α , less than .7

Table 7

Covariate Analyses for Age, Sexual Partner History and Continuous HLSF and BFT Variable

Variable	1	2	3	4	5	6	7	8	9
1. Age ^{a b}	-	-.03	.69	-.09	.07	.10	.05	.17*	—
2. eHealth literacy									.01
3. CC knowledge ^a									.12
4. CC screening attitudes									-.06
5. HPV vaccine attitudes									.11
6. Medical mistrust ^a									.18*
7. GRM frequency									.37**
8. GRM stress appraisal									.29**
9. Sexual history ^{a b}									

Note. ^a Spearman's ρ was used to examine associations for these variables as they were nonnormally- distributed.

^b Correlational analyses were only conducted for potential covariates (age, sexual partner history) and HLSF and BFT dependent variables.

* $p < .05$

Table 8.1

ANOVA for Sexual Orientation and CC Screening Attitudes, HPV Vaccination Attitudes, Gendered Racial Microaggressions Covariate Analyses

Scale	<i>M</i>	<i>SD</i>	F ratio	df	η^2
CC Screening	69.59	11.57	1.24	4	0.03
Asexual	65.91	10.71			
Bisexual/Pansexual	71.73	9.52			
Lesbian/Gay	65.00	13.83			
Straight	69.18	12.17			
Queer/Ques/Other	75.00	11.57			
HPV Vaccination Beliefs	31.57	12.51	0.92	4	0.03
Asexual	25.36	12.18			
Bisexual/Pansexual	34.15	10.28			
Lesbian/Gay	33.75	5.85			
Straight	31.72	13.32			
Queer/Ques/Other	31.09	9.57			
GRMS Frequency	1.98	1.13	1.14	4	0.03
Asexual	2.12	0.92			
Bisexual/Pansexual	1.72	1.13			
Lesbian/Gay	1.17	1.49			
Straight	2.08	1.11			
Queer/Ques/Other	1.37	1.34			
GRMS Stress	2.18	1.34	1.71	4	0.05
Asexual	2.36	1.01			
Bisexual/Pansexual	1.69	1.2			
Lesbian/Gay	1.38	1.37			
Straight	2.33	1.33			
Queer/Ques/Other	1.72	1.68			

Note. Ques is an abbreviation for questioning.

Table 8.2

Kruskal-Wallis Test for Sexual Orientation and eHealth literacy, Medical Mistrust and CC Knowledge

Covariate Analyses

Measure	eHealth Literacy	Medical Mistrust	CC Knowledge
Kruskal-Wallis H	5.32	4.51	7.03
df	4	4	4
<i>p</i>	.26	.34	.14
N	145	145	144

Table 8.3

Chi-Square Test of Independence Sexual Orientation by Pro Pap-Smear Encounter

Group	Provider Encounter	
	Pro Pap-Smear Encounter	No Pro Pap-Smear Encounter
Asexual	4	0
Bisexual/Pansexual	2	0
Lesbian/Gay	1	0
Straight	12	8
Queer, Questioning, Other	1	1
$\chi^2 (1, N=29) = 4.24, p = .38$		

Table 8.4

Chi-Square Test of Independence Sexual Orientation by Pro HPV Vaccination Encounter

Group	Provider Encounter	
	Pro HPV-Vac Encounter	No Pro HPV Vac Encounter
Asexual	4	3
Bisexual/Pansexual	9	4
Lesbian/Gay	4	0
Straight	44	19
Queer, Questioning, Other	6	0
$\chi^2 (1, N=93) = 4.86, p = .30$		

Table 9.1

*ANOVA for Gender Identity and CC Screening Attitudes, HPV Vaccination Attitudes,
Gendered Racial Microaggressions Covariate Analyses*

