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A Mixed Methods Study: Midlife African-American Women's Knowledge, Beliefs, and Barriers to Well-Woman Visit, Flu Vaccine, and Mammogram Use

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Abstract

African-American women (AAW) are particularly at risk for deleterious health outcomes that might be mitigated through increased preventive care use. A mixed methods study that examined relationships between knowledge of, beliefs about, and barriers to well-woman visits, flu vaccines, and mammograms was conducted with midlife AAW who participated in an online survey (n=124) and in-depth interviews (n=19). Findings showed that greater knowledge of preventive service recommendations and positive patient-provider relationships were associated with greater preventive service use. Flu vaccines were significantly underused. Study implications inform strategies to increase preventive care utilization among AAW and increase capacities to improve health disparities.

Keywords

preventive health services; minority health; health services utilization

Background

Preventive care is underutilized in the United States, which results in increased morbidity, mortality, and inefficient use of health care dollars (U.S. Department of Health and Human Services, 2011). Midlife adults who access preventive services are more likely to maintain health and independence as they age; however, fewer than 1 in 3 midlife women are up to date on select preventive services recommended for their age and gender (Holden, Chen, & Dagher, 2015; Multack, 2013). Disparities in the use of well-woman care vary across preventive care type and are greatly affected by socioeconomic status (Edwards, 2011).

African-American women (AAW) are particularly at risk for deleterious health outcomes that might be mitigated through increased and adherent preventive care use. In 2015, AAW had the highest rates of breast and cervical cancer screening compared to any other racial/ethnic group (U.S. Department of Health and Human Services, 2015), yet they are still more likely to die from breast, cervical, and colorectal cancers and have the shortest survival times than any other racial group. Disparities among these trends are even higher in Chicago, where mortality rates are 1.5 times higher for AAW than for White women, despite AAW having lower breast cancer incidence rates (Institute for Research on Race and Public Policy, 2017; Susan G. Komen, 2015). As such, it is not only important that AAW receive screenings, but that screenings be received in a timely fashion, and regularly. Additionally, among preventive care services, flu and pneumonia vaccination are persistently the lowest used preventive services among midlife adults (Multack, 2013). Flu and pneumonia *combined* are the 7th leading cause of death for African-Americans in Chicago (Institute for Research on Race and Public Policy, 2017) and racial gaps in influenza and pneumococcal vaccination remain even after controlling for health insurance coverage and socioeconomic status (Multack, 2013). Timely screening, detection, and vaccination among AAW could not only help reduce death rates from cancer, flu and pneumonia, and other chronic conditions (U.S. Department of Health and Human Services, 2014), but also have a positive impact on the quality of their health (National Commission on Prevention Priorities, 2007). While identifying factors that impact the use of preventive care among all midlife adults is needed, it may be especially impactful in ameliorating health disparities and inequities that AAW experience.

There are a number of factors that have been shown to impact midlife adults' use of preventive services. Many midlife adults do not access preventive care because they possess limited knowledge of preventive services recommended for their age and gender; feel they are not at risk for certain conditions; are unsure about recommendation guidelines and timeframes for receiving services; and, face many barriers that contribute to lapse in preventive care use (Multack, 2013; Pascale, Beal, & Fitzgerald, 2016). For example, studies conducted with AAW have shown that low perceived risk of breast cancer, low knowledge about cervical cancer screening, and low health literacy have negative impacts on the use of preventive services; it is suggested that increased knowledge could positively impact preventive care screening rates (Matthews, 2015; Walther, 2014). Moreover, varying and consistently changing screening guidelines lead to confusion over recommendations, which may also impact preventive care use (Kopans, 2015). Barriers to preventive services use span personal, community, and organizational levels and may be further exacerbated by healthcare system factors such as fragmented care, poor patient-provider communication, and discriminatory healthcare experiences (Matthews, 2015; Multack, 2013; Trivedi & Ayanian, 2006).

This study builds upon the limited number of studies that specifically explore midlife AAW's perceptions and behaviors associated with seeking or accessing preventive care (Ackerson, 2010; Fowler, 2006; Gatchell, 2012; Matthews, 2015; McKenzie & Skelly, 2010; O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004; Trivedi & Ayanian, 2006). Using a mixed methods approach, this study specifically examines the relationships between

knowledge of, beliefs about, and barriers to preventive services and women's use of preventive health care among a sample of midlife (aged 40 to 64) African-American women.

Data and Methods

Study Design

The theoretical framework for this study was guided by the Behavioral Model of Health Services Use (Andersen, 1995) which links knowledge, beliefs, and barriers to care to health service utilization. This study was conducted using a convergent parallel mixed methods design where quantitative data were collected first followed by collection of qualitative data; both quantitative and qualitative data were analyzed concurrently, but separately (Creswell & Clark, 2011). Women recruited to participate in this research were members of the Service Employees International Union - Healthcare Illinois Indiana (SEIU HCII) in Chicago. The SEIU HCII represents over 91,000 health workers in Illinois, Indiana, Missouri, and Kansas, who provide care for children, seniors, and individuals with disabilities. Many of the employees represented at SEIU HCII are minority women who are low wage earners.

Quantitative phase

Recruitment.—An online screening and survey link was emailed to women for whom SEIU HCII staff could determine eligibility (AAW, 40 to 64 years, English literate, resided in Illinois, and were current members or had been members of SEIU HCII within the past 12 months at the time of recruitment) a priori based on their internal records. Surveys were emailed in two waves from May 11, 2016 to August 17, 2016. Incentives for completion were offered in both waves.

