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The Effect of Socioeconomic Status and Race on Women’s Knowledge and Attitudes Towards Hormone Replacement Therapy

Submitted by

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2005
Dedication

I would like to dedicate this paper to all of my family and friends that have supported me throughout the past two and a half years. Without their love and encouragement, I wouldn’t be where I am today.
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Introduction

Over the past several years, the subject of postmenopausal hormone replacement therapy (HRT) in postmenopausal women has become a controversial topic following the release of the HERS and WHI results regarding primary and secondary CHD prevention, which suggested that HRT does not have the cardioprotective effect that was previously thought. According to a survey performed by the National Center for Health Statistics, between 1988-1994, 44% of postmenopausal women in the United States reported having used some type of hormone replacement therapy at some point in their life (Brett & Chong, 2001). Estrogen therapy has been available to women for over sixty years, and has been used to relieve the symptoms of menopause such as vasomotor symptoms, vaginal dryness, and vaginal atrophy, and to prevent and treat of osteoporosis (Writing Group for the Women’s Health Initiative Investigators [WGWHII], 2004). Although it is a commonly used therapy that has been in use for decades, most women are not familiar with the associated risks and benefits of HRT. It is important, therefore, that health care providers are able to educate women about HRT, including helping them understand the current controversies, so that their patients may make an informed decision regarding their personal use of hormone therapy. In 1992, the American College of Physicians recommended that HRT be discussed with all women around the time of menopause (Brett & Chong). However in 1998, Brett and Chong found that only 45% of women surveyed between the ages of 40-60 years reported receiving counseling regarding HRT use. In another study, over half of the women surveyed stated that they left their healthcare provider’s office with unanswered questions about HRT (Clinkingbeard, Minton, Davis, & McDermott, 1999). Although the women appeared to have a basic understanding of menopausal symptoms, their knowledge of the long-term health risks that are affected by menopause was poor. This is a
strong indication that healthcare providers are not supplying their patients with adequate information regarding the risks and benefits of hormone replacement therapy.

Currently, the United States Food and Drug Administration (2004) recommends individualizing treatment with HRT and using hormones for the treatment of menopausal symptoms in the lowest effective dose for the shortest period of time needed. Estrogen and progestin are not recommended for the routine prevention of chronic conditions in postmenopausal women based on the recent publications from the Women’s Health Initiative Studies (WHI) and the Heart and Estrogen/Progestin Replacement Studies (HERS/HERS II). The studies examined the risks and benefits of estrogen and progestin in postmenopausal women, and the results were unexpected and have caused confusion for many women. In 1998, Hulley, et al. published results from the HERS study which examined the effects of estrogen plus progestin on coronary heart disease (CHD) in postmenopausal women with known CHD. They discovered that there was no overall cardiovascular benefit from using HRT as a secondary prevention method for CHD, and in fact, found an increased risk for thromboembolic events. However, after several years of therapy, the results suggested a more favorable pattern of CHD events. Therefore, it was not recommended that women begin this therapy, but that women who are currently taking it should continue to do so. In July 2002, Grady, et al. published results from the follow-up study (HERS II) that examined HRT use in postmenopausal women with known coronary heart disease. They found that there was a 50% increased risk of coronary events in the first year of the trial, but the risk returned to baseline over the next two years. Therefore, there was no overall effect of using estrogen plus progestin in postmenopausal women with CHD. Soon after the HERS/HERS II studies were published, the Writing Group for the Women’s Health Initiative Investigators (2002) published their findings of the benefits of combined
estrogen and progestin use in healthy, postmenopausal women with an intact uterus. This arm of the trial was planned to proceed for a total of 8.5 years but was stopped after only a mean duration of 5.2 years. It was terminated due to the test statistic for invasive breast cancer exceeding the stopping boundary set forth prior to the beginning of the study. It was discovered the CHD events increased by 29% for women taking the combined HRT compared to the placebo. In addition, the rates of stroke and venous thromboembolism were also increased in the HRT group. However, the rates of colorectal cancer and hip fractures were decreased, and the rate of endometrial cancer remained the same. Based on the cardiovascular findings, they concluded that estrogen plus progestin therapy should not be used to prevent CHD in postmenopausal women. In April 2004, the Writing Group for the Women’s Health Initiative Investigators published the results from the arm of the trial that examined the effects of estrogen alone on CHD in postmenopausal women who had a hysterectomy prior to beginning the study. Similar to the estrogen plus progestin trial, this arm was also terminated early due to the 39% increase in the risk for stroke, which exceeded the stopping boundary set forth at the beginning of the trial. Overall, total CHD rates including stroke were 12% higher in the women taking estrogen than the placebo group. In addition, the rate of invasive breast cancer was 23% lower in the group receiving estrogen, and no significant differences were reported in the incidences of colorectal cancer between the two groups. In agreement with the other studies, the WHI does not recommend the use of estrogen alone for the prevention of chronic disease in postmenopausal women.

Although many studies have been dedicated to research concerning hormone replacement therapy, a majority of the results are limited to a narrow population of women. Many articles state that the greater part of their respondents were Caucasian, well educated, and financially
affluent women; therefore, the results of their studies cannot necessarily be extended to members of other groups. In the study from the National Center for Health Statistics, Brett and Chong (2001) found that use of HRT varies by socioeconomic status where the most educated and wealthiest women have the highest probability of use. A patient’s socioeconomic (SES) status is interrelated with their access to health care because it has been observed that income, education, and work status play a role in whether or not women utilize health services that contribute to good health (Mead, Witkowski, Gault, & Hartmann, 2001). A study by Ettinger, Woods, Barrett-Connor, and Pressman (2000) examined SES and access to health care as predictors for women obtaining HRT counseling from their physicians. They concluded from their study that women of the lowest SES were the least likely to have received counseling. Consequently, research is needed to examine the factors that influence why women with lower incomes are less likely to use HRT and whether the discrepancy is due to such factors as inconsistent recommendations by health care providers, access to health care, race/ethnicity, education level, and socioeconomic status.
Literature Review

Women’s Use of HRT

Over the years, numerous studies have been published documenting the risks and benefits of HRT use in postmenopausal women. Estrogen was first approved as a hormone supplement to treat menopausal symptoms in the 1940’s (Nelson, 2004). In 1975, the number of prescriptions for hormone therapy peaked at 30 million, but began to decline to approximately 15 million in the early 1980’s, when evidence emerged showing the increased risk of endometrial cancer with unopposed estrogen use (Wysowski, Golden, & Burke, 1995; Kennedy, Baum, & Forbes, 1985; Hemminki, Kennedy, Baum, & McKinlay, 1988). However, estrogens were combined with progestins to eliminate the risk of endometrial cancer in women with an intact uterus, and prescriptions for hormone therapy were 36 million in 1992, representing almost 6 million women (Wysowski, et al.). A national cohort study performed by Brett and Madans (1997) examined women’s use of HRT between 1982 and 1992. They reported that 45% of U.S. women born between 1897 and 1950 who were menopausal by 1992 had used HRT for at least one month. The National Center for Health Statistics, in conjunction with the Office for Research on Women’s Health of the National Institutes of Health, reported that between 1988-1994, 44% of postmenopausal women stated having ever used female hormone pills, vaginal creams, suppositories, injections, or skin patches (Brett & Chong, 2001).

National trends in HRT use have been studied extensively up until 1995; however, the impact of recent evidence on HRT use is currently unknown. A study by Hersh, Stefanick, and Stafford (2004) was designed to describe the national trends in hormone therapy use from January 1995 through July 2003. They utilized two nationally representative databases where the number of women exposed to any form of HRT was estimated based on the number of
prescriptions filled. In 1995, approximately 9.7 million women were taking hormone therapy based on the number of annual prescriptions. Between the years of 1999 and 2001, the number of women using HRT increased to 15 million, remaining stable through June 2002. However, in July 2002, the results of the estrogen/progestin arm of the WHI study as well as the HERS II study were released, and hormone therapy prescriptions declined in the following months. When compared to January-June 2002, prescriptions for January-June 2003 declined by 66% for Prempro (estrogen/progestin) and 33% for Premarin (estrogen only). Although the largest decrease was seen in the number of estrogen/progestin prescriptions, the results released in March 2004 by the WHI group concerning the estrogen only arm of the study may prompt additional declines in the use of estrogen only products (Schultz, 2004).

