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HORMONE REPLACEMENT THERAPY KNOWLEDGE,

PERCEIVED RISK OF CORONARY HEART DISEASE, AND LIKELIHOOD TO TAKE AMONG LOW_INCOME AFRICAN_AMERICAN WOMEN presented by

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HORMONE REPLACEMENT THERAPY KNOWLEDGE, PERCEIVED RISK RISK OF CORONARY HEART DISEASE, AND LIKELIHOOD TO TAKE AMONG LOW-INCOME AFRICAN-AMERICAN WOMEN

By

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ABSTRACT

HORMONE REPLACEMENT THERAPY KNOWLEDGE, PERCEIVED RISK RISK OF CORONARY HEART DISEASE, AND LIKELIHOOD TO TAKE AMONG LOW-INCOME AFRICAN-AMERICAN WOMEN

By

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This study is a secondary analysis examining African-American women's knowledge of HRT, and it's risks, cardioprotective benefits and likelihood to take HRT. Research questions include: 1) What is the level of HRT knowledge among low-income African-American women (LIAAW)? 2) What is the relationship between HRT knowledge and likelihood to take HRT? And 3) What is the relationship between HRT knowledge, perceived risk of CHD, and likelihood to take HRT? The sample consisted of 197 LIAAW ages 40-70. Findings include: 1) low level of knowledge (1.08 out of a total of 5 (SD 1); 2) likelihood to take and knowledge had a weak correlation (r=0.19); and 3) perceived CHD risk (0-20% risk out of 0% (no risk) to 100%). Both knowledge and perceived risk indicated a predictive relationship (R^2=.05) for likelihood to take HRT. Implications for APN's of these findings demonstrate the need for health education and health promotion.

To my parents who gave me the ambition to strive for great things.
To my loving husband and children who supported me and helped me earn my MSN.

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INTRODUCTION

There is minimal research looking at risks and benefits of hormone replacement therapy (HRT) and its use among African-American women. This my be due to the fact that African-Americans are not at risk for osteoporosis due to their greater peak bone mass and therefore are not thought to be candidates for long term HRT (Andrews, 1996).

However, there are other health and health care issues that are significant in starting HRT in these women, coronary heart disease (CHD) is the leading cause of death among all women in the United States (Andrews, 1996). Recent studies have correlated estrogen and estrogen replacement with cardioprotection (Riggs, 1987).

The absence of CHD data among African-American women is even more significant (Liao & Cooper, 1992). However, one of the few studies available is Grady, Rubin, Petitti, Fox, Black, Ettinger, Ernster, & Cummings (1992). African-Americans have a 46.5% lifetime chance of developing CHD compared with 46.1% in whites (Grady et al., 1992) making them equally eligible for the cardioprotection of HRT. There is lack of knowledge on the natural history and prognosis of CHD in all women due to the exclusion and/or

under-representation of women of all ages in past studies and clinical trials.

Prevention of CHD is much more important and effective than treatment. A statistically and clinically significant reduction in all cause mortality was found with long-term estrogen use in a cohort of aging women (Ettinger, Friedman, Bush & Quesenberry, 1996). This was reflected primarily through a reduction in mortality from coronary heart disease and cardiovascular disease. Unfortunately, African-American women were excluded from this study since it was originally done to look at osteoporosis and African-American women were not considered prone to osteoporetic fractures (Ettinger et al., 1996). A 50% reduction in heart disease risk has been documented in postmenopausal women taking estrogen (PEPI, 1995). Recent studies have shown the combined treatment of progesterone and estrogen have a cardioprotective effective similar to unopposed estrogen (PEPI, 1995).

The purpose of this study is to examine low-income African-American women's (LIAAW) knowledge of hormone replacement, CHD risks, and cardioprotective benefits. This study will also analyze the predicted relationship between perceived risk of CHD, HRT knowledge, and likelihood to take HRT among low-income African-American women.

Women live approximately seven years longer than men and spend nearly one third of their lifespan post-menopause, therefore their later years may be filled with chronic diseases. Furthermore, according to Grimes (1995) the

proportion of U.S. women older than 45 years is predicted to grow from 34% in 1995 to 43% in 2020, millions of baby boomers are entering menopause increasing the numbers of menopausal women from 15 to 18 million. During this time period from 1995 to 2020 the U.S. population will experience an 81% increase in the number of elderly women (Grimes, 1995).

Health promotion and preventive health must be emphasized since these activities may improve the quality of life thereby decreasing morbidity and mortality. Health care providers are experts in diagnosing and treating diseases; however, it is time more providers expand their focus to include a program of preventive health care, specifically prevention of heart disease (Hammond, 1996). Particularly advanced practice nurses (APN) in primary care contribute to health promotion and disease prevention. APN's provide education and incorporates self-care for women regardless of race and educational level. Longitudinal research on HRT is a necessity with so many women entering menopause and living longer post-menopausal.

Hormone replacement therapy has been shown to reduce menopausal vasomotor symptoms, genitourinary symptoms, and decrease the risk for osteoporosis and CHD (Hammond, 1996). This study will focus on the relationship between cardioprotective effects of HRT, women's perceived risk of CHD, and a woman's likelihood to take HRT. The use of hormone replacement therapy for symptomatic treatment and

osteoporosis prevention will not be discussed within the context of this paper.

REVIEW OF THE LITERATURE

Conceptual Definitions

Key concepts of this study are: *knowledge of HRT, perceived coronary heart disease (CHD) risk, and likelihood to take HRT*. These concepts will be defined and discussed to briefly to preface the information embodied within the review of literature.

Conceptual definition of *knowledge of HRT* in this study will be defined as factual information about HRT risks and benefits, including particular knowledge related to HRT's cardioprotective effect. Gorsky, Koplan, Peterson, and Thacker (1994) define HRT as non-contraceptive estrogen with or without progesterone. Gillespie (1989) defines HRT as various combinations of estrogen and progesterone and use of testosterone in certain circumstances. In this study HRT is defined as exogenous estrogen administration which may or may not be in combination with progesterone. Polit and Hungler (1995) discusses knowledge as having many roots; stemming from inherited customs, tradition, and past knowledge. There are a number of publications that address naturally occurring estrogen (Freeman, 1995). Naturally occurring estrogen will not be discussed within the context of this study. Knowledge is defined as an individual's interpretive framework which operates within oneself to assign meaning to lived events (Hawthorn, 1994). Grady et

al. (1992) discussed knowledge of HRT as: 1) an understanding of it's common side effects; 2) positive benefits regarding decreased risks for various diseases; and 3) understanding improvement in life expectancy.