Qualitative phase

Recruitment and Methods.—At the end of the online survey, only respondents residing in Chicago were notified about their eligibility to participate in an interview, provided information about the interview, and asked to indicate their desire to participate in an interview. Interviews were conducted from August 15, 2016 to October 15, 2016 using a semi-structured interview guide and were audio-recorded.

Measures

Dependent variables—*Past and anticipated well-woman visit (WWV) attendance* were examined as dependent variables and assessed quantitatively and qualitatively. For past use of WWVs, women were provided definitions of preventive care and WWVs, and asked in the survey: *About how long has it been since you last visited a doctor for a well-woman visit or preventive care?* Women who responded that they completed a visit within the past year (anytime less than 12 months prior to the survey date) were compared to women who responded that they completed a visit within the past 2 years or 5 years, had never had a visit, or were not sure when their last visit took place. For anticipated use of WWVs, women were asked: *When is the next time you plan on attending a well-woman visit (or a yearly checkup, screening, or vaccine, etc.)?* Women who responded that they planned to attend a visit within the next 6 months to a year were compared to women who responded that they planned to attend a visit in more than a year or were not sure.

Past use of flu vaccine and receipt of a mammogram were also examined as dependent measures of preventive service use quantitatively (Centers for Disease Control and Prevention, 2013) and qualitatively. Preventive service use among women was assessed with the following yes/no questions: (1) *During the past 12 months, have you had either a flu shot or a flu vaccine that was sprayed in your nose?* (2) *Have you had a mammogram during the past 2 years?* Missing responses were assumed to represent “no” answers, and recoded as such. Women who received a flu vaccine within the past 12 months were compared to women who had not. Women who received a mammogram within the past 2 years were compared to women who had not.

Independent Variables—*Knowledge, beliefs, and barriers* were treated as independent variables. Knowledge of preventive care as a result of provider consultation was measured by asking if a doctor or nurse had started a conversation with the participant in the previous 12 months about any of 7 preventive services (flu vaccine, mammogram, pap smear, blood pressure, cholesterol, blood sugar, and blood stool testing); participants were also asked whether a provider or nurse had discussed eating habits, body weight, smoking habits, alcohol use, and mood. Responses to each item were captured as yes/no. A summary measure was constructed by summing all of the yes responses. A dichotomous measure of provider consultation was created to compare women who were counseled on seven or more (out of 12) services/behaviors to women who were counseled on six or fewer.

A woman’s beliefs about frequency of obtaining the 7 preventive services were measured by asking women how often they believed a woman should obtain each of the 7 preventive services, with responses ranging “don’t know”, “never”, “at least once a year”, “every two years”, and “every three years”. A summary score for consistency of beliefs with recommended guidelines was created based on the United States Preventive Services Task Force (USPSTF) 2015 recommendations for all preventive services (U.S. Preventive Services Task Force, 2014). Women who recognized four or fewer services with the correct timeframe were categorized as having beliefs with low consistency with recommendations. Women whose beliefs were in concordance with recommended timeframes for five to seven of the services were categorized as having beliefs with high consistency with recommendations.

Barriers to preventive service use were captured by asking if women had put off getting preventive care for any of 20 reasons (e.g., couldn’t get through on the telephone, took too long to get an appointment, etc.). Women reported few barriers; therefore, a summary measure of barriers was created by categorizing women as having any barriers (1 or more) or zero barriers. Barriers were assessed quantitatively (Brotons et al., 2012; Centers for Disease Control and Prevention, 2013; Keenan, 2010; National Association of County & City Health Officials, 2012) and qualitatively.

Potential Confounding Variables and Effect Modifiers—*Demographic characteristics* were explored as potential confounders and effect modifiers and included: age, marital status, children in household less than 18 years of age, educational attainment, annual income, and insurance status.

Healthcare system experience factors were also explored as potential confounders and effect modifiers of the relationship between knowledge, beliefs, and barriers and each of the dependent variables. This included access to a primary care provider (none, one provider, or more than one provider; if primary care provider response was missing, it was assumed to be “none”); quality of patient-provider communication, measured using a series of seven questions that women rated as true or not true in regard to how their provider communicated with them (e.g., the provider explained things in a way that was easy to understand) (Agency for Healthcare Research and Quality, 2012); and perceived/experienced racism within the healthcare system. Positive communication experiences were summed; this measure was categorized as strong for women who experienced five or more positive communication events, and weak for women who experienced fewer than five. Perceived/experienced racism was measured by asking women if they felt their experiences seeking healthcare in the past twelve months were worse, same, or better than people of other races.

Quantitative analysis

Mean and standard deviation were calculated for age; frequencies and percentages were calculated for categorical variables. Differences in means and proportions between high and low users of the preventive care measures were evaluated using either *t*-tests or chi-square tests, respectively. For categories with five or fewer observations, Fisher’s exact test was used. The Breslow Day statistic from single-factor stratified contingency table estimates was used to assess homogeneity across strata and identify potential effect modifiers. Single factor logistic regression models for each independent variable (knowledge of, beliefs about, and barriers to preventive care services use) and each dependent variable (past and anticipated WWV, flu vaccine, and mammogram use) were generated to estimate crude odds ratios and 95% confidence intervals (95% CI) with each factor alone. A forward selection approach was then used to add potential confounders (demographic and healthcare system experience variables and independent variables) one at a time. Variables were retained in the model to control for confounding if they produced a 10% change in the estimate. Adjusted models each included all three of the independent variables of interest. We further evaluated effect modification in models using interaction terms between each independent variable and each covariate. Data were analyzed using SAS version 9.4 (SAS Institute, Cary, NC). Statistical significance was set at $p < 0.05$ and all tests were two-tailed.

