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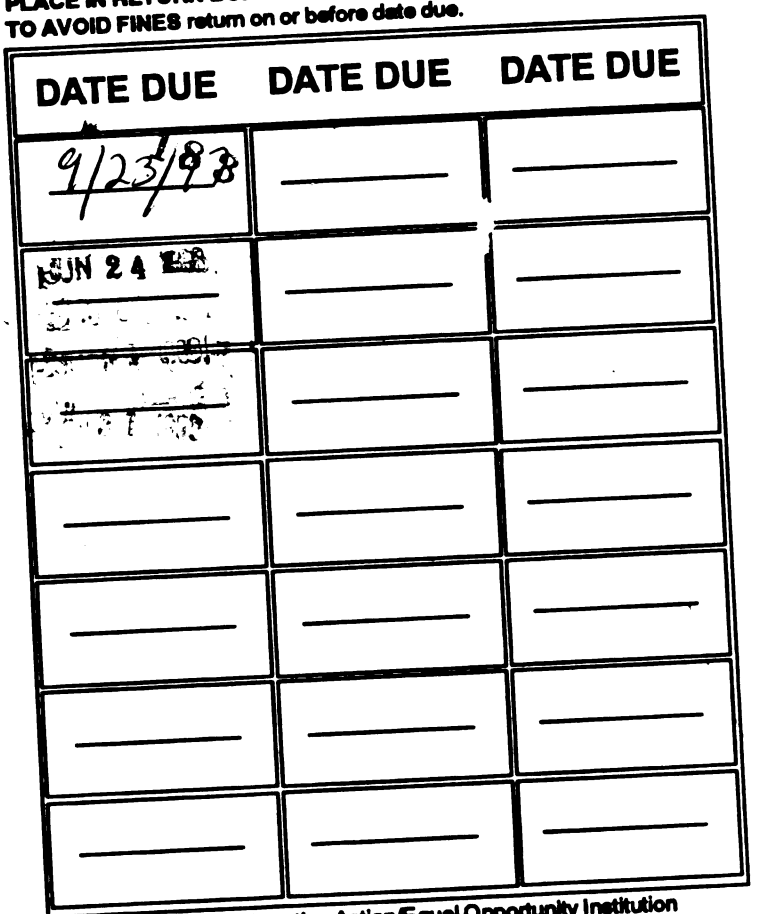

THE RELATIONSHIP BETWEEN WOMEN'S PERCEIVED SUSCEPTIBILITY TO MENOPAUSAL SYMPTOMS, LONG TERM RISKS AND MEDICATION SIDE EFFECTS AND THEIR PERCEIVED CONTROL OVER MENOPAUSAL SYMPTOMS WITH THEIR LIKELIHOOD IN TAKING HORMONE REPLACEMENT THERAPY

By

Nancy Ambs

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ABSTRACT

THE RELATIONSHIP BETWEEN WOMEN'S PERCEIVED SUSCEPTIBILITY TO MENOPAUSAL SYMPTOMS, LONG TERM RISKS AND MEDICATION SIDE EFFECTS AND THEIR PERCEIVED CONTROL OVER MENOPAUSAL SYMPTOMS WITH THEIR LIKELIHOOD IN TAKING HORMONE REPLACEMENT THERAPY

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There are many difficult decisions to make in regards to care during the menopausal experience. Since hormone replacement therapy (HRT) has become available, the decision making process has not been easier for many women. This study utilized a convenience sample of 252 women of menopausal age. Susceptibility to menopausal symptoms, risks of osteoporosis and heart disease, risks of endometrial cancer and the risk of experiencing medication side effects was evaluated with perceived control over menopausal symptoms to determine the relationship to a woman's likelihood in taking HRT. Two categories of susceptibility, menopausal symptoms and risk of osteoporosis showed significance in relation to the likelihood of taking HRT. Control did not contribute to the prediction of the likelihood of taking HRT. Implications for the Advanced Practice Nurse include the use of susceptibility in evaluating decision making at menopause to create a plan of care with clients to meet their specific needs.

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Introduction

Menopause is a normal developmental period of life that is universally experienced by women at the average age of 50 to 51 years, with 90 percent experiencing menstrual variability five to ten years prior to cessation of menstrual flow (McCance & Huether, 1990). The advent of estrogen and estrogen/progesterone have created new choices for health care providers and their menopausal patients with common discomforts of aging no longer accepted as inevitable (Greenwood, 1984). These new choices have led to the question of how and why women decide to choose or not to choose hormone replacement therapy (HRT) during the menopausal experience.

Although 75 to 95 percent of obstetricians/gynecologists claim they would prescribe HRT, only one in four women over fifty has chosen HRT in her plan for care (Spake, 1994). The reasons often stated for women not choosing hormone replacement therapy (HRT) are lack of knowledge of the therapy, concerns about side effects and lack of understanding the benefits (Spake, 1994, Ferguson, et al., 1989). Women have a wide variation is their response to the fluctuation of their bodies' hormone levels experienced prior to menopause (Barbach, 1993). Further complicating these responses to hormone levels is one's genetic history, personal habits (diet, smoking, exercise), and attitudinal differences towards menopause (Barbach, 1993).

Two attitudinal factors that can be examined to further enhance the understanding of decision making in this period are a woman's feeling of susceptibility and her perceived control during menopause.

Susceptibility refers to the person's subjective risks of contracting a condition (Rosenstock, 1974) and has been shown to be a factor in health behavior in previous studies (Hallal, 1982, Yep, 1993). Hallal (1993) found that women who reported a higher level of breast self-exams also had a greater level of perceived susceptibility to disease. When studying monogamy and condom use in young people, Yep (1993) found as perceived susceptibility to HIV exposure increased, there was a greater tendency to become monogamous. During the menopausal experience, women could have feelings of susceptibility to the symptoms that are possible during menopause, the side effects from taking medication (such as HRT) to aid those symptoms or the risks involved in taking medication, such as, development of endometrial cancer. It could also include susceptibility to long-term effects of estrogen reduction such as osteoporosis or cardiovascular changes.

