

RACIAL AND ETHNIC DISPARITIES IN CARDIOVASCULAR DISEASE: AN
ASSESSMENT OF OBSTETRICIAN-GYNECOLOGISTS' KNOWLEDGE,
ATTITUDES, AND PRACTICE PATTERNS

By

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Submitted to the

Faculty of the College of Arts and Sciences

of American University

in Partial Fulfillment of

the Requirements for the Degree

of Master of Arts

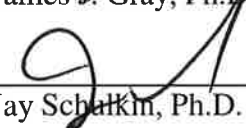
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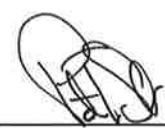
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ABSTRACT

Cardiovascular disease (CVD) is the leading cause of death and disability among women in the United States. African American and Hispanic women are at increased risk for CVD compared to White women. Obstetrician-gynecologists (ob-gyns) play an integral part in well-women care, and racial/ethnic minority women are more likely to utilize their ob-gyn as their primary care provider. This study assessed ob-gyns' knowledge, attitudes, and practice patterns of racial/ethnic disparities in CVD among African American and Hispanic (minority women) women. This study also sought to determine physician and patient-related barriers to providing CVD care.

The response rate was 33%. Physician practices with high minority populations predicted an increased likelihood that ob-gyns were knowledgeable about racial/ethnic disparities in CVD and a greater likelihood that ob-gyns perceive their patients at increased CVD risk. However, physicians appear to be less knowledgeable about Hispanic women's increased CVD risk. Practices with high minority patient populations predicted an increased likelihood that ob-gyns view patient nonadherence to medical recommendations and patients' inability to see a specialist as patient-related barriers to providing CVD care and a decreased likelihood that ob-gyns view lack of exposure to intermediate/high risk patients during residency as a physician-related barrier to providing CVD care.

ACKNOWLEDGEMENTS

I am beyond grateful for the guidance, support, and knowledge of my advisor, Dr. Michele Carter, over the past three years. I have learned a tremendous amount about research and look forward to expanding my knowledge and skill under his supervision. I am also extremely thankful for the encouragement and support of Dr. Jay Schulkin. He has continued to see my potential as a researcher and push me to grow and achieve. I am thankful for the statistical guidance of Drs. Michael Power and Britta Anderson, as well as Alex Zeymo. I am grateful for Dr. James Gray's valuable feedback and support throughout this project.

I would like to thank my family for their unwavering support, patience, and encouragement. My mother, Rosemary Jones, has been my rock and role model. She has been my inspiration to become a clinician and has provided endless support and encouragement throughout my time in the Clinical Program. I would also like to thank my sister and brother for their support. I am forever grateful for my boyfriend, wonderful friends, and classmates who have provided me with encouragement, distraction, and laughter. A very special thank you to: Steven, Alexis, Martha, Allie, John, Micah, Greta, and Vicki.

This study was supported by Grant No. UA6MC1901 0 from the Maternal and Child Health Bureau (Title V, Social Security Act, Health Resources and Services Administration, and Department of Health and Human Services (HHS)).

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CHAPTER 1

INTRODUCTION

Cardiovascular Disease

Cardiovascular disease (CVD) is defined by the International Classification of Diseases 2010 in Chapter IX, codes I00-I99, and in Chapter XVII, codes Q 20-28, as diseases of the circulatory system and congenital malformations of the circulatory system (World Health Organization, 2008). Some examples of cardiovascular disease include: chronic rheumatic heart diseases, hypertensive diseases, ischemic heart diseases, and pulmonary heart diseases.

More than one in three American female adults has some form of CVD (AHA, 2012). CVD is the leading cause of death and disability among women and men in the United States (U.S. Department of Health and Human Services [USDHHS], 2000). According to the American Heart Association (AHA), 500,000 women die each year from CVD, exceeding the number of male deaths (AHA, 2004). It is the third leading cause of death in women ages 19-39, the second leading cause of death in women ages 40-64, and the number one cause of death in women ages 65 and older (ACOG, 2011).

The American College of Obstetricians and Gynecologists (ACOG) reports that women 55 years of age and older are at particular risk for heart disease (ACOG, 2011). According to the U.S. Census Bureau, the female age distribution will shift dramatically toward an older female population over the next 50 years (National Center for Health Statistics, 1998). These statistics are particularly pertinent for ob-gyns because part of their patient population is comprised of postmenopausal women, those at highest risk for CVD.

CVD risk factors. CVD risk factors are comprised of two categories:

behavioral/modifiable risk factors and metabolic risk factors. Behavioral/modifiable risk factors include: tobacco use, poor diet, obesity, and physical inactivity. Metabolic risk factors consist of diabetes, hypertension, high blood cholesterol and other lipids, and metabolic syndrome. Many of these risk factors are inter-related and each one of them may affect the others. CVD risk factors are often comorbid, with approximately 70% of all patients having multiple ones (Cuffe, 2006).

Behavioral/Modifiable CVD Risk Factors

Smoking. Women who smoke frequently are at increased risk for CVD (Mosca et al., 2004). Higher smoking rates are found in younger, low-income women with less education, particularly those in racial/ethnic minority groups (Mirsa, 2001; Whitlock & Williams, 2003). Smoking is responsible for more than half of all heart attacks among middle-aged women. Smoking cessation is the single greatest modifiable risk factor for CVD (Creatsas, Christodoulakos, & Lambrinoudaki, 2005).

Poor diet and obesity. A second risk factor that contributes to CVD is an unhealthy diet. The U.S. Department of Agriculture (USDA) recommends a daily diet containing at least three servings of vegetables, with at least one-third being from orange or dark green vegetables, and at least two servings of fruit. Contingent on age, only 43% to 49% of women meet the daily vegetable intake recommendation, and 10% to 13% of women achieve the recommendations for dark vegetable daily consumption. Only 20% to 35% of all women meet the guidelines for daily fruit intake (USDA, 2000).

According to the Centers for Disease Control and Prevention (CDC), one-fourth of all American women are overweight and of these, more than one-third are obese (USDHHS, 2000).

Being overweight or obese is associated with significant increases in morbidity and mortality (Allison, Fontaine, Manson, Stevens, & VanItallie, 1999). Obesity is also linked to greater risk for many chronic metabolic diseases, including diabetes, hypertension, and metabolic syndrome.

Physical inactivity. Physical inactivity is another CVD risk factor that is common among women. The Federal Physical Activity Guidelines state that adults who engage in 150 minutes per week of moderate-intensity aerobic activity experience substantial health benefits including: lower risk for coronary heart disease (CHD), stroke, hypertension, diabetes, and premature death (USDHHS, 2008). Physical activity also attenuates the risk for being overweight or obese (Lamonte & Blair, 2006). These health risks diminish even further as one increases their weekly amount of physical activity. In general, women (13%) get less daily physical activity than men (16%) (USDA, 2000). Only 16.4% of all women meet the Federal Physical Activity Guidelines compared to 25.1% of all men (AHA, 2012). Insufficient physical activity contributes to 12% of diabetes, another CVD risk factor, and 22% of coronary heart disease (Colditz, 1993).

Metabolic Risk Factors

Diabetes. Diabetes is a major cause of CVD in women and is strongly associated with physical inactivity and obesity (Mosca et al., 1999). Individuals with diabetes often have comorbid hypertension and hyperlipidemia (Xu, Kockanek, Murphy, & Tejada-Vera, 2010). CVD is the leading cause of premature death among individuals with diabetes (Merz, Buse, Tuncer, & Twillman, 2002). Those with diabetes are two to four times more likely to have CVD than persons without diabetes (Merz et al., 2002). While CVD-related deaths in the U.S. have decreased over the past 30 years, diabetic adults have not benefited from this decline. In particular, mortality due to CVD has actually increased in diabetic women (Gu, Cowie, & Harris,

1999). Of the estimated 18.3 million Americans with physician-diagnosed diabetes, approximately ten million are female (AHA, 2012).

Hypertension. Hypertension is a CVD risk factor among all adult females that accounts for 33% of cardiovascular events (Creatsas et al., 2005). Hypertension is strongly associated with other CVD risk factors including: physical inactivity, diet (particularly sodium intake), obesity, metabolic syndrome, and dyslipidemia (Creatsas et al., 2005; Mirsa, 2001). Furthermore, women who take oral contraception are at even greater risk for elevated blood pressure (Mirsa, 2001). After 64 years of age, significantly more women than men have high blood pressure in the U.S. Women with hypertension are at a four-fold increased risk for CVD relative to normotensive women (Creatsas et al., 2005).

High blood cholesterol and other lipids. According to the AHA, 53.8 million women (46.3%) have total blood cholesterol levels of 200 mg/dL or higher (AHA, 2012). Low levels of high-density lipoprotein (HDL) cholesterol and high levels of low-density lipoprotein (LDL) cholesterol are associated with a greater risk for CVD in women. Moreover, triglyceride levels may be a significant risk factor for CVD, particularly among older women (Mosca et al., 1999).

Metabolic syndrome. Metabolic syndrome is a cluster of risk factors that occur collectively and increase the risk for CVD, diabetes, and stroke. This cluster includes: abdominal obesity, hypertension, low HDL cholesterol levels, high fasting blood glucose, high triglycerides, and insulin resistance (National Heart, Lung, and Blood Institute, 2011). An individual must have at least three metabolic risk factors to be diagnosed with metabolic syndrome. Metabolic syndrome is closely linked to physical inactivity and being overweight or obese. Individuals with metabolic syndrome are twice as likely to develop CVD and five times more likely to develop diabetes than individuals without metabolic syndrome. The number of individuals living with

metabolic syndrome is greatly increasing due to an overall increase in obesity rates. It has been suggested that metabolic syndrome may surpass smoking as the leading risk factor for cardiovascular disease.

Racial and Ethnic Minority Women

Nearly one-third of adult American women are members of racial and ethnic minority groups, with Hispanics (15%) and African Americans (12.5%) being the largest female minority groups (USDHHS, 2011). Women in general, particularly racial/ethnic minority women, are more likely than men to live in poverty and as a result, more likely to suffer from disability and poor health (Mirsa, 2001). Lower socioeconomic status (SES) is also related to declines in cardiovascular health. Individuals of lower SES suffer a disproportionate burden of morbidity and mortality from CVD (Wong, Shapiro, Boscardin, & Ettner, 2002). Low SES is associated with increased rates of hypertension, obesity, and physical inactivity. Furthermore, low-income adults and adults with less education are more likely to score poorly on the Healthy Eating Index and Federal Physical Activity Guidelines (USDA, 2002).

ACOG warns that women are at risk for obesity; however, low-income women, minority women, and women living in urban areas are at an even greater risk (ACOG, 2014). Eighty percent of all American women live in urban areas and may be at a disadvantage when it comes to easy access to healthy foods, such as fresh fruits and vegetables. Women living in low-income, urban locations may be more limited to food high in fat and calories, processed food, and fast food restaurants. Even when healthy foods are available in urban locations, they tend to be more expensive than food high in fat and calories (ACOG, 2014).