The conceptual definition of *perceived CHD risk* will be defined in this study as an individual's estimated probability that they will encounter coronary heart disease. Perceptions is defined as any insight, intuition, or knowledge gained by perceiving (American Heritage Dictionary, 1985). Pender (1996) describes risk as an estimate of health threats to which individuals may be particularly vulnerable because of biologic makeup, family history, and lifestyle. Logothitis (1988) defined perceived risk as an individual's subjective susceptibility of contracting a condition. People vary in their perceptions of personal susceptibility, one may deny the possibility of acquiring a condition while another may perceive a real danger of contracting the condition.

It should be noted that knowledge of HRT and perceived CHD risk contain some of the same components within their definition. However, they are treated as distinctly separate variables. Knowledge is related to actual risk and therefore different than perceived risk.

Likelihood to take HRT is conceptually defined as the probability to use exogenous estrogen which may or may not be combined with progesterone for treatment to reduce the risk of coronary heart disease in menopausal women.

Rothert (1990) defines likelihood to use HRT as a woman's use of information regarding cancer risk, osteoporosis risk, and hot flashes to make the decision to use HRT. Pender (1987) describes likelihood of action as perceived benefits minus perceived barriers, the end result determines the likelihood of taking recommended preventive health actions. The American Heritage Dictionary (1985) defines likelihood as probability.

The proceeding material discusses the current literature surrounding: 1) cardioprotection associated with HRT; 2) health risks associated with HRT use; 3) perceived risk of CHD; 4) knowledge of HRT; and 5) likelihood of taking HRT.

Cardioprotection and HRT

Heart disease is the leading cause of death in post-menopausal women (Wild, 1996; Grady et al., 1992). Two main long-term problems, atherosclerosis and osteoporosis exist with estrogen deficiency (Hammand, 1996). HRT can be used as prophylaxes verses therapy even if initial symptoms of menopause; hot flashes or flushes, irritability, and/or vaginal dryness, do not clinically manifest themselves (Hammond, 1996). This emphasizes the significance of informing asymptomatic women of potential health risks associated with estrogen deficiency. Offering long term hormone replacement therapy to decrease chances of developing osteoporosis or cardiovascular disease is also important (Hammond, 1996). The focus of this study is on

HRT and cardioprotection, therefore osteoporosis will not be discussed within this study.

Coronary heart disease is at least twice as common as any other disease in women of all races (Grady et al., 1992). Death from CHD occurs at the median age of 74 years old and death from stroke occurs at a median age of 83 years old. There is a forty percent increase in mortality in African-Americans and forty percent of the difference is due to coronary artery disease (Andrews, 1996). Grady et al. (1992) did a meta analysis determining relative risk of developing coronary heart disease. African American women untreated with HRT have a 46.5% lifetime chance of developing coronary heart disease, similar to that of white women at 46.1% (see Figure 1).

Reports from the 1970s suggested that African Americans were naturally protected against coronary artery disease, however had a higher incidence of stroke (Keil, Sutherland, Knapp, Lackland, Gazes, & Tyroler, 1993). These reports lead to further studies attempting to understand coronary heart disease in African Americans. The Charleston Heart Study, a longitudinal study (1960-1990), found no statistically significant difference in age specific mortality rates due to coronary events between white and African-American women. However, the overall cause of death rate in African-American women was significantly higher than

Lifetime Risk of CHD Not Treated with HRT

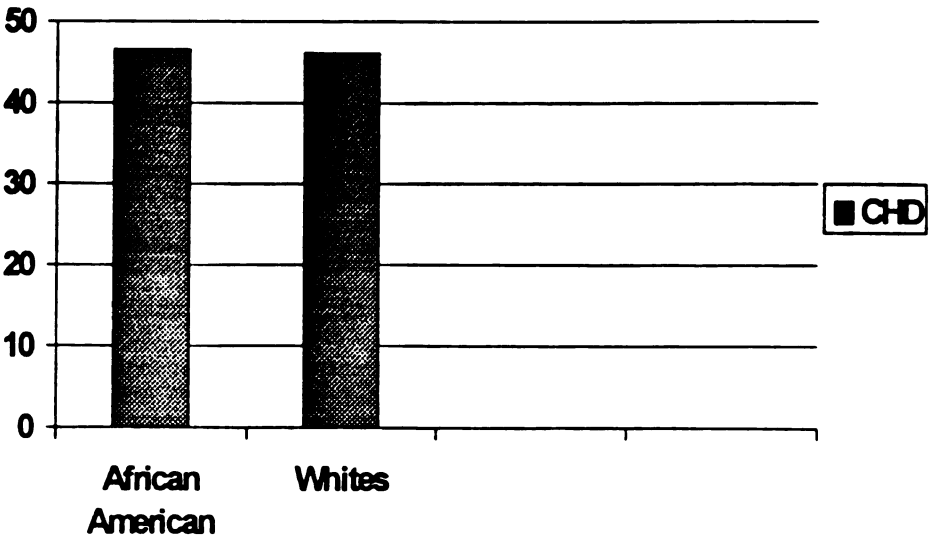

Figure 1.

in white women (Keil et al., 1993). Inconsistently in the literature exists. Keil et al. (1993) found no difference in mortality rates in contrast Liao and Cooper (1995) found a difference in mortality rates. Mortality rates did not decline in AAW as in white women.

Grady et al. (1992) found that the expected benefit of HRT in African-American women with coronary heart disease was similar to the benefit in white women with coronary heart disease. If treated with estrogen alone there was reduction in the probability of recurrent coronary heart disease and an increased life expectancy of 1.9 years. When treated with combination of progesterone and estrogen there

was a reduction in probability of recurrent coronary heart disease and an expected gain of 0.9 years.

Given the similarity of life time risk (Figure 1) it is assumed the overall cardioprotective benefits of HRT among African-American women are thought to be similar to white women (Grady et al., 1992). Therefore, the direct physiological effects of estrogen are also assumed to be similar regardless of race. The individual effect of estrogen is in the effect on lipid metabolism. Estrogen increases high-density lipoprotein cholesterol (HDL-C) and decreases low density lipoprotein cholesterol (LDL-C). Estrogen deficiency related to menopause leads to increased LDL-C and decreased HDL-C. Increased LDL-C transports more cholesterol to the walls of the arteries and decreased HDL-C compromises the ability to draw cholesterol away from the arterial wall leading to arteriosclerosis and CAD (Wild, 1996; Lindheim, Notelovitz, Feldman, Larsen, Khan & Lobo, 1994; Nabulski, Folsom, White, Wolfgang, Heiss, Wu, & Szklo, 1993; Hammond, 1996).

Another effect of estrogen is on the arterial wall, protecting the endothelial wall from injury due to stress. Although the exact mechanism isn't known, this action may decrease platelet aggregation and adhesion related to atherosclerosis. Also estrogen has been found to alter abnormal coronary vasoactivity, which is related to myocardial ischemic. The direct effect of estrogen is on

the vascular smooth muscle, leading to arteriolar relaxation in vessels, maintaining arterial tone (Wild, 1996).