Scale	<i>M</i>	<i>SD</i>	F ratio	df	η^2
CC Screening	69.54	11.64	2.08	3	0.04
Agender	66.32	14.04			
Cis-Woman	70.57	10.80			
Gender Nonconforming	69.57	10.86			
Trans-Man	49.00				
HPV Vaccination Beliefs	31.59	12.56	0.59	3	0.01
Agender	29.21	14.53			
Cis-Woman	32.04	12.22			
Gender Nonconforming	33.00	10.03			
Trans-Man	41.00				
GRMS Frequency	1.97	1.14	1.91	3	0.04
Agender	1.66	0.90			
Cis-Woman	2.03	1.19			
Gender Nonconforming	1.98	0.92			
Trans-Man	4.00				
GRMS Stress	2.17	1.34	1.36	3	0.03
Agender	1.89	1.40			
Cis-Woman	2.23	1.34			
Gender Nonconforming	2.26	0.93			
Trans-Man	4.20				

Table 9.2

*Kruskal-Wallis Test for Gender Identity and eHealth literacy, Medical Mistrust and CC
Knowledge Covariate Analyses*

Measure	eHealth Literacy	Medical Mistrust	CC Knowledge
Kruskal-Wallis H	2.84	1.40	4.58
df	3	3	3
<i>p</i>	.417	.705	.205
N	143	143	142

Table 9.3

Chi-Square Test of Independence Gender Identity by Pro Pap-Smear Encounter

Group	Provider Encounter	
	Pro Pap-Smear Encounter	No Pro Pap-Smear Encounter
Agender	3	4
Cis-Woman	13	4
Gender Nonconforming	3	1
$\chi^2 (1, N=28) = 2.68, p = .262$		

Table 9.4

Chi-Square Test of Independence Gender Identity by Pro HPV Vaccination Encounter

Group	Provider Encounter	
	Pro HPV-Vac Encounter	No Pro HPV Vac Encounter
Agender	9	9
Cis-Woman	15	53
Gender Nonconforming	2	3
Transgender Man	0	1
$\chi^2 (1, N=91) = 5.05, p = .168$		

Table 10.1

ANOVA for Mother's Education and CC Screening Beliefs, HPV Vaccination Beliefs, Gendered Racial

Microaggressions Covariate Analyses

Scale	<i>M</i>	<i>SD</i>	F ratio	df	η^2
CC Screening	69.48	11.66	0.85	5	0.03
12th grade or less	67.29	10.56			
High school/GED	66.96	13.16			
Some college	70.14	10.99			
Associates	67.34	9.14			
Bachelor's	71.69	13.56			
Master's/Professional/Doctorate	70.96	10.50			
HPV Vaccination Beliefs	31.59	12.61	1.17	5	0.04
12th grade or less	25.71	12.18			
High school/GED	27.20	10.28			
Some college	32.27	5.85			
Associates	32.54	12.17			
Bachelor's	33.03	13.74			
Master's/Professional/Doctorate	31.59	12.61			
GRMS Frequency	1.93	1.10	1.13	5	0.04
12th grade or less	1.83	1.07			
High school/GED	1.69	1.14			
Some college	1.96	1.11			
Associates	1.63	1.06			
Bachelor's	2.06	1.07			
Master's/Professional/Doctorate	2.26	1.13			
GRMS Stress	2.15	1.10	1.61	5	0.06
12th grade or less	1.82	1.00			
High school/GED	1.76	1.26			
Some college	2.16	1.35			
Associates	1.94	1.32			
Bachelor's	2.22	1.36			
Master's/Professional/Doctorate	2.72	1.34			

Note. Mother's education was used as a proxy indicator for SES

Table 10.2

Kruskal-Wallis Test for Mother's Education and eHealth literacy, Medical Mistrust and CC Knowledge
Covariate Analyses

Measure	eHealth Literacy	Medical Mistrust	CC Knowledge
Kruskal-Wallis H	4.09	3.70	4.65
df	5	5	5
<i>p</i>	.537	.593	.460
N	141	141	140

Note. Mother's education was used as a proxy indicator for SES

Table 10.3

Chi-Square Test of Independence Mother's Education by Pro Pap-Smear Encounter

Group	Provider Encounter	
	Pro Pap-Smear Encounter	No Pro Pap-Smear Encounter
12 th grade or less	0	1
High school diploma/GED	3	5
Some college	4	1
Associates	3	0
4-year/bachelor's degree	6	2
Master's/Professional/Doctorate	4	0