African American women (48.9%) have the highest rates of CVD among all women, far surpassing rates for White women (32.4%) and Hispanic women (30.7%) (AHA, 2014).

However, both African American and Hispanic women have a greater prevalence of several major CVD risk factors relative to their White female counterparts (Mirsa, 2001).

African American women. Primary risk factors for CVD among African American women include poor diet, obesity, physical inactivity, diabetes, metabolic syndrome, and hypertension (AHA, 2012). Many of these risk factors are linked to each other, as well as to African American women's increased risk for CVD.

With regards to USDA guidelines of daily fruit and vegetable consumption and caloric intake, African Americans are least likely to achieve these targets among racial/ethnic minority groups (USDA, 2008). They scored lowest on the Healthy Eating Index for 1999-2000 compared to other minority groups and Whites (USDA, 2002, 2008). African American females are also at greatest risk for obesity, with an alarming 77.7% being overweight or obese and of these, 51% being obese (AHA, 2012). Furthermore, only 11.2% meet the Federal Physical Activity Guidelines (AHA, 2012). African American women (33.9%) have a higher prevalence of physical inactivity than White women (21.6%) (CDC, 2005).

Moreover, African American females have the highest rate of diabetes compared to all women, with 14.7% being diagnosed by a physician and an estimated 4% being undiagnosed (AHA, 2012). Also making them the group at greatest risk, African American women (45.7%) have the highest rates of hypertension relative to all women. Lastly, they are at the second greatest risk for metabolic syndrome, with 38.8% being diagnosed with the condition (AHA, 2012).

African American women have lower rates of smoking and high total blood cholesterol levels relative to White women. The AHA reports that 16.7% of African American females ages 18 and older smoke cigarettes compared to 20.5% of White females (AHA, 2012). Moreover,

41.2% have total blood cholesterol levels of 200 mg/dL and higher compared to 47% of White women (AHA, 2012). According to the AHA, 27.7% of African American women have LDL cholesterol levels of 130 mg/dL or higher, and 6.6% have HDL cholesterol levels less than 40 mg/dL (AHA, 2012).

Hispanic women. Hispanic women are at an increased risk for many CVD risk factors relative to White females. Among these are poor diet, obesity, physical inactivity, diabetes, high blood cholesterol and other lipids, and metabolic syndrome.

Hispanic women (39.6%) have a higher prevalence of physical inactivity than White women (21.6%) (CDC, 2005). The large majority (75.1%) of Hispanic women are overweight or obese, and of these, 43.4% are obese (AHA, 2012). They also have the second highest rate of diabetes among all women, with 12.7% being diagnosed by a physician and an estimated 3.8% being undiagnosed.

Furthermore, Hispanic women (46.5%) have high total blood cholesterol levels matching rates of White women (47%) (AHA, 2012). Among Mexican American adults, 31.6% have LDL cholesterol levels of 130 mg/dL or higher and 12.2% have HDL cholesterol levels less than 40 mg/dL (AHA, 2012). Hispanic females (40.6%) are also at greatest risk for metabolic syndrome relative to all women (AHA, 2012).

Hispanic females (9%) have the lowest rates of smoking compared to all women (AHA, 2012). Furthermore, they (28.9%) have lower rates of hypertension than White (31.3%) and African American (45.7%) women (AHA, 2012).

Racial Discrimination and CVD

There are several reasons why racial/ethnic minority women are still at greater risk for CVD relative to White women even when accounting for CVD risk factors being equal. Racial

discrimination is a unique stressor for African American and Hispanic women that may explain one reason for the disparity in CVD. Although the U.S. has seen a decrease in overt racial discrimination, subtle and chronic racism still exist. As the two largest minority groups, African Americans and Hispanics are still subjected to racial discrimination (Levin, Sinclair, Veniegas, & Taylor, 2002). More research has been conducted investigating the degree to which African Americans still experience discrimination; however, studies that include Hispanics are scant.

Several studies have examined the impact of perceived discrimination on health outcomes (Brondolo et al., 2008; Clark, Anderson, Clark, & Williams, 1999; Mwendwa et al., 2011; Mwendwa et al., 2011; Pascoe & Richman, 2009; Sims et al., 2008). Clark and colleagues (1999) propose a biopsychosocial model to explain the effects that perceived racial discrimination has on psychological and physiological outcomes for African Americans. Their model suggests that environmental stimuli that are perceived as discrimination result in amplified psychological and physiological stress responses that are influenced by several moderator and mediator variables (i.e., constitutional, psychological, behavioral, and sociodemographic factors and coping style). Over time stress responses to chronic exposure to discrimination may result in negative health outcomes, including CVD.

African Americans and Hispanics are disproportionately exposed to discrimination, which may result in increased stress levels and the subsequent use of coping strategies. Two types of coping responses have been identified: active and passive (Clark et al., 1999). Active coping strategies are regarded as adaptive and passive coping strategies as maladaptive in attenuating negative health outcomes of perceived discrimination (Pascoe & Richman, 2009). Active coping strategies such as confrontation, seeking social support, or positive reappraisal may palliate the negative outcomes of discrimination on mental and physical health (Pascoe &

Richman, 2009). However, more passive coping strategies such as keeping quiet, alcohol and drug use, and smoking may actually increase negative mental and physical health outcomes. Prolonged exposure to discrimination, coupled with a passive coping style, may result in increased and sustained sympathetic activation and higher resting systolic blood pressure, which may lead to hypertension (Brondolo et al., 2008; Clark et al., 1999).

Psychological stress has been linked to CVD (Kamarck & Jennings, 1991; Rozanski, Blumenthal, & Kaplan, 1999). Psychological stress reactions to perceived discrimination influence behavioral and physiological responses (Clark et al., 1999). For example, psychological stress is strongly associated with an elevated risk for obesity, a major CVD risk factor (Mwendwa et al., 2011; Sims et al., 2008). Studies have shown that African American women who experience perceived racial discrimination often engage in overeating, haphazard meal planning, emotional eating, poor appetite regulation, and greater intake of sweets and foods high in fat content (Mwendwa et al., 2011; Sims et al., 2008). Moreover, psychological stress has been linked to lipid dysregulation (Mwendwa et al., 2011, Sims, et al., 2011). Mwendwa and colleagues (2011) found that African American women who endorsed behavioral coping mechanisms as a response to perceived discrimination had higher levels of LDL cholesterol. Lastly, psychological stress has been associated with the increased release of neuroendocrines, which in turn increase cardiovascular activity and strain (Clark et al., 1999).

Other Factors that Influence Racial/Ethnic Disparities in CVD

Racial/ethnic disparities in CVD are impacted by other factors, such as healthcare system, physician, and patient variables. Inequalities in access to care and healthcare quality contribute to poorer health outcomes among minority women. In the Institute of Medicine's (IOM) report of racial/ethnic healthcare disparities, results indicated that racial/ethnic minorities are less likely

than Whites to receive needed medical services and routine treatment for diseases, such as CVD and diabetes (IOM, 2002). In cardiac care, minority patients are less likely to receive catheterization, transplants, pharmacological therapy, and bypass surgery even when procedures are judged necessary (Smedley, Stith, & Nelson, 2003). In contrast, minorities are more likely than White patients to receive poorer quality care and unfavorable procedures, such as lower extremity amputations for diabetes (Smedley et al., 2003).

Physicians' lack of cultural competency and biases in medical decision-making may also impact healthcare disparities. Research suggests that physicians' diagnostic and treatment decisions, as well as their overall attitudes about their patients, are influenced by patients' race/ethnicity (IOM, 2002). In a study by van Ryn and Burke (2000), findings showed that physicians rated African American patients as less educated, less intelligent, more likely to abuse drugs and alcohol, less likely to comply with medical recommendations, less likely to have social support, and less likely to participate in cardiac rehabilitation than White patients even after accounting for patients' income, education, and personality characteristics.

Furthermore, patients' health beliefs, low health literacy rates, and nonadherence to medical recommendations may perpetuate disparities in CVD (Bosworth & Oddone, 2002; Krousel-Wood, Thomas, Munter, Morisky, 2004). Racial/ethnic minority groups are less likely to adhere to medical recommendations compared to Whites. As previously discussed, these issues are deeply rooted in a long-standing history of racism and maltreatment of racial/ethnic minority groups, which has resulted in the distrust of White physicians and the medical community at large. Differences in cultural beliefs and values may affect treatment adherence, help seeking, and patient-provider trust. For example, social support has proven to be the strongest predictor of treatment adherence among African Americans, while familiarism and

allocentrism are strong predictors of medical adherence among Hispanics (Lewis, Belgrave, & Scott, 1990). Incorporating family and peers into the health network may improve adherence and trust among minority women (Lopez-Aqueres, Kemp, Plopper, Staples, & Brummel-Smith, 1984; Tamez & Vacalis, 1989).

In summary, African American and Hispanic women are exceedingly more likely to experience racial/ethnic discrimination than White women. Perceived discrimination has been linked to CVD through the following mediator and moderator variables: stress, coping style, sociodemographic factors, biopsychosocial factors, physiological, psychological, and behavioral factors. Furthermore, healthcare system, physician, and patient factors also contribute to health disparities. Because these women are disproportionately at greater risk for experiencing discrimination and therefore also developing negative health outcomes, physicians should be mindful of these disparities and tailor screening, counseling, and management services accordingly.

Ob-gyns as Primary Care Providers

ACOG and other empirical studies acknowledge ob-gyns' roles as primary care providers (PCPs) for women (ACOG, 2011; Coleman et al., 2007; Ehrental et al., 2011; Morgan, Lawrence, & Schulkin, 2010; Stovall, Loveless, Walden, Karjane, & Cohen, 2007). Ob-gyns play an integral part in well-woman care and are often the first and most frequent point of medical contact for women (Hale, 1995; Scholle & Kelleher, 2003). Many women report ob-gyns are their only source of routine health care (Leddy, Lawrence, & Schulkin, 2011). Furthermore, low-income, non-White women who are younger, less educated, and who have small children are more likely to utilize their ob-gyn as a PCP (Henderson, Weisman, & Grason,

2002; Scholle & Kelleher, 2003). In a study of young, low-income women, 38% of those surveyed considered their ob-gyn as their PCP (Scholle & Kelleher, 2003).

Physician Race

Minority physicians are more likely to care for patients from underserved and minority populations, as well as low-SES patients (Moy & Bartman, 1995; Saha and Shipman, 2008; Xu et al., 1997). African American physicians are more likely to care for African American patients, and Hispanic physicians are more likely to care for Hispanic patients (Komaromy et al., 1996). Physician race/ethnicity has been associated with differences in medical decision-making and end-of-life treatment (Mebane, Oman, Kroonen, & Goldstein, 1999). Mebane and colleagues (1999) found that African American physicians were six times more likely than White doctors to request aggressive medical treatments. In another study by Kressin and colleagues (2007), results indicated that African American doctors were significantly more active in educating their patients about treatment nonadherence.