Nabulsi et al. (1993) compared cardiovascular risk factors in post-menopausal women (approximately 30% of these women were African-American and 70% were white) who had never used HRT, with those that had used HRT in the past, and those women who currently used HRT. This study demonstrated a significant reduction in LDL-C and an increase in HDL-C only in those women who currently used HRT. Women who had used HRT in the past but stopped had similar cholesterol levels as those women who had never used HRT. Based on these results the authors estimated a 42% reduction in the risk of CHD associated with HRT use. This study did not specify duration of HRT use in either group.

A fifty percent reduction in heart disease risk has been documented in postmenopausal women currently taking estrogen (PEPI, 1995). Recent studies have shown the combined treatment of progesterone and estrogen have a cardioprotective effect similar to unopposed estrogen (PEPI, 1995). Postmenopausal Estrogen/Progesterone Interventions Trial (PEPI, 1995) compared the effect on heart disease risk factors of estrogen alone or in combination with progesterone. The results showed that the combined therapy of progesterone and estrogen yielded an increase in HDL-C; however, unopposed estrogen had a significantly greater increase in HDL-C. Decrease in LDL-C was similar in all groups. Fibrinogen levels remained stable in women with HRT

treatment (no difference between treatment groups) compared to women in the placebo group who had a significant increase in fibrinogen. The PEPI trial (1995) showed that unopposed estrogen therapy had the greatest effect on HDL-C. However, all hormone treatments were demonstrated to be significantly better than none. The increment in HDL-C was associated with 20-25% decrease in risk of CAD. The PEPI trial sample was comprised of 80% whites and 4% African-Americans.

In a study comprised of white women, Gorsky, Koplan, Peterson, and Thacker (1994) examined hypothetical health outcomes among women usin HRT verses those not using HRT. Two hypothetical cohorts of 10,000 women 50 years old was extrapolated to age 75 years old. One cohort included HRT users, the other cohort included non-HRT users. They found women who used HRT for 25 years experienced 48% fewer fatal CHD events, and 49% fewer nonfatal CHD events.

The direct effects of estrogen on the cardiovascular system are well documented. However, data on the combined effects of estrogen and progesterone are limited. The PEPI (1995) trial evaluated the combined effects of estrogen and progesterone in the reduction of CHD. This was a good study, however, only 4% of the sample consisted with the PEPi trial, however, this study did not specify duration of HRT use in either group.

In summary, tremendous gaps exist in the literature. Specifically, longitudinal studies on women, the effects of combined estrogen/progesterone on CHD, and minorities were

not identified in most of the current literature. Further longitudinal studies are needed to evaluate the lifetime impact HRT has on all women. There is a significant deficit in the literature surrounding African-American women and HRT.

Risks of HRT

Breast Cancer. Grady et al. (1992), did a meta-analysis and found that African-American women age 50 years old have a lesser lifetime probability of developing breast cancer compared to 50 year old white women. The median age breast cancer develops in African-American women is 69 years. Grady et al's. (1992) study examined thirty-nine epidemiological studies lookin at estrogen and its possible relation to breast cancer, since 1970. Findings determined an estimated relative risk for breast cancer among HRT ever-users compared with those who never took estrogen equals 1.01, therefore demonstrating a slight increment in the risk for breast cancer. In addition, there is no clear evidence that the risk of breast cancer increases with increasing doses of HRT or varied treatment regimes. Studies evaluating long term effects of HRT also have conflicting results, many show a small increase among women who took HRT longer and others do not (Grady et al., 1996). Controversy remains surrounding HRT use, length of use, and treatment regimens and HRTs impact on breast cancer (Grady et al., 1992).

Stanford, Weiss, Voigt, Daling, Habel, and Rossing (1995) studied 537 white women ages 50-64 that were diagnosed with invasive or in situ breast cancer between January 1988 and June 1990 and found women who had not taken HRT. Women who had taken a combination of progesterone and estrogen for greater than eight years had a relative risk of 0.4.

Colditz, Egan, and Stampfer (1993), conducted a meta-analysis from 31 studies on HRT and its risk on breast cancer. The results from this study showed no increased risk of breast cancer in women who had ever used HRT. However when looking at studies that examined 10-15 years of use, there was a statistically significant 20-30% increase in breast cancer.

Colditz, Hankinson, Hunter, willett, Manson, Stampfer, Hennekens, Rosner, and Speizer (1995), did a longitudinal study, The Nurses' Health Study from 1976-1992, and examined the relationship between use of hormone replacement therapy and the risk of breast cancer in postmenopausal primarily white women. The results determined that the risk of breast cancer was significantly incrased among women who were currently using estrogen alone (relative risk, 1.32) or estrogen combined with progestin (relative risk, 1.41).

In summary, inconsistency exists in the data surrounding the associatin of breast cancer and HRT. Grady et al. (1992) meta-analysis revealed a slight increment in the risk for breast cancer not necessarily linked to length

of use or certain treatment regimes. Stanford et al. (1995) found no increase in breast cancer risk associated with HRT used for greater than 20 years. However, Colditz et al. (1993) found a statistically significant increase in breast cancer with HRT use of 10-15 years. Grady et al. (1992) and others were unable to determine the relative risk of breast cancer associated with combined estrogen/progesterone use, related to inconsistent data. In addition to these inconsistencies, a gap occurring in the literatures is the lack of data on African-Americans, HRT use and the association with breast cancer. In conclusion, the link between HRT and breast cancer for African-American women needs further study. AAW need to be included in studies regarding breast cancer and HRT.

Endometrial Cancer. Grady et al. (1992) found that African-American women have a lower (1.5% versus 2.6%) lifetime probability of endometrial cancer compared to white women. The median age which endometrial cancer develops is 68 years old in both African-American and white women. Thirty-five studies looking at estrogen therapy and endometrial cancer were examined. A significant increase was found in risk associated with exogenous estrogen. Grady et al. (1992) assumed that the relative risk for endometrial cancer and estrogen therapy is the same for black women as white women. The link is not well established between African-American women, estrogen therapy, and risk for endometrial cancer due to lack of data. The relative risk

for endometrial cancer in a woman taking conjugated unopposed estrogen is 2.31 and increases with increasing doses and also increases with increased duration of use. However, the risk from dying from this disease may not equally increase, the increase in endometrial cancer in the 1970s did not increase the mortality rate from endometrial cancer. This may be associated to the nonaggressive form of endometrial cancers related to estrogen therapy, these forms of endometrial cancers are less invasive compared to women with endometrial cancers that have not been on estrogen therapy.