Note. Mother's education was used as a proxy indicator for SES

χ^2 (5, N=29) = 9.49, *p* = .09

Table 10.4

Chi-Square Test of Independence Mother's Education by Pro HPV Vaccination Encounter

Group	Provider Encounter	
	Pro HPV-Vac Encounter	No Pro HPV Vac Encounter
12 th grade or less	3	3
High school diploma/GED	7	6
Some college	10	3
Associates	13	5
4-year/bachelor's degree	16	8
Master's/Professional/Doctorate	18	1

Note. Mother's education was used as a proxy indicator for SES

χ^2 (5, N=93) = 8.94, p = .111

Table 11.1

ANOVA for Father's Education and CC Screening Beliefs, HPV Vaccination Beliefs, Gendered Racial

Microaggressions Covariate Analyses

Scale	<i>M</i>	<i>SD</i>	<i>F ratio</i>	<i>df</i>	η^2
CC Screening	69.25	11.89	0.63	5	0.03
12th grade or less	65.75	9.61			
High school/GED	71.27	14.29			
Some college	68.41	12.76			
Associates	67.85	8.3			
Bachelor's	70.89	10.25			
Master's/Professional/Doctorate	68.58	9.58			
HPV Vaccination Beliefs	32.17	12.11	1.65	5	0.06
12th grade or less	27.75	10.29			
High school/GED	33.76	13.51			
Some college	34.15	11.11			
Associates	27.50	10.95			
Bachelor's	36.92	13.43			
Master's/Professional/Doctorate	32.17	8.62			
GRMS Frequency	1.93	1.16	0.85	5	0.03
12th grade or less	1.50	1.12			
High school/GED	1.99	1.15			
Some college	1.99	1.26			
Associates	2.02	1.40			
Bachelor's	2.22	1.08			
Master's/Professional/Doctorate	1.68	0.75			
GRMS Stress	2.15	1.36	1.36	5	0.05
12th grade or less	1.46	1.36			
High school/GED	2.16	1.37			
Some college	2.24	1.36			
Associates	2.68	1.54			
Bachelor's	2.32	1.19			
Master's/Professional/Doctorate	1.98	1.24			

Note. Father's education was used as a proxy indicator for SES

Table 11.2

Kruskal-Wallis Test for Father's Education and eHealth literacy, Medical Mistrust and CC Knowledge
Covariate Analyses

Measure	eHealth Literacy	Medical Mistrust	CC Knowledge
Kruskal-Wallis H	6.93	3.44	11.24
df	5	5	5
<i>p</i>	.23	.63	.05*
N	127	127	126

Note. Father's education was used as a proxy indicator for SES

*Significant difference at $p=.05$

Table 11.3

Chi-Square Test of Independence Father's Education by Pro Pap-Smear Encounter

Group	Provider Encounter	
	Pro Pap-Smear Encounter	No Pro Pap-Smear Encounter
12 th grade or less	2	4
High school diploma/GED	4	3
Some college	1	1
Associates	0	0
4-year/bachelor's degree	0	0
Master's/Professional/Doctorate	1	1

Note. Father's education was used as a proxy indicator for SES

χ^2 (5, N=29) = 7.17, $p = .208$

Table 11.4

Chi-Square Test of Independence Father's Education by Pro HPV Vaccination Encounter

Group	Provider Encounter	
	Pro HPV-Vac Encounter	No Pro HPV Vac Encounter
12 th grade or less	7	3
High school diploma/GED	18	5
Some college	13	5
Associates	8	1
4-year/bachelor's degree	5	6
Master's/Professional/Doctorate	9	0

Note. Father's education was used as a proxy indicator for SES

χ^2 (5, N=93) = 9.39, p = .095

Table 12.1

*ANOVA for Family History of Cancer and CC Screening Attitudes, HPV Vaccination Attitudes,
Gendered Racial Microaggressions Covariate Analyses*