ACOG Recommendations for Ob-gyns

ACOG recommends that ob-gyns provide periodic assessments that include screening, preventive counseling, and immunizations (ACOG, 2011). ACOG also encourages ob-gyns to be particularly mindful of women entering menopause and recommends that physicians counsel patients about lifestyle modifications including: exercise, dietary habits, smoking cessation, and blood pressure, lipid, and weight management. With regards to CVD counseling, guidelines state “The ob-gyn can educate, screen, monitor, and treat women to reduce their risk of morbidity and mortality from CVD” (ACOG, 2007). ACOG guidelines recommend that ob-gyns provide counseling and offer interventions and referrals for hypertension, obesity, diabetes, dyslipidemia, smoking cessation, physical exercise, and diet (ACOG, 2007). Physician adherence to

cardiovascular preventive care guidelines is one key step to improve patient outcomes, but actual adherence to recommendations is suboptimal (Barnhart, Lewis, Houghton, & Charney, 2007; Coleman et al., 2007; Ehrental et al., 2011; Morgan et al., 2010).

Lack of CVD Knowledge Among Physicians and Their Female Patients

Although research on CVD is largely available, the lack of knowledge regarding heart disease among physicians and their female patients is concerning (Barnhart et al., 2007; Mosca et al., 2005, 2006). Mosca et al. (2005) surveyed PCPs, cardiologists, and ob-gyns regarding their knowledge and practice patterns of CVD and its risk factors. Less than one in five physicians knew that more women than men die yearly from CVD. Ob-gyns were less likely to be aware of national guidelines for cholesterol and blood pressure levels than PCPs. Moreover, only half of physicians counseled their patients on healthy dieting, and less than two-thirds of physicians recommended physical activity to patients.

In a study by Barnhart and colleagues (2007), ob-gyns and internists were surveyed regarding their practice patterns, knowledge, and attitudes of coronary heart disease. More than half of ob-gyns and almost one-third of internists did not know that tobacco use was the leading cause of myocardial infarction in women. Findings also indicated that many physicians needed to improve their counseling and referral services for tobacco cessation, did not know that nicotine replacement therapy could be used during pregnancy, and had limited knowledge of healthy lipid levels. On the contrary, the majority of physicians (over 90% of internists and 82.4% of ob-gyns) did report providing dietary counseling to their overweight and obese patients, but they did not refer these patients to more specific weight loss treatment services.

Mosca et al. (2006) conducted an analogous study, but surveyed women instead of physicians regarding their knowledge of CVD. Only 55% of women knew that CVD was their

leading cause of mortality. Results from similar studies of national telephone surveys of women reveal that less than half of respondents knew that CVD was their leading cause of mortality (Legato, Padus, & Slaughter, 1997; Mosca, Ferris, Fabunmi, & Robertson, 2004; Mosca et al., 2000). African American and Hispanic women were significantly less likely than Whites to know that CVD is their leading cause of death (38% and 34% versus 62%, respectively) (Mosca et al., 2006). Furthermore, when asked about their knowledge of healthy levels of CVD risk factors, these minority groups were significantly less knowledgeable. Their ratings of awareness regarding healthy blood pressure and healthy LDL and HDL cholesterol levels were significantly lower than those of White females. Of importance, women who had received information about CVD in the last 12 months or who knew that CVD was their leading cause of mortality were significantly more likely to take preventive action by losing weight, decreasing their intake of unhealthy foods, and increasing physical activity. Disappointingly, the lack of CVD knowledge among minority women does not seem to be improving. A recent study found that Hispanic women (27%) were much less likely than White women (88%) to be knowledgeable that CVD is their leading cause of death (Giardina et al., 2013). Findings from these studies underscore the meaningful impact that ob-gyns can have by counseling their minority patients regarding their increased CVD risk, as well as discussing general information about cardiovascular health and CVD prevention.

Ob-gyn Attitudes, Screening, and Management of CVD

Ehrenthal and colleagues (2011) were the first to conduct a study specifically focused on ob-gyns' screening and management of CVD. Similar to the findings of Morgan et al. (2010), the majority of ob-gyns reported that providing comprehensive care was important to them, but there was a large discrepancy between the types of services offered in their practices. The majority of

ob-gyns reported that they provide pregnant patients with both reproductive and non-reproductive care. However, they believed that besides obesity and smoking, care not focused on reproductive issues for non-pregnant patients was beyond their scope of practice. CVD risk factors that were reported to be outside their scope of practice included management of lipids, diabetes, and hypertension. Several barriers to screening and management of CVD were identified such as: inadequate training, time constraints, reimbursement, lack of collaborative network among PCPs and specialists, and lack of exposure (particularly during residency) to women at high-risk or who actually had CVD. Most physicians, particularly residents, reported that they primarily see younger, reproductive-aged women during training and therefore are not exposed to women who are at high-risk for CVD or who have been diagnosed with CVD. Physicians reported that as a result, they do not gain experience in CVD screening or disease risk stratification. Physicians also believed that the training curriculum did not adequately focus on traditional internal medicine and primary care issues. When discussing strategies for improvement, respondents suggested a collaborative care approach to women's health, extension of training, continuing medical education, and ACOG-supported training in CVD prevention.

A more recently published study by Ehrenthal and colleagues (2013) evaluated the efficacy of the *Heart Truth* Professional Education Campaign on physician knowledge of women and heart disease. The knowledge test consisted of 8 questions, two of which asked about racial/ethnic disparities in type 2 diabetes and heart disease. Participants included physicians (i.e., family practitioners, general internists, ob-gyns, cardiologists, physicians or osteopathic physicians, nurse practitioners, and physician assistants) nurses, and students. Among all physicians, knowledge scores at baseline before the educational campaign was conducted were highest for cardiologists (75.8%) and lowest for ob-gyns (63.6%). The total knowledge score for

internists were higher ($p = .051$) and for ob-gyns significantly lower ($p < .005$) compared with scores of family practitioners. Of all physicians, ob-gyns (53.1%) were least likely to be able to identify that African Americans, Latinas, and Asian Americans are at high risk for type 2 diabetes. However, ob-gyns (84.8%) scored second highest in being able to identify that African American women are most likely to die from heart disease among women of all races/ethnicities.

Although the study by Ehrenthal and colleagues (2011) is the only study to date that has specifically examined ob-gyns' practice patterns for CVD, they did not use a large or nationally representative sample; they only surveyed 46 ob-gyn residents and practicing physicians in the mid-Atlantic region. The second study by Ehrenthal and colleagues (2013) assessed physicians' general knowledge of CVD using only 8 questions, two of which pertained to racial/ethnic disparities.

Research Rationale

No studies have thoroughly investigated ob-gyns' knowledge, attitudes, and practice patterns of racial/ethnic disparities in CVD. Likewise, no studies have examined whether ob-gyns provide different types of CVD care for African American and Hispanic women, even though it is well established that these minority groups are at greater risk for several CVD risk factors and are less knowledgeable about their risk (AHA, 2012; Mosca et al., 2006).

Ob-gyns serve as PCPs for many racial/ethnic minority women. It is crucial that ob-gyns be knowledgeable about these health disparities. More aggressive interventions are recommended for women with multiple CVD risk factors (Perrone & Brunelli, 2013), and physicians should tailor preventive strategies differently for high-risk groups like African American and Hispanic women (Stranges & Guallar, 2012).

The aim of this study was to assess ob-gyns' knowledge, attitudes, and practice patterns of

racial/ethnic disparities in CVD, specifically among African American and Hispanic women. This study also sought to determine physician and patient-related barriers to providing CVD care. This study examined whether physician practices with high minority patient populations predicted differences in ob-gyns' knowledge, attitudes, and practice patterns of racial/ethnic disparities in CVD. This study also assessed whether African American and Hispanic physicians differed in their knowledge, attitudes, and practice patterns of CVD among minority women given that minority physicians are more likely to care for minority patients (Komaromy et al, 1996). Racial differences among physicians have also been associated with differences in medical decision-making. African American physicians are more active in providing education to patients about medical nonadherence and are more likely to request aggressive medical treatments than White physicians (Kressin et al., 2007; Mebane et al., 1999).

This is the first study of ob-gyns' knowledge, attitudes, and practice patterns of racial/ethnic disparities in CVD that will utilize a nationally representative sample. Given that the only related studies (Ehrenthal et al., 2011, 2013) focused on ob-gyns' general knowledge and practice patterns of CVD based on their overall female population, this study extends the literature to two high-risk and less commonly researched populations, African American and Hispanic women. For the purposes of this study, the term "minority" refers only to African American and Hispanic patients.

It was hypothesized that:

1. A greater proportion of African American and Hispanic physicians would be knowledgeable about racial/ethnic CVD disparities relative to White physicians.
2. Physician practices with high minority patient populations would predict a greater likelihood that physicians are knowledgeable about racial/ethnic CVD disparities.

3. Physician practices with high minority patient populations would predict differences in physicians' attitudes regarding CVD-related care (e.g., perceiving their patient population as "above average risk" for several CVD risk factors relative to the general population of adult women in the U.S., agreeing that African American race and Hispanic ethnicity are strong CVD risk factors; agreeing that CVD care should be tailored differently for African American and Hispanic women; agreeing that CVD care is within the professional role of an ob-gyn; and physician and patient-related barriers to providing CVD care). It was hypothesized that ob-gyn-reported barriers to providing CVD care would be similar to previous findings (Barnhart et al., 2007; Coleman et al., 2007; Ehrental et al., 2011; Morgan et al., 2010):

3a. time constraints

3b. lack of sufficient knowledge

3c. inadequate training

3d. lack of reimbursement

3e. lack of exposure during residency to intermediate or high-risk CVD patients or patients currently with CVD

4. Physician practices with high minority patient populations would predict differences in physicians' CVD practice patterns (e.g., CVD counseling, screening, and management).

CHAPTER 2

METHODS

Participants

Participants were 1,073 ACOG fellows and junior fellows. Of these participants, 273 were members of ACOG's Collaborative Ambulatory Research Network (CARN). CARN members are ACOG fellows and junior fellows in practice who have volunteered to participate in survey studies without compensation; they are typically recruited through advertising or random selection from ACOG's membership rolls. CARN was established to improve the response rate on ACOG's Research Department survey studies while maintaining a participant pool representative of practicing ACOG members. CARN members are a representative sample (by age, gender, and geographic location) of the ACOG membership, of which more than 90% of ob-gyns in the U.S. are members.

Because this study examined how physicians' racial and ethnic distribution of minority patients affects their knowledge, attitudes, and practice patterns of CVD among minority women, we wanted to ensure that there was a representative sample of physician practices with high minority patient populations. In order to increase the variability of physician practices with minority patient populations in the study, CARN members were selected based on the criteria that they had previously indicated in one of two ACOG questionnaires that they had a high percentage of African American or Hispanic patients. CARN members were selected specifically from these two questionnaires because these were the only previous ACOG surveys in which information was collected on physicians' racial/ethnic distribution of their patient populations. A cut-off was established as to what represented a high minority patient population; the cut-off was based on national averages provided by U.S. Census data (USDHHS, 2011). High minority

practices were defined as having an African American or Hispanic patient population above the national average (12.5%; 15%, respectively). The remaining 800 participants consisted of a computer-generated random sample of ACOG fellows and junior fellows (non-CARN).