Combining estrogen with a progestin for postmenopausal women with an intact uterus has evolved as a way to prevent endometrial cancer. Therefore, women who have an intact uterus receiving HRT should be prescirbed a estrogen/progestin combination to prevent the increased cancer risk associated with estrogen therapy (Hammond, 1996; Grady et al. 1992).

Grady et al's. (1992) meta analysis has documented consistent results associating endometrial cancer and unopposed estrogen. Equally consistent is the documentation that adding progesterone reduces the endometrial cancer riks to the same level as for women who do not take HRT.

Perceived CHD Risk

Very little is written about woman's perceived risk for coronary heart disease, possibly due to the recent data correlating estrogen with cardioprotection. Padonu et al.

(1996), found African-American women's perceptions of CHD were associated with aging, certain risk factors, and family history, not with menopausal status. Grady et al. (1992) elaborates on perceived risk and proposes that women with CHD are more likely to value prevention through use of HRT to prevent recurrent CHD. However, no studies have been done to substantiate this data.

Perlumutter, Smith, Slaughter, and Hanlon (1997) published a national telephone survey regarding perceived heart disease risk conducted in September, 1996. Fifty-eight percent of women underestimated their heart disease risk, thinking its threat is less than or equal to that of breast cancer. Only thirty-three percent know that heart disease is a greater threat than breast cancer, and nine percent are not sure (Perlumutter et al., 1997) (see Figure 2).

There are gaps in the literature surrounding women's perceived CHD risk. Perlumutter et al. (1997) was the only study that specifically evaluated women's perceived risk of CHD. Padonu et al. (1996) examined attitudes of women toward CHD. The current study will contribute to the literature surrounding women's perceived CHD risk.

Knowledge of HRT

Ransom, Guerin, Holmes-Rovner, Dodson, and Padonu (1996) surveyed a group of African-American and white nurses regarding perceived risks and benefits of estrogen replacement therapy (ERT). In measures of knowledge

Women's Perceived Risk for CHD

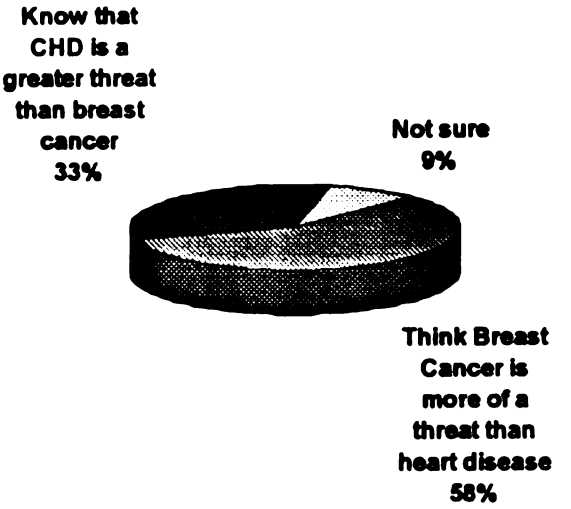

Figure 2.

surrounding ERT and heart disease they found a significant deficit, 60.8% of African-American nurses were unable to identify an association of ERT's cardioprotective benefit, compared with 27.5% of white nurses. The African-American nurses were also less likely to believe that ERT was a good idea for other women to take (43%), and even less likely as a personal choice (30%), compared with white nurses (87%) and (55%) consecutively. These two groups wre homogeneous regarding health variables, age, and income.

Hunter and Liao (1994) sampled 101 London women; mean age 45 years old, on the intentions to use HRT. The majority were employed, 77% white, and the remaining were of mixed ethnic group. They found very low knowledge of the relationship of heart disease and menopause, and risks of HRT related to breast cancer and long term use.

Padonu, Holmes-Rovner, Rothert, Schmitt, Kroll, Rovner, Talarczyk, Breer, Ransom, and Gladney (1996) studied 55

African-American women and their perceptions of menopause and HRT. These women expressed both positive and negative perceptions about HRT. Value of HRT was expressed for the relief of menopausal symptoms. Negative perceptions included fear of cancer, resumption of menses, side effects, and taking medication for a lifetime.

In a study of white, college educated women, Carlson (1994) found that 69% of the women knew three is increased risk of heart disease after menopause, however, only 50% knew that estrogen replacement therapy reduces the risk. Ninety percent of the women knew about the risk of osteoporosis and 78% knew that HRT can prevent osteoporosis. Lack of knowledge was identified in this study, 53% of the women thought uterine cancer was a greater risk than osteoporosis. Forty-six percent of these women believed they should make the decision regarding HRT but strongly considered the practitioner's opinion.

The data looking at knowledge level of HRT is inconsistent. Ferguson et al. (1989) studied a group of white women and found that 27% of the women not taking HRT knew that estrogen was related to osteoporosis compared to 89% of women on HRT and premenopausal women. Factors associated with HRT use was physician recommendations and the elimination of hot flashes. An unfavorable factor, in HRT use was vaginal bleeding. Knowing someone on HRT regimen that was having difficulty was a negative factor of all three groups of women. In this study of 227 women: 1)

37 were currently taking HRT; 2) 125 had never taken HRT; and 3) 65 were premenopausal. The women that were currently taking HRT viewed menopause as a medical condition, advocated treatment, and were much likely to favor natural approaches. However, the majority of the women currently taking HRT in this study have had hysterectomies leading to increase education and may be the reason these women viewed menopause as a medical condition.

Ferguson et al. (1989) stated the following predictors to HRT use: 1) perceived natural approaches less favorable; 2) knowing that estrogen can decrease osteoporosis; 3) viewing menopause as a medical condition; 4) being under the care of a gynecologist; 5) symptom control. These predictors accounted for 51% of variance whether women take HRT. The current study is similar to Ferguson's in that it envisions the prediction of likelihood of HRT use. Predictors for the proposed study include knowledge of HRT and perceived risk of CHD.

Rothert, Rovner, Holmes, Schmitt, Talarczyk, Kroll, and Gogate (1990) found that women are more concerned about hot flashes and disruption of normal daily life than the consideration for mortality and morbidity risk in deciding about HRT. Also demonstrated in this study is that women have different patterns in their use of information regardin HRT. Most women felt they should be partners in the decision making process.

Grady et al. (1992) found that women with coronary heart disease are more likely to place increased value on hormone replacement therapy, decreasing reoccurrence of coronary heart disease events as compared to women with increased risk for breast cancer.

Wardell and Engebretson (1995) found in a group of forty, perimenopausal, early menopausal, middle class, ages 40-53; women skepticism in long term use of HRT. These women relayed lack of commitment, and concern of long term side effects, specifically cancer. This group of women also considered the risk/benefit of HRT inappropriate in healthy women.

Only two studies in the literature address African-American women's HRT knowledge level. Padonu's et al. (1996) study is a qualitative study examining attitude rather than level of knowledge. Therefore, the lack of literature surrounding African-American women's HRT knowledge level is not clear given the gaps in the literature.