Control refers to a person's beliefs that her/his behavior could or could not affect outcomes. Those with internal control believe that one's health state is a result of her/his behavior. Those with external control believe such things as luck, fate or powerful others determine one's health (Wallston, 1978). A woman's perception of control during menopause may be a factor in her decisions for health, such as choosing HRT. Findings from a broad range of studies have shown levels of control to have clear implications with respect to health (Strickland, 1978). Early studies showed that women who practiced birth control were more likely to be internal (Lundy, 1972, MacDonald, 1970). More recently, Shope et al. (1993) noted that adolescents who had better skills at

refusing alcohol misuse were more internal and Bundek et al. (1993), found in a study of Hispanic women, that increased frequency of doing self breast exams was associated with internal control.

Knowledge of a woman's perceived susceptibility to such concerns as menopausal symptoms, side effects of HRT, and the risks of osteoporosis, heart disease and endometrial cancer, along with the knowledge of her perceived control over menopausal symptoms, would enhance the understanding of the decision making process that occurs during the menopausal experience. With this information, health care providers would be able to assist women in their decisions for care at menopause.

Menopause

The term menopause means the cessation of ovarian function resulting in permanent amenorrhea (Greendale & Judd, 1993). By the year 2010, forty million American women will be at or through menopause (Jovanovic & Levert, 1993). The mean age of menopause for women is fifty to fifty-one years (Olldenhave & Netelenbos, 1994), but there are several years of hormonal changes that take place prior to menopause. When one talks about the menopausal experience, one usually means the myriad of changes that take place in the five to ten years before menopause and the health needs that arise as a result (Notelovitz & Tonnessen, 1993). Starting at approximately age thirty-five, a woman's supply of eggs (ovarian follicles) begins to decline thus shortening the follicular phase of the menstrual cycle. This is evidenced by a change in the regularity and length of the cycles and menstrual flow (Greendale

& Judd, 1993).

The most widely known symptom of menopause is the hot flush (Greendale & Judd, 1993). This is the vasomotor effect (also known as the hot flash) characterized by sudden heat and often sweating by the body which can be accompanied by other symptoms such as heart palpitations, anxiety and chills. This is experienced by 50 to 85 percent of women to some degree (Spake, 1994). The frequency of hot flushes can range from less than daily to three an hour, and are generally noted to occur within a two year period surrounding a woman's final menses (Greendale & Judd, 1993, Spake, 1994). Hot flushes have been shown to be a major factor in decision making for the use of HRT (Rothert et al, 1990). Other symptoms often associated with hot flushes are sleep disturbance, insomnia, irritability and fatigue, all of which can have a profound impact on quality of life (Olenhave & Netelenbos, 1994).

The etiology of the hot flush remains unclear. Speculation includes the loss of ovarian function leading to a decline in the production of estrogen and progesterone. This is followed by the reduction of the hypothalamic feedback system which promotes thermoregulatory instability (Greendale & Judd, 1993).

The tissues most affected by the reduction of estrogen are the ovaries, uterus, vagina, breast and urinary tract (Mazade & Park, 1992). As estrogen levels decrease, the lining of the vagina and urethra become thinner, drier and inelastic resulting in complaints of pain, discomfort and increased incidence of infection (Lark, 1990).

The symptoms as described above, of which many are considered short

term, are one concern, but the long-term effects from a decrease in estrogen may be of greater consequence (Mazade & Park, 1992), especially in regards to mortality. These include the decrease of bone mass and the effect on the cardiovascular system. There is still debate as to the actual cause and effect of these possible long term risks noted in post menopausal women, but more and more evidence relates estrogen decline to the differences in bone mass and cardiovascular changes seen pre and post menopause (Greendale & Judd, 1993).

All women have bone loss at the time of menopause. Estrogen appears to inhibit osteoclasts which break down bone (Spake, 1994). Twenty-five percent of the female population is at risk for developing osteoporosis, which is a loss of bone to the extent that specific parts of the skeleton are so fragile that the susceptibility to fracture is enhanced (Mazade & Park, 1992). Other variables involved in osteoporosis include familial factors, calcium intake and physical activity (Oldenhave & Netelbos, 1994). The main concern with osteoporosis is hip fractures, which have frequently resulted in decreased quality of life with lessened mobility or wheelchair confinement and even death in 10 to 15 percent of women (Cutler & Garcia, 1992).

Another concern among women may be heart disease. Heart disease is the most frequent cause of death for women and men over the age of fifty, and has a worse prognosis for women than for men (Oldenhave & Netelenbos, 1994). A fifty-year-old woman has a four and a half times more chance of developing heart disease than breast cancer. It has been shown that heart

disease and stroke kill over half of all women over fifty, more than all cancers combined (Spake, 1994). The controversy over this issue in relation to menopause involves the fact that most of the research done is observational or with non-controlled studies (Spake, 1994), but there is evidence that estrogen decline does effect levels of lipoprotein which have a direct effect on the risk of heart disease.

Estrogen increases the receptors that inactivate LDL, the negative cholesterol and increases the ability of the body to use HDL, the positive cholesterol, by lowering the enzyme that destroys it (Barback, 1993). As women enter menopause, a gradual decline in estrogen occurs with no evidence of abrupt increases in cardiovascular problems evident (Greendale & Judd, 1993). This is why it is difficult to pinpoint that a decline in estrogen is the key factor in the increase in cardiovascular risk. What is noted is a decrease in cardiovascular disease for many women at risk who have used hormone therapy (Mazade & Park, 1992), thus an association that estrogen may play a part in preventing cardiovascular problems.