Qualitative analysis

Four initial transcripts were annotated; annotations were compiled to develop a codebook that consisted of codes, code definitions, and the study construct that was related to each code. Code families were used to group codes that were related to each overarching concept; the final codebook was developed iteratively and refined throughout the process of analysis. Transcripts were coded by two analysts (VH and JM) using Dedoose software. Appropriateness and relevance of codes, code families, and code applications were discussed amongst analysts prior to, during, and after coding. Export tools were used to analyze quotations linked to codes, co-occurrences, frequencies, and relationships among codes. Themes were generated by examining codes and quotations that described categories, causes or explanations, relationships, and theoretical/conceptual constructs (Miles, Huberman, & Saldaña, 2013). Patterns of codes and code summaries were clustered into a final

determination of themes. Analysts discussed transcripts, quotes, memos, and data summaries extensively to determine consensus and to assure that the themes truly represented the content of the data collected.

Mixed methods data analysis procedures

Methodological integration was conducted in both instrument design and in interpretation of merged quantitative and qualitative results. Results from each method were physically juxtaposed to each other to help determine whether quantitative and qualitative results supported convergence, expansion, or divergence (Creswell & Clark, 2011).

IRB approval for this study was obtained from the University of Illinois IRB on April 6, 2016.

Results

Quantitative results

One hundred eighty-one women consented to participate in the study and 124 women who completed at least 60% of the survey comprised the study sample for analysis (Table 1). Women's ages ranged from 40 to 63 with a mean age of 51 years. Most women were not married; had some college education; had a household income less than \$30,000; did not reside with children who were less than 18 years of age; and, had some form of health insurance.

Overall, the majority of the sample had obtained a WWV within the past year (79.8%), anticipated obtaining a WWV within a year (85.5%), and had obtained a mammogram within the past 2 years (79.0%). However, fewer than half of women (49.4%) had obtained an influenza vaccine within the past year.

The majority of women had only one provider and reported strong patient-provider communication. Among these women, the majority had completed a WWV within the past year and anticipated seeking a WWV within 12 months. Only half of women who reported having no provider had obtained a WWV in the past year. The majority were also up to date with mammograms. Fourteen percent of women felt they were treated worse than other races when obtaining healthcare; past and anticipated WWV and mammogram use were slightly lower for these women, but flu vaccine use was slightly higher. Over 30% of women were unsure if they were discriminated against in their health care due to their race.

Fifty-nine percent of women received provider counseling on 7 or more preventive services/behaviors and these women were slightly more likely to have obtained a past WWV. Among women who had been counseled on 6 or fewer services, 27.5% had not received a WWV within the past year and were significantly more likely to have not obtained a flu vaccine.

Although no woman's beliefs about timing of preventive services was consistent with all 7 recommended guideline timeframes, 72.6% of women reported timeframes consistent with the recommendations for 5 or 6 services. These women were significantly more likely to have received a WWV within the past year than those women whose reports of timeframes

were less consistent with recommendation timeframes (84.4% vs. 67.7%), although rates for anticipated WWVs were similar. Women whose beliefs were highly consistent with recommendation timeframes were also significantly more likely to be compliant with mammogram and flu vaccine recommendations than women with low consistency.

The majority of women did not report any barriers to utilizing preventive care services and had obtained and planned to obtain an annual WWV. Women who reported any barriers were significantly less likely to use any of the preventive services. Of the 21 women who reported barriers to care, none of them had received a WWV within the past year and 7 of them did not anticipate obtaining a WWV within a year. Among women with zero barriers to preventive care use, 82.5% obtained a mammogram, whereas 38.1% of women who reported barriers *had not* obtained a mammogram.

Model-based associations between knowledge, beliefs, and barriers and each outcome are shown in Table 2. Unadjusted models did not show strong associations; however, women who were more knowledgeable about services due to provider consultation appeared to have higher odds of obtaining a WWV within the past year (OR: 2.1, 95% CI: 0.9 – 5.2), higher odds of anticipated WWV use (OR: 1.2, 95% CI: 0.4 – 3.2), higher odds of flu vaccine use (OR: 2.2, 95% CI: 1.0 – 4.5), and lower odds of mammogram use (OR: 0.9, 95% CI: 0.4 – 2.1) compared to women who received consultation on six or fewer services, although the confidence intervals all included one. Likewise, women whose beliefs were highly consistent with recommendations appeared to have higher odds of obtaining a WWV within the past year (OR: 2.6, 95% CI: 1.0 – 6.5), of anticipated WWV use (OR: 1.4, 95% CI: 0.5 – 4.1), of flu vaccine use (OR: 4.4, 95% CI: 1.8 – 10.9), and of mammogram use (OR: 3.7, 95% CI: 1.5 – 9.1) compared to women with less consistent beliefs; confidence intervals were wide and not all relationships were significant. Unadjusted models also showed that women who reported having any barriers to preventive care use appeared to have lower odds of anticipated WWV use (OR: 0.2, 95% CI: 0.08 – 0.7), of flu vaccine use (OR: 0.4, 95% CI: 0.1 – 1.0), and of mammogram use (OR: 0.3, 95% CI: 0.1 – 0.95) compared to women who reported zero barriers, although some confidence intervals included one.