Stearns, Ullmer, Lopez, Smith, Issacs, and Hayes (2002) reported that nearly two-thirds of women will experience menopausal symptoms and that 10-20% of women with these symptoms will find them to be intolerable. Various studies have indicated that women take HRT to help with the side effects of menopause such as hot flushes, vaginal dryness, and night sweats caused by the decreasing amount of hormones in their bodies due to natural menopause or a hysterectomy (Coffield & Clymer, 2002; Ghali, Freund, Boss, Ryan, & Moskowitz, 1997). It has also been reported that women who take HRT differ from non-users in many ways. HRT users tend to be more affluent, leaner, attain a higher level of education, and exercise more than non-users (Nelson, Humphrey, Nygren, Teutsch, & Allan, 2002). These women also tend to have greater access to health care. Despite these differences, comparisons between HRT users versus nonusers demonstrated that the single most important factor associated with the likelihood of HRT use was surgical menopause (Avis & Johannes, 1998).
Following the release of the results from the HERS and WHI studies, use of HRT has changed among postmenopausal women. In a study by Barber, Margolis, Luepker, and Arnett (2004), postmenopausal women were surveyed to learn how HRT use was affected by the results of the WHI results. They found that most women (95.7%) were aware of the research findings at the time of the survey. Thirty-two percent of women with an intact uterus and only 11.5% of women with a hysterectomy discontinued HRT. They also found that the women that cited menopausal symptoms as a reason for starting HRT were less likely to stop therapy than women without menopausal symptoms. About one third of women stated that they were confused, scared, nervous, or worried about the results of the studies. Another study used a telephone survey of women ages 40-79 to gather their responses to the WHI studies (Theroux, 2005). Of this sample of women, 25% reported current/recent use of HRT, 12% used HRT in the past, and 63% had never used HRT. Similar to the previous study, more than half of the women were worried about the long-term effects of HRT. The women identified breast cancer as the primary health concern rather than heart attacks or stroke. Theroux also found that women who were more informed about the WHI study were more likely to stop HRT use. The greatest predictor of a woman’s decision to stop HRT was knowledge of the benefits and risks, and the predictor of resuming HRT use was the development of menopausal symptoms. Schonberg, Davis, and Wee (2005) surveyed 204 women after the WHI results were released on July 9, 2004 and found that most women taking HRT at that time discontinued use within an average of 13 months. Seventy percent of the women decided to stop taking HRT, and of the 30% that chose to keep using HRT, 53% reduced their original dose. Nineteen percent of the women who stopped use reported eventually restarting it primarily for the management of menopausal symptoms. They also
discovered that women of non-white race and use of the combined therapy were associated with being more likely to stop therapy.

Experts recommended that physicians counsel women about the risk of osteoporosis and heart disease, and encourage good nutrition for those women that decided to stop taking HRT after the release of the WHI findings (Schonberg & Wee, 2005). This study observed how menopausal symptoms were managed following WHI and whether these women were counseled about chronic disease prevention. They found that of the women that attempted stopping HRT, 82% reported suffering from at least one menopausal symptom with hot flushes being the main symptom. Nearly half of these women visited their physician because of these troubling symptoms. Forty-eight percent of the women who stopped HRT and developed symptoms tried at least one complementary alternative medicine (CAM) where the most common were soy, black cohosh, and vitamin E. CAM users were found to younger, more educated, and more likely to be white than non-users (Bair, et al., 2002). They also found that very few women discussed important prevention topics with their physicians after the WHI publication.

In addition to the changes in women’s use of HRT, the current clinical prescribing practices have been altered as a result of the WHI studies. Hersch, Stefanik, and Stafford (2004) reviewed annual trends in HRT use in the United States using national pharmaceutical databases. From 1999-June 2002 there were approximately 90 million prescriptions written for HRT in the United States. After the release of the WHI findings, HRT prescriptions declined by 38%. They also found that the percentage of women ages 50-74 taking HRT declined from 42% to 28% by 2003. Because a woman’s decision to use HRT is complex and dependant on a variety of factors, it is important that health care providers have a more clear understanding of the role of HRT in

Up until 1993, studies that examined women with previous coronary heart disease (CHD) reported a beneficial association with postmenopausal hormone replacement therapy with either estrogen alone or combined estrogen plus progestin therapy. However, these were observational studies, and the results may have been due to selection bias if the women who were taking hormone therapy tended to have better CHD risk profiles than those who did not. Therefore, it was necessary to perform a randomized trial in order to establish the safety of hormone therapy in postmenopausal women (see Table 1 for comparisons between the HERS and WHI studies).

In August 1998, the Heart and Estrogen/Progestin Replacement Study (HERS) published the first large, randomized, double-blind, placebo-controlled study of the effects of estrogen plus progestin on postmenopausal women with established CHD. The participants were postmenopausal women under the age of 80 (mean age=66.7 years) with known CHD and an intact uterus. The total number participating in the study was 2,763 women, where 1380 received one tablet daily of 0.625mg of conjugated equine estrogen plus 2.5mg of methoxyprogesterone acetate and 1383 received a placebo pill. After 4.1 years of follow-up, it was determined that there was no statistically significant difference in the number of occurrences of primary CHD events, either CHD death or non-fatal myocardial infarction, between the 172 women taking hormone therapy and the 176 women taking the placebo. There was also no statistically significant difference between the two groups for secondary coronary events: coronary artery bypass graft surgery, percutaneous coronary revascularization, hospitalization for unstable
angina, hospitalization for congestive heart failure, resuscitated cardiac arrest, peripheral artery disease, stroke or transient ischemic attack, or other CHD event. Although there was no statistically significant difference between the two groups regarding primary and secondary outcomes of CHD, it was observed that the women receiving the hormone replacement therapy experienced three times more venous thromboembolic events, deep vein thromboses, or pulmonary emboli. They also found that the incidence of gall bladder disease was increased in the women taking hormone therapy, which was likely attributable to the effects of estrogen (Everson, McKinley, & Kern, 1991). Metabolic studies have shown that estrogen increases the uptake of lipoproteins into the liver as well as inhibits bile acid synthesis, resulting in an increase of biliary cholesterol and cholelithiasis. There was no significant difference between the groups regarding the rates of breast cancer, endometrial cancer, other cancers, or fractures.

Based on the findings of the trial, the HERS group did not recommend beginning the hormone replacement therapy for the sole purpose of secondary prevention of CHD events. However, they did notice a significant time trend during the 4.1 years of follow-up. In the hormone replacement group, there were more CHD events in the first year and fewer in years three through five than the placebo. This suggests that longer duration of therapy may be beneficial, so women who had a history of CHD and were currently taking HRT were recommended to continue taking the medication.

In July 2002, the results of a 2.7 year follow-up study to the HERS trial, HERS II, was published. The objective of the follow-up study was to determine whether the risk reduction for CHD that was observed during the later years of the HERS study persisted over time, and resulted in an overall reduction in the risk of CHD events in postmenopausal women with known CHD. The participants were 2,321 women from the original HERS study who were randomized
into groups receiving HRT (1156 women) or a placebo (1165 women). The women were called every four months to obtain knowledge concerning any CHD or other events that occurred. The follow-up study was supposed to proceed for a total of four years, but was stopped after only 2.7 years because the executive committee determined that there was no statistically significant difference between the two groups concerning either primary or secondary CHD events. Therefore, after a total of 6.8 years of follow-up, the study recommended that there was no cardiovascular benefit from longer duration usage of hormone replacement therapy.

The Women’s Health Initiative (WHI) published results in July 2002 that were obtained from the arm of their study designed to observe the effects of combined estrogen and progestin on CHD in postmenopausal women with an intact uterus. The women in the WHI Study were healthy (unlike the women in the HERS trials who had known CHD prior to the beginning of the trials) with a mean age of 63.3 years. Participants were randomly assigned to groups where 8,506 women were assigned to receive one daily tablet of 0.625mg conjugated equine estrogen (CEE) plus 2.5mg of medroxyprogesterone acetate while 8,102 women received a matching placebo. The trial was scheduled to continue for a mean duration of 8.5 years but was stopped early at only 5.2 years of follow-up. The test statistic for invasive breast cancer, which was determined before the trial began, had crossed the designated boundary, and it was concluded that the risk-benefit ratio was too great to continue the study.