Hormone Replacement Therapy

Hormone replacement therapy (HRT) involves the use of estrogen or estrogen/progesterone for management and treatment of menopausal symptoms (Greendale & Judd, 1993) and long term risks such as osteoporosis and heart disease. Since 1937, practitioners have known that estrogen therapy helps prevent such symptoms as hot flushes and vaginal dryness (Mazade & Park, 1992). After a dramatic increase in estrogen use in the 1960s-1970s, a

sharp decline ensued after a 1975 study by Zeil and Finkle indicated that unopposed estrogen increased the risk of endometrial cancer (Mazade & Park, 1993). By the mid-1980s the prescribing of progesterone in addition to estrogen therapy began and was recommended for women who still had an intact uterus (Cutler & Garcia, 1992, Barbach, 1993, Grady, et al, 1992). Progesterone was shown to reduce the risk of endometrial cancer to the standard by decreasing the "hyperplasia" or increased cellular lining of the uterus that occurs when taking unopposed estrogen (Terrell, 1989, te Velde & VanLeusden, 1994).

Research demonstrated that the use of HRT relieves menopausal symptoms such as hot flushes and vaginal dryness, and decreases the risks of osteoporosis and heart disease. Gorsky and colleagues (1994) performed a decision analysis on a hypothetical population of ten thousand menopausal women who had received estrogen at age fifty. They calculated that after five years of hormone use there would be a 6 percent decline in cardiovascular disease and a 1.5 percent decline in hip fractures, while after twenty-five years on hormones there would be 48 percent fewer fatal cardiovascular disease events and 67 percent fewer hip fractures.

Controversy over the use of HRT by women remains due to lack of adequate research and long term studies, especially involving the extended use of HRT for disease prevention (te Velde & VanLeusden, 1994, Grady, et al., 1992, Barbach, 1993, Mazade & Park, 1992). What is unclear are the side effects of long term use, such as risks of cancer, especially breast cancer

(Greendale & Judd, 1993, Spake, 1994, Grady, et al., 1992). Women state that fear of cancer is one of the main reasons they stop taking HRT, with 20 percent no longer taking HRT after nine months (Spake, 1994). Another reason for not using HRT is the concern or actual experience of other side effects such as weight gain, bleeding, mood changes and breast tenderness (Lark, 1990, Rothert et al., 1990, Barbach, 1993).

Other choices for women to reduce the symptoms of the menopausal experience include the use of herbs, vitamins such as C and E, calcium, diet changes, regular exercise and change of personal habits, such as smoking (Lark, 1990, Barbach, 1993, Greenwood, 1984). As with HRT, there is little research reported to substantiate the risks and benefits of these remedies and even less information concerning the efficacy and side effects of these methods.

This leaves women with difficult decisions to make in regards to care during the menopausal experience. Depending on their anticipated or experienced symptoms during the menopausal experience and their knowledge of HRT, there are many paths that could be taken. As seen in a study by Rothert et al. (1990), women are most concerned with the disruption of their lives from hot flushes rather than the consideration of long term morbidity or mortality risks. Many risks versus side effects both short term and long term have to be taken into account. Often this means evaluating the tradeoffs that may have to occur to obtain the best quality of life during and after the menopausal experience.

As part of decision making that occurs during the menopausal experience, the concepts of susceptibility and control can be examined to understand how perceptions can influence the choice for HRT. Although there are numerous studies reporting the use of the concepts susceptibility or control to understand health behaviors, little is known about the added value of combining the concepts susceptibility and control to understanding health behaviors. By examining the relationship of susceptibility and control issues with regards to the choice of HRT, important information can be obtained about women during the menopausal experience and their decisions for care. Information about their perceptions of susceptibility to menopausal symptoms, long term risks such as osteoporosis and heart disease, possible development of endometrial cancer and medication side effects, can give health providers information that could help support or develop health care strategies. Enhanced with the knowledge of women's perceived control during the menopausal experience, health care providers could better understand the components that are involved in order to provide guidance and knowledge about the choices available for women at menopause, and allow for optimal health care decision making.

Research Questions:

The research questions for this study are:

1) How do perceived susceptibility to:
   a. likelihood of experiencing menopausal symptoms,
   b. risk of experiencing osteoporosis,

c. risk of experiencing heart disease,

d. likelihood of experiencing HRT side effects,

e. risk of experiencing endometrial cancer

contribute to the likelihood of taking HRT?

2) Does control contribute over and above susceptibility in understanding the likelihood of taking HRT?

Study Relevance

Advanced Practice Nurses can use the knowledge of a client's perceived susceptibility and control during the menopausal experience to help the client create plans of care based on her needs. Susceptibility information can be used to help expand or redirect the knowledge base that a woman may have. This can include providing facts on the norms of menopause and symptoms, evaluating the possibilities for long term risks such as osteoporosis or heart disease, discussing alternatives to care during the menopausal experience, as well as their possible risks and side effects. A health care provider can assist a client during the menopausal experience by formulating a plan of care with the client based on the client's specific needs. This includes obtaining a complete medical history of the person, current concerns or symptoms, and a discussion of all the risks and benefits regarding care, such as with the use of HRT (Barback,1993, Lark, 19909, Grady,et al, 1992, Notelovitz & Tonnessen, 1993, Jonanovic, 1993, Cutler & Garcia, 1992). Having knowledge about a women's perceptions of susceptibility to short or long term menopausal symptoms, increased postmenopausal risks such as osteoporosis, heart disease or cancer,

or side effects to HRT combined with the understanding of the women's perception of control of menopausal symptoms, can enhance a clinicians's ability to work with a client to create a plan of care based upon the client's individuality.