Age and education level were determined to be confounders in many of the individual models, and therefore were included in all adjusted models. None of the healthcare system experience factors met the criteria for confounding in the multivariable models. After adjustment, there were no strong associations between knowledge of services based on healthcare provider consultation and any of the outcomes. On the other hand, adjusted models indicated that women whose beliefs were highly consistent with recommended guidelines for each of 7 preventive services had almost 4 times the odds of obtaining a WWV within the past year (AOR: 3.8, 95% CI: 1.3 – 11.6), over 4 times the odds of flu vaccine use (AOR: 4.2, 95% CI: 1.6 – 10.8), and almost 7 times the odds of mammogram use (AOR: 6.6, 95% CI: 2.1 – 21.0) compared to women with less consistent beliefs. The multivariable model for barriers to preventive care showed that women who reported having any barriers to preventive care use had lower odds of anticipated WWV use (AOR: 0.3, 95% CI: 0.09 – 0.89), of flu vaccine use (AOR: 0.4, 95% CI: 0.1 – 1.2), and mammogram use (AOR: 0.3, 95% CI: 0.1 – 1.0) compared to women who reported zero barriers, although not all of these relationships were significant. None of the p-values for the interaction terms for

each demographic characteristic or healthcare system experience factor, and each independent variable met the criteria for effect modification, nor were meaningful stratum specific estimates observed.

Qualitative results

Sample Characteristics.—Nineteen women participated in one-on-one, in-depth interviews. These women were demographically similar to the overall study sample.

Qualitative interviews sought to understand women's use of preventive care and factors that negatively or positively impacted use of well-woman care and specific preventive services. Three themes were identified that described women's barriers to, facilitators of, and beliefs and knowledge about preventive health services. Illustrative quotes for each theme are shown in Table 3.

Theme 1.: Most women used preventive care regularly or obtained treatment for specific conditions when needed. System factors like ease of getting appointments, ability to see desired providers, positive relationships/satisfaction with providers, and affordable insurance or costs facilitated women's use of preventive care.

Most women stated that they used preventive care regularly. The majority of women interviewed had seen a provider for preventive services within the past year. Women discussed a number of system factors that facilitated their use of clinical preventive services.

The ability to get appointments easily and to see their desired providers increased women's confidence that they could access care when needed, usually with providers whom they had established relationships. Positive relationships and satisfaction with providers and provider locations played vital roles in women feeling comfortable and trusting providers. Women felt that having providers who listened to them and took time to understand their situations and answer their questions motivated them to continue to seek care. Many women felt more comfortable with female providers, especially for gynecological examinations. Additionally, providers' efforts to educate and remind women about recommended preventive services were extremely influential in women obtaining those services.

Affordable insurance premiums and copayments; clinics with free or sliding scale fees; government programs that pay for mammograms and pap smears; and no cost preventive care were also influential in enabling women to access care. Many women interviewed had insurance through the Affordable Care Act (ACA) marketplace exchange or through Medicaid, which greatly contributed to their ability to access preventive care.

Theme 2.: Women had few barriers to accessing preventive care; however, those who had current or past barriers, identified challenges associated with health insurance, healthcare costs, and discomfort or dissatisfaction with providers.

Interestingly, women did not express a lot of barriers to getting preventive care. Most stated they were able to access services at sites that were conveniently located and easy to get to via driving or public transportation, although parking was expensive or difficult for some

women. Most women were not caring for pre-school aged children, so lack of childcare was not a commonly expressed barrier; however, some of these midlife women were caring for their elderly parents. Although many women did not work at jobs where they had paid sick leave, for most, it was relatively easy to schedule healthcare appointments outside of work (on the weekends or early morning), make adjustments to their work schedules, or request time off without much pushback. Most women also felt that it was easy to get an appointment when needed and relatively easy to see their desired provider, although there were longer wait periods to see specialists or to get mammograms.

A few women admitted that they had not seen a doctor in a few years or saw a provider irregularly or only when extremely ill. Some stated that they sometimes avoided care (either currently or in the past) due to fear of the visit content or results; the cost of care or not having health insurance; life challenges; prioritizing others' needs over their own; putting off care in hopes that the issue would resolve itself; and employment conflicts. Some women delayed or avoided getting preventive care because of discomfort with examinations, particularly mammograms and pap smears.

Discomfort, dissatisfaction, and poor communication with providers were also barriers to seeking preventive care. Women were much more willing to consistently seek recommended care when they felt they had positive and open communication with their providers. Some felt that many African-American women, in general, were distrustful of providers and therefore avoided seeing them. Some of these feelings of distrust were attributed to perceived differential treatment based on race experienced by them or by family members.

Some women stated that the quality of care received was based upon the healthcare institution and location of services. Women felt that facilities located in low-income, minority neighborhoods were not always up to par compared with others and that some providers in these locations were not invested in their patients. This resulted in women feeling like they needed to go from "place to place" for their care and that people who can access highly funded hospitals or clinics received better healthcare. Women's accounts of their experiences indicated that they often faced differential treatment or availability of care based on race or socioeconomic status.

Finally, although most women in the sample were insured, being insured did not alleviate all challenges associated with healthcare costs for all women. The most mentioned *past and current* barriers to obtaining well-woman care or maintaining physical health were related to health insurance and healthcare costs. Some insured women did not have insurance prior to the ACA. Women expressed challenges associated with insurance bureaucracies, differences in treatment or access based on insurance type, difficulty getting health insurance, certain providers not accepting certain insurance types, changes in provider networks, misinformation given regarding insurance, and ability to afford additional costs associated with healthcare (e.g., deductibles, copayments).

Theme 3.: Women were moderately confident in their knowledge about chronic conditions, screenings, and immunizations recommended for their gender and age; however, there was

confusion regarding recommendation timeframes and several misperceptions regarding flu vaccinations, which resulted in avoidance for some women.

Most women were moderately confident in their knowledge about screenings and immunizations recommended for their gender and age, but admitted that there was some confusion with recommendation timeframes, particularly for pap tests and mammograms. Of the 19 women interviewed, 10 of them did not get annual flu vaccines. These women avoided flu vaccinations because they were skeptical or distrustful of them; felt that their immune systems were strong enough to fight off potential infections; believed that the flu shot caused illness rather than prevented it; or felt they were not at high risk for illness. Five of the ten women who avoided getting flu shots had a history of respiratory illness. Women who *did* obtain annual flu shots did so to protect themselves from illness due to the nature of their work or because of current chronic medical conditions (e.g., asthma).