Following the termination of the estrogen plus progestin arm of the WHI study, researchers determined that women taking the combination of estrogen and progestin experienced a 29% increase in CHD events compared to those taking placebo, as well as an overall 22% increase in total cardiovascular disease. Stroke rates were also increased 41% in women taking the combination HRT. As reported in the HERS studies, a two-fold increase in the
rates of deep vein thrombosis, venous thromboembolism, and pulmonary embolisms was reported by the WHI studies. It was also discovered that the number of invasive breast cancer was increased by 26%, but there was no significant difference in the numbers of in situ breast cancer. In addition, there was a 37% reduction in colon cancer and a 33% reduction in hip and vertebral fractures in women taking the combination HRT. While the data was being analyzed, the WHI study found that differences between treatment groups for CHD, stroke, and PE began to develop soon after randomization, and did not show evidence of convergence during the 5.2 years of follow-up. In addition, the WHI study was the first randomized controlled trial to confirm that combined estrogen and progestin increased the risk of invasive breast cancer, which became apparent several years following randomization. Based on the findings of this study, there were more harmful than beneficial outcomes in the combination HRT group than the placebo, and that it is unlikely a benefit for CHD would have emerged even if the study had been allowed to continue the entire 8.5 years. Therefore, the WHI recommended against the use of combined estrogen plus progestin hormonal therapy for the secondary prevention of CHD in postmenopausal women with an intact uterus.

In April 2004, the WHI published the data from the arm of the study designed to observe the effects of estrogen alone on CHD in postmenopausal women who had undergone a hysterectomy prior to participating in the study. The women were randomized into groups where 5,310 women received 0.625mg/d of conjugated equine estrogen (CEE), and 5,429 women received a matched placebo. Similar to the estrogen plus progestin trial, this arm of the study was also terminated early in March 2004, which is one year earlier than anticipated.

It was determined that CEE did appear to affect the risk of CHD compared to placebo, and in fact increased the risk of stroke by 39%, which crossed the adverse effect boundary set
prior to the beginning of the trial. This result is consistent with the previous reports by the HERS and WHI estrogen plus progestin trials. The risk of venous thromboembolism, deep vein thrombosis, and pulmonary embolism was increased by 33%, but only the increased rate of deep vein thrombosis reached statistical significance. Total cardiovascular disease rates including stroke were 12% higher in the women taking CEE hormone replacement therapy, but it did not significantly affect the incidence of CHD overall. These results differ from those obtained in the HERS and WHI estrogen plus progestin trials in which the risk of CHD was significantly elevated in the first year of treatment. In this study, a non-significant increase was seen in the first year with a cumulative effect possibly showing a modest benefit with longer usage. In addition, the rate of invasive breast cancer was 23% lower in the group receiving CEE than placebo, and no significant differences were reported in the incidences of colorectal cancer between the two groups. Finally, the results of this study are consistent with the WHI estrogen plus progestin trial in providing evidence that estrogen therapy reduces the risk of hip, vertebral, and other fractures in postmenopausal women. Based on the data accumulated in this study, the WHI does not recommend the use of CEE for the prevention of chronic disease in postmenopausal women. In of the current recommendations by the U. S. Food and Drug Administration, CEE should only be used for the relief of menopausal symptoms in the smallest effective dose for the least amount of time.

After the results of the HERS and WHI trials were published, many professionals, both doctors and researchers alike, openly criticized the findings. Professionals who believe that clinical trials provide “gold standard” evidence were more likely to accept the results of the trials even while acknowledging the limitations (Derry, 2004). Other professionals placed their confidence in the large amounts of epidemiological studies that already existed. The responses to
the HERS and WHI studies were similar. Many people were convinced by the data that CEE/MPA was not effective for CHD prevention, while others believed that the methodical flaws in the studies were too serious to draw confident conclusions. Since the HERS and WHI did not directly study other estrogen and progestin preparations other than CEE/MPA, some people believed that lower doses or different forms might be safer unless proven otherwise. Despite that rationale, the FDA assumed that there was enough possibility that all HRT preparations might carry similar safety issues, so they regarded all preparations as the same. Data analysis of the HERS and WHI was also criticized because the manner in which the results were presented made the increase in health risks seem extraordinarily large when looked at as relative risk rather than absolute risk. The media also played a role by frequently quoting the WHI results using percentages instead of reporting the overall absolute risk (Lumsden, 2005). Lumsden also reported that many of the menopause experts felt that their professional integrity had been brought into question, and some found it difficult to alter their advice despite the current recommendations.

Another criticism that was addressed following the publication of the results was the sample of postmenopausal women that was chosen to participate in the study. Naftolin, Taylor, & Karas (2004) and Rivera-Woll & Davis (2004) indicated in their analyses that the WHI study population was at least 10-fold underpowered to have revealed any cardioprotection for women using HRT during menopause. They found that the patients in the WHI study were selected at a much later stage in life (two-thirds were over the age of 60) when serious damage to the cardiovascular system had already occurred. It is believed that the WHI excluded the group of women who would ordinarily be selected for HRT (Wehrmacher & Messmore, 2005). When introduced during menopause, estrogens can be better expected to maintain healthy tissue rather
than repair damaged estrogen-deprived tissue. They concluded that the protective effects of estrogen on cardiovascular disease might require early administration and a long observation period before the cardiovascular health of the treated women becomes apparent. A study by Hammond (2005) also cited similar criticisms of the WHI studies. The average age of patients entering into both arms of the study was 63 years. The mean age of menopause in the United States is 51 years, so it is difficult to extrapolate the results of these studies to the typical population who utilize HRT. Thus, the average patient using HRT is appreciably younger than those who participated in the WHI studies. Hammond believes that patients should be assessed at intervals in order to determine whether or not to continue therapy, and to continue as long as symptom control is good without significant side effects.

Current Clinical Guidelines

HRT is one of the most commonly prescribed drug regimens for postmenopausal women in the United States (United States Preventive Services Task Force [USPSTF], 2002). In 1995, approximately 30% of postmenopausal women in the United States were using HRT to treat the symptoms of menopause as well as for the prevention of chronic diseases such as CHD and osteoporosis (Keating, Cleary, Rossi, Zaslavsky, & Ayanian, 1999). In 1996, the second U. S. Preventive Services Task Force (USPSTF) determined that there was insufficient evidence the recommend for or against HRT use for all women. They felt that individual decisions should be made taking into consideration patient risk factors, knowledge of the risks and benefits, and personal preferences.

Since the release of the results of the HERS and WHI studies, potential preventive effects of HRT have become an important issue. In 2002, the USPSTF issued an updated summary of
recommendations based on these more recent findings. They recommended against the routine use of estrogen and progestin for the prevention of chronic diseases in postmenopausal women. In their extensive research, they found fair evidence that HRT increases the risk for stroke, good evidence that HRT increases the risk for a thromboembolism, fair-good evidence that HRT increases the risk for breast cancer, and evidence that HRT may increase the incidence of CHD. They felt that the harms associated with HRT use are more likely to outweigh the benefits, even though the absolute risk from HRT use is modest.

In addition to the recommendations by the USPSTF, the American College of Obstetricians and Gynecologists (ACOG) also produced a set of recommendations regarding HRT in postmenopausal women (2004). They also advise against the use of HRT for the primary or secondary prevention of CHD, and that the lowest effective dose should be used for the shortest possible time to alleviate menopausal symptoms. The FDA ordered estrogen safety warnings to be placed on product labels referring to the WHI study results, as well as altering the approved indications for the use of estrogen (Stephenson, 2003). Most organizations with guidelines on HRT have revised or are in the process of revising their recommendations in light of the recently reported results from the clinical trials.

In today’s market, there are many different estrogen preparations and multiple hormone delivery methods. When deciding which estrogen preparation to prescribe to women, physicians were uncertain if one preparation was better than another. In a study by Nelson (2004), the short-term efficacy and adverse effects were compared between two of the most commonly used estrogens-oral CEE and oral/transdermal 17-estradiol. The results indicated that both preparations were more effective than placebo in relieving menopausal symptoms, and neither estrogen was more effective than the other. Reported adverse effects also appeared to be similar
regardless of the type of estrogen used. Although HRT remains the gold standard for treating menopause-related symptoms, various other treatments are available such as non-pharmacologic lifestyle adjustments, antidepressants, gabapentin, clonidine, soy products, and herbal remedies (Sikon & Thacker, 2004). The risks and benefits of alternative agents are not fully known, and most have been found to be much less effective than traditional HRT. Therefore, physicians and researchers are looking to use lower doses of HRT in the future in hopes of maintaining efficacy while reducing the associated health risks.

Women’s Attitudes and Knowledge about HRT

Balancing the beneficial and harmful effects is a challenging but important task for women when making an informed decision about the use of HRT. As an increasing amount of resources are being spent studying the effects of HRT on menopausal women, researchers have become interested in women’s knowledge and attitudes about menopause and HRT. A woman’s decision to use HRT is very complex and can be determined by factors such as recommendations from health care providers, individual risk profiles, their attitudes, individual values, specific symptoms, or influence from their peer groups (Avis & Johannes, 1998). Therefore, before HRT is prescribed for women, it is important for health care providers to assess their level of knowledge, understanding, and attitudes regarding menopause and HRT.