Likelihood to Take HRT

Very little is written about African-Americans likelihood to take hormone replacement therapy. In Ransom's et al. (1996) study of perceived risks and benefits of ERT in a group of African-American nurses and white nurses, the African-American nurses were less likely to believe that ERT was a good idea for other women to take (43%), and even less likely as a personal choice (30%), compared with white

nurses (87%) and (55%) consecutively. Padonu's et al. (1996) study documented 24% of African-American women are currently using HRT and 76% are not taking any form of HRT.

Jahnige and Fiebach (1997) compared the use of ERT in African-American women and white women patients at a hospitla based clinic at an urban medical center. Past ERT use was similar betwen the two groups (13.6% vs. 15.1%) however, current ERT use was higher among African-American women (15.9% vs. 5.7%). Having two or more CHD risk factors was significantly associated with ERT use among African-American women. Altough, after controlling for age and high CHD risk factors, African-American women and white women had a similar likelihood of ERT use.

Only three studies documented HRT use among African-American women (Jahnige & Fiebach, 1997; Ransom et al., 1996; Padonu et al., 1996). One study documented equal use of HRT between African-American and whites (Jahnige & Fiebach, 1997), the other documented less use of HRT among African-American women (Ransom et al., 1996) and one study did not compare use between groups (Padonu et al., 1996).

Summary

Overall, gaps in the literature exist surroundign low-income women and the relationship with HRT. Staning and Glazer (1992) documented attitudes surrounding menopause in low-income women, but did not explore HRT knowledge. The literature is also deficient in studies surrounding African-American women. Little is known regarding the extent of

their HRT knoweldge. Only recently has there been an awareness surrounding decreased CHD risk and HRT use. Women in general have been left out of the cardiovascular longitudinal studies, which may be why there is little data on women's perceived risk for CHD. As recent as 1991 the National Institute of Health set forth the Women's Health Initiative, raising the priority of women's health and provide baseline data on understudied issues surrounding death in women. The Women's Health Initiative has to date focused on research surrounding CHD, cancers, and osteoporosis (Rosser, 1994).

Purpose

The purpose of this study is to examine low-income African-American women's knowledge of hormone replacement, CHD risks, and cardioprotective benefits. This study will also analyze the predictive relationship between perceived risk of CHD, HRT knowledge, and likelihood to take HRT among low-income African-American women.

Research Questions

1. What is the level of HRT knowledge among low-income African-American women?
2. What is the relationship between HRT knowledge and likelihood to take HRT?
3. What is the relationship between HRT knowledge, perceived risk of CHD, and likelihood to take HRT?

Conceptual Model

Health Promotion Model. Pender (1996) defines health promotion as increasing the level of well being and self-actualization of an individual. The Health Promotion Model (HPM) was designed as a guide for exploring biopsychosocial proceses that motivate persons to engage in behaviors that promote healthy enhancement of health. The HPM focuses on movement toward a positive state of health and well being, the negative states of illness have little motivational significance for health promoting behaviors. The motivation for health promotion comes from the desire for growth expression of human potential and quality of life promoting behaviors, are a continuum of activities incorporated into an individuals lifestyle. The HPM has been used as a framework to determine/predict overall health promoting lifestyles and specific behaviors (Pender, 1996) (see Figure 3).

Individual characteristics and experiences are unique to each person that will affect subsequent actions. Prior related behavior is any behavior that is the same or similar behavior in the past. Prior behavior (previous HRT use and prior knowledge) will have both a direct and indirect effect on the likelihood of participating in health-promoting behaviors. Personal factors are categorized as biologic (age, race, menopausal status), psychological and sociocultural (education and income) (Pender, 1996) (see Figure 4).

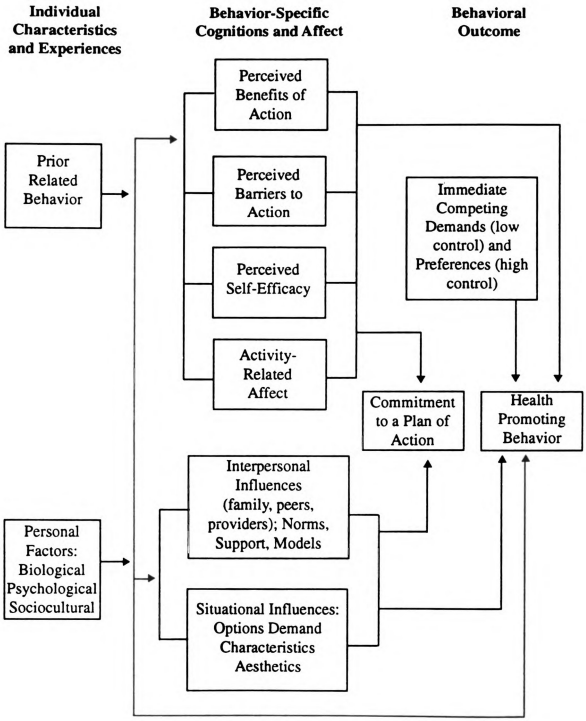

Figure 3. Pender (1996), Revised Health Promotion Model.