Scale	<i>M</i>	<i>SD</i>	F ratio	df	η^2
CC Screening	69.60	11.57	0.63	2	0.007
Yes	69.02	10.31			
No	70.13	11.96			
Unsure	69.02	20.29			
HPV Vaccination Beliefs	31.57	13.62	1.65	2	0.02
Yes	31.38	12.88			
No	31.09	11.57			
Unsure	35.67	13.62			
GRMS Frequency	1.98	1.14	0.85	2	0.02
Yes	2.05	1.18			
No	1.98	1.14			
Unsure	1.33	1.26			
GRMS Stress	2.18	1.34	1.36	2	0.006
Yes	2.22	1.33			
No	2.16	1.28			
	1.80				
Unsure	1.71				

Table 12.2

Kruskal-Wallis Test for Family History of Cancer and eHealth literacy, Medical Mistrust and CC Knowledge Covariate Analyses

Measure	eHealth Literacy	Medical Mistrust	CC Knowledge
Kruskal-Wallis H	1.20	0.68	0.75
df	2	2	2
<i>p</i>	.55	.71	.69
N	145	145	144

Table 12.3

Chi-Square Test of Independence Family History of Cancer by Pro Pap-Smear Encounter

Group	Provider Encounter	
	Pro Pap-Smear Encounter	No Pro Pap-Smear Encounter
Fam. History of Cancer	15	7
No Fam. History of Cancer	5	2
$\chi^2 (1, N=29) = .026, p = .87$		

Table 12.4

Chi-Square Test of Independence Family History of Cancer by Pro HPV Vaccination Encounter

Group	Provider Encounter	
	Pro HPV-Vac Encounter	No Pro HPV Vac Encounter
Fam. History of Cancer	43	15
No Fam. History of Cancer	19	9
Unsure	5	
$\chi^2 (1, N=93) = .371, p = .83$		

Table 13.1

*Mann Whitney U Test for Sexual Partner History
and Provider Recommendation for Pap Smear*

	Sexual Partner History
U	122.50
<i>p</i>	.12

Table 13.2

*Mann Whitney U Test for Sexual Partner History and
Provider Recommendation for HPV Vaccine*

	Sexual Partner History
U	914.50
<i>p</i>	.70

Table 14.1

ANOVA for Current Sexual Activity Status and CC Screening Attitudes, HPV Vaccination

Attitudes, Gendered Racial Microaggressions Covariate Analyses

Scale	<i>M</i>	<i>SD</i>	F ratio	df	η^2
CC Screening	69.60	11.57	4.94*	1	0.03
Yes	67.86	10.67			
No	72.17	12.45			
HPV Vaccination Beliefs	31.57	12.51	0.53	1	0.004
Yes	32.18	12.94			
No	30.64	11.89			
GRMS Frequency	1.98	1.14	12.19**	1	0.08
Yes	2.23	1.11			
No	1.58	1.06			
GRMS Stress	2.18	1.34	7.57*	1	0.05
Yes	2.42	1.35			
No	1.81	1.24			

* $p < .05$

** $p < .001$

Table 14.2

Mann Whitney U Test for Current Sexual Activity Status and eHealth literacy, Medical Mistrust and CC Knowledge Covariate Analyses

	Measure	eHealth Literacy	Medical Mistrust	CC Knowledge
Mann Whitney U		2882.00	2889.00	2626.50
<i>p</i>		.15	.09	.59

Table 14.3

Chi-Square Test of Independence Current Sexual Activity by Pro HPV Vaccination Encounter

Group	Provider Encounter	
	Pro HPV-Vac Encounter	No Pro HPV Vac Encounter
Not Sexually Active	27	10
Current Sexually Active	40	16
$\chi^2 (1, N=93) = .026, p = .87$		

Table 14.4

Chi-Square Test of Independence Current Sexual Activity by Pro Pap-Smear Encounter

Group	Provider Encounter	
	Pro HPV-Vac Encounter	No Pro HPV Vac Encounter
Not Sexually Active	10	4
Current Sexually Active	10	5
$\chi^2 (1, N=29) = .077, p = .78$		

Table 15

Regression Analyses for eHealth literacy Predicting CC Knowledge, CC Screening Attitudes and HPV Attitudes.