A study by Clinkingbeard, Minton, Davis, and McDermott (1999) used a community, mail-based survey of 665 women to determine women’s knowledge of the health risks associated with menopause and knowledge about HRT. The results of the study showed that although the women who returned their surveys seemed to have a basic understanding of the symptoms of menopause, their knowledge of long-term health risks was poor. For example, although 60% of
women reported that the risk of osteoporosis increased with menopause, only 30% reported that they knew the risk of heart disease was also increased. In addition, researchers found that the women participating in the study showed an interest in acquiring more knowledge about menopause, the risks associated with HRT, and alternatives to HRT treatment.

In a telephone survey conducted by the Partnership for Prevention group, 1,003 women between the ages of 55-70 were asked questions regarding their knowledge about the data released from the WHI studies (Coffield & Clymer, 2002). They reported that 79% of women stated that heart disease was a concern. Sixty-nine percent of women reported having heard about the health risks associated with HRT published by the WHI group, and 58% of women were concerned about these possible risks. Also, 24% of the women reported feeling confused about the meaning of the results while 27% women felt they were more informed following the release of the studies. Another study by Schonberg et.al also questioned women’s knowledge about HRT following the WHI publication (2005). They discovered that while 62% of the women recognized the effects on breast cancer, only 38% recognized the risk of heart disease and 31% recognized the increased risk for stroke. It is surprising that a majority of the women knew the breast cancer results and most were not aware of the heart disease findings even though the WHI was designed primarily to evaluate the effects of HRT on heart disease.

In order for women to make informed decisions about HRT, it is important for them to be conscious of the risks and benefits associated with its use. In a study conducted by Scheid, Coleman, and Hamm (2003), women were asked to estimate the lifetime probability of developing breast cancer, uterine cancer, osteoporosis, and a myocardial infarction. Postmenopausal women were then divided into two groups, HRT users versus HRT non-users. The study discovered that regardless of whether or not the women used HRT, they overestimated
their risk for all four diseases. However, HRT users did perceive a greater benefit and less risk concerning the use of HRT than the non-users. Another study by Ghali, et al. (1997) examined how women’s knowledge about HRT may or may not influence their decision to initiate or continue HRT use. They reported that more knowledge about the risks and benefits of HRT was a good predictor of HRT use.

Phelan, Buist, Andersen, Newton, Delaney, and LaCroix (2001) examined women’s characteristics to determine if they were associated with a positive, negative, or neutral attitude about HRT. They learned that women who were currently taking HRT had more positive attitudes about HRT in general. They also reported that women who felt satisfied with the information given to them by their health care provider were more likely to have positive attitudes as well. Therefore, if women are expected to make educated decisions regarding HRT use, it is critical that health care providers supply them with accurate information.

**Impact of Socioeconomic Status and Race on Women’s Use of HRT**

When examining HRT use among women, it is important to examine how factors such as race and socioeconomic status (SES) influence women’s choices. In the 1980’s, the non-randomized observational studies included samples of women that were not representative of the entire population of postmenopausal women (ACOG, 2004). It was discovered that hormone users tended to have superior access to health care in addition to being thinner, wealthier, and healthier overall. Studies by Avis and Johannes (1998) and Finely, Gregg, Soloman, and Gay (2001) also reported similar findings. HRT users typically had a better SES with a higher education, higher income, and greater use of medical care for preventative procedures such as mammograms, pap smears, and cholesterol screening tests. In addition to variation in HRT use
by SES, race has also shown to be an important factor, even though a majority of the current studies lack racial diversity in which the typical participants are middle-upper class Caucasian women. Therefore, it is necessary to evaluate the impact that both SES and race have on a woman’s decision to use HRT.

The effect of SES on health is critically important to women especially because they are more likely than men to experience illness and use the health care system (Mead, et al., 2001). This group focused their research on the effects that SES has on women’s general well-being. Research shows that 29% more women than men live in poverty and women with limited income, little education, and low wage jobs are less healthy than women with a higher SES. Almost 39% of women with incomes less than $7500 reported that they didn’t use preventive services because they could not afford it (Reisinger, 1995). The results of the study by Mead, et al. found that women living in poverty undergo circumstances that greatly influence their health such as educational attainment, employment status, dependence on public assistance, racial background, family structure, and certain risk factors. Poor women are three times more likely to be black and four times more likely to be Hispanic. They also have a higher prevalence of serious health conditions, and are more likely to suffer from multiple health problems but significantly less likely to have consistent, regular health care. In addition, women with the lowest family incomes reported significantly lower health status than women in the highest income group. It is apparent that women who need health care the most are having the most difficulty accessing the care that they need.

A study by Marks and Shinburg (1998) found that SES was the most significant sociodemographic factor determining HRT use other than sex, age, and race. Higher rates of HRT use have been associated with women that have higher household incomes (Rosenberg,
Shapiro, & Kaufmann, 1979; Derby, Hume, & Barbour, 1993). Marks and Shinberg found that although HRT use was associated with a woman’s own occupational status, HRT use was also associated with her husband’s occupational status. As mentioned earlier, it is hypothesized that women of higher SES families utilize the health care system more frequently, exhibit better health behaviors, and engage in more preventive services than do women of lower SES families.

Finley, et al. (2001) also examined the relationship between SES, preventative health care behaviors, and the use of HRT among menopausal women. They found that a higher annual income was significantly associated with greater HRT use. Women reporting an annual income greater than $35,000 were 2.7 times more likely to use HRT than women earning less than $15,000. Also, women having an advanced degree were 47% more likely to be taking HRT than those with only a high school education or less. Similar results were obtained in studies by Freidman-Koss, Crespo, Bellatoni, and Andersen (2002) and Brennan, Crespo, and Wactawski-wende (2004). Higher SES (measured by education and income) was associated with increased odds of HRT use. They also reported that current HRT use was lowest among women who were grouped within the lowest income brackets.

This discrepancy in HRT use secondary to SES factors was explored in a study by Ettinger, et al. (2000). The results showed that a woman’s level of education and income were associated with an increased likelihood of HRT counseling. Women of the lowest SES and those without a primary care physician were least likely to receive counseling. Therefore, women with lower SES are not receiving the same information from which to make the decision whether or not to initiate HRT.

Although SES appears to be an important factor in the determination of HRT use, race has also been shown to play a role in women’s knowledge, attitudes, and use of HRT. As
mentioned previously, a majority of the research that relates to HRT has been performed in middle-upper class Caucasian women, which is hardly a representative sample of all postmenopausal women in this country and worldwide. One of the problems is the lack of research on HRT use in racially diverse populations. Physicians are expected to apply the results obtained in the clinical trials in their own practices, which is complicated by the fact that little research exists concerning the use of HRT in populations other than Caucasian women. Results from some studies have indicated that there is a strong ethnic difference in attitudes toward HRT between Caucasian women and African American women, but usually the number of African American women in a study is not enough to establish significance (Standing & Glazer, 1992).

Results from the Standing and Glazer study (1992) of 66 African American, low-income women at a clinic did show that African American women tended to have a more positive attitude toward menopause than did a corresponding sample of Caucasian women. This finding was supported by a similar study performed by Pham, Grisso, and Freeman (1997) that characterized the attitudes of Caucasian and African American perimenopausal women related to menopause. Although both groups of women reported similar symptoms and frequency of symptoms, only one-third of African American women reported discussing these symptoms with their physician while two-thirds of the Caucasian women did. African American women are more likely to receive information regarding menopause from their family members. There appears to be increased familial support among African American families compared to Caucasian families that indicates different cultural elements affecting the perception of menopause. The study also found that Caucasian women were more than twice as likely to report that the physician inquired about their symptoms. One quarter of Caucasian women in this study were recommended HRT for their symptoms while none of the African American women
reported being offered HRT. Previous studies have shown that a recommendation to take HRT was strongly associated with HRT use (Finely et al., 2001). Eighty-two percent of women who reported a strong suggestion from a health care provider decided to use HRT, while only 20% of women who received an ambivalent suggestion made the same decision. Therefore, based on this data, it is not surprising that African American women are less likely to use HRT for menopausal symptom relief.