Several women were proactive in increasing their health knowledge and literacy and demonstrated a degree of confidence when communicating with providers. Women gained knowledge from a number of sources, including: their own research, social networks, exposure to diverse settings and people, utilizing health education and volunteer opportunities offered by community organizations, and from actually working in the healthcare field. When asked about the health literacy of women in their communities, in general, the women interviewed felt that women in their communities were only slightly aware of preventive care recommendations and that they needed more education to fully be able to realize the importance of preventive healthcare and to utilize services. Women felt that this could be improved by more community-centered health educators or mentors, distribution of educational materials or billboards in places that women frequent, or sharing information with and advocating for each other.

Mixed Methods Results

Triangulation of quantitative and qualitative results regarding facilitators of, barriers to, and beliefs and knowledge associated with preventive care use are summarized in Table 4. Qualitative findings converged with and expanded quantitative results except for women's perceived discrimination based on race, which yielded slightly contradictory findings.

Discussion

Women in this study had relatively high utilization of WWVs and mammograms, although still below Healthy People 2020 targets. One of the most salient factors that appeared to facilitate women's use of preventive care was the fact that this sample of women was highly insured. They were unique in that they belonged to a labor union that offered healthcare plans to its members. Additionally, a number of women had insurance through the Illinois Exchange Marketplace or through the Medicaid expansion, which mandates that most preventive health services be offered with no out-of-pocket costs for patients (Institute of Medicine, 2011). It is plausible that this provision may have had a positive impact on women's use of preventive services in this study, especially given that some women were uninsured prior to the ACA. Conversely, women had low use of flu vaccines, which is consistent with national flu vaccine uptake rates (Multack, 2013). Low use of flu vaccines

was likely attributable to misperceptions about the vaccine as suggested in the qualitative results.

This study corroborates the few previous study findings that assessed AAW's use of preventive care while also expanding our understanding of midlife AAW's experiences associated with utilizing preventive care. In a study that examined women's breast cancer knowledge, researchers found that among a sample of 291 women, many women felt they were not at risk for breast cancer, although they actually had 1 to 9 risk factors (Walther, 2014). Another study also showed that AAWs use of cervical cancer screening was affected by knowledge of the purpose of the screening, having a female examiner, and encouragement of family and friends (Matthews, 2015). Although findings were not statistically significant, the current study demonstrated that women who were more knowledgeable about preventive services based on provider consultation may be more likely to obtain WWVs and flu vaccines.

Confusion over recent changes in breast and cervical cancer screening guidelines has been shown to contribute to a decline in screening rates (Narayan et al., 2017; Sharpe, Levin, Parker, & Rao, 2016). The USPSTF, American College of Radiology (ACR), American College of Obstetricians and Gynecologists (ACOG), Health Resources and Services Administration (HRSA), and the American Cancer Society (ACS) have varying breast cancer screening guidelines that have undergone revisions over the past several years. In 2012, USPSTF and ACOG also revised their cervical cancer screening guidelines. Revisions and variations among screening guidelines contribute to healthcare complexity and create confusion for providers and patients alike (Haas et al., 2016; Pascale et al., 2016). Further, some studies show that provider practices are inconsistent with national and organizational guidelines due to uncertainty and variations in practice policies and infrastructure at their own institutions (Corbelli et al., 2014; Haas et al., 2016). This study demonstrated that women whose beliefs about recommendation timeframes for select preventive services were highly consistent with USPSTF recommendations at the time of the study were significantly more likely to utilize preventive services. This highlights the need for more consistency among organizations that develop preventive screening guidelines to facilitate women's knowledge and use of preventive care services, particularly screenings. It also highlights the need for increased efforts to educate providers and patients on the most recent recommendations and/or the importance of implementing standards of care that are more individualized and targeted based on each woman's risk factors and needs.

Women in this study reported few barriers; on the other hand, no surveyed woman who reported having barriers had obtained a WWV within the past year. Many women interviewed had past barriers with accessing care usually related to costs, insurance, and mistrust of providers. These findings corroborate previous research that found that factors such as health beliefs, inability to take off time from work, lack of awareness of preventive care recommendations, poor patient-provider relationships, and lack of health insurance or out-of-pocket costs are major barriers to women's preventive care seeking (Multack, 2013; National Commission on Prevention Priorities, 2007).

The current study also builds upon research that examines how healthcare experiences are associated with preventive care use. Studies have shown coordination of specialty care by one primary care provider (PCP) to be strongly associated with high trust in PCPs and higher trust of PCPs to be significantly associated with greater use of recommended clinical preventive services (O'Malley et al., 2004). In this study, positive, established, and trusting relationships with providers; positive communication; access to female providers; and having only one PCP positively influenced the relationships between women's knowledge, beliefs, and barriers associated with the use of preventive care.

Finally, in addition to mistrust of the medical system and providers, discrimination based on race has also been shown to be a barrier to seeking and utilizing preventive services amongst midlife AAW (Gatchell, 2012; McKenzie & Skelly, 2010; O'Malley et al., 2004). During interviews, discrimination based on race and socioeconomic status was consistently discussed as part of women's experiences with structural factors in the healthcare system (e.g., lower quality healthcare facilities in low-income and African-American communities) and personal factors in the healthcare system (e.g., mistreatment/abuse by providers). This finding supports prior associations found between racism/discrimination and decreased use of preventive care (Williams & Mohammed, 2009; Yang, 2015).