The purpose, risks, and benefits of the study were outlined in an accompanying cover letter (see Appendix A). Return of the completed questionnaire indicated consent to participate in the study. Participation was voluntary, with no compensation offered to participants. Pilot testing was conducted in October and November 2012. Their comments were used to clarify survey questions.

Measures

Participants were mailed a questionnaire on CVD, which was approved by the Institutional Review Board of American University. Respondents were not provided with information on cardiovascular health and were instructed not to look up any information in order to gauge physician knowledge as opposed to research skills. The survey consisted of 39 questions and was constructed to be completed in approximately 15-20 mins. Survey questions covered physician and patient demographics and physicians' knowledge, attitudes, and practice patterns of racial/ethnic disparities in CVD (see Appendix B). Demographic questions included the physician's year of birth, gender, race/ethnicity, number of years in practice, type of practice, primary medical specialty, practice location, and racial/ethnic distribution of patient population.

Based on physicians' responses to relevant survey questions, a separate score was calculated to represent ob-gyns' knowledge of racial/ethnic disparities in CVD, ob-gyns' screening patterns of CVD, and ob-gyns' perceived CVD risk of their patient population. These three scores were used in data analyses to determine whether having a greater proportion of minority patients predicted differences in ob-gyns' knowledge, attitudes, and practice patterns of CVD.

The knowledge score was created from the following two true/false survey questions “African American women are at an equal risk for CVD relative to non-Hispanic White women” and “Hispanic women are at an increased risk for CVD relative to non-Hispanic White women” (Questions 18c and 18d, respectively). The answer to the first question was false, and the answer to the second question was true. Physicians who answered both of these questions correctly were judged to be knowledgeable of racial/ethnic disparities in CVD.

A screening score was created based on Question 32 in which physicians were asked, “Based on your practice, please indicate which of the following CVD risk factors you routinely screen for among your patients.” Nine common CVD risk factors were listed. Physicians were given one point for each CVD risk factor for which they screened.

A CVD risk score was created based on Question 38 in which physicians were asked, “Rate the prevalence of the following CVD risk factors among your patients relative to the general population of adult women in the U.S.” Twelve CVD risk factors were listed. The answers were set up as a Likert scale with the following as possible choices: “above average”, “average”, “below average”, and “don’t know”. Physicians were given one point for each CVD risk factor for which they selected “above average”.

One vignette was included in the questionnaire (Question 35) in which physicians were asked whether their concern for a patient borderline on a number of objective, physical measures of CVD risk factors (e.g., BMI, hypertension, high cholesterol, etc.) would increase if she were African American, Hispanic, or White. This vignette was developed to assess whether patient race/ethnicity plays an important role in physicians’ medical decision-making regarding CVD care.

Procedure

Paper mailings, which included a cover letter, questionnaire, and stamped return envelope, were sent via postage mail to 1,073 ACOG members in March 2013. Two additional reminder mailings were sent in April and May 2013 to encourage non-respondents. Data collection was stopped after three mailings due to a significant decline in responses after the third mailing. An abbreviated letter questionnaire was sent to those who had not responded by July 22, 2013 to assess for potential non-response bias by evaluating whether respondents and non-respondents significantly differed demographically and with regards to their responses to survey questions. Non-response bias results when respondents differ in meaningful ways from non-respondents. We used an abbreviated version of the survey to increase the probability that non-respondents of the full survey would respond to the shortened survey given the reduced time needed to complete it. The abbreviated letter survey contained 6 questions from the original questionnaire and was sent with an accompanying cover letter (see Appendices C & D). Data collection ended in September 2013.

Data Analysis

Data were analyzed using a statistical software package, SPSS 20.0 (IBM SPSS Statistics 20.0, IBM Corp.©, Armonk, NY). Descriptive statistics were computed for the measures used in the analyses and reported as mean values \pm standard deviation. Chi-square analyses and Fisher's exact test were performed to examine differences in proportions between groups. Pearson correlation was used to measure the association between quantitative variables. One-way analysis of variance was used to compare group means. Linear and logistic regressions were used to determine whether practices high in minority patient populations predicted differences in ob-gyns' knowledge, attitudes, and practice patterns regarding racial/ethnic

disparities in CVD. Instead of picking an arbitrary cut-off as to what qualified as “high minority patient populations” (i.e., creating a dichotomous variable) and thus risk losing valuable data, this study looked at the total percentage of minority patient populations as a continuous variable in order to have the most accurate predictive model. These analyses were conducted on three levels for all questions of interest: percent of total minority patients (African American and Hispanic women); percent of African American patients alone; and percent of Hispanic patients alone. Linear and logistic models were used to calculate predicted probabilities and their corresponding 95% confidence intervals. Findings were reported as significant at $p < .05$. All analyses accounted for years in practice and gender, given that recency of training (Hill et al., 2001) and gender (Roter & Hall, 1998; Hall et al., 1994) have been found to be associated with differential clinical practice.

CHAPTER 3

RESULTS

Full surveys received by July 22, 2013 were included in analyses. A total of 346 physicians responded, for a response rate of 33%. The CARN response rate was 59% and the non-CARN response rate was 24%. These response rates are similar to response rates of previous ACOG surveys (e.g., Hill, Gray, Carter, & Schulkin, 2005; Vink, Anderson, Fuchs, Schulkin, & D'Alton, 2013). Of those who were sent a survey, 8 were retired, 3 opted out, and 10 were unreachable by mail and therefore were excluded from all analyses. Among respondents, 58.1% were female. Responding physicians had a mean age of 52.27 (SD = 11.69 years), and an average of 19.68 years in practice (SD = 11.49 years).

Respondents were from 46 states and five countries (Argentina, Mexico, Honduras, Niger, and Canada). Regions not represented were Idaho, Maine, North Dakota, Rhode Island, and the District of Columbia. Physician demographic information can be found in Table 1. Some gender differences were found with regards to physician age, race/ethnicity, years in practice, and type of practice (see Appendix E).

Table 1. Demographic Characteristics of Responding Physicians

Demographic Variables	Percent (%)
Gender	
Male	41.9
Female	58.1
Type of practice	
Solo practice	17.3
Ob-gyn partnership /group	33.2
Multi-specialty group	15.6
HMO (staff model)	4.0
University faculty and practice	18.2
Other	11.6
Primary specialty	
General ob-gyn	68.7
Gynecology only	16.2

Obstetrics only	6.1
Other	9.0
Practice location	
Urban, inner city	18.3
Urban, non-inner city	38.1
Suburban	30.2
Rural	12.2
Other	1.2
Physician race	
Non-Hispanic, White	76.2
Hispanic	5.6
African American	5.3
Asian/Pacific Islander	9.1
Native American	0.3
Multiracial	2.3
Other	1.2

Abbreviated Letter Survey

Letter surveys received by September 22, 2013 were included in analyses. No significant differences in demographic characteristics were found between respondents and non-respondents. Only two statistically significant differences were found between respondents and non-respondents with regards to their answers on survey questions. A greater number of respondents of the full survey considered “outside of scope of practice” to be a barrier to providing CVD care compared to non-respondents (i.e., respondents of the abbreviated survey) (81% vs. 70%, $\chi^2(1, N = 410) = 4.29, p = .038$). Additionally, a greater number of respondents of the abbreviated survey agreed that African American women are at equal risk for CVD relative to White women in the general U.S. population (7% vs. 0.3%, $\chi^2(2, N = 406) = 17.41, p < .001$).

Knowledge

Contrary to the first hypothesis, a greater proportion of African American and Hispanic ob-gyns were not more knowledgeable regarding racial/ethnic CVD disparities relative to White ob-gyns; however Fisher’s exact test did approach statistical significance ($p = .075$). The second

hypothesis that physician practices with high minority patient populations would predict a greater likelihood of being knowledgeable about racial/ethnic CVD disparities among both African American and Hispanic women was marginally significant at an alpha level of .05 (OR, 1.01, 95% CI [1.00, 1.02]; $p = .059$). While this result is marginally statistically significant, it is important to note its practical significance. For example, if an ob-gyn were to increase his or her minority patient population by 5 percentage points, the likelihood of being knowledgeable about racial/ethnic CVD disparities would increase the odds by a factor of 5. Likewise, if a physician were to increase his or her minority patient population by 10 percentage points, the likelihood of being knowledgeable would increase by a factor of 9. As such, these results are practically meaningful. Physician practices with high minority patient populations also predicted being more knowledgeable about racial/ethnic CVD disparities specifically among African American women (OR, 1.02, 95% CI [1.00, 1.04]; $p = .018$) but not among Hispanic women (OR, 1.00, 95% CI [.995, 1.01]; $p = .355$).

Of all responding physicians, 60.1% were knowledgeable of racial/ethnic CVD disparities among both African American and Hispanic women. Ninety-one percent of ob-gyns were knowledgeable about African Americans' increased CVD risk, while only 64.9% of physicians were knowledgeable regarding Hispanics' CVD risk.

Ob-gyns' Perceived CVD Risk of Their Patient Populations

In support of the third hypothesis, physician practices with high minority patient populations were predictive of ob-gyns' perceptions that their patient populations are at greater risk for CVD compared to the general population of adult women in the U.S. (OR, 1.03, 95% CI [1.02, 1.04]; $p < .001$). Secondary analyses were conducted to determine whether having a greater percentage of African American patients or Hispanic patients predicted ob-gyns'

perceptions that their patient populations are at greater risk for CVD compared to the general population of adult women in the U.S. Physician practices with a greater percentage of African American patients (OR, 1.04, 95% CI [1.02, 1.05]; $p < .001$) and Hispanic patients (OR, 1.02, 95% CI [1.01, 1.02]; $p = .004$) predicted an increased likelihood that ob-gyns perceive their patient populations at greater risk for CVD compared to the general population of adult women in the U.S.

As hypothesized, physician practices with high minority patient populations predicted increased CVD risk scores ($\beta = .054$, $p < .001$). Physician practices with high minority patient populations explained a significant proportion of the variance in CVD risk scores, $R^2 = .13$, $F(3,329) = 16.57$, $p < .001$. Physician practices with a greater percentage of African American patients alone ($\beta = .064$, $p < .001$) and Hispanic patients alone ($\beta = .028$, $p = .003$) also predicted higher CVD risk scores (see Table 2).

Of particular importance to this study, physician practices with high minority patient populations, a greater percentage of African American patients alone, and a greater percentage of Hispanic patients alone predicted an increased likelihood that ob-gyns perceive their patient populations at above average risk for racial discrimination and low SES relative to the general population of adult women in the U.S. Physician practices with high minority patient populations and a greater proportion of African American patients alone (but not a greater percentage of Hispanic patients alone) predicted an increased likelihood that ob-gyns perceive their patient populations at above average risk for stress relative to the general population of adult women in the U.S. (see Table 2).