Variable	B	SE	t	p	95 % CI for B
CC knowledge	.11	.04	2.82	.005	[0.03, 0.19]
CC screening attitudes	-.47	.16	-2.89	.004	[-0.79, -0.15]
HPV vaccine attitudes	.45	.18	2.56	.012	[0.10, 0.80]

Table 16

Differences in Perceived eHealth Literacy by Pap-Smear Adherence, Results from Independent Samples t-Test

	Pap-Smear Status						95% CI of Difference		
	Pap-Adherent		n	Pap Non-Adherent		n	t	df	
	M	SD		M	SD				
eHealth Literacy	30.52	5.19	17	29.83	5.20	12	3.96, 5.36	-.31	27

Note. Sample consists of students who received pap-smear within past three years, regardless of age.

Table 17

Difference in HPV Vaccination Attitudes by HPV Vaccination Adherence, Results from Independent Samples t-Test

	Pap-Smear Status						95% CI of Difference	
	^a HPV Vaccine Adherent			HPV Vaccine Non-Adherent			t	df
	M	SD	n	M	SD	n		
HPV Vaccine Attitudes	36.26	10.05	86	24.80	10.17	25	6.92, 15.99	5.00 109

Note. ^a Participants received at least one dose of the HPV vaccine.

Table 18

ANCOVA for CC Screening Attitudes by Pap-Smear Adherence with Current Sexual Activity Status as Covariate

Source	M	SD	F ratio	df	Partial η^2
Pap-Smear Adherence	67.55	13.49	1.27	1	0.27
Adherent	62.94	13.09			
Non-Adherent	74.08	11.61			

Table 19

ANCOVA for Medical Mistrust by Online Health Information Seeking Behaviors with Sexual Partner History as a Covariate

Source	M	SD	F ratio	df	<i>Partial η^2</i>
Medical Mistrust	0.66	1.03	2.15	3	0.04
Never	0.56	0.73			
1 to 5 times a month	0.63	1.04			
6 to 10 times a month	0.32	0.58			
More than 10 times a month	1.25	1.34			

Table 20

Regression Analyses for Medical Mistrust Predicting Perception of eHealth Literacy

Variable	B	SE	t	p	95 % CI for B
eHealth Literacy	31.36	0.63	49.45	.22	[30.11, 32.62]

Note. Regression model controlled for sexual partner history

Table 21

Regression Analyses for Pro-Vaccine Encounter Predicting CC Knowledge

Variable	B	SE	t	p	95 % CI for B
CC Knowledge	1.60	.44	3.63	<.001	[0.72, 2.46]

Table 22

Regression Analyses for Pro-Vaccine Encounter Predicting HPV Vaccine Attitudes and Beliefs

Variable	B	SE	t	p	95 % CI for B
HPV Vaccine Attitudes	10.35	1.90	5.44	<.001	[6.59-14.12]

Table 23

Chi-Square Test of Independence for Pro Pap-Smear Encounter by Pap Smear Adherence

Group	Provider Encounter	
	Pro Pap-Smear Encounter	No Pro Pap-Smear Encounter
Pap-Adherent	12	5
Pap Non-Adherent	8	4

$\chi^2 (1, N=29) = .051, p = .82$

Table 24

*Descriptive Statistics for Gendered Racial Microaggression Frequency and Stress Appraisal**Subscales*

	<i>M</i>	<i>SD</i>
Gender Racial Microaggression Frequency		
Angry Black Women	2.43*	1.37
Strong Black Women	2.34	1.34
Assumptions of Beauty	1.83	1.33
Silence and Marginalization	1.89	1.25
Gender Racial Microaggression Stress Appraisal		
Angry Black Women	2.51*	1.48
Strong Black Women	1.89	1.38
Assumptions of Beauty	2.20	1.43
Silence and Marginalization	2.26	1.58

*Highest endorsed frequent and stressful GRM

Table 25.1

Regression Analyses for GRM Frequency Predicting CC Screening Attitudes

Variable	B	SE	t	p	95 % CI for B
CC Screening	1.76	.98	1.79	.07	[-.17, 3.69]
Attitudes					