In evaluating control, the Advanced Practice Nurse can guide the exchange in decision making based on beliefs in internal or external control of reinforcements. This could include enhancing a woman's feeling of her ability to have a positive effect on her outcomes, ie, increasing her internality, or by using her beliefs in external forces to guide her towards a more positive direction of care.

Conceptual Framework

The framework to assess the relationship of perceived susceptibility and perceived control of menopausal women and their likelihood of taking HRT will be based upon two theories, the dimension of susceptibility from the Health Belief Model and the construct of Locus of Control from the Social Learning Theory.

The Health Belief Model (Becker, 1974) was formulated to explain health related behaviors (Champion, 1985). In its earliest form, the model was based upon the fact that in order for an individual to take an action to avoid disease, she/he would have to believe: 1. that she/he was personally susceptible to it, 2. the occurrence of the disease would have at least moderate severity on some component of her/his life, and 3. taking an action would be beneficial by reducing the susceptibility to the condition or if the disease occurred, the

severity, and that it would not impose barriers such as cost, inconvenience, or embarrassment (Rosenstock, 1974). Other factors involved in the model are cues to action, which are needed to instigate the action, and modifying factors such as demographics, which act to condition a person's perceptions of the situation (Rosenstock, 1974).

Individuals were noted to have a great variance in their perceptions of susceptibility, from those who deny any possible susceptibility to illness, to others willing to admit a possible susceptibility and finally those who feel they are in great danger of contracting a condition (Rosenstock, 1974). The factors of perceived susceptibility and severity of a person's condition were believed to have a strong cognitive component in the model and provided the energy or force to take action (Rosenstock, 1974).

This study will focus on the variable of perceived susceptibility of women and their likelihood to take HRT. The use of the dimension of susceptibility from the Health Belief Model will give a good guideline with which to evaluate health behavior that relates to making choices during the menopausal experience. This will be accomplished by examining the categories of susceptibility related to menopausal symptoms such as hot flushes or vaginal dryness, health risks such as osteoporosis or heart disease, the risks and side effects of taking HRT and the risk of developing endometrial cancer reported by women during the menopausal experience.

The second concept used in this study is Locus of Control (LOC). Control was first examined by Rotter (1966) as part of Social Learning Theory,

a theory that attempts to integrate trends in psychology's stimulus response and cognitive theories. Rotter (1966) described a person's performance as the selection of behaviors as opposed to a conditioned reflex. Expectancy was defined as an individual's estimate that a particular reinforcement will occur as the result of the person's behavior in a particular situation. Reinforcement value was described as a preference for any reinforcement to occur if the possibility of its occurring were all equal.

A person is referred to as having a high level of control (internal) when the perception is that a person's own behavior is the contingency of an event. When a reinforcement is perceived to occur as the result of fate, chance, luck or powerful other, then the person is said to be external (Rotter, 1966).

Based on his ideas, Rotter (1966) developed an internal-external (I-E) scale. This was created to measure the extent of internal as opposed to external components that a person exhibits during specific situations. Researchers reported that individuals with internal expectancies were more likely that those with external expectancies to be responsible for their actions (Davis & Davis, 1972). It was also found that internals were better able to gather and process information in regards to problem solving (Ducette & Wolk, 1972).

The next step in the development of control scales was the Health Locus of Control (HLC) scale created by Wallston et al. (1976) to be used more specifically for health behavior. This was followed by the Multidimensional Health Locus of Control Scale (MHLC) (Wallston et al., 1978). This scale went

a step further to differentiate between the levels of external control by testing two levels separately, powerful others and chance, as well as the test for internal LOC. According to this model, persons who had a strong internal locus of control were more likely to engage in a positive health behavior (Wallston et al., 1978).

By examining the perceived susceptibility and control in women during the menopausal experience, a more complete assessment of decision making behavior, such as the taking of HRT, can be achieved. Both the Social Learning Theory and the Health Belief Model share a desire to attain or maintain a positive health state (Rosenstock, 1974), and allow for a more complete review of the factors that comprise the decision for that health state.

It has been shown that the variable of control is often not enough to explain health behavior (Wallston, 1978). By examining the variable of perceived susceptibility and how control relates to susceptibility, it may be possible to better understand the variance in health behaviors during the menopausal experience. Figure 1 presents a possible relationship of susceptibility, control and the likelihood of taking HRT. Susceptibility is depicted as having a direct relationship to the likelihood of taking HRT. Control is depicted as adding to the understanding or prediction, but not directly influencing the decision making process.

Although neither the Health Belief Model nor the Social Learning Theory in its entirety will be used as a guideline for the present study, the concepts of perceived susceptibility and perceived control will be examined for a relationship

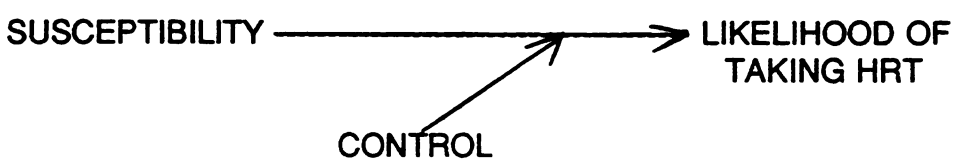

Figure 1. Relationship of susceptibility, control and the likelihood of taking HRT.

in the likelihood of taking HRT. Figure 2 displays hypotheses of the relationship between susceptibility, control and the likelihood of taking HRT. As the literature has shown, high levels of susceptibility and high levels of control are associated with an increase in health behavior and decision making. The choice for HRT is often made due to belief in its ability to alleviate many menopausal symptoms and decrease the risk of osteoporosis and heart disease. This choice for HRT can therefore be interpreted as a positive health behavior. This figure hypothesizes that the levels of susceptibility to menopausal symptoms, medication side effects, long term risks, which include osteoporosis and heart disease, and risk of endometrial cancer relate to the likelihood of taking HRT. As one's level of susceptibility becomes high (H), or low (L), the decision for HRT is expected to be affected. For example, in examining the relationship of the likelihood of taking HRT to susceptibility of symptoms, as susceptibility to the symptoms becomes higher, the likelihood of taking HRT also becomes higher. If the susceptibility to symptoms is perceived as low, the likelihood of taking HRT is predicted to be low.