Table 2. Odds Ratios of Physicians' Perceptions that their Minority Patient Populations are at Above Average Risk for CVD Risk Factors

CVD Risk Factor	<i>B</i>	OR	95% CI	<i>p</i> value
Smoking				
% Minority	.004	1.00	(.994, 1.01)	.434
% African American	.020	1.02	(1.01, 1.03)	.003**
% Hispanic	-.011	.989	(.977, 1.00)	.094
Obesity				
% Minority	.026	1.03	(1.02, 1.04)	.000**
% African American	.042	1.04	(1.03, 1.06)	.000**
% Hispanic	.008	1.01	(.998, 1.02)	.103
Hypertension				
% Minority	.022	1.02	(1.01, 1.03)	.000**
% African American	.039	1.04	(1.03, 1.05)	.000**
% Hispanic	.003	1.00	(.994, 1.01)	.504
Hyperlipidemia				
% Minority	.020	1.02	(1.01, 1.03)	.000**
% African American	.025	1.03	(1.01, 1.04)	.000**
% Hispanic	.009	1.01	(.999, 1.02)	.095
High blood cholesterol				
% Minority	.024	1.02	(1.02, 1.03)	.000**
% African American	.027	1.03	(1.01, 1.04)	.000**
% Hispanic	.011	1.01	(1.00, 1.02)	.027*
Diabetes mellitus				
% Minority	.028	1.03	(1.02, 1.04)	.000**
% African American	.019	1.02	(1.01, 1.03)	.002**
% Hispanic	.022	1.02	(1.01, 1.03)	.000**
Physical inactivity				
% Minority	.013	1.01	(1.00, 1.02)	.003**
% African American	.018	1.02	(1.01, 1.03)	.003**
% Hispanic	.005	1.01	(.995, 1.01)	.329
Unhealthy diet				
% Minority	.020	1.02	(1.01, 1.03)	.000**
% African American	.017	1.02	(1.01, 1.03)	.006**
% Hispanic	.014	1.01	(1.00, 1.02)	.007**
Metabolic syndrome				
% Minority	.027	1.03	(1.02, 1.04)	.000**
% African American	.021	1.02	(1.01, 1.03)	.001**
% Hispanic	.019	1.02	(1.01, 1.03)	.000**
Stress				
% Minority	.015	1.02	(1.01, 1.02)	.002**
% African American	.022	1.02	(1.01, 1.04)	.001**
% Hispanic	.004	1.00	(.994, 1.01)	.436
Racial discrimination				
% Minority	.031	1.03	(1.02, 1.04)	.000**

% African American	.034	1.04	(1.02, 1.05)	.000**
% Hispanic	.014	1.01	(1.00, 1.03)	.010*
Low socioeconomic status				
% Minority	.032	1.03	(1.02, 1.04)	.000**
% African American	.021	1.02	(1.01, 1.03)	.001**
% Hispanic	.025	1.03	(1.01, 1.04)	.000**

* $p < .05$, ** $p < .01$

Attitudes and Opinions about Racial/Ethnic Disparities in CVD

African American race and Hispanic ethnicity as CVD risk factors. Contrary to the hypothesis, physician practices with high minority patient populations did not predict a greater likelihood that ob-gyns' agreed that African American race and Hispanic ethnicity are strong CVD risk factors. The lack of significant results may be better explained by the lack of variance in responses to these questions; the majority of physicians agreed that African American race and Hispanic ethnicity are strong CVD risk factors (95.9% and 71.3%; $r = .326$, $p < .001$).

Of all responding physicians 99.1% and 79.1%, respectively ($r = .264$, $p < .001$), believed that African American and Hispanic women in the general U.S. population are at greater risk for CVD relative to White women. When asked specifically about CVD risk among their African American and Hispanic patients, 94.8% and 73.1% of ob-gyns, respectively ($r = .155$, $p = .006$), believed that African American and Hispanic women within their practices are at greater CVD risk relative to White women. These results support those illustrated in Table 2, which indicate that ob-gyns were less likely to rate their Hispanic patient population at above average risk for the same number of CVD risk factors as they did for their African American population.

Tailoring care differently for minority patients. It was hypothesized that physician practices high in minority patients would predict a greater likelihood that ob-gyns would agree that their concern would increase for the patient described in the vignette if she were African American, Hispanic, or White. Physician practices with high minority patient populations did not

predict a greater likelihood that ob-gyns' concern for this patient would increase if she were African American (OR, .998, 95% CI [.368, 3.09; $p = .823$) or Hispanic (OR, .995, 95% CI [.300, 1.01]; $p = .267$). Physician practices with a greater proportion of African American patients alone or Hispanic patients alone were not predictive of ob-gyns' increased concern for the patient in the vignette. The lack of significant results may be better explained by the lack of variance in responses to these questions; the majority of all responding physicians stated that their concern would increase if the patient were African American or Hispanic (93.0% and 72.5%, respectively, $r = .449$, $p < .001$). Only 27.2% of ob-gyns stated that their concern would increase if the patient were White. Answers to the vignette significantly differed based on physician race/ethnicity. Hispanic (93.8%) and African American (93.3%) ob-gyns were significantly more likely than White physicians (69.1%) to agree that their concern for the patient would increase if she were Hispanic ($\chi^2(2, N = 277) = 8.13$, $p = .017$).

Physicians were asked whether they agreed that CVD care should be tailored differently for African American and Hispanic women. Contrary to the hypothesis, physician practices with high minority patient populations, a greater percentage of African American patients alone, or a greater percentage of Hispanic patients alone, did not predict an increased likelihood of agreeing that CVD-related care should be tailored differently for African American and Hispanic women. Of all responding physicians, 54.8% agreed that CVD care should be tailored differently for African American women, while only 44.6% agreed that CVD care should be tailored differently for Hispanic women ($r = .771$, $p < .001$). Only 44% of physicians agreed with both of these statements. These responses do not reflect physician attitudes indicated by their answers to the vignette. This discrepancy will be explored in the discussion section.

Responses to these questions also differed significantly by physician race. African American physicians (88.2%) were significantly more likely than Hispanic (52.6%) and White (52.3%) ob-gyns to agree that CVD care should be tailored differently for African American women ($\chi^2 (2, N = 292) = 8.31, p = .016$). African American (82.4%) and Hispanic (52.6%) physicians were significantly more likely than White ob-gyns (40.2%) to agree that CVD care should be tailored differently for Hispanic women ($\chi^2 (2, N = 292) = 12.20 p = .002$).

Attitudes Regarding the Professional Role of Ob-gyns

As hypothesized, physician practices with high minority patient populations (OR, 1.01, 95% CI [1.00, 1.02]; $p = .016$) and a greater proportion of African American patients (OR, 1.02, 95% CI [1.00, 1.03]; $p = .036$) predicted an increased likelihood that physicians agreed that counseling for CVD is within the professional role of ob-gyns. Similar results were not found for screening or management of CVD. Physician practices with high minority patient populations did not predict a greater likelihood that physicians agreed that patients' CVD health should be of high priority for ob-gyns. Of all responding physicians, 74.9% agreed that patients' CVD health should be of high priority for ob-gyns. Additionally, 76% agreed that screening is within the professional role of ob-gyns, while 67.3% and 18.1%, respectively, agreed that counseling and management are within their professional role.

Physician/Patient-Related Barriers to Providing CVD Care

The hypothesis was supported that physician practices high in minority patients would predict differences in physician/patient-related barriers to providing CVD care. Practices with high minority patient populations predicted an increased likelihood that ob-gyns view patient nonadherence to medical recommendations (OR, 1.01, 95% CI [1.00, 1.02]; $p = .045$) and patients' inability to see a specialist (OR, 1.03, 95% CI [1.02, 1.04]; $p < .001$) as patient-related

barriers to providing CVD care and a decreased likelihood that ob-gyns view lack of exposure to intermediate/high risk patients during residency (OR, .990, 95% CI [.981, .999]; $p = .024$) as a physician-related barrier to providing CVD care.

Physician practices with a greater percentage of Hispanic patients predicted an increased likelihood that ob-gyns perceived their patients' inability to see a specialist as a patient-related barrier to providing CVD care (OR, 1.03, 95% CI [1.01, 1.04]; $p < .001$). The top three most reported physician/patient-related barriers to providing CVD care were time constraints, outside scope of practice, and patient nonadherence to recommendations (see Table 3). These results support the third hypothesis as well as previous findings (Barnhart et al., 2007; Coleman et al., 2007; Ehrental et al., 2011; Morgan et al., 2010).

Table 3. Physician/patient-Related Barriers to Providing CVD Care (% of Physicians Who Agreed)

Time constraints	88.8
Outside scope of practice	80.5
Patient nonadherence to recommendations	80.3
Inadequate training	80.1
Lack of sufficient knowledge	74.9
Lack of exposure to intermediate/high risk patients	61.4
Lack of reimbursement	59.1
Patients' inability to see a specialist	53.8

Practice Patterns

Physician practices with high minority patient populations predicted differences in CVD practice patterns. Ob-gyns were asked whether they routinely screened their patients for a number of CVD risk factors. Although practices high in both African American and Hispanic patients did not predict increased CVD screening for the CVD risk factors included in the questionnaire, physician practices with a greater proportion of Hispanic patients predicted an increased likelihood that ob-gyns screen their patients for diabetes (OR, 1.02, 95% CI [1.00,

1.03]; $p = .015$) and a decreased likelihood that physicians screen their patients for physical inactivity (OR, .989, 95% CI [.980, .999]; $p = .033$). Physician practices with a greater proportion of African American patients predicted a decreased likelihood that ob-gyns screen their patients for hyperlipidemia (OR, .988, 95% CI [.976, 1.00]; $p = .044$).

Ob-gyns were also asked whether they routinely recommend a number of CVD health-related topics to their patients. Physician practices with high minority patients (OR, .951, 95% CI [.905, 1.00]; $p = .048$) and practices with a greater proportion of Hispanic patients (OR, .946, 95% CI [.909, .985]; $p = .007$) predicted a decreased likelihood that physicians recommend smoking cessation to their patients.

Physician race was associated with two significant findings regarding differences in CVD screening patterns. Hispanic ob-gyns (100%) were significantly more likely to screen for diabetes than White (69.3%) or African American (68.8%) physicians ($\chi^2(2, N = 291) = 7.79, p = .020$). African American (100%) and White (99.6%) ob-gyns were significantly more likely to screen for smoking than Hispanic (94.4%) physicians, although the majority of all of these physicians appear to be screening for smoking ($\chi^2(2, N = 291) = 6.70, p = .035$).

CHAPTER 4

DISCUSSION

The aim of this study was to assess ob-gyns' knowledge, attitudes, and practice patterns of racial/ethnic disparities in CVD, specifically among African American and Hispanic women. This study also sought to determine physician/patient-related barriers to providing CVD care. This is the first study to examine these important health issues among ob-gyns. Given that the only related studies focused on ob-gyns' knowledge and practice patterns of CVD among their overall female population, this study extends the literature to two at-risk, under-researched, and underserved groups.