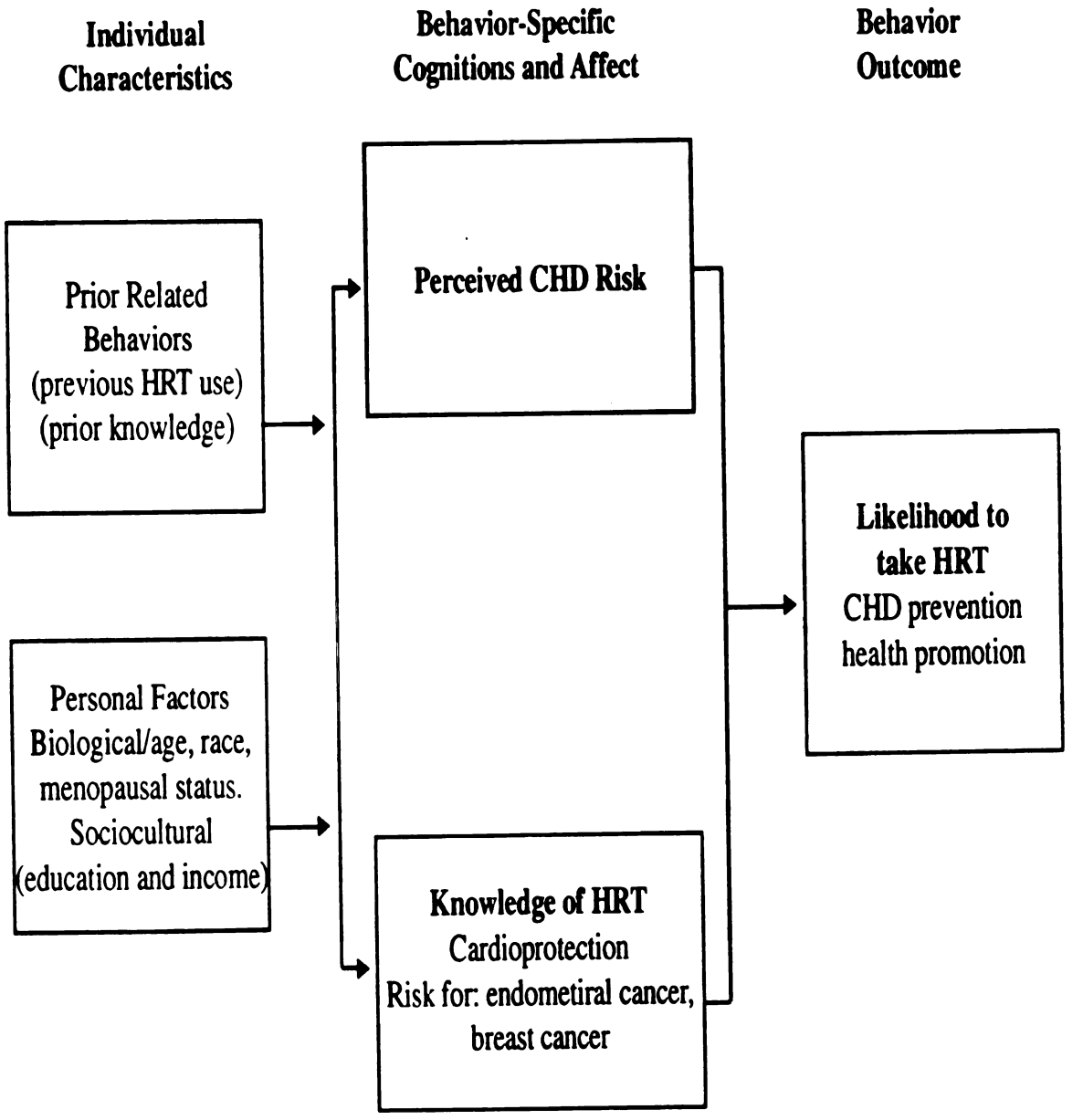

Figure 4. Adapted Health Promotion Model.

Behavior-specific cognition and affect are considered to be of major motivational significance within the HPM. Variables within this category are considered crucial for intervention since they can be modified through nursing action (Pender, 1996). Variables cardioprotective benefits, risk for endometrial cancer and breast cancer.

Commitment to carry out a specific plan of action leads to a behavioral outcome. Likelihood to use HRT is the outcome variable within this study. Health promoting behavior is the action outcome in the HPM. These behaviors are directed at attaining positive health outcomes, such as the prevention of CHD (Pender, 1996).

As primary care health providers Advanced Practice Nurse (APN) can provide risk assessment and educational intervention to clarify beliefs and facilitate the likelihood of action. Understanding menopause, HRT and potential health outcomes allows women to make an informed decision and take action towards prevention. Using HRT is thought of as preventive behavior.

METHODS

Original Study

The original study consistsed of a survey to low-income, menopausal, African-American women to determine their knowledge of menopuse and hormone replacement therapy. Funded in part by the National Institute for Nursin Research (Grant number NR01245). The purpose of the study was to evaluate African-American judgments of estrogen replacement

therapy (ERT). A 92-item survey was used to collect data which included; sociodemographic, health risks, and perceptions of menopause, the alpha coefficient is .85.

Present Study

Secondary analysis was done, this study design used a descriptive correlational design utilizing data from all participants (N=197). This study examined African-American women's knowledge of HRT, and the relationship between HRT knowledge and likelihood to take HRT. The relationship between perceived CHD risk, HRT knowledge, and likelihood to take HRT was also analyzed.

Sample

The convenient sample consisted of 197 predominantly low-income, African-American, menopausal women, ages 40-70. Participants were recruited from Saginaw, Michigan through key informant strategies utilizing the Michigan State University Department of Urban Development community development projects, primarily from low-income housing developments. Surveys were administered in a group settin and required approximately 45 minutes to complete as part of a longer study of judgment processes (total time, 2 hours average). Participants were given $25 for the entire task.

Sixty-six percent of the sample were between the ages of 40 and 50, 30% were between the ages of 51 and 55. Twenty-four percent of the women were married, and 64.3% of the women were either divorced, single, or separated. Thirty-five percent were employed either part or full-time.

Sixty-two percent of the women had household incomes under $15,000, and 18% earned between $15,000 nd $25,000. Thirty percent had less than a high school education, 28% had a high school education, and 34% had more than a high school education or a technical/trade degree. Thirty-three percent were still having regular periods, 15% had a period within the last year, and 40% had not had a period for one year. Twenty-seven percent of the women had hysterectomies.

Procedure for Protection of Human Rights

Prior to beginning the original study, the subjects each signed a consent form. Each participants was assigned a code number to ensure confidentiality. Participants were free to withdraw from the study at any time without penalty. All data was to be released in aggregate form only. This study was aprpoved by Michigan State University Committee on Research Involving Human Subjects (UCRIHS) before the research began.

Operational Definitions

These key concepts were operationalized through use of Women's Menopause Information Instrument.

1. *Knowledge of HRT* is used to describe factual information about HRT risks and benefits, including particular knowledge related to HRT's cardioprotective effect as it impacts an individuals' decision to use HRT. As used here, knowledge is measured by questions 78, 80, 81, 82, and 88 (Appendix A) for a potential score of 0 to 5 for overall knowledge. One point will

be given for each correct answer. These scores correspond to the number of correct responses to questions related to questions related to a basic understanding of HRT.

2. *Perceived risk of coronary heart disease* (CHD) is an individuals estimated probability that they will encounter coronary heart disease. CHD is a number of disease states involving the heart and the vascular system, includes but is not limited to: myocardial infarction, coronary spasm, embolism, arteriosclerosis, and angina. A woman's perceived risk for CHD will be measured from the participants response to one specific question, number 28 (Appendix B) from the Health Background section of the questionnaire. The question is: How likely DO YOU THINK YOU are to get heart disease? A perceived risk will be calculated by compressing the answers into five categories, 1) 0-20%; 2) 21-40%; 3) 41-60%; 4) 61-80%; 5) 81-100%. Scoring will be on a 1-5 scale with 5 indicating a higher perceived risk.

3. *Likelihood to take HRT* is defined as the probability to use exogeneous estrogen which may or may not be combined with progesterone for treatment to reduce the risk of coronary heart disease in menopausal women. A woman's likelihood to take HRT was measured from participants' responses to two specific questions from the Health Background section of the questionnaire,

numbers 24 and 25 (Appendix C). These questions are: Ho wlikely are you to take estrogen replacement therapy (ERT)?; How likely are you to take estrogen/progesterone combined therapy (PERT)? Likelihood to take HRT was determined by the mean score of both questions combined.