Limitations

A major limitation of this study was the low survey response rate. As such, the external validity of the findings presented here is not certain. Beyond this, completion rates dropped off toward the end of the survey, indicating that perhaps the survey was too long for participants. It is not known how this phenomenon may have affected study results. An increased sample size would have helped to increase power in analyses and aid in ensuring more stable and reliable findings.

Conclusion

AAW continue to experience a disproportionate prevalence of negative health outcomes and studies that explore under-examined factors that may decrease these disparities are needed. This mixed methods study adds to the small body of literature that explores individual and healthcare system factors that impact midlife AAW's use of preventive care services. Based on study results, intervention strategies that may increase timely use of preventive services and improve health outcomes should aim to: 1) increase health literacy and debunk misperceptions about preventive services with educational social media campaigns that are socially and culturally relevant, utilizing images of "like" others; 2) facilitate patient-provider encounters and communication by developing interventions that provide women with tools to ask questions and garner information from their providers during visits; and, 3) expand investigations of long-term impacts of health policy on utilization of preventive care services. Finally, efforts should be made to develop screening guidelines that are consistent amongst organizations and to use effective health communication strategies in communicating guidelines to individuals, communities, and providers. African-American women continue to experience a disproportionate prevalence of negative health outcomes. Studies and interventions that examine and address multi-level factors through quantitative

and qualitative methods and approaches may be instrumental in expanding our capacities to decrease health disparities and inequities.

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Table 1.

Distribution of Demographic, Healthcare Experiences, and Independent Variables Overall and by Well-Woman Visit, Flu Vaccine, and Mammogram Use.

Study Variable	Overall (n=124)	Past Well-Woman Visit Use		Anticipated Well-Woman Visit Use		Obtained Influenza Vaccine within Past Year		Obtained Mammogram within Past 2 Years	
		Within the past year (n=99, 79.8%)	Longer than past year (n=25, 20.2%)	Within next 6 months to 1 year (n=106, 85.5%)	More than 1 year or don't know (n=18, 14.5%)	Yes (n=60, 48.4%)	No (n=64, 51.6%)	Yes (n=98, 79.0%)	No (n=26, 21.0%)
Age [mean, standard deviation (SD)]	50.9 (6.9) (Range: 40–63)	50.5 (6.9)	52.4 (6.9)	50.5 (6.9)	53.4 (6.3)	51.9 (7.5)	50.0 (6.3)	51.6 (6.9)	48.4 (6.6)
Marital status									
Married	30 (24.2)	24 (80.0)	6 (20.0)	25 (83.3)	5 (16.7)	14 (46.7)	16 (53.3)	21 (70.0)	9 (30.0)
Not married	94 (75.8)	75 (79.8)	19 (20.2)	81 (86.2)	13 (13.8)	46 (48.9)	48 (51.1)	77 (81.9)	17 (18.1)
Education									
< High school	5 (4.0)	5 (100.0)	0	5 (100.0)	0	5 (100.0)	0 (0.0)	5 (100.0)	0 (0.0)
High school graduate	28 (22.6)	19 (67.9)	9 (32.1)	22 (78.6)	6 (21.4)	9 (32.1)	19 (67.9)	17 (60.7)	11 (39.3)
Some college	68 (54.8)	55 (80.9)	13 (19.1)	58 (85.3)	10 (14.7)	35 (51.5)	33 (48.5)	57 (83.8)	11 (16.2)
College graduate	23 (18.6)	20 (87.0)	3 (13.0)	21 (91.3)	2 (8.7)	11 (47.8)	12 (52.2)	19 (82.6)	4 (17.4)
Income									
< \$30,000	84 (68.3)	69 (82.1)	15 (17.9)	73 (86.9)	11 (13.1)	41 (48.8)	43 (51.2)	67 (79.8)	17 (20.2)
\$30,000–\$49,999	28 (22.8)	20 (71.4)	8 (28.6)	23 (82.1)	5 (17.9)	14 (50.0)	14 (50.0)	20 (71.4)	8 (28.6)
\$50,000+	11 (8.9)	9 (81.8)	2 (18.2)	9 (81.8)	2 (18.2)	5 (45.5)	6 (54.6)	10 (90.9)	1 (9.1)
Children in household < 18 years									
No children	70 (56.5)	53 (75.7)	17 (24.3)	59 (84.3)	11 (15.7)	31 (44.3)	39 (55.7)	57 (81.4)	13 (18.6)
1 child	54 (43.5)	46 (85.2)	8 (14.8)	47 (87.0)	7 (13.0)	41 (75.9)	13 (24.1)	41 (75.9)	13 (24.1)
Insurance									
Insured	117 (94.4)	92 (78.6)	25 (21.4)	99 (84.6)	18 (15.4)	58 (49.6)	59 (50.4)	92 (78.6)	25 (21.4)
Uninsured (includes not sure)	7 (5.6)	7 (100.0)	0	7 (100.0)	0	2 (28.6)	5 (71.4)	6 (85.7)	1 (14.3)
Primary care provider									