Obtaining the levels of perceived susceptibility provides the ability to evaluate one important aspect that factors into decision making. During the menopausal experience, this includes such perceptions as menopausal symptoms, long term risks, or medication side effects. In combining susceptibility with the information regarding control, a more complete picture with regards to a woman's health beliefs can be obtained in order to guide her in her decision making process.

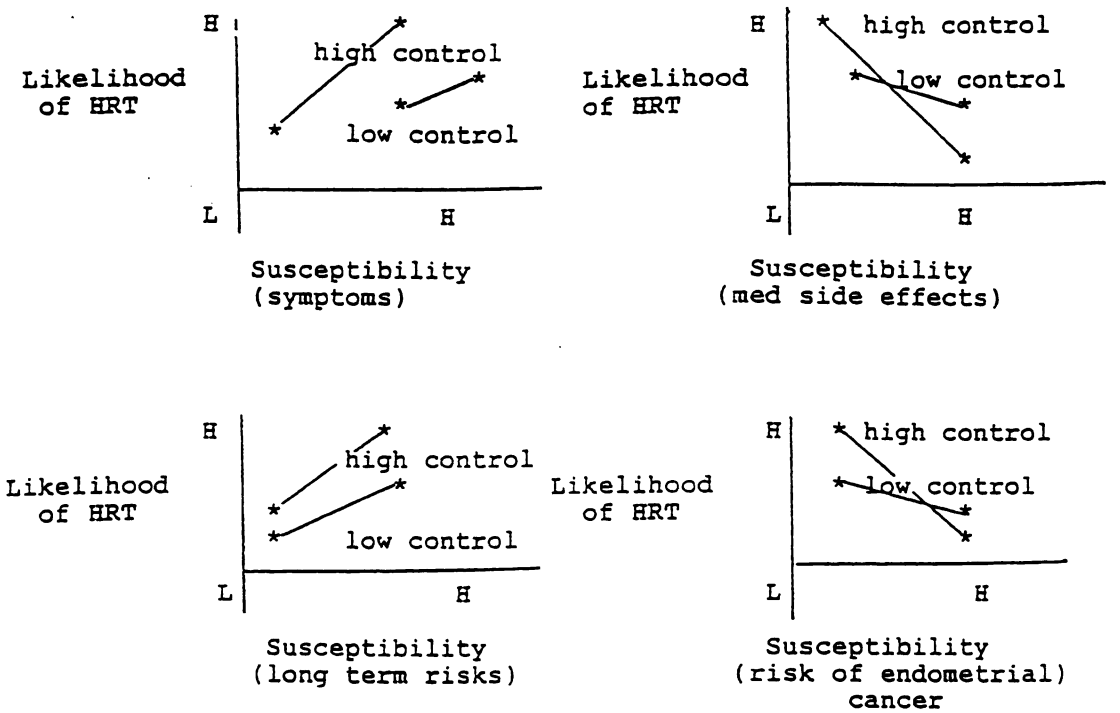

Figure 2. Hypothesized relationship of control, susceptibility and the likelihood of taking HRT.

Conceptual Definition of Variables

Susceptibility

According to Random House Dictionary, to be susceptible is to be accessible or especially liable or subject to some influence, mood or agency. In this study, the term applies to a woman's perception of her likelihood of experiencing the symptoms of menopause (hot flushes or vaginal dryness), the long term risks of experiencing osteoporosis or heart disease, the likelihood of experiencing the side effects of HRT, and the risk of experiencing endometrial cancer.

Control

Control is defined as a woman's belief that her behavior has or does not have an effect on her outcomes. For the purpose of this study, control will be defined as a woman's perceptions as to her ability or lack of ability to affect menopausal symptoms.

Menopause

Menopause is the cessation of menses for one year. For the purposes of this study, the term will include the time period at or about the actual time of menopause and will be referred to as the menopausal experience.

Hormone Replacement Therapy

Hormone replacement therapy (HRT) is the use of estrogen (ERT) alone or estrogen/progesterone in combination (PERT) for menopausal management of symptoms and/or reduction of the risks of osteoporosis or heart disease.

Review of Literature

Although there were many articles using susceptibility, as a variable of the Health Belief Model, and control, there are few articles reporting the use of the two concepts in combination to evaluate health behaviors. Similarly, factors relating decision making and health behaviors during menopause have not been extensively researched.

Literature review for this study will include articles that pertain to the use of susceptibility and control, have included both the Health Belief Model and control in research and those that have used either the Health Belief Model and/or control specifically in relation to menopause.

Susceptibility and Control

Susceptibility

In 1984, Janz and Becker did a review of Health Belief Model (HBM) as a theoretical framework in research from 1974 to 1984. Criteria for inclusion in the review were, 1. was within that time frame, 2. had a behavioral outcome measure, 3. reviewed all four dimensions of the model (susceptibility, severity, barriers and benefits), and 4. was limited to medical conditions. The results were grouped under three headings, 1. preventive health, 2. sick role behaviors and 3. clinic utilization. Their review supported the purpose and usefulness of the HBM in understanding decision making. Statistical significance for the various factors of the Health Belief Model was also provided (by dividing the number of positively significant studies by the total number of studies), with susceptibility displaying a 77 percent ratio.