Note. Regression model controlled for sexual partner history and current sexual activity status

Table 25.2

Regression Analyses for GRM Stress Appraisal Predicting CC Screening Attitudes

Variable	B	SE	t	p	95 % CI for B
CC Screening Attitudes	2.36	.73	3.25	.001	[.92-3.79]

Note. Regression model controlled for sexual partner history, current sexual activity status and age

Table 26.1

Regression Analyses for GRM Frequency Predicting HPV Vaccine Attitudes

Variable	B	SE	t	p	95 % CI for B
HPV Vaccine Attitudes	1.76	.98	1.79	.07	[-.18, 3.69]

Note. Regression model controlled for sexual partner history and current sexual activity status.

Table 26.2

Regression Analyses for GRM Stress Appraisal Predicting HPV Vaccine Attitudes

Variable	B	SE	t	p	95 % CI for B
HPV Vaccine Attitudes	2.79	.79	3.54	<.001	[1.23, 4.35]

Note. Regression model controlled for sexual partner history, current sexual activity status, and age.

Table 27

Reflexive Journal Excerpts

Salient Incident	Reflexive Journal Entry	Subjectivity Awareness
Inquiry about racial identity influence on getting the vaccine	<i>I don't think so we're black which comes with history of medical malpractice but we've always been trusting of medicine.</i>	Interesting that this addressed some cognitive dissonance with trusting the healthcare system.
Inquiry about racial identity influence on getting the vaccine	<i>Many times as a Black Woman I question the health care system. It's definitely broken. I know that the doctors know what they are doing and only want to help with prevention & etc. However, I'm always having to ask more questions, get data & statistics on it before I follow through. Many times in history my people have been used as guinea pigs and never given the care they got from the findings.</i>	It's refreshing to know that young Black women are advocating for themselves in the healthcare setting. I just hope that their self-advocating interactions are not challenged by their respective providers.
Inquiry about factors that influence parents/guardians' decision to get the HPV vaccination	<i>I think considering my mom is a nurse she knows all the HPV risks and knows that getting the vaccine counts with many benefits.</i>	My own mother is a nurse and when I was younger, she encouraged me to get the HPV vaccine. Black representation in the medical field is crucial for helping to inform Black patients about the significance of vaccinations and health risks.

Table 28

Themes and Subthemes

Medical Mistreatment/Mistrust

Strong Black Woman

Internal Struggles

Independence

Education

Selflessness

Masculinity

Health Literacy

Adequate Health Literacy

Inadequate Health Literacy

Oppression

Racism

Misogynoir

Sexism

Colorism

Medical Autonomy

Cultural Health Factors

Table 29

Themes Central to Identity of Black Women: Strong Black Woman and Oppression

Theme	Subtheme	Excerpt
Strong Black Woman	Internal Struggles	<i>... I think as far as sexually black women are portrayed as having multiple "baby daddies". Black men in return are praised for having multiple sexual partners or "bodies" just to say they "hit that".</i> – 18-year-old, Cis-woman, HPV vaccine received, pap smear not yet recommended based on age
	Independence	<i>That we are "independent" and "don't need a man", we're just as soft as the next woman, work twice as hard as the next woman, and are graduating at astounding rates—</i> 22-year-old, Cis-woman, HPV vaccine received, pap smear received.
	Education	<i>I feel like the media can sometimes be wish-washy. Sometimes they portray black women as doing too much and being extra. But other times, we are looked at as beautiful and educated.</i> 18-year-old, Agender, HPV vaccine status unknown, pap smear not recommended based on age.
	Selflessness	<i>I think that black women in social media are portrayed as strong, always standing up for others. Not mellow. What I mean is that they acknowledge injustices and try to create ways to solve them.</i> 18-year-old, Cis-woman, HPV Vaccine status unknown, pap smear not recommended based on age.
	Masculinity	<i>The media has portrayed black people as angry and somewhat nasty. The media makes people think we are hard to get along with and that if things aren't going how we see fit then we react off anger.</i> 18, cis-woman, HPV vaccine received, pap-smear received.
Oppression	Racism & Sexism	<i>Black women are portrayed as loud and ghetto. If a white woman did something bad like leaving their child in the house alone with little food they wouldn't be seen as a bad mother she would be seen as a struggling mother who just needs help. If a woman of color took their child to a job interview and left her child in the car for 10 mins with all the necessities, she would be locked up for 10 years for child endangerment and scolded. Were seen as crazy but white women aren't?</i> 18, Cis-woman, HPV vaccine received, pap smear not recommended based on age.