Research has identified that African American and Hispanic women are at greatest risk for CVD relative to all women (AHA, 2012). Because ob-gyns serve as PCPs for many minority women, it is crucial that they be knowledgeable about these disparities. More aggressive interventions are recommended for women with multiple CVD risk factors (Perrone & Brunelli, 2013), and it may be necessary for physicians to tailor preventive strategies differently for high-risk groups like African American and Hispanic women (Stranges & Guallar, 2012). Stranges and Guallar (2012) suggest that CVD preventive counseling and emphasis on adherence to medical recommendations may need to be tailored differently for at-risk minority women whose CVD risk profiles differ from the general population. They highlight that while these women are at greater risk for many metabolic and behavioral CVD risk factors, educational attainment, socioeconomic status, and cultural factors are additional critical determinants of CVD risk that may impact adoption of healthy behaviors and medical compliance.

Knowledge

Because African American physicians are more likely to care for African American patients and Hispanic physicians are more likely to care for Hispanic patients (Komaromy et al, 1996), it was hypothesized that these physicians would be more knowledgeable about racial/ethnic CVD disparities relative to White physicians. This hypothesis was not supported; however, Fisher's exact test did approach statistical significance ($p = .075$). The lack of significant findings may be better explained by the large underrepresentation of minority physicians (African American, $n = 18$; Hispanic, $n = 19$) included in the sample relative to White ob-gyns ($n = 260$). A replication of this research question with a larger sample of African American and Hispanic physicians may help to distinguish whether ob-gyn race is associated with physician knowledge of racial/ethnic CVD disparities.

The second hypothesis was that physician practices with high minority patient populations would predict a greater likelihood of physicians being knowledgeable about racial/ethnic CVD disparities in both African American and Hispanic women was supported. It appears that having a greater minority patient population significantly affects a physician's knowledge of racial/ethnic disparities in CVD. It is likely that physicians who have practices with greater minority populations are more often exposed to intermediate/high-risk patients than physicians with low minority patient populations.

Physician practices with high minority patient populations predicted being more knowledgeable about racial/ethnic CVD disparities specifically among African American women but not among Hispanic women. Of all responding physicians, 60.1% were knowledgeable about racial/ethnic disparities in CVD among both African American and Hispanic women. Almost all physicians (91%) were aware of disparities among African American women, while only 65%

were knowledgeable of disparities among Hispanic women. In part, these results support previous findings that most ob-gyns are aware that African American women are at greater risk for CVD relative to all women (Ehrenthal et al., 2013). However, findings suggest that racial/ethnic disparities in CVD specifically among Hispanic women are less well known among ob-gyns. One possible explanation for this result is that less research has been conducted regarding Hispanics' CVD risk profile. A larger amount of research has been conducted investigating African American's CVD risk, and it is more widely established that African American women are at greatest risk for CVD relative to all women. Similar to African Americans, Hispanic women face unique challenges, such as discrimination, low SES, low educational attainment, and less access to healthcare, which may place them at greater risk for CVD compared to other groups of women. As the Hispanic population in the U.S. continues to rapidly expand, more research is needed to better understand Hispanic's CVD risk profile. Results suggest that it may be necessary to disseminate educational information to physicians regarding Hispanic women's high-risk profile given that fewer physicians are knowledgeable about these disparities and fewer physicians believe that Hispanic ethnicity is a strong CVD risk factor.

Ob-gyns' Perceived CVD Risk of Their Patient Populations

Physician practices with high minority patient populations, a greater percentage of African American patients alone, and a greater percentage of Hispanic patients alone were predictive of ob-gyns' perceptions that their patient populations are at greater risk for CVD compared to the general population of adult women in the U.S. Additionally, practices with high minority patient populations, a greater percentage of African American patients alone, and a greater percentage of Hispanic patients alone predicted higher CVD risk scores. These results

support national data that African American and Hispanic women are at increased risk for CVD compared to all women. It appears that ob-gyns with greater minority patient populations observe these groups' increased risk within their practices.

There is some discrepancy within these findings. The finding that practices with a greater proportion of Hispanic patients predicted an increased likelihood that ob-gyns perceive their patient populations at greater CVD risk is puzzling coupled with the findings that these same practices did not predict an increased likelihood that ob-gyns were aware of racial/ethnic disparities among Hispanic women and were less likely to believe that Hispanic ethnicity is a strong CVD risk factor. Future research is needed to clarify ob-gyns' beliefs about racial/ethnic disparities in CVD among Hispanic women.

Physician practices with high minority populations predicted a greater likelihood that ob-gyns perceive their patients at above average risk for all CVD risk factors listed in the questionnaire except smoking. In general, these results reflect national statistics. African American and Hispanic women have higher rates of poor diet, obesity, physical inactivity, diabetes, metabolic syndrome, racial discrimination, low SES, and stress relative to White women. African American women also have higher rates of hypertension than Whites, and Hispanic women have comparable rates of high blood cholesterol levels and other lipids relative to White women. In contrast, African American and Hispanic women have lower rates of smoking than White women, and it appears that ob-gyns observe this decreased risk within their patient populations.

Overall, ob-gyns' perceptions of CVD risk profiles among their patient populations correspond with national data for African American and Hispanic women. However, as noted in many of the results it appears that ob-gyns do not perceive their Hispanic patients to be at greater

risk for some CVD risk factors relative to White women. For example, having a greater proportion of Hispanic patients did not predict an increased likelihood that ob-gyns perceive their patient populations at greater risk for obesity, physical inactivity, and stress. Again these results may be due in part to ob-gyns' lack of knowledge of Hispanic women's increased CVD risk as indicated by findings of ob-gyn knowledge of these disparities. Additionally, these questions assessed ob-gyns' perceptions of their patients' risk profiles. This study was unable to collect data on the actual percentage of patients within these practices that have been diagnosed with these CVD risk factors in order to verify whether these patient populations are actually at greater risk relative to Whites.

Attitudes about Racial/Ethnic Disparities in CVD

African American race and Hispanic ethnicity as CVD risk factors. The third hypothesis that physician practices with high minority patient populations would predict a greater likelihood that ob-gyns would agree that African American race and Hispanic ethnicity are strong CVD risk factors was not supported. These results may be best explained by the lack of variance in responses. The majority of responding physicians (96% and 71%, respectively) agreed that African American race and Hispanic ethnicity are strong CVD risk factors. However, again findings indicated that fewer ob-gyns view Hispanic ethnicity as a strong CVD risk factor.

Almost all responding ob-gyns (99%) believed that African American women in the general U.S. populations are at greater CVD risk than White women, while only 79% believed that Hispanic women are at greater CVD risk. These results were similarly reflected when ob-gyns were asked specifically about African American and Hispanic women within their patient populations. Ninety-five percent of ob-gyns believed that African American women in their practices are at higher CVD risk compared to White women, while only 73% believed that

Hispanic women in their practices are at greater risk. Once again, results indicated that ob-gyns do not view Hispanic ethnicity as a strong CVD risk factor relative to African American race. These results are concerning given that Hispanic women are at increased risk and are more likely to be of low SES, more likely utilize their ob-gyn as their PCP, and are less likely to have access to health care services.

Tailoring care differently for minority patients. Contrary to the hypothesis, practices high in minority patient populations did not predict a greater likelihood that ob-gyns' concern would increase for a patient borderline on a number of CVD risk factors if she were African American or Hispanic. The majority of ob-gyns agreed that their concern would increase if the patient were African American (93%) or Hispanic (73%). Thus, it appears that having a greater proportion of minority patients does not influence ob-gyns' concern, but rather that most physicians' concern would increase based on patient race/ethnicity. These results remain consistent with previously discussed results, indicating that ob-gyns appear less concerned about increased CVD risk among Hispanic patients relative to African American patients.

The hypothesis that physician practices with high minority patient populations would predict a greater likelihood that ob-gyns would agree that CVD care should be tailored differently for African American and Hispanic patients was not supported. Over half (54.8%) of ob-gyns agreed that CVD care should be tailored differently for African American women, but a smaller proportion of ob-gyns (44%) believed that care should be tailored differently for Hispanic women. While most ob-gyns indicated that their concern for the patient in the vignette would increase if she were African American or Hispanic, it does not appear that these attitudes translate to ob-gyns' beliefs that CVD care should be tailored differently for these at-risk groups. These attitudes conflict with medical recommendations. It is recommended that physicians tailor

preventive strategies differently for high-risk groups like African Americans and Hispanics (Stranges & Guallar, 2012) and use more aggressive interventions for women with multiple CVD risk factors (Perrone & Brunelli, 2013).

Responses to these questions significantly differed based on physician race/ethnicity. Hispanic and African American ob-gyns were significantly more likely than White physicians to agree that their concern for the patient in the vignette would increase if she were Hispanic. Furthermore, African American physicians were significantly more likely than Hispanic and White ob-gyns to agree that CVD care should be tailored differently for African American women. African American and Hispanic physicians were significantly more likely than White ob-gyns to agree that CVD care should be tailored differently for Hispanic women. Differences in medical decision-making have been associated with physician race/ethnicity (Mebane et al., 1999).

Attitudes Regarding the Professional Role of Ob-gyns

As hypothesized, physician practices high in minority patient populations predicted an increased likelihood that ob-gyns agreed that CVD counseling is within their professional role. However, similar results were not found for screening and management of CVD. Perhaps physicians with high minority patient populations recognize that these women are at greater risk for CVD and therefore are more likely to provide CVD counseling. Another possible explanation is that many ob-gyns believe that CVD care is outside of their scope of practice, and thus they may view CVD screening and management as beyond their clinical responsibility.

Physician/Patient-Related Barriers to Providing CVD Care

The hypothesis that physician practices high in minority patient populations would predict differences in physician/patient-related barriers to providing CVD care was supported.

Practices with high minority patient populations predicted an increased likelihood that ob-gyns view patient nonadherence to medical recommendations and patients' inability to see a specialist as patient-related barriers to providing CVD care and a decreased likelihood that ob-gyns view lack of exposure to intermediate/high risk patients during residency as a physician-related barrier to providing CVD care. Physicians' attitudes of barriers to providing CVD care appear to reflect a long-standing problem with regards to socioeconomic disadvantages that many minority groups face, as well as, persistent distrust between minority patients (particularly African Americans) and their physicians. It is well established that racial/ethnic minority women are at a significant disadvantage regarding access to health care services even when controlling for factors such as SES, insurance coverage, stage or severity of disease, comorbidities, type and availability of health care services, and patient preferences (Mayberry et al., 2000). Research indicates that minority women are less likely to adhere to treatment recommendations compared to White women, and racial discrimination and trust in health care providers have been shown to mediate this relationship (Bosworth et al., 2006, 2008; Cuffee et al., 2013; O'Malley et al., 2004).