In a similar study by Weng, et al. (2001), African American women were less likely to report having been counseled for HRT and menopause, to be satisfied with the counseling they received, and to be offered HRT. Previous studies have documented that rates of HRT use are lower among African American compared to Caucasian women. Overall, 45% of women in this study reported that a health care provider recommended HRT. However, African American women were significantly less likely to report any recommendations for HRT use. In a national sample of women over the age of 45, only 14% of African American women received an estrogen prescription compared to 33% of Caucasian women (Bartmann & Moy, 1998).

Holmes-Rovner, et al. (1996), surveyed low-income, perimenopausal African American women to determine their expectations of health outcomes and their attitudes and knowledge of menopause and HRT. In previous studies, it was discovered that among African American women, those reporting the highest number of symptoms were more likely to be less educated and have a low income. This study found that African American women had neither a positive nor negative view of menopause. A knowledge score was calculated based on a questionnaire that inquired about vasomotor symptoms, fractures due to osteoporosis, CHD, endometrial cancer, and side effects of HRT use. African American women scored half as high as the Caucasian women. It was concluded that African American women are in need of education
about menopause and HRT options. Their lack of specific knowledge may be due to overall lack of education, although it was noted that the women did express an interest in obtaining more education on HRT.

Due to the fact that most HRT studies have included mainly Caucasian women, providers appear to be less likely to recommend HRT to African American women due to the lack of evidence among minorities and a perception that African American women are at a lower risk for osteoporosis (Weng et al., 2001). Many physicians prescribe HRT for disease prevention such as for osteoporosis (Egeland, Matthews, Kuller, & Kelsey, 1988; Avis & Johannes, 1998). Data shows that African American women are at a lower risk for osteoporosis and vertebral or hip fracture which may impact physicians prescribing patterns. African American women also have higher rates for obesity, CVD, and stroke than Caucasian women (Pham et al., 1997). However, there exists no evidence to suggest that African American women have less of a need for HRT than Caucasian women. It is quite apparent that health care providers are not adequately preparing African American women with the necessary information from which to base a decision regarding use of HRT. Women may be reluctant to use HRT due to their lack of knowledge, and it is the responsibility of the health care providers to educate all women of the risks and benefits associated with HRT regardless of her SES or race.

*Who is Providing Women with their Information?*

Women receive information regarding HRT from numerous sources – health care providers, friends, family, and media – and these sources may alter their attitudes toward HRT and their decision to use it. In a study by Griffiths (1995), British women admitted that recommendations from health care providers in general practice were the most important
influences in their decision-making regarding HRT, more so than friends or relatives. However, a study by Clinkingbeard, et al. (1999) revealed that women’s main source for information about HRT was from women’s magazines (76%). The other most frequently cited sources included health care providers (68%), friends (52%), TV (44%), and their own mothers (44%). When the women did admit to talking to a health care provider, specific discussion of HRT only occurred in 37% of the cases, and many women reported that their questions were not always answered. Women stated various reasons for their unanswered questions such as difficulty retaining the information given to them in short office visits, intimidation by the physician, feelings that their symptoms were minimized, and the thought that male providers had difficulty understanding their experiences as women. Similar results were found by Conboy, Domar, and O’Connell (2001) who reported that a majority of women received their information about HRT from magazines and books (70%). Sixty-six percent of the women in the study who reported discussing HRT with a health care professional stated that the physician initiated the conversation approximately half the time. A study by the National Women’s Health Resource Center showed that although health care professionals are the single top source of information concerning HRT, the combination of media sources – television, Internet, magazines, and newspapers – are actually utilized more as a group than the health care professional alone (2003). Based on these studies, the results indicate that women are using numerous sources to gain information on HRT and that they are relying heavily on the media for information. It seems apparent that physicians need to be more proactive in the discussion of HRT with menopausal women.

Although various studies report differing results on the sources women utilize to obtain information about HRT, healthcare providers are still an important source for many women. A
study by Newton, LaCroix, Buist, Andersen, and Delaney (2001) compared HRT prescribing frequency to provider characteristics, attitudes, and beliefs about menopause and HRT within family practice/internal medicine, gynecologists, and women’s health specialists. The results showed that the youngest providers (age 26-38) prescribed HRT about half as frequently as providers aged 39+ years. They also discovered that differences existed regarding the sex of the provider. Among gynecologists, males prescribed HRT half as frequently as females, and among family practitioners, the male providers prescribed HRT approximately one-fifth as frequently as the female providers. The frequency of HRT prescriptions was highest among gynecologists, which may be associated with the unique characteristics of women that chose to visit a gynecologist. This difference may also be attributed to the fact that HRT is usually ranked higher on the list of preventive topics discussed with patients at gynecologists’ offices. Finally, HRT prescribing frequency was highest among providers with the most favorable attitudes toward HRT.

A study by Schonberg and Wee (2005) showed that after the WHI results were released, only 6% of the women surveyed first heard about the results from their primary care physicians. However, 91% of the women reported discussing HRT with their physicians at some point during the first year after the release. Schonberg and Wee also asked about women’s trust of the medical profession after the WHI publication. At the time of the survey, 91% of the women reported being satisfied with their primary care physicians, and 77% believed that they were adequately informed about health/medical issues most of the time. Twenty-six percent of the women rated their general trust in medical recommendations lower after WHI, and 22% reported losing some confidence in medical advice. Trust is an important aspect of the doctor-patient relationship because it influences patients’ willingness to seek medical care and follow the given
recommendations. If women cannot trust the medical profession, it is difficult to provide adequate care. Overall, this study showed that the WHI did not significantly impact women’s trust in medical recommendations.

In addition to the differences among prescribing physicians, women’s age also appears to play a role in HRT prescription frequency. In 1992, the American College of Physicians recommended that physicians discuss HRT with all women around the time of menopause (Brett & Chong, 2001). Data collected in the National Health Interview Survey during 1998 found that approximately 45% of women aged 40-60 reported receiving counseling about HRT from a physician, and that age was a factor in those women receiving counseling. They reported that only 19% of women age 40-44 were counseled compared to 41% of women age 45-49, 63% of women age 50-54, and 67% of women age 55-60. The results from all of these studies suggest that prescribing HRT for women is a complex issue that is affected by many variables, and the differences among groups of women are not easily delineated.

Summary

Since the publication of the HERS II follow-up study and both arms of the WHI studies, HRT has been a controversial topic for both women and their health care providers alike. Current clinical guidelines recommend against the use of HRT for either primary or secondary prevention of CHD. If HRT is used to treat menopausal symptoms, the lowest possible effective dose should be used for the shortest amount of time necessary. Research shows that current HRT use has been impacted by the recent publications. Many women have discontinued use or decreased their dosage, and the number of prescriptions for HRT has dramatically decreased as a result. Studies show that women are relying on both the media and health care providers for the
most up to date information about HRT. However, there appears to be a discrepancy in women’s knowledge, attitudes, and use of HRT based on socioeconomic status and race. Therefore, it is imperative that health care providers are aware of the most current clinical recommendations, so that they can educate all women on the potential risks and benefits associated with HRT regardless of SES or race.
Methodology

This descriptive study uses survey methodology, with data being gathered by pencil-and-paper questionnaire. Approval for this study was obtained from the Institutional Review Boards of both Wayne State University and the Medical University of Ohio prior to questionnaire distribution.

Problem statement

Hormone replacement therapy (HRT) is an ongoing area of research in today’s health care settings. Due to the publication of the WHI and HERS studies, the current guidelines and recommendations for the use of HRT in postmenopausal women continue to change based on the data acquired from these studies. It is important for health care providers to present the most current information so patients have the opportunity to make informed decisions regarding HRT. However it is uncertain as to how many women feel that they have been provided adequate information concerning the most recent recommendations, and whether or not socioeconomic status (SES) and race have an impact on their current understanding. The purpose of this study was to evaluate the influence that SES and race have on women’s knowledge of HRT.

Participants

The sample included women who were patients at the General Internal Medicine Clinic as part of the Detroit Medical Center. The clinic is located at 50 East Canfield in Detroit, MI, and the sample is a representation of a subpopulation of women in the Detroit/Southwest Michigan region. This site was selected because many of its members are women, with a large percentage of members are qualified to be in the lower socioeconomic status, and because a majority of the
women are not of Caucasian race. Inclusion criteria consist of all women over the age of 18. Exclusion criteria are the following: (1) men and (2) women less than 18 years of age.