Colorism	<i>There are barely any black role models or positive things said about black women, we have to defend ourselves, prove our worth and value every day. We get everything taken away from us and a lighter person takes the credit. 20, Cis-woman, HPV vaccine received, pap-smear received</i>
Misogynoir	<i>We as Black women are put on a pedestal. We are supposed to act a certain way, talk a certain way, and dress a certain way. If we aren't living up to those standards we are seen as angry, whores, hoes, and thots. I think Black men who see Black women as angry or straightforward, tend to go for white women. 18-year-old, Cis-woman, HPV vaccine received, pap-smear not required.</i>

Table 30

Medical Mistrust/Mistreatment and Health Literacy Selected Quotes

Theme	Subtheme	Excerpt
Medical Mistrust/Mistreatment		<i>A lot of African Americans don't like to get Pap smears. I've know people that had it before 21. I got mine when I turned 22. Negative comments influenced my feelings while I got the pap smear and when I was notified it would happen. It's also hard because most providers we see are of another descent and it's awkward and makes me feel uncomfortable. I also have a female provider so that helps. The second person in the room was of African descent so that made me feel a little more comfortable. 22-year-old, Gender non-conforming, HPV vaccine received, pap smear received</i>
		<i>Many times as a Black Woman I question the health care system. It's definitely broken. I know that the doctors know what they are doing and only want to help with prevention & etc. However, I'm always having to ask more questions, get data & statistics on it before I follow through. Many times in history my people have been used as guinea pigs and never given the care they got from the findings. 19-year-old, Cis-woman, HPV vaccine received, pap smear not recommended based on age.</i>
Health Literacy	Inadequate Health Literacy	<i>I didn't really know much about the HPV vaccine until i took this survey, I didn't know much about the cancer until this survey, and I've actually never heard of HPV, and until this research project. It's something I'm still learning about. 18-year-old, Cis-gender woman, HPV vaccine received, pap smear not recommended based on age.</i>
	Adequate Health Literacy	<i>This was a conversation I would have with my grandma and when she was growing up their [they] didnt have this vaccine so now that this vaccine is here and can use it my grandma believes that I should be gruanted [granted] of this vaccine. 18-year-old, Cis-woman, HPV vaccine received, pap-smear not recommended based on age.</i>

Table 31

Medical Autonomy and Cultural Health Factors Selected Quotes

Theme	Subtheme	Excerpt
Medical Autonomy		<i>Healthcare providers don't try to warn black women of preventive measures, I definitely want to take the steps to ensure my protection. 18-year old, Cis-woman, HPV vaccine received, pap smear not recommend based on age.</i>
Cultural Health Factors		<i>I was always told that abstinence is the only way to avoid these things. I was told it would affect me as long as I didn't act ghetto and sleep around. I still stray from promiscuity because I don't feel right. 18-year-old, Cis-woman, HPV vaccine status unknown, pap smear not recommended based on age.</i>
		<i>Pap smears are a very important preventive care measure. I feel like most black women don't understand the importance of a Pap smear. There's a stigma surrounding Pap smears due to people's history, but not enough information in the media urging black women about the importance of taking these preventive measures. 18-year-old, Cis-woman, HPV vaccine received, pap smear received.</i>
		<i>The media makes pap smears seem bad and that it only means that you have a sexually transmitted disease or something. So, since black women hear these things, they don't wanna get it because they are scared of this news. Also, some health care providers you see on the media take advantage of black women. 21-year-old, Cis-woman, HPV vaccine status unknown, pap smear received.</i>