In terms of health preventive behavior, the factors most often associated were susceptibility, barriers and benefits. This was shown in studies such as the use of vaccination (Larson, et al. 1979), screening programs (Becker et al, 1975) and the use of preventive services (Rundall & Wheeler, 1979). Susceptibility was, in general, shown to be more important in terms of preventive behavior than sick role behavior (Janz & Becker, 1984).

Two more recent articles using the HBM in the context of sexual practices and preventive behavior (Yep, 1993, Gielen et al., 1994), demonstrated a relationship between increased susceptibility and change in behavior. Yep (1993) studied 153 sexually active college students with a mean age of 21. The students filled out a health belief instrument that was adapted from two previous studies at the University of Michigan by Kirscht & Josept in 1989, along with demographics and an assessment on HIV behavior. The author's hypotheses included: 1. the greater the perceived susceptibility to HIV, the more likely the individual will engage in HIV-preventive behaviors, 2. the greater the perceived severity of HIV, the more likely individuals will engage in HIV preventive behavior, 3. the greater the perceived efficacy of HIV preventive behaviors, the more likely individuals will engage in such behaviors and 4. the greater the perceived barriers associated with HIV preventive behaviors, the less likely individuals will engage in such behaviors.

Susceptibility was perceived to be low for the threat of HIV in this group (M=1.89, SD=.81, with 1=lowest susceptibility and 5=highest susceptibility). It was found that as perception of susceptibility went up, there was a greater

tendency of participants to become monogamous, thus, making a decision supporting health (Beta=.61, p<.01). Unfortunately, the use of condoms was not seen to be affected by susceptibility (or any of the factors), which Yep discussed as a multifaceted issue that needed further exploring.

In a study by Gielen et al. (1994) of women and protective sexual behavior, susceptibility was again seen to be a factor in behavior change. A sample of 567 women were evaluated on protective practices, health beliefs, and HIV testing to examine the degree with which efforts were made to protect themselves from AIDS, as well as identify belief structures which may predispose women to take action to protect themselves as opposed to those who are not predisposed. Using odds ratios after a logistic regression analysis of each of the protective behaviors was done, with susceptibility being the most frequent variable listed, susceptibility and barriers were the two variables most associated with protective behaviors. This led Gielen et al. to suggest that perceived personal susceptibility motivates women to try protective behaviors.

In summary, the literature demonstrates that the variable of susceptibility has significant relevance to health behaviors. The more susceptible a person believes she/he is to a negative health state, the more likely they are to act for a positive health behavior. What is lacking from literature is how this relates to women during the menopausal experience. This supports the use of the variable of susceptibility in the context of health care and decision making of women during menopause to aid in further understanding the taking of HRT.

Control

In 1978, Strickland wrote an article reviewing research on control and its relationship to health knowledge, precautionary health practices and reactions to physical and psychological disorders and treatments. At that time the most frequently used instrument was Rotter's I-E scale, but Strickland noted that research had been done by other scales including the Multidimensional Health Locus of Control (MHLC) scale by Wallston et al. (1978).

Citing articles on various health practices such as overweight treatment (Wallston et al., 1976), cigarette smoking (Coan, 1973, Williams, 1973) and use of inoculation for influenza (Dabbs & Krischt, 1971), Strickland (1978) stated that, "With some exceptions, the bulk of the reported research on I-E and precautionary practices lends credence to the expected theoretical assumptions that individuals who hold internal opposed to external expectancies are more likely to assume responsibility for their health." Furthermore, that internals try to maintain their physical health and protect themselves against accidents and disease much more than those who are external.

Strickland noted that very little research was available linking I-E beliefs to specific physical illness, but felt that control is related to reactions to the disorder and the struggle to recover, with questions as to whether the internal versus external expectancies are more adaptive.

Concerning psychological aspects and I-E beliefs, Strickland found a variance in reports. While there was a relationship between external control and psychopathology, it was not true of many maladaptive persons, such as

substance abusers. With regards to treatment, internal expectancies can facilitate adaptive responses, but it is the congruence of LOC and the structure of the therapy that gives the most thorough changes.

Overall, Strickland (1978) found that the dimensions of the I-E scale and beliefs about LOC were an influence to health. An important finding from this review was that change in behavior can be enhanced by aligning one's beliefs in expectancies to specific situations. An external individual would respond more to outside influence, while an internal individual would do better if allowed to be more independent in decision making. This leads to practical implications for health care providers when techniques are used to tailor individual expectancies.

Wallston et al. (1976) published a study concerning LOC, health value and health information seeking. College students participated in two studies, with a different sample population in each group (study 1, n=88, study 2, n=97). The goal of the study was to show how the Social Learning Theory provides a framework for studying the relationship of differences in information-seeking with preventive health care. This was evaluated by examining LOC and outcome value (in this case, outcome=health). The hypothesis was that a person who is internal and values health will seek information more than a person who does not value health or who holds external beliefs. Instruments used were the Health Locus of Control (HLC) scale, an 11 item, six-point Likert scale, value survey, ranking of ten items from 1-11, least important to most important and questions aimed at rating knowledge of hypertension.

Results of the study supported the hypothesis by its authors that health related information-seeking was related to internal LOC and high value of health ($F=3.92$. $df=1,80$, $p< .05$ in study 1, $F=4.55, df=1.89, p< .04$ in study 2).

Wallston (1992) in an updated article on LOC using MHLC, suggested a modification of the theory and inclusion of other variables, such as health value and competency. He explained that internal health locus of control was a necessary, but not sufficient condition for engaging in proper health behavior, and should be used as perceived control.

Locus of Control has been found to be related to preventive health behavior, but has not been clearly proven to have a role in decision making. As research points to the direction that internal control beliefs guide persons to be more responsible for health, more evaluation needs to be done to find if there is an association with internal beliefs and decisions for health care. The suggestion that control alone is not a strong enough factor for engaging in health behavior further supports the present research that will study the relationship of control with another variable, susceptibility.