**Questionnaire**

The survey instrument was partially derived from various other surveys used in previous research (Cleveland, 2003). Information on the patient’s current menstrual status was gathered as well as demographic information (age, race, education level, and income level). The survey inquired about current or past use of HRT and what types of HRT used (if applicable), because it was expected that women who currently use HRT or who have used it in the past are more likely to be aware of changes in the current HRT recommendations. If the participant had changed regimens, a follow-up question asked what she had changed and her reason for changing. The survey also examined the respondent’s knowledge about HRT, especially in light of the WHI and HERS study, and where she received most of her information regarding HRT use. This survey was piloted by a sample of women to make any necessary changes before being distributed for the study.

**Protocol**

Every woman who came to the clinic for an appointment during the data collection period (September-October 2005) was presented with the option to participate in this survey. A cover letter explained that the survey that participation was completely voluntary and that it was anonymous. It was also clarified that there were no reasonably foreseeable risks or discomforts of participating in this study and that the participants will not be compensated in any way for their participation.
If the women agreed to participate, they were asked to fill out the questionnaire that took approximately 10 minutes to complete. Following completion, the surveys were given to the resident physician and placed in an enclosed box located at the receptionist’s desk. An educational pamphlet containing information regarding menopause and HRT was made available in each examination room to all women regardless of participation in the study. Completed surveys were returned to the researcher. The responses were coded, entered into Microsoft Excel, and analyzed using SPSS.
Results

Demographic information

A total of 115 women completed this survey. The response rate is unknown because there is no way to determine how many women chose not to complete the survey during their clinic visit. Fourteen percent of the women reported their age being between 18-29, 10.4% were between 30-39, 28.7% were age 40-49, 22.6% reported being 50-59, 10.4% were 60-69, and the remaining 13.9% were age 70 or older. A majority of the respondents were old enough to be concerned about menopausal symptoms, currently experiencing menopause, or have previously experienced it because the average age of menopause in women in the United States is age 51 (MacKay, 2004).

The women were also asked to identify their racial identity in this survey. Eighty-five percent of the women identified themselves as African American, 10.4% were Caucasian, and 2.6% identified themselves as multiracial, while 1% described themselves as either Hispanic/Latina or other. When asked about educational level, 37.4% of the women surveyed responded that they had completed some college. Thirty percent of the women reported having finished high school, while about 9% reported having completed college. Only 4.3% of the women indicated that they had completed any graduate work.

In addition to the demographic information provided above, the women were asked to report their income level. A majority of the women (82.6%) reported their annual income to be less than $30,000/year with more than half of those women (52.2%) making less than $15,000/year. Approximately 14% reported an income ranging from $30,000-$75,000 annually while only 3.5% of the respondents had an annual income greater than $75,000. When asked to describe their current menstrual status, 23% of the women reported being postmenopausal and
had not had a hysterectomy, while 24% were postmenopausal with a hysterectomy. Twenty-three percent of the women still had their periods at least 6 months out of the year and did not experience any menopausal symptoms (hot flashes, night sweats, mood swings), and 31% of the women currently have their period and also experience some symptoms of menopause.

**Women’s Use of HRT**

When the women were asked whether or not they currently used HRT or had used it within the past year, only 21.3% reported that they had ever used HRT. Of the women reporting some HRT use, a majority (15.7%) reported using estrogen only, 3.4% used a combination of estrogen plus progestin, 2.2% used progestin only, and 5.6% of the women did not know what kind they were using or had used within the past year. When asked to describe their most recent change in their use of HRT, 44% of the women reported stopping use of HRT. Twenty-four percent of the women reported that they had not changed their use of HRT within the last year, while 4% of the women changed the type of HRT that they were using. Twenty-eight percent of women reported that they had decreased the dose of their current HRT while none of the women had increased their current dose. The most common reason for changing their usage was side effects (28%). Other reasons included doctor’s suggestion (16%), changed on their own (12%), cost (12%), HRT not controlling their symptoms (4%), and decided together with a health care provider (4%). Four percent of the women indicated that there was another reason for their change but did not state the reason. Twenty percent of the respondents claimed that they did not change their type of HRT at all within the past year.
Information Sources

The women were asked to indicate where they received most of their information about HRT. The majority of women (30%) indicated that television was their main source of information about HRT. Other sources included the healthcare providers in gynecology (8%), internal medicine (8%), and family medicine (6%); friends and family (6%), magazines (6%), drug advertisements (4%), medical journals (4%), and other sources (30%). Of the women that responded other, 47% indicated that they had no information about HRT. One woman reported that she had read a pamphlet from the healthcare provider’s office, and another woman stated that she had learned about HRT in college. Two of the 26 premenopausal respondents (almost 8%) reported that healthcare providers were their main source of information about HRT, while 23 out of 89 women (26%) who were peri/postmenopausal indicated that healthcare providers were their main source of information.

In the survey, the women were asked if they had ever had a healthcare provider discuss HRT with them. Almost 50% of the peri/postmenopausal women reported that a healthcare provider had discussed HRT with them at some time, while 26.9% of the premenopausal respondents (period/no symptoms) reported that HRT had been discussed with them. Only 30.6% of perimenopausal women that still had their period but experienced symptoms of menopause had a healthcare provider discuss HRT options with them. Of the women who were postmenopausal with an intact uterus, 46.2% discussed HRT with a healthcare provider while 77.8% of postmenopausal women who had undergone a hysterectomy reported discussing HRT with a healthcare provider.

Eighty-nine of the 115 women who completed the survey identified themselves as being peri/postmenopausal. When these women were asked which type of healthcare provider
prescribed HRT for them, a majority of the women indicated a gynecology (14.2%). Other choices were internal medicine (13.4%), a family medicine (3.4%), free clinic (2.2%), unsure of whom prescribed their HRT (2.2%), and other (1.1%). However, 64% of the respondents in this group indicated that they have never had anyone prescribe HRT for them. More specifically, 13.9% of the perimenopausal women indicated that the gynecologist was responsible for prescribing most of their HRT prescriptions. The postmenopausal women without a hysterectomy reported that an internal medicine doctor prescribed a majority of their HRT (23.1%), followed by a gynecologist (7.7%), a family physician (3.8%), and never prescribed (61.5%). Postmenopausal women with a hysterectomy also indicated that an internal medicine doctor was mainly responsible for prescribing their HRT (36.4%), followed by a gynecologist (22.2%), family medicine physician (7.4%), free clinic (7.4%), and never prescribed (40.7%).

When examining the type of HRT prescribed to each group of women, it was discovered that a majority of the perimenopausal women (88.9%) had never used any type of HRT, but those that did used progestin only (5.6%). Postmenopausal women without a hysterectomy reported that 7.7% used the combination therapy, 7.7% used estrogen only, and 11.5% of the women were not sure which type of HRT they were using. The postmenopausal women with a hysterectomy reported that 40.7% used estrogen only, 3.7% used combination therapy, and 3.7% were unsure which type of HRT they were using or had used within the past year.

Knowledge level

For analysis of the knowledge levels of the women, the data was entered into Microsoft Excel for analysis by one-way ANOVAs for categorical data (race, education, income, and menstrual status) as well as Tukey tests where applicable. The average number of correct
answers to the knowledge portion of the survey by all of the respondents was 1.4 questions correct out of 7 possible points (20% correct). Of the 115 women completing the survey, 42.6% indicated that they had heard information about any health risks associated with HRT in the news. Seventy-eight percent of the women did not know or answered incorrectly that HRT should not be prescribed for the purpose of preventing CHD. Almost 95% of the women did not know or answered incorrectly that HRT can decrease the risk for developing colon cancer.

Similarly, 76.5% and 85.2% of the respondents did not know or answered incorrectly that HRT increases the risk of breast cancer and stroke respectively. Seventy-one percent of the women did not know that HRT could be used in the prevention of osteoporosis. Finally, ninety percent of the women did not know or answered incorrectly that women with an intact uterus should not be taking estrogen only.

There was no statistically significant difference found between women’s knowledge level and race ($F(4,110) = 1.13, p = .35$), income ($F(5,109) = 2.079, p = .07$), or menstrual status ($F(5,109) = 1.52, p = .19$). However, there was a statistically significant difference between women’s knowledge level and their educational status ($F(6,108) = 5.05, p = .00$). A Tukey post-hoc test revealed that the difference was between the women who had performed graduate level work versus other educational levels.

Based on a t-test it was found that there was a statistically significant difference between the knowledge score for women reporting a health care professional prescribing HRT for them versus women never having a health care provider prescribe HRT for them ($t(113) = 3.14, p = .00$). A statistically significant difference was also found between women knowledge level and their current use of HRT ($t(113) = 4.04, p = .00$).
Discussion

The sample of women utilized in this study was chosen because it included a large proportion of women that would be experiencing menopausal symptoms, currently going through menopause, or having experienced menopause in the past. Eighty-nine out of 115 respondents indicated that they were peri/postmenopausal. This finding was not surprising given the population of patients that normally visit an internal medicine clinic. It was also not surprising that a majority of the women had an annual income of less than $30,000 due to the location of the clinic in an urban/inner city area of Detroit, MI.