Study Variable	Overall (n=124)		Past Well-Woman Visit Use		Anticipated Well-Woman Visit Use		Obtained Influenza Vaccine within Past Year		Obtained Mammogram within Past 2 Years	
	Within the past year (n=99, 79.8%)	Longer than past year (n=25, 20.2%)	Within next 6 months to 1 year (n=106, 85.5%)	More than 1 year or don't know (n=18, 14.5%)	Yes (n=60, 48.4%)	No (n=64, 51.6%)	Yes (n=98, 79.0%)	No (n=26, 21.0%)		
1 provider	76 (85.4) *	13 (14.6)	79 (88.8)	10 (11.2)	41 (46.1)	48 (53.4)	70 (78.7)	19 (21.4)		
> 1 provider	17 (73.9) *	6 (26.1)	17 (73.9)	6 (26.1)	14 (60.9)	9 (39.1)	20 (87.0)	3 (13.0)		
None	6 (50.0) *	6 (50.0)	10 (83.3)	2 (16.7)	5 (41.2)	7 (58.3)	8 (66.7)	4 (33.3)		
Patient-Provider communication										
Strong communication	86 (81.9)	19 (18.1)	90 (85.7)	15 (14.3)	51 (48.6)	54 (51.4)	83 (79.0)	22 (21.0)		
Weak communication	4 (50.0)	4 (50.0)	7 (87.5)	1 (12.5)	3 (37.5)	5 (62.5)	6 (75.0)	2 (25.0)		
Perceived treatment based on race										
Worse than other races	13 (76.5)	4 (23.5)	13 (76.5)	4 (23.5)	10 (58.8)	7 (41.2)	13 (76.5)	4 (23.5)		
Same or better as other races	54 (81.8)	12 (18.2)	59 (89.4)	7 (10.6)	36 (54.6)	30 (45.5)	56 (84.9)	10 (15.1)		
Don't know or not sure	29 (76.3)	9 (23.7)	31 (81.6)	7 (18.4)	13 (34.2)	25 (65.8)	26 (68.4)	12 (31.6)		
Knowledge of services based on provider consultation										
Counseled on 6 services	37 (72.6)	14 (27.5)	43 (84.3)	8 (15.7)	19 (37.3) *	32 (62.8)	41 (80.4)	10 (19.6)		
Counseled on 7 services	62 (84.9)	11 (15.1)	163 (86.3)	10 (13.7)	41 (56.2) *	32 (43.8)	57 (78.1)	16 (21.9)		
Consistency of beliefs with preventive care recommendations										
Low consistency (< 4 services)	23 (67.7) *	11 (32.3)	28 (82.4)	6 (17.7)	8 (23.5) **	26 (76.5)	21 (61.8) **	13 (38.2)		
High consistency (> 4)	76 (84.4) *	14 (15.6)	78 (86.7)	12 (13.3)	52 (57.8) **	38 (42.2)	77 (85.6) **	13 (14.4)		
Barriers to preventive care use										
Any barriers	0 (0.0) ***	21 (100.0)	14 (66.7) *	7 (33.3)	6 (28.6) *	15 (71.4)	13 (61.9) *	8 (38.1)		
Zero barriers	99 (96.1) ***	4 (3.9)	92 (89.3) *	11 (10.7)	54 (52.4) *	49 (47.6)	85 (82.5) *	18 (17.5)		

Note: Survey completion rates tapered toward the end of the survey. Sample size for income is 123 observations. Sample size for provider communication is 113 observations. Sample size for perceived treatment based on race is 121 observations. Statistically significant differences denoted as:

.100' < p

10' < p
**
'50' < p
*

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Table 2.

Crude and Adjusted Odds Ratios and 95% Confidence Intervals for Relationships between Knowledge, Beliefs, Barriers and Use of Well-Woman Visits, Flu Vaccines, and Mammograms.

Independent variable	Past Well-Woman Visit Use within Past Year		Anticipated Well-Woman Visit Use within Next Year		Obtained Influenza Vaccine within Past Year		Obtained Mammogram within Past 2 Years	
	Crude OR (95% CI)	Adjusted OR ^d (95% CI)	Crude OR (95% CI)	Adjusted OR ^c (95% CI)	Crude OR (95% CI)	Adjusted OR ^d (95% CI)	Crude OR (95% CI)	Adjusted OR ^e (95% CI)
Knowledge of services based on health care provider consultation								
Counseled 6 services	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Counseled 7+ services	2.1 (0.9, 5.2)	1.4 (0.5, 4.0)	1.2 (0.4, 3.2)	0.9 (0.3, 3.1)	2.2 (1.0, 4.5)*	1.5 (0.6, 3.4)	0.9 (0.4, 2.1)	0.3 (0.1, 1.1)
Consistency of beliefs with preventive care recommendations								
Low consistency	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
High consistency	2.6 (1.0, 6.5)*	3.8 ^c (1.3, 11.6)*	1.4 (0.5, 4.1)	1.4 (0.4, 4.8)	4.4 (1.8, 10.9)	4.2 (1.6, 10.8)**	3.7 (1.5, 9.1)	6.6 (2.1, 21.0)**
Barriers to preventive care use^b								
Zero barriers	-	-	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)	1.0 (ref)
Any barriers	-	-	0.2 (0.08, 0.7)*	0.3 (0.09, 0.89)*	0.4 (0.1, 1.0)	0.4 (0.1, 1.2)	0.3 (0.1, 0.95)*	0.3 (0.1, 1.0)

Note: OR=odds ratio; 95% CI= 95% confidence interval; statistically significant associations denoted as:

* p < .05

** p < .01.

^a Adjusted model for past well-woman visit included independent variables knowledge of services based on health care provider consultation and consistency of beliefs with preventive care recommendations, plus age (continuous), education level (high school graduate or less, some college, college graduate), and quality of provider communication (strong/weak).

^b The association between barriers to preventive care and past well-woman visit use was not able to be estimated due to zero cells.

^c Adjusted model for anticipated well-woman visit included independent variables knowledge of services based on health care provider consultation, consistency of beliefs with preventive care recommendations, and barriers to preventive care use, plus age (continuous), and education level (high school graduate or less, some college, college graduate).