Health Belief Model and Locus of Control

Three articles were reported the use of both the Health Belief Model and control as frameworks for their research. Two involved women and the practice of cancer screening (such as self breast exam) while the other evaluated management of hypertension.

In Hallal's (1992) study, 207 women completed the Health Beliefs instrument, developed by Stillman in 1977, which included questions pertaining

to susceptibility, the MHLC scale, the Tennessee Self Concept scale, developed by Fitts in 1965 and a questionnaire about the practice of self breast exam (SBE). The purpose of the study was to obtain information regarding personality characteristics and self-attitudes to be able to formulate teaching strategies for SBE. Three hypotheses were formulated: 1: health belief scores will be higher of those who practice SBE reflected by greater perceived susceptibility and greater perceived benefits than the scores of those who do not practice SBE, 2. health locus of control scores of those who practice SBE will reflect a high degree of internality than those who do not practice SBE, and 3. self-concept scores of those who practice SBE will be higher, reflected by higher self-concept levels, than those self-concept scores of those who do not practice SBE.

Using a point biserial correlation between subscales and the practice of SBE, susceptibility was found to be significant at the $p<.05$ level and account for 2.2 percent of the variance. Internal and chance locus of control showed no significance. In a stepwise regression model, the total P, the measure of overall self-esteem, was the best predictor of the practice of SBE, followed by perceived benefits, than a negative correlation with powerful others.

Two of the three hypotheses were accepted, with the overall significance of practicing SBE and obtaining higher scores in health scores supported. Hallal suggested that the fact that internality was not demonstrated, even though the sample scored higher on the internal subscale than chance or powerful others, could be due to the fact that the practice of SBE may not be

viewed as an important behavior in promoting a specific outcome.

Overall, Hallal felt that all elements of the frameworks employed were significant in the study and could be used to develop education programs to promote SBE. Most of all, Hallal stated that the elements used in the study could also be useful in other nursing research.

The second research article (Murray & McMillan, 1993), reported using the HBM and control to study the predictive behavior of women (n=757) from Northern Ireland, involving cancer screening practices (SBE and cervical smear). The researchers used four instruments: 1. cancer screening behavior, which analyzed frequency of SBE and cervical screening, 2. health beliefs, a 22-item questionnaire designed from previous research to measure the four main dimensions of susceptibility, severity, benefits and barriers, as well as health motivation, cancer knowledge, confidence and contact with cancer, 3. locus of control using the MHLC scale, and 4. emotional control, which used a 21-item scale developed by Watson & Greer (1983) to measure the extent to which the person expresses or controls anger, depressed mood or anxiety. The hypotheses were that cancer screening behavior would be predicted positively by beliefs in susceptibility to cancer, perceived seriousness of cancer, beliefs in the benefits of cancer treatment, belief in internal LOC, and low control of emotions, and negatively in beliefs about barriers to treatment and the role of powerful others.

The highest predictors of SBE frequency were health motivation, knowledge of cervical cancer and low belief of powerful others. This is

congruent with Hallal's 1992 study. Those who were more likely to obtain cervical smears were knowledgeable about breast cancer and reported less barriers.

Susceptibility and internality demonstrated no significance in this study by correlation or multiple regression analyses, with either SBE or cervical smears, although the authors stated that based on their analyses, health beliefs and LOC were important predictors of behavior. No explanations were offered by the authors for the inability to accept much of the hypothesis.

Abraham and Williams (1991) used the HBM to examine perceptions and management of persons with hypertension. With a sample of 275 elderly people with hypertension, the researchers tested the adequacy of the HBM as well as locus of control, knowledge about hypertension and intention to participate in treatment. The instrument used was created by the researchers by adopting the original HBM with items specific to hypertension. Using factor analysis, six factors were found that reflected decision making with regards to care and management of hypertension. The six factors included susceptibility, health locus of control, understanding of hypertension, use of health services, inference of illness and likelihood of disease-related complications. The researchers concluded that patients need to process information, use cognitive skills to analyze this information and use these inferences to guide them in behavioral responses to their illness and management. Abraham and Williams believed that a decision making rather than a belief perspective was supported in this study.

In summary, the variables of susceptibility and control have very limited research to substantiate or negate their role in evaluating health behavior. The research by Hallal (1992) and Murray and McMillan (1993) that used both the HBM and control as study frameworks had similar findings. Neither showed a significant relationship between control or susceptibility and health behavior. This may be in part due to the subject matter, cancer screening. Cancer, having such a powerful effect on people in general, could alter perceptions of one's ability to change outcomes. Practices such as SBE could be viewed as limited and would alter the sense of control. Fear of cancer could also produce denial of susceptibility, which could effect true perceptions. This supports the need to evaluate susceptibility and control with other issues such as menopause and the decision for HRT. Although there remains a debate as to whether menopause should be considered an illness, or a natural process (Logothetis, 1991), decision making was found to correlate to the variables of susceptibility and control when related to an illness and warrants further study to determine its relevance to menopause.

Menopause, Control and Susceptibility

In reviewing the literature on menopause and the variables of susceptibility and control, four articles were found, three which examined control issues and menopause, and one that used the HBM to evaluate decisions about estrogen therapy during menopause. Of the four articles, three were doctoral dissertations, of which two were published and one was a master's thesis.