Although the respondents were not asked specifically if they were aware of the findings of the WHI and HERS studies, almost half of the women reported that they had heard about the health risks associated with HRT in the news. Overall, the women scored very poorly on the knowledge portion of the survey. Similar results were seen in studies by Clinkingbeard, et al. (1999) and Schonberg and Wee (2005), in which women had limited knowledge about the long term risks of menopause and HRT use. This may be due to the fact that the women in this particular sample reported moderate levels of education (only 9% of the respondents indicated that they had finished college). Another possible reason for the low knowledge scores may be due to the fact that the women are not aware of the new recommendations and are confused about the information that they have received about HRT. It is also likely that because many reports on HRT changes were issued over a year ago, women may have forgotten what they learned. Since the women scored low on the knowledge portion of the survey, it indicates that education is needed for women about HRT and the current recommendations for its use so that they may make an informed decision about whether the risks outweigh the benefits.
Like the Clinkingbeard et al. (1999) study and the Conboy et al. (2001) study, this study also found that a large percentage of women received information about HRT from a source other than their healthcare provider since television was reported as their main source of information (30%). This shows that the women in this area rely heavily on the media as an important source of information about HRT. A study by the National Women’s Health Resource Center also showed that the combination of media sources are utilized more as a group than health care providers alone (2003). Although women are using the media to gain valuable information, 26% of the peri/postmenopausal women indicated that healthcare providers were their main source of information about HRT. This emphasizes the importance of the healthcare provider being aware of the results of the major studies and having the ability to integrate the findings into their everyday practice of medicine. They should also know the most current recommendations available and be able to interpret them for the patients. Because 28% of the women who were taking HRT changed due to the side effects of the medicine, healthcare providers should also be able to explain the risks, benefits, and side effects so the women can make informed decisions concerning HRT use.

When analyzing the data, it was interesting to note the different types of HRT that the peri/postmenopausal women reported using currently or within the past year. For example, 7.7% of the postmenopausal women without a hysterectomy reported taking estrogen only HRT. According to clinical recommendations, women with an intact uterus should not take unopposed estrogen due to the fact that it has the potential to cause endometrial cancer. Also, 3.7% of postmenopausal women with a hysterectomy reported using combination therapy which is not indicated for women without an intact uterus. However, these results are not terribly surprising given the results of the knowledge portion of the survey where only 10% of the women correctly
answered the question stating that women with an intact uterus should not be taking estrogen only HRT. These statistics are perfect examples of the importance of patient education because if these women answered truthfully, it is possible that some of them are taking medication that has the potential to harm them.

As the case with any study, there were certain limitations. Since we were attempting to study the affect that race and socioeconomic status has on women’s knowledge about HRT, we tried to select a population of women with more diversity in race, education level, and annual income. However, the sample of women we chose to study was not as diverse a population as expected. A majority of the participants were African American, low income, and with low to moderate levels of education. Therefore, when knowledge levels of the women were analyzed, statistically significant differences were not found because the characteristics of the population were too homogeneous. The only statistically significant difference was seen in the education level which is not surprising since more highly educated women may have a better understanding and more awareness of the literature surrounding the current recommendations for the use of HRT.

Other future research ideas could include examining healthcare providers’ knowledge of the current HRT research/recommendations and what methods providers are using to distribute their knowledge to the patients. Also, researchers could examine if women feel that they are receiving enough information about HRT to make educated decisions regarding its use since the current guidelines and recommendations have been changed a great deal over the past few years. Finally, it is important to investigate the various barriers that women might feel are preventing them from getting valuable information about HRT. Healthcare providers may be making a sincere effort to educate women about menopause and HRT, but if women aren’t absorbing the
information, it is important to understand the reasons in order to facilitate better relationships between women and their health care providers.

In conclusion, current health care providers should be aware that women are not knowledgeable about the risks, benefits, and current recommendations associated with HRT use. With millions of peri/menopausal women in the Unites States, it is the responsibility of the health care providers to be well educated on menopause and HRT, so that they can provide their patients with the information that they need to make informed decisions about their own health.
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Table 1. Summary of main findings of the HERS and WHI studies

<table>
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<th>Name of Study</th>
<th>Research Question</th>
<th>Study Population</th>
<th>Results of Study</th>
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| Heart and Estrogen/Progestin Replacement Study     | To determine if estrogen + progestin therapy alters the risk for CDH events        | Total number of participants= 2763 women with established coronary disease, younger than 80 years of age with intact uterus (average age 66.7) | CHD: no difference in primary or secondary outcomes (time trend-more events occurred in first year with fewer in years 4 and 5)  
Thromboembolic events: 3x more common in HRT group  
Cancer: no significant difference  
Fractures: no significant difference  
Gall bladder disease: increased incidence in HRT group |
| Follow-up (HERS II) - 2002                         | To determine is the risk reduction for CHD events observed in the later years of HERS study persisted with additional years of follow-up | Total number of participants= 2321 women from original HERS study                | CHD: no statistically significant decrease in rates of primary or secondary CHD events  
Lower rates of CHD from original HERS trial did not persist in the follow-up studies                                                                                                                          |
| Women’s Health Initiative-Estrogen plus Progestin Trial-2002 | To assess the major health benefits and risks of combined estrogen + progestin therapy for the primary prevention of CHD in postmenopausal women with an intact uterus | Total number of participants= 16,608 postmenopausal women with an intact uterus, age 50-79 (average age 63.6) | Trial stopped early (5.2 years)  
CHD: events increased 29% in HRT group (events developed soon after trial began w/o convergence)  
Stroke: increased 41% in HRT group  
Thromboembolic events: 2x more common in HRT group  
Cancer: 26% increase in breast cancer, 37% decrease in colon cancer, no change in endometrial cancer  
Fractures: 33% decrease                                                                                                                                      |
| Women’s Health Initiative-Estrogen Only Trial-2004 | To assess the major health benefits and risks of estrogen therapy for the primary prevention of CHD in postmenopausal women with a prior hysterectomy | Total number of participants= 10,739 postmenopausal women with a prior hysterectomy, age 50-79 | Trial stopped early (6.8 years)  
CHD: no significant effect on incidence observed, although total cardiovascular disease events were 12% increased in HRT group  
Stroke: increased 39%  
Thromboembolic events: increased 33%  
Cancer: 23% decrease in breast cancer, no significant difference in colon cancer or total cancers  
Fractures: decreased 30-39%                                                                                                                               |
Appendix A: Medical University of Ohio Institutional Review Board Approval

On file (approved June 23, 2005)
Appendix B: Wayne State University Human Investigation Committee Approval

On file (approved April 20, 1005)
Appendix C: Text of Cover Letter for Questionnaire

I am a Physician Assistant student at the Medical College of Ohio in Toledo. I am doing a research study on what women in the Detroit area know about hormone replacement therapy (HRT). The purpose of my study is to determine if women are well informed about the current risks and benefits of using HRT and where they have received their information concerning this topic. The study will also examine women’s opinions regarding HRT, as well as their previous use or current use of HRT. I am inviting you to participate in my study because you are a woman over the age of 18. The results of this study will help health care providers better understand the needs of the women in the Detroit and surrounding areas.

This survey is anonymous, which means that no one will be able to connect you to your responses to the questions. Participation is voluntary, so you do not have to complete the survey. If you decide to fill out the survey, you may leave questions blank. If you fill out the survey and then decide not to participate, you are not required to turn in the survey. There are no foreseeable risks or discomforts associated with completing this questionnaire. You will not be compensated in any way for your participation.

If you decide to participate, complete the 2-page survey stapled to this letter. It should take approximately 10 minutes to complete. After you have completed the survey, please return it to the reception desk and place it in the return box. Next to the return box, there is an educational brochure from the American College of Obstetricians and Gynecologists about HRT. If you have any additional questions about HRT, please consult your health care provider.

If you have any questions regarding this study, please contact me at (419) 346-3250 or my major advisor on this project, Jolene Miller, MLS, at (419) 383-4959.

Thank you for participating in this research study.