^d Adjusted model for influenza vaccine included independent variables knowledge of services based on health care provider consultation, consistency of beliefs with preventive care recommendations, and barriers to preventive care use, plus age (continuous), and education level (high school graduate or less, some college, college graduate).

^e Adjusted model for mammogram use included independent variables knowledge of services based on health care provider consultation, consistency of beliefs with preventive care recommendations, and barriers to preventive care use, plus age (continuous), and education level (high school graduate or less, some college, college graduate).

Table 3.

Illustrative Theme Quotations

Interview Theme	Quote
<p>Most women used preventive care regularly or obtained curative care when needed. System factors like ease of getting appointments, ability to see desired providers, positive relationships and satisfaction with providers, and affordable insurance or costs facilitated women's use of preventive care.</p>	<ul style="list-style-type: none"> • <i>I really want to see the same person. You don't want to have to go back, explain, [or think], "Are they reading your chart good?" I want somebody that's compassionate. I kind of don't like a man doctor because I feel like they don't understand. Your first time, you can figure out. "Is he going to work, or is this doctor not going to work?" If he's not going to work, I don't want to be wasting any time. (Participant 17, age 51)</i> • <i>Thank God – right now, I don't have a problem with the insurance that I have right now, which is County Care. I don't have a copay. Usually, they cover 100 percent, and whatever it is that they don't pay for, I usually don't get. (Participant 5, age 60)</i>
<p>Women had few barriers to accessing preventive care; however, many had past or current challenges associated with health insurance, healthcare costs, and discomfort or dissatisfaction with providers.</p>	<ul style="list-style-type: none"> • <i>I just turned 40, so this is the year that I have to go and get the mammogram, and I'm scared, actually. I haven't even scheduled it, but I'm gonna go because my hospital is [Hospital name], and you can schedule an appointment the same day. But I'm just scared because everybody keeps telling me how it is, and I'm just scared. (Participant 19, age 40).</i> • <i>I think I really didn't understand the barriers of trying to have insurance and maintain insurance until I got older. I have some medications. Thankfully, I'm working. So you get certain discounts when you're working. But still, I have a really high deductible. I think it's \$2,500 a year. I don't have \$2,500. The field I work in, they don't pay a lot. So I owe the hospital, actually. I did find a pharmacy though, for getting my prescriptions, that's cheaper. But when I didn't have insurance, I really became aware of how that impacts a person's being healthy. I couldn't get my medication. So I'm asking people, like my friends, do they have these medications: "You got any such and such?" That was crazy. (Participant 12, age 62)</i>
<p>Women were moderately confident in their knowledge about chronic conditions, screenings, and immunizations recommended for their gender and age; however, there was confusion regarding recommendation timeframes and several misperceptions regarding influenza vaccinations, which resulted in avoidance for some women.</p>	<ul style="list-style-type: none"> • <i>You know what? I got a flu shot years ago, and I got pneumonia. And I was like, "I ain't taking that no more." (Participant 7, age 51)</i> • <i>You see all the information, they're talking about it on TV, they have different symposiums and conferences – but it's like, "Oh, I ain't gotta worry about that. Ain't nobody in my family got no breast cancer, that ain't gonna happen to me." It's not really taken seriously that you need to go get your mammograms. (Participant 8, age 50).</i>

Table 4.

Summary of Integrated Results from Qualitative and Quantitative Analyses

Interview Theme	Summary of Survey Results	Integrated Results
Facilitators of Preventive Care Use		
<p>Most women used preventive care regularly or obtained curative care when needed. System factors like ease of getting appointments, ability to see desired providers, positive relationships and satisfaction with providers, and affordable insurance or costs facilitated women’s use of preventive care.</p>	<ul style="list-style-type: none"> • Women who received counseling on 7 or more services were more likely to have obtained a WWV, flu vaccine, or mammogram. • Most women had strong, positive communication with providers and these women were also more likely to use services. 	<p>Convergence –</p> <ul style="list-style-type: none"> • Positive provider relationships and communication facilitates women’s use of preventive care
Barriers to Preventive Care Use		
<p>Women had few barriers to accessing preventive care; however, many had past or current challenges associated with health insurance, healthcare costs, and discomfort or dissatisfaction with providers.</p>	<ul style="list-style-type: none"> • 17% of women reported having current barriers to preventive care use • 93% had strong positive communication with providers • 94% were insured • Women with barriers had lower odds of WWV, flu vaccine, and mammogram use 	<p>Convergence, Expansion, & Divergence –</p> <ul style="list-style-type: none"> • Women had few <i>current</i> barriers to preventive care use; but those with barriers had lower rates of preventive services use • Women’s access to insurance was facilitated by the ACA and private insurance • Barriers reported via survey and interviews were similar • Women reported discrimination in the healthcare system based on race or socioeconomic status during interviews, but differential treatment based on race was not a statistically significant factor reported by women in survey.
Beliefs and Knowledge about Prevention and Preventive Services		
<p>Women were moderately confident in their knowledge about chronic conditions, screenings, and immunizations recommended for their gender and age; however, there was confusion regarding recommendation timeframes and several misperceptions regarding influenza vaccinations, which resulted in avoidance for some women.</p>	<ul style="list-style-type: none"> • Women whose beliefs about the frequency of obtaining specific clinical preventive services were highly consistent with recommendation guidelines had almost 4 – 7 times higher odds of past WWV, flu vaccine, and mammogram use • 58% of women with high knowledge consistency obtained a flu vaccine in past year and only 24% with low knowledge consistency obtained a flu vaccine within past year 	<p>Convergence & Expansion –</p> <ul style="list-style-type: none"> • More knowledge of preventive care is associated with greater use of preventive care services • Low rates of flu vaccine use might be explained by misperceptions regarding flu vaccine

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