In a sample of one hundred postmenopausal women, Lind (1984) studied the relationship of control using Rotter's (1966) I-E scale, and the use of estrogen, with the report of menopausal symptoms. Data was analyzed to determine internal and external components and users and non-users of estrogen. After creating four groups, internal users, internal non-users, external users and external non-users, Lind further examined each group according to their rating of menopausal symptoms. Lind found no significant relationship between control and whether or not a woman chose estrogen (x^2=.001, p>.05). Control was related to reported menopausal symptoms, with high external subjects reporting more symptoms than high internal subjects. The conclusion Lind drew was that control does have an influence on women and their reaction to and experiences of menopause, but not specifically to the choice of estrogen. Lind (1984) reported that the factors leading to estrogen use were complex and not with the realm of that study.

Kroll (1989) studied the relationship of perceived control as it related to expectations and behaviors at menopause with the stated purpose to use the information for creating an intervention program for women. A sample of 271 women 45 to 55 years of age and not currently on estrogen therapy participated. The control scale instrument was part of a perception of menopause instrument developed by Rothert et al. (1986). Items were scored using a Likert scale with 1 indicating less internal control and 5 indicating greater internal control. The Cronbach alpha for the scale was .6580.

In analyzing the data related to control and the demographic

characteristics, Kroll found no significant relevance between control ($p>.05$) and marital status, employment status or income. There was also no significant relationship between control and the number of reported management strategies or religion. A small to moderate relationship was found between control and several other variables studied, such as symptom severity and menopausal status.

Of meaning to the present study was that Kroll found a weak correlation of perceived control and the likelihood of taking estrogen therapy ($r=.1271$, $p<.05$), although it was felt that the relationship was partly due to the component of knowledge. Conclusions from this study included the need to look beyond control for understanding factors that influence women at menopause, but a need for sensitivity to the control issue, especially as it related to knowledge and symptoms during menopause (Kroll, 1989).

Duffy (1988) studied the relationship of health locus of control, self-esteem and health status to health promotion during menopause. Data from 262 women were collected using the MHLC scale, the Rosenburg self-esteem scale, and questionnaires on health perceptions from Ware, 1976 and health-promoting lifestyles from Walker et al., 1987.

Results of the analyses of the first three instruments using stepwise regression showed chance health locus of control entering first ($r^2=.13$), followed by self-esteem, current health and health worry/concern, post high school education and internal health locus of control ($r^2=.01$). A canonical correlation analysis was then used to examine the top six variables from the

regression analyses with variables from the health promotion lifestyle scale. This showed that subjects who scored high on self-esteem, internal LOC, and low on chance LOC had high self-actualization scores, nutrition, exercise and interpersonal support subscales. A second analysis showed that the women older in age, with high health concern scores who reported low chance LOC scores, had high scores on health responsibility, nutrition and stress management health promotion subscales. Conclusions drawn from this study suggested that individual perceptions of health locus of control, self-esteem and health status influence health promotion behavior.

Logothetis (1991) studied beliefs about menopause and decision making process regarding estrogen replacement therapy (ERT) in a sample of 252 women. The instrument used was a two part questionnaire composed of scales to measure the components of the HBM (susceptibility, severity, barriers and benefits), as well as those that concern the philosophical orientation to menopause (POM). The hypothesis was that there would be differences between those who use ERT and those who do not use ERT in relation to the components of the HBM and POM, when the level of menopausal distress was controlled.

Results indicated that current users of ERT had significantly stronger perceptions of susceptibility to menopausal problems than non-users. Overall, the reported feeling of susceptibility and seriousness to the menopausal problems were low (F=1.18, 3.09, respectively) which Logothetis stated was contrary to finding from literature. The greatest factor demonstrated for use of

ERT were the benefits, barriers factors (F=47.40). Of question is the scale used to test the susceptibility aspect for this study. The instrument was constructed by its author and used seven questions to determine susceptibility. The example of two questions given in the article gives credence to some possible ambiguity in terms of susceptibility:

I don't believe I will have trouble with menopause.

My health status makes having problems with menopause likely.

Neither of the representative samples is clear as to what susceptibility is. What does the author mean by "trouble" or "problems?" Unless more specificity is evident in the remaining questions as to what the women are actually susceptible to, such as the hot flushes or osteoporosis, it is unclear as to the interpretation of susceptibility.

In summary, the review on menopause and the factors of control and susceptibility offers some support for a relationship, but reflects need for more evaluation. This is especially true in terms of evaluating decision making during menopause and the use of HRT. No current literature has reported the study of the relationship of the combination of susceptibility and control with the use of hormone replacement therapy during the menopausal experience. Overall, the review of literature pertaining to the variables of susceptibility and control has shown that both have relevance to health care behavior. What is evident is the need for further evaluation of these variables in the context of decision making

during the menopausal experience. The purpose of this study, therefore, will be to determine the relationship of the categories of perceived susceptibility and perceived control to a woman's decision regarding the likelihood of taking HRT.

Method

Study Design

This research will be secondary analysis of quantitative data collected from a "Decision Making in Menopause Study" (Rothert et al., 1990). This research is a correlational study to look at the relationship of the variables susceptibility, control and the likelihood of taking HRT. The frameworks of the Health Belief Model or Social Learning Theory will not be tested, but the specific variables of susceptibility and control will be examined for their relationship in the likelihood of taking HRT.

Sample

The study participants were a non-probability convenience sample of 252 women. Recruitment was done by television, radio and newspaper advertisements in a Michigan city and surrounding community. The women were age forty years or over, with the majority being Caucasian (94.4%), married (66%), with higher education (80%, >12 years education) and higher income levels (56% earning $50,000 or more /year) than the general population. There was no exclusion based on past menopausal history, current menopausal experiences, or the use of medication.

Measurement Instruments and Operational Variable Definition

From the 121 item questionnaire, questions related to susceptibility, control and the likelihood of taking HRT were used for this study. All three measures were based on extensive literature review (Rothert et al, 1990). The instruments have been pilot tested and used in the larger study the Decision Support Intervention (Rothert et al., 1990).

Control

The variable