RESULTS

Analysis was done using descriptive statistics determining: 1) the mean HRT knowledge score was 1.08 out of a total of 5 (SD 1.0); 2) the mean likelihood to take HRT (in the form of ERT or PERT) was 2.76, this falls between the answers "Probably would not take this form of HRT" and "May or may not take HRT"; 3) Perceived CHD risk most frequent response was 0-20%; 4) Pearson r correlation was r=0.13 between HRT konwledge and perceived CHD risk, however, not statistically significant; 5) Stepwise multiple regression determined a predictive relationship between knowledge of HRT, perceived risk of CHD and the outcome variable, likelihood to take HRT. The amount of variance (adjusted R^2=.05) is small however statistically significant $p \leq .003$. The level of significance is set to $p \leq 0.05$.

FINDINGS AND DISCUSSION

Mean Level of HRT Knowledge

Overall, the African-American women had a very low level of HRT knowledge. Somewhat surprising, none of the 197 women answered question number 78 "HRT (estrogen) decreases a women's risk of heart disease" correctly. This

exemplifies the lack of knowledge regarding HRT's cardioprotective benefits. Not surprising, 50% of the African-American women were able to answer number 8 "HRT can relieve menopausal symptoms" correctly (Table 1). Clearly the lack of knowledge demonstrated in this study speaks for itself. Education is paramount to health promoting activities such as taking HRT. The results are consistent with the current literature on African-American women's knowledge of HRT. Padonu et al. (1996) qualitative study about perceptions of menopause and HRT demonstrated the women's expressed value of HRT for the relief of menopausal symptoms. This is reflected in the current study where the highest knowledge score obtained was on question number 81 *HRT (estrogen) can be used to help relieve the symptoms of menopause*. The two other studies demonstrated an overall low HRT knowledge.

HRT Knowledge and Likelihood to take HRT

There is a weak positive relationship between HRT knowledge and likelihood to take HRT, indication educational intervention is important. There are no studies in the literature that correlate HRT knowledge and likelihood to take HRT.

Perceived CHD Risk

Most of the African-American women underestimated their risk of CHD (Table 2). In actuality, African-American women's lifetime probability for CHD is almost 50%. This

Table 1.

HRT Knowledge (percent of correct answers) (n=197)

HRT Knowledge Question	% of correct responses
HRT (estrogen) decreases a women's risk of heart disease	0
The addition of a progestional agent (Provera) to ERT increases risk of cancer to the uterus	14
Estrogen therapy without progesterone increases the risk of cancer of the uterus	22
HRT (estrogen) after menopause increases the risk of osteoporosis	22
HRT (estrogen) can be used to help relieve the symptoms of menopause	50

HRT knowledge questions answered correctly (0-5 scale)	# of respondents (n=197)
0 correct responses	69 (35%)
1 correct response	65 (33%)
2 correct responses	42 (21%)
3 correct responses	20 (10%)
4 correct responses	1 (1%)
	197 (100%)

mean=1.08; median=1; SD=1

Table 2.

Comparison of CHD Expectations to Actual Risks

African-American Women	
Actual lifetime probability for CHD in a 50 yr. old woman*	Sample population's most frequently reported response to perceived CHD risk
46.5%	20% or less*
*Grady et al., 1992	*1=0-20%; 2=21-40%; 3=41-60% 4=61-80%; and 5=81-100%

finding signifies the importance for educational interventions.

In comparison, Perlumutter's et al. (1997) study also demonstrated women underestimate their CHD risk as compared with their subjective risk for breast cancer. Fifty-eight percent thought breast cancer was more of a risk than heart disease. Although the current study does not demonstrate comparison between disease processes, over half of these women believe they have equal to or less than 20% chance for developing CHD (see Figure 5).

There is only one study in the literature on women's perceived CHD risk, this is consistent with results from the current study. Perlmutter's et al. (1997) study also demonstrated women's underestimated risk for CHD when comparing it to their risk for breast cancer. Padonu et al. (1996) qualitative study mentioned that women believe their risk for CHD is directly associated with family hisotry.

Likelihood to take HRT

HRT knowledge and perceived CHD risk demonstrated some variance, however very low, in predicting likelihood to take HRT. Therefore, HRT knowledge and a perceived CHD risk had a small impact on African-American women's likelihood of taking HRT (see Table 3).

Increasing a women's perceived CHD risk and HRT knowledge through education may increase the likelihood of taking HRT, thereby increasing CHD prevention and health promotion. Although clearly distinct within this study and

AA Women's Perceived CHD Risk

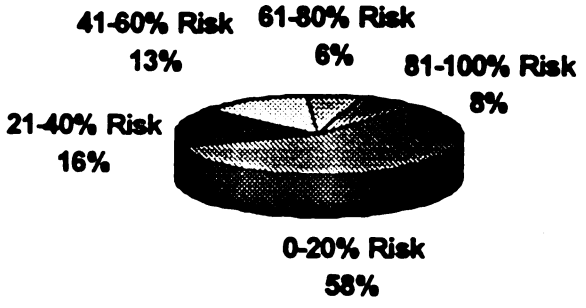

Figure 5.

Table 3.

Regression of Knowledge of HRT, Perceived Risk of CHD and Likelihood to Take HRT

Source of Variation	Beta	Adjusted R^2	F Statistic	P
Knowledge	.17	.03	6.70	.01
Perceived Risk	.16	.05	5.88	.003

no significant correlation is present between CHD risk and HRT knowledge, intuitively there is overlap between these two variables. Although small, the statistically significant variance *HRT knowledge* and *CHD perceived risk* impact the likelihood to take HRT demonstrating the importance of educational intervention.

Knowledge level and perceived risk only accounted for 5% of the variance. Within this study women scored highest on the question related to symptom relief and HRT, inferring some variance in relationship o symptom relief. One may then speculate some impact on likelihood to take HRT if these women had symptoms of menopause. Other things that may impact taking HRT may be health care providers beliefs, media, friends and family. Intuitively an overlap between HRT knowledge level and perceived CHD risk may impact a women's ability to make an "informed decision" to take HRT rather than judge her "likelihood" to take HRT.

Limitations

The Health Promotion Model is a fairly good model for predicting *likelihood to take HRT*, resulting in CHD prevention and health promotion. The variable *perceived CHD risk* fit within the major division Behavioral Specific Cognitions and Affect, however, did not fit within any of Penders individual variables. *Likelihood to take HRT* is actually an "intent to a plan of action", not an "outcome". To improve the fit of the model with the study and future studies, the variable *likelihood to take HRT* should be placed between Behavior-Specific Cognitions and Behavioral Outcome. This variable is considered a "commitment to a plan of action".