The top three most reported physician/patient-related barriers were time constraints, outside scope of practice, and patient nonadherence to recommendations. These results reflect previous findings and mixed physician sentiment that providing CVD care is outside their professional role (Barnhart et al., 2007; Coleman et al., 2007; Ehrental et al., 2011; Morgan et al., 2010). Findings suggest that future research and medical guidelines should focus on how to best address these commonly reported barriers.

Practice Patterns

While practices high in minority patient populations predicted some differences in physicians' CVD practice patterns, it appears that overall ob-gyns are screening, counseling, and managing all patients in a similar fashion. Results indicated some differences in CVD screening and counseling practices. Physician practices with a greater percentage of Hispanic patients predicted an increased likelihood that ob-gyns screen their patients for diabetes and a decreased likelihood that they screen their patients for physical inactivity. These results correspond with physicians' responses on questions regarding their patients' CVD risk profile. Physician practices with a greater percentage of Hispanic patients predicted an increased likelihood that ob-gyns believed that their patients are at above average risk for diabetes, but not physical inactivity, relative to White women. In terms of how these results align with national statistics, physician responses to screening and risk profile questions about diabetes match national data that Hispanic women are at increased risk for diabetes relative to White women. However, in regards to physical inactivity, physician responses to screening and risk profile questions did not correspond with national statistics. Hispanic women have higher rates of physical inactivity than White women, but results did not indicate that physicians with a greater percentage of Hispanic patients are more likely to screen for physical inactivity or more likely to perceive their patient population at above average risk for physical inactivity.

It is unclear why physicians in the sample do not perceive their Hispanic patients to be at greater risk for physical inactivity. However, results indicated that the total percentage of minority patients within physician practices (i.e., both Hispanic and African American patients) did predict an increased likelihood that ob-gyns perceive their patient populations at above average risk for physician inactivity. Lastly, physician practices with a greater proportion of

African American patients predicted a decreased likelihood that ob-gyns screen for hyperlipidemia. These results correspond with national data that African American women have lower rates of total blood cholesterol than White women. However, it is important to note that African American women have higher rates of LDL cholesterol (i.e., bad cholesterol) than White women, suggesting that physicians should still be screening these women for hyperlipidemia.

Ob-gyns were also asked whether they routinely recommend a number of CVD health-related topics to their patients. Physician practices with high minority patients and practices with a greater proportion of Hispanic patients predicted a decreased likelihood that physicians recommend smoking cessation. Physician practices with a greater percentage of African American patients did not predict a decreased likelihood that ob-gyns' recommend smoking cessation to their patients. Overall, these results correspond with national statistics that African American and Hispanic women have lower rates of smoking than White women. It is unclear why physician practices with a greater proportion of African American women did not also predict a decreased likelihood that physicians recommend smoking cessation given that higher minority patient populations and higher Hispanic patient populations did predict a decreased likelihood. However, physicians' responses to this question correspond with their responses to their perceived smoking risk of their patients (i.e., practices with a greater proportion of African Americans predicted an increased likelihood that ob-gyns believed their patients are at above average risk for smoking relative to White women).

Limitations

Some limitations should be considered when interpreting the results of this study. Firstly, all surveys were completed retrospectively, subjecting them to possible recall bias. Secondly, it is possible that ob-gyns' responses were influenced by a social desirability effect. Physicians

may have selected responses that they believed would be viewed positively by others. However, the survey included methods by which social desirability may be avoided in survey research, including emphasis on confidentiality, the use of self-administration of the questionnaire, and forced-choice items (for review see Nederhof, 1985).

As with all survey research, there is a possibility of non-response bias. Efforts were made to address this issue within the methodology by sending an abbreviated version of the survey to all non-respondents after data collection was complete. Results indicated that respondents and non-respondents did not differ on demographic variables and only differed in their responses to two survey questions.

Another limitation of this study is the potential for a sampling bias due to how groups were selected. Non-CARN participants were a randomly selected sample. CARN participants were selected based on whether they previously indicated on two ACOG surveys that they had minority patient populations above the national average to ensure that physician practices included in the sample were representative of practices with both low and high proportions of minority women. Analyses yielded no meaningful between-group differences among CARN and non-CARN members with regards to physician demographics. During the more than 20-year history of CARN, comparisons of their responses on questionnaires to those of randomly selected non-CARN members have rarely yielded significant differences (Farrow, Goldenberg, Fretts, & Schulkin, 2013). There is strong evidence from a wide variety of recent studies that clinical practice patterns do not significantly differ between CARN and non-CARN samples (e.g., Anderson, Stumpf & Schulkin, 2009; Bettes et al, 2007; Morgan, Goldenberg and Schulkin, 2008a; Morgan, Goldenberg and Schulkin, 2008b; Morgan, et al, 2005; Power, Cogswell, Schulkin, 2006).

Future Directions

The existence of racial/ethnic disparities in health care is still largely unrecognized. As this is the first study to investigate ob-gyns' knowledge, attitudes, and practices patterns of racial/ethnic disparities in CVD, there is a great deal of additional research needed to further assess ob-gyns' awareness of these disparities and determine whether they tailor CVD practice patterns differently for at-risk minority women. ACOG could focus its efforts on clarifying guidelines for how ob-gyns can best treat at-risk minority women and how to address frequently reported barriers to providing CVD care. In support of previous findings, the majority of respondents indicated that a collaborative care approach to women's health, continuing medical education, and ACOG-supported training in CVD care would improve delivery of CVD care to their patients (Ehrenthal et al., 2001).

As an increasing number of ob-gyns incorporate primary care into their clinical practices, it is crucial that they are adequately supported and prepared to address important health care concerns, such as CVD. It is also imperative to recognize that racial/ethnic minority women are more likely to utilize their ob-gyn as a PCP. While racial discrimination and access to health care continue to improve for African American and Hispanic women, these groups are still at a major disadvantage when it comes to receiving equal treatment in care. Efforts should focus heavily on narrowing this gap in health care disparities.

APPENDIX A
FULL SURVEY COVER LETTER

Dear Member of the Collaborative Ambulatory Research Network:

The American College of Obstetricians and Gynecologists requests your participation in our most recent Collaborative Ambulatory Research Network (CARN) questionnaire study, **Cardiovascular Health Survey**. The primary focus of the study is on ob-gyns' knowledge and practices regarding cardiovascular disease.

The survey should take approximately 15-20 minutes to complete. It is not necessary to study any extra materials prior to completing the questionnaire; please be as candid as possible. If you complete the survey and return it to us, we will take this as an indication that you have consented to participate. Individual responses are confidential and data will be analyzed and reported in aggregate form only.

A high response rate is crucial for ensuring that the results of this survey accurately reflect the clinical practices of our Fellows. We rely on you to make these surveys a success. **Please return the survey in the enclosed postage-paid return envelope by [Date] to avoid reminder mailings.**

We thank you in advance for your cooperation and participation. If you have any questions, please contact Katherine Jones at (202) 863-4999.

Sincerely,

Jay Schulkin, Ph.D.
Director of Research

Katherine Jones, B.S., B.A.
Research Assistant

APPENDIX B

FULL SURVEY

CARDIOVASCULAR HEALTH

Part. A. Demographic Information

1. Your year of birth: _____ 2. Your gender: ☐ Male ☐ Female 3. Years in practice: _____
4. State in which your primary practice is located: _____ 5. Year you completed residency: _____
6. Which category best describes your current practice? (☒ one)
☐ Solo Practice ☐ Ob-gyn partnership/group ☐ Multi-specialty group
☐ HMO (staff model) ☐ University faculty and practice ☐ Other (please specify): _____
7. Which of the following do you consider your primary medical specialty? (☒ one)
☐ General ob-gyn ☐ Gynecology only ☐ Obstetrics only ☐ Other (please specify): _____
8. Which best describes the location of your practice? (☒ one)
☐ Urban, inner city ☐ Urban, non-inner city ☐ Suburban ☐ Rural ☐ Other: _____
9. Which of the following race/ethnicity do you identify as? (☒ all that apply)
☐ Non-Hispanic White ☐ Hispanic ☐ African American ☐ Asian/Pacific Islander
☐ Native American ☐ Multiracial ☐ Other (please specify): _____
10. Estimate the proportions of your patient population that are: (*Total should equal 100%*)
_____ % Non-Hispanic White _____ % Hispanic _____ % African American
_____ % Native American _____ % Asian/Pacific Islander _____ % Multiracial
_____ % Other (please specify): _____
11. Estimate the proportions of your patient population that are in the following age groups: (*Total should equal 100%*) _____ % age <18 _____ % age 18-44 _____ % age 45-64 _____ % age 65+
12. Estimate the proportions of your patient population that have the following as their primary insurance type: (*Total should equal 100%*)
_____ % Private insurance (including HMO, IPO, etc.) _____ % Public insurance _____ % Uninsured
13. Which do you consider yourself? (☒ one)
☐ Mostly a primary care provider ☐ Mostly a specialist ☐ Both a primary care provider & specialist
14. Approximately what percentage of your **pregnant** patients use you as their primary care physician?
☐ 0% ☐ 1-20% ☐ 21-40% ☐ 41-60% ☐ 61-80% ☐ 81-100%
15. Approximately what percentage of your **nonpregnant** patients use you as their primary care physician?
☐ 0% ☐ 1-20% ☐ 21-40% ☐ 41-60% ☐ 61-80% ☐ 81-100%
16. **Estimate to the best of your ability** how many hours per week you spend on ob-gyn care _____ and how many hours per week you devote to primary care _____?

17. Have you read the ACOG Committee Opinion regarding Racial and Ethnic Disparities in Women's Health

(CO 317)? ☐ Yes ☐ No

a. If yes, did you find the Committee Opinion to be helpful? ☐ Yes ☐ No

Part B. Cardiovascular Care

18. Based on your knowledge of the general population in the United States, please indicate whether the following statements are true or false.

	True	False	Don't Know
a. Heart disease is the number one killer of women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Heart disease mortality does not differ by gender.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. African American women are at an equal risk for cardiovascular disease relative to non-Hispanic White women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Hispanic women are at an increased risk for cardiovascular disease relative to non-Hispanic White women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Pre-menopausal women are at a decreased risk for cardiovascular disease relative to post-menopausal women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

19. Do you assess new patients for cardiovascular disease risk factors?

☐ Most of the time ☐ Frequently ☐ Sometimes ☐ Rarely/Never

20. Do you believe that you received adequate residency training in cardiovascular care? ☐ Yes ☐ No

21. Do you have a systematic method for identifying women at risk for cardiovascular disease?

☐ Yes ☐ No

a. If yes, do you flag these patients to insure that you continue to screen and monitor them carefully for complications that may arise later in life? ☐ Yes ☐ No

22. If you do **not** have a system for identifying these at-risk women, please indicate the extent to which you consider the following to be barriers to do so.

	Major Barrier	Minor Barrier	Not a Barrier
Too time consuming	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Outside scope of practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Lack of knowledge of cardiovascular risk factors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other (please specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

23. Do you provide a heart examination to your patients? ☐ Most of the time ☐ Frequently ☐ Sometimes ☐ Rarely/Never

24. How do you typically manage patients at risk for cardiovascular disease? (✓ one)

☐ Treat them myself ☐ Refer them to a specialist ☐ Other (please specify): _____

25. If you refer patients to a specialist for cardiovascular care, do you follow up with the specialist regarding the results? ☐ Yes ☐ No ☐ Depends, On what? _____
- a. If yes, do you then discuss the results with the patient?
☐ Yes ☐ No ☐ Depends, On what? _____
26. Have you read the ACOG guidelines for counseling women on cardiovascular care? ☐ Yes ☐ No
- a. If yes, did you find the guidelines on cardiovascular care to be helpful? ☐ Yes ☐ No
27. Have you read the ACOG guidelines on ob-gyns' roles as primary care providers for women?
☐ Yes ☐ No
- a. If yes, did you find the guidelines on ob-gyns' roles as primary care providers to be helpful?
☐ Yes ☐ No
28. Compared to the general population of adult women in the United States, do you consider the risk of cardiovascular disease in your patient population to be: ☐ Higher ☐ The same ☐ Lower
29. Please estimate to the *best of your ability* the percentage of **your patient population** that:
- _____ % Has hypertension _____ % Has high cholesterol _____ % Has metabolic syndrome
 _____ % Has diabetes _____ % Smokes tobacco _____ % Is overweight
 _____ % Is obese
30. Please rate the extent to which you agree that the following are **strong** cardiovascular disease risk factors in the **general population of adult women in the United States**.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. Smoking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Obesity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Hypertension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. African American race	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Hyperlipidemia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Unhealthy diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Age	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. High blood cholesterol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Hispanic ethnicity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Diabetes mellitus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Metabolic Syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Stress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

31. How frequently do you screen the following patients for cardiovascular disease? (✓ *one per row*)

	Routinely	Only in women with risk factors	Rarely/Never	N/A
a. African American	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Asian/Pacific Islander	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Hispanic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Non-Hispanic White	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

32. Based on your practice, please indicate which of the following cardiovascular disease risk factors you ***routinely*** screen for among your patients. (✓ *all that apply*)

a. Smoking	<input type="checkbox"/>
b. Obesity	<input type="checkbox"/>
c. Hypertension	<input type="checkbox"/>
d. Hyperlipidemia	<input type="checkbox"/>
e. High blood cholesterol	<input type="checkbox"/>
f. Diabetes mellitus	<input type="checkbox"/>
g. Sedentary lifestyle	<input type="checkbox"/>
h. Unhealthy diet	<input type="checkbox"/>
i. Metabolic syndrome	<input type="checkbox"/>

33. Please indicate which of the following **cardiovascular health-related topics** you ***routinely*** recommend to your patients. (✓ *all that apply*)

a. Smoking cessation	<input type="checkbox"/>
b. Regular exercise	<input type="checkbox"/>
c. Heart-healthy diet	<input type="checkbox"/>
d. Weight management/reduction	<input type="checkbox"/>
e. Glycemic control in diabetics	<input type="checkbox"/>
f. Blood pressure management	<input type="checkbox"/>
g. Cholesterol management	<input type="checkbox"/>

34. **Based on your practice**, please indicate the extent to which the following are barriers to providing cardiovascular screening for your patients.

	Major Barrier	Minor Barrier	Not a Barrier
a. Time constraints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Inadequate training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Lack of reimbursement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Outside scope of practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Lack of sufficient knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Lack of exposure to intermediate/high risk patients during residency training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Patients' nonadherence to recommendations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Patients' inability to see a specialist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Other (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

35. In your professional opinion, if you had a patient who was borderline on a number of objective, physical measures of cardiovascular disease (i.e. BMI, hypertension, high cholesterol, etc.), such that you might be unsure when to be aggressive in your counseling and/or management, would any of the following patient demographics actually increase your concern for the patient?

- a. She is post-menopausal? ☐ Yes ☐ No
- b. She is African American? ☐ Yes ☐ No
- c. She is Caucasian? ☐ Yes ☐ No
- d. She is Hispanic? ☐ Yes ☐ No

36. Based on your knowledge of the general population of adult women in the United States, please rate whether the following racial/ethnic groups of women are at a lower, equal, or greater risk for cardiovascular disease relative to non-Hispanic White women.

	Lower	Equal	Greater	Don't Know
a. African American	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Asian/Pacific Islander	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Hispanic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

37. Based on your patient population, please rate whether the following racial/ethnic groups of women in your practice are at a lower, equal, or greater risk for cardiovascular disease relative to non-Hispanic White women.

	Lower	Equal	Greater	Not Applicable
a. African American	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Asian/Pacific Islander	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Hispanic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

38. Rate the prevalence of the following cardiovascular risk factors among your patients relative to the general population of adult women in the United States.

	Above Average	Average	Below Average	Don't Know
a. Smoking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Obesity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Hypertension	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Hyperlipidemia	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. High blood cholesterol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Diabetes mellitus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Sedentary lifestyle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Unhealthy diet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Metabolic syndrome	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Stress	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Racial discrimination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Low socioeconomic status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

39. Please indicate the extent to which you agree with the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. Patients' cardiovascular health should be a high priority for ob-gyn physicians.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Screening for cardiovascular disease is within the professional role of an ob-gyn physician.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Counseling for cardiovascular disease is within the professional role of an ob-gyn physician.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Management of cardiovascular disease is within the professional role of an ob-gyn physician.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Preventive care and screening for cardiovascular disease should be tailored differently for African American women than for non-Hispanic White women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Preventive care and screening for cardiovascular disease should be tailored differently for Hispanic women than for non-Hispanic White women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. A collaborative network among ob-gyns, primary care providers, and cardiologists would improve cardiovascular care for women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. ACOG-supported training in cardiovascular care would improve my delivery of care to my patients.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. I would benefit from continuing medical education courses in cardiovascular care.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for your participation in this questionnaire!

Please return the survey in the addressed postage-paid envelope provided. Otherwise, return to:

ACOG, Research Dept. c/o Katherine Jones, 409 12th Street SW, Washington, DC 20024.

Any questions, please call (202) 863-4999.

APPENDIX C

ABBREVIATED SURVEY COVER LETTER

Dear ACOG Fellow or Junior Fellow:

You were selected for our questionnaire study, **Cardiovascular Health**. As we have yet to receive your survey, we conclude that you have declined to participate. We still would very much like to be able to include at least some of your experiences and opinions in our results. We hope you will consider filling out the short questionnaire on the back of this letter. Of course, you may instead send back one of the earlier full surveys we sent you.

The questionnaire should take approximately 5 minutes to complete. It is not necessary to study any extra materials prior to completing it; please be as candid as possible. If you complete the survey and return it to us, we will take this as an indication that you have consented to participate. Individual responses are confidential and data will be analyzed and reported in aggregate form only.

A high response rate is crucial for ensuring that the results of this survey accurately reflect the clinical practices of our Fellows. We rely on you to make these surveys a success. **Please return the survey in the enclosed postage-paid return envelope by August 8, 2013.**

We thank you in advance for your cooperation and participation. If you have any questions, please contact Katherine Jones at kjones@acog.org or at (202) 863-4999.

Sincerely,

Jay Schulkin, Ph.D.
Director of Research

Katherine Jones, B.S., B.A.
Research Assistant

APPENDIX D

ABBREVIATED SURVEY

Short Survey on Cardiovascular Health

1. Which of the following race/ethnicity do you identify as? (✓ *all that apply*)

- ☐ Non-Hispanic White ☐ Hispanic ☐ African American ☐ Asian/Pacific Islander
☐ Native American ☐ Multiracial ☐ Other (please specify): _____

2. Estimate the proportions of your patient population that are: (*Total should equal 100%*)

_____ % Non-Hispanic White _____ % Hispanic _____ % African American
 _____ % Native American _____ % Asian/Pacific Islander _____ % Multiracial
 _____ % Other (please specify): _____

3. In your professional opinion, if you had a patient who was borderline on a number of objective, physical measures of cardiovascular disease (i.e. BMI, hypertension, high cholesterol, etc.), such that you might be unsure when to be aggressive in your counseling and/or management, would any of the following patient demographics actually increase your concern for the patient?

- a. She is post-menopausal? ☐ Yes ☐ No b. She is African American? ☐ Yes ☐ No
 c. She is Caucasian? ☐ Yes ☐ No d. She is Hispanic? ☐ Yes ☐ No

4. Based on your knowledge of the general population of adult women in the United States, please rate whether the following racial/ethnic groups of women are at a lower, equal, or greater risk for cardiovascular disease relative to non-Hispanic White women.

	Lower	Equal	Greater	Don't Know
a. African American	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Asian/Pacific Islander	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Hispanic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Please indicate the extent to which you agree with the following statements.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. Screening for cardiovascular disease is within the professional role of an ob-gyn physician.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Counseling for cardiovascular disease is within the professional role of an ob-gyn physician.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Preventive care and screening for cardiovascular disease should be tailored differently for African American women than for non-Hispanic White women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Preventive care and screening for cardiovascular disease should be tailored differently for Hispanic women than for non-Hispanic White women.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. **Based on your practice**, please indicate the extent to which the following are barriers to providing cardiovascular screening for your patients.

	Major Barrier	Minor Barrier	Not a Barrier
a. Time constraints	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Inadequate training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Lack of reimbursement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Outside scope of practice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Lack of sufficient knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Lack of exposure to intermediate/high risk patients during residency training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Patients' nonadherence to recommendations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Patients' inability to see a specialist	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Other (specify): _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

APPENDIX E

GENDER DIFFERENCES IN PHYSICIAN DEMOGRAPHIC CHARACTERISTICS

Demographic Variable	Male	Female
Age, mean (<i>SD</i>)**	59.58 (9.34)	46.97 (10.29)
Years in practice, mean (<i>SD</i>)**	27.00 (9.88)	14.57 (9.63)
Type of practice (%)**		
Solo practice	25.5	11.4
Ob-gyn partnership/group	33.8	32.8
Multi-specialty group	15.2	15.9
HMO (staff model)	2.1	5.5
University faculty and practice	13.8	21.4
Other	9.7	12.9
Primary specialty (%)		
General ob-gyn	65.5	71.0
Gynecology only	20.0	13.5
Obstetrics only	4.8	7.0
Other	9.7	8.5
Practice location (%)		
Urban, inner city	22.1	15.6
Urban, non-inner city	33.8	41.2
Suburban	30.3	30.2
Rural	13.1	11.6
Other	0.7	1.5
Physician race (%)*		
Non-Hispanic, White	83.1	71.4
Hispanic	7.0	4.5
African American	1.4	8.0
Asian/Pacific Islander	6.3	11.1
Native American	0.7	0.0
Multiracial	0.7	3.5
Other	0.7	1.5
Professional self-identification (%)		
Primary care physician (PCP)	2.1	1.5
Specialist	49.0	50.5
Both PCP and specialist	49.0	48.0

* $p < .05$, ** $p < .01$

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