Abbey L. Blair, MSBS
Appendix D: Questionnaire

1. What is your age?
   - [ ] 17 and younger
   - [ ] 18-29
   - [ ] 30-39
   - [ ] 40-49
   - [ ] 50-59
   - [ ] 60-69
   - [ ] 70 or older

2. How would you describe your racial makeup?
   - [ ] Caucasian/White
   - [ ] African American/Black
   - [ ] Hispanic/Latina
   - [ ] Native American
   - [ ] Asian/Pacific Islander
   - [ ] Multiracial
   - [ ] Other: __________________________
   - [ ] over $75,000

3. What is the highest level of education you have completed?
   - [ ] less than 8th grade
   - [ ] completed 8th grade
   - [ ] completed high school
   - [ ] some college
   - [ ] completed college
   - [ ] graduate work
   - [ ] other: __________________________

4. What is your estimated annual household income?
   - [ ] less than $15,000
   - [ ] $15,000-$30,000
   - [ ] $30,001-$45,000
   - [ ] $45,001-$60,000
   - [ ] $60,001 - $75,000

5. Which best describes your menstrual status?
   - [ ] I have my period at least 6 months out of the year and DO NOT experience symptoms of menopause (hot flashes, night sweats, mood swings).
   - [ ] I have my period AND experience symptoms of menopause (hot flashes, night sweats, mood swings).
   - [ ] I am postmenopausal (have not had a period in 6-12 months) AND HAVE NOT had a hysterectomy.
   - [ ] I am postmenopausal (have not had a period in 6-12 months) AND HAVE had a hysterectomy.

The questions in this section refer to doctor-prescribed hormone replacement therapy (HRT), NOT natural/herbal remedies.

6. Which of the following best describes the type of hormone replacement therapy (HRT) you have used or are currently using or that you have used in the past year?
   - [ ] Combined estrogen and progestin, such as Prempro
   - [ ] Estrogen only, such as Premarin
   - [ ] Progestin only, such as Provera or Prometrium
   - [ ] I don’t know what kind it is, but the name of it is __________________________________________.
   - [ ] I have never used HRT.

7. Which of the following best describes who prescribed HRT for you? Select only one.
   - [ ] Family doctor
   - [ ] Gynecologist
   - [ ] Internal medicine doctor
   - [ ] Free clinic
   - [ ] I don’t know or can’t remember
   - [ ] Other kind of doctor: __________________________
   - [ ] I have never had a doctor prescribe HRT for me.

8. Which of the following best describes the MOST RECENT CHANGE in your use of HRT within the last 12 months? Select only one.
   - [ ] I started using HRT.
   - [ ] I have changed the type of HRT that I am using.
   - [ ] My dose of HRT has increased.
   - [ ] My dose of HRT has decreased.
   - [ ] I stopped using HRT.
   - [ ] My usage has not changed.
   - [ ] I have never used HRT.
9. Which of the following best describes the reason for the **MOST RECENT CHANGE** in your use of HRT? 
   **Select only one.**
   - [ ] HRT was not controlling my symptoms
   - [ ] I have changed on my own because of research/news.
   - [ ] I talked to my doctor because of the news and together we decided to change my use of HRT.
   - [ ] Other reason: ____________________________
   - [ ] I have not changed my use of HRT.
   - [ ] I have never used HRT.

10. Where do you receive **MOST** of your information about hormone replacement therapy? **Please only check one box.**

   - [ ] Television
   - [ ] Newspapers
   - [ ] Radio
   - [ ] Internet/web sites
   - [ ] Gynecologist
   - [ ] Internal Medicine doctor
   - [ ] Magazines (Ladies Home Journal, Time, Newsweek, etc.)
   - [ ] Medical journals (JAMA, New England Journal of Medicine, etc.)
   - [ ] Friends and family
   - [ ] Family doctor
   - [ ] Drug advertisements/drug company material
   - [ ] Other_______________________________________________

11. Which of the following doctor(s) has discussed HRT use with you? **Check all that apply.**

   - [ ] Family medicine doctor
   - [ ] Gynecologist
   - [ ] Internal medicine doctor
   - [ ] I do not know what type of physician discussed HRT use with me.
   - [ ] I have never had a doctor discuss HRT use with me.
   - [ ] Other_______________________________________________

In the following section please answer the questions to the best of your ability. Please mark only one box for each question.

12. In the past year, do you recall hearing or reading in the news any health risks associated with HRT?  
   - [ ] Yes
   - [ ] No
   - [ ] Don’t know

13. Should HRT be prescribed for the purpose of preventing coronary heart disease?  
   - [ ] Yes
   - [ ] No
   - [ ] Don’t know

14. Does HRT use **decrease** a woman’s risk for developing colon cancer?  
   - [ ] Yes
   - [ ] No
   - [ ] Don’t know

15. Should HRT be prescribed for the purpose to prevent osteoporosis (weakening and brittle bones)?  
   - [ ] Yes
   - [ ] No
   - [ ] Don’t know

16. Does HRT use **increase** a woman’s risk for developing breast cancer?  
   - [ ] Yes
   - [ ] No
   - [ ] Don’t know

17. Does HRT use **increase** the risk of a stroke in women?  
   - [ ] Yes
   - [ ] No
   - [ ] Don’t know

18. Based on current recommendations, which of the following should postmenopausal women who still have a uterus **NOT** be taking:

   - [ ] Estrogen only
   - [ ] Progestin only
   - [ ] Estrogen and progestin combined
   - [ ] I don’t know

Thank you for taking time to complete this survey!
March 30, 2005

Dear Dr. Hanna-Johnson,

I am a Physician Assistant student at the Medical College of Ohio. I am currently working on my scholarly project, in which I am researching what women in the Detroit area know about hormone replacement therapy (HRT). Dr. Russell Blair, a resident physician at your clinic, recommended your clinic as a site at which to gather information from the women in the area. Dr. Blair and myself will be co-investigators for this research project.

The purpose of our study is to understand what women know about the risks and benefits of HRT and where they receive their information. We are going to examine the women’s current and past use of HRT, and whether their socioeconomic status and race influences their decisions. With the results of this research, we hope to educate health care providers about the needs of women in the Detroit area regarding hormone replacement therapy. When the results of the survey have been analyzed, we would be happy to share the results with you and the clinic personnel.

If you think it would be appropriate for the patients at your clinic to participate, we will distribute copies of the survey to the receptionist/clerk at the front desk of the clinic. For a period of approximately three weeks sometime during spring semester 2005, the questionnaire would be distributed and collected in this way: when a woman arrives for her appointment, the receptionist would give her a copy of the cover letter and survey. At this time, the woman may decide whether or not to complete the survey. The anonymous survey is two pages long and should take approximately 10 minutes to complete. There will be an educational brochure about HRT from the American College of Obstetricians and Gynecologists available at the front desk to any woman who would like one, whether or not she completed a survey. We have attached a copy of the survey that we plan to use, so that you may review it. Please note that the Institutional Review Boards (IRB) of the Medical College of Ohio and Wayne State University have not yet approved this survey. It is possible that changes to the contents of the survey may be made after the IRB review process.

We hope that you will consider taking part in this important research. If you have any questions or concerns regarding this study, please feel free to contact us at acarr@mco.edu or (419) 346-3250, rblair@med.wayne.edu, or the project advisor, Jolene Miller, MLS, at jomiller@mco.edu or (419) 383-4959. We would be happy to answer any questions that you may have. We look forward to hearing from you soon.

Sincerely,

Abbey L. Blair, MSBS, PA-S                                   Russell A. Blair, M.D.

I authorize physician assistant student, Abbey Blair, and Russell Blair, Resident in Internal Medicine, to use my clinic as a site to distribute surveys for their research project.

Signature ___________________________________ Date _______________________

Printed name ____________________________________________
Appendix F: Educational Handout on Hormone Replacement Therapy

On file

_Hormone Therapy_. (2003, April) ACOG Patient Education Brochure AP006
Abstract

**Objective.** The purpose of this study was to evaluate whether socioeconomic status and race influence women’s knowledge of HRT. **Methods.** Participants in this research project were patients at a General Internal Medicine Clinic (part of the Detroit Medical Center). The women were given a questionnaire that gathered demographic information, current or past use of HRT, main source of information on HRT, and questions pertaining to their knowledge about HRT. **Results.** Participants were more homogeneous than expected. Demographic information indicated that a majority of the women were African American, of lower socioeconomic status, and peri/postmenopausal. Overall, the women scored poorly on the knowledge portion of the survey. However, no statistically significant difference in knowledge scores between race or income levels were found. **Conclusion.** It is important that health care providers educate all women concerning the risks and benefits of HRT, so they can make informed decisions regarding its use.