Another limitation was the use of secondary data. Limitations existed within the survey, the answers were in a likert scale which may have confused some of the subjects.

Further limitations in the study included the few (5) questions evaluated to determine HRT knowledge. Unfortunately, perceived CHD was determined by only one question. The researcher found this question a little confusing since there were up to 10 answers in which to choose. To put this in better perspective, future studies may want to compare disease risks, as in Perlumutter's et al. (1997) study such as comparing CHD to breast cancer. Answers to this question may prove more beneficial in evaluating perceived risks, therefore leading to guided educational process.

In conclusion, due to the limitations of the sample, these findings are not generalizable to the African-American population.

Implications for Advanced Practice Nurses

Results of this study have implications in at least three areas of primary care: 1) assessment; 2) information and health benefits; and 3) CHD prevention and HRT education. The results from this study clearly demonstrate the lack of knowledge surrounding HRT and CHD risk. African-American women should know and understand their lifetime risks for various diseases, specifically CHD. As clinicians, advanced practice nurses (APN) are obligated to assess each woman's individual disease risk and her group risk. Increasing individual and group risk education will allow each woman to make an informed decision regarding HRT use.

Using a community approach targeting African-American women will increase access to primary health care. APN's must assess the community for culturally relevant issues, such as styles of communication and possibly in focus groups. Proposed strategies to initiate first contact includes targetin malls, school programs, and beauty salons for health promotion screening. Also providing menopause and HRT educational materials. APN's can also educate other health care providers within the community to counsel African-American women about issues surrounding HRT and menopause that is sensitive to the beliefs and values of the community.

As educators, APN's should target pre-menopausal African-American women educating them on risk factors, preventive measures, and health promotion. Providing women was precise information that is culturally relevant is also very important in the educational process. An educational approach should focus on multiple strategies to reduce women's risk for heart disease. Preventive educational strategies include, benefits of exercise, encourage healthy diets low in fat, benefits of not smoking, and other health risks related to CHD. African-American women are most knowledgeable in HRT's symptomatic relief in menopausal symptoms, therefore educating women on the importance of HRT long term is essential to reducing long term risks for CHD. Emphasize that not only women with menopausal symptoms benefit from HRT but also those with no symptoms in regards

to long term prevention. Women that have a better understnadin gof menopause and it's lon term risk factors will be better prepared to make an informed choice regaridn HRT use based on factual data. Provide patients with culturally relevant educational materials such as books, booklets, videos, and/or cassette tapes to clarify information and abolish fears.

A providers own view of menopause and HRT may impact a women's decision to take HRT, objectivity must be maintained. Programs to educate health care providers may be initiated, so they are able to provide African-American women with the risks and benefits of taking HRT.

With the advnet of managed care and capitated health care costs, the action of health promotion and disease prevention should be forefront. Health care providers should have a standard protocol for educating women about menopause and their benefits/risks of using HRT, regardless of their menopausal symptoms. Assisting African-American women to make an informed decision of preventive therapy with HRT increases a woman's lifetime expectancy, and decreases her lifetime probability of CHD. Optimistically, engaging in health promoting activities will not only impact lifetime expectancy but improve qulaity of life.

Recommendations for Future Research

Clearly, future studies are needed evaluating African-American women's HRT knowledge and perceptions and incorporating educational interventions. This study

demonstrates African-American women's low level of knowledge. However, those women with increased HRT knowledge are more likely to take HRT. Studies surrounding combined (estrogen and progesterone) therapy and the impact on CHD is lacking. The lack of current literature surround CHD in women is significant. Further research is crucial in assessing all women regarding perceived CHD risk incorporating an educational intervention.

Further studies are needed to evaluate what impact African-American womens' decision to take HRT. Specifically, evaluating African-American women's HRT knowledge, perceptions of menopause and her ability to make an informed decision. In conclusion, further research is needed demonstrating improvement in the quality of life associated with HRT.

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APPENDIX A

78. Hormone replacement therapy (estrogen):
1=Increases a woman's risk of heart disease
2=Decreases a woman's risk of heart disease
3=Has no effect on a woman's risk of heart disease
4=Don't know

79. Please answer Questions 79-90 using the following scale:
1=True
2=False
3=Don't know

80. Hormone therapy (estrogen) after menopause increases the risk of osteoporosis.

81. Hormonal therapy (estrogen) can be used to help relieve the symptoms of menopause.

82. Estrogen therapy without progesterone increases the risk of cancer of the uterus.

88. The addition of a progestational agent (Provera) to estrogen replacement therapy increase risk of cancer to the uterus.

APPENDIX B

NOTE: For item 25, if you already have the condition or disease identified in a question, mark 91-100%, if you can't get the condition or disease, mark 10% or less.

28. How likely DO YOU THINK YOU are to get heart disease?

1= 10% or less	5=41-50%	8=71-80%
2=11-20%	6=51-60%	9=81-90%
3=21-30%	7=61-70%	10=91-100%
4=31-40%		

APPENDIX C

24. How likely are you to take hormone replacement therapy (HRT) in the form of estrogen alone?
    1= Very certain that you would not take this form of HRT.
    2= Probably would not take this form of HRT.
    3= May or may not take HRT.
    4= Probably would take HRT.
    5= Very certain that you would take HRT.

25. How likely are you to take HRT in the form of estrogen/progestogen combined?
    1= Very certain that you would not take this form of HRT.
    2= Probably would not take this form of HRT.
    3= May or may not take HRT.
    4= Probably would take HRT.
    5= Very certain that you would take HRT.

APPENDIX D

MICHIGAN STATE
UNIVERSITY

March 20, 1997

TO: Marilyn Rothert
College Of Nursing
A230 Life Sciences

RE: IRB#: 97-192
TITLE: HORMONE REPLACEMENT THERAPY KNOWLEDGE, PERCEIVED RISK OF CORONARY HEART DISEASE, AND LIKELIHOOD OF USE AMONG LOW INCOME AFRICAN AMERICAN WOMEN
REVISION REQUESTED: N/A
CATEGORY: 1-E
APPROVAL DATE: 03/19/97

The University Committee on Research Involving Human Subjects (UCRIHS) review of this project is complete. I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project and any revisions listed above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Investigators planning to continue a project beyond one year must use the green renewal form (enclosed with the original approval letter or when a project is renewed) to seek updated certification. There is a maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB # and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.

PROBLEMS/ CHANGES: Should either of the following arise during the course of the work, investigators must notify UCRIHS promptly: (1) problems (unexpected side effects, complaints, etc.) involving human subjects or (2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us at (517)355-2180 or FAX (517)432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Georgia Padonu
Patricia A. Davis

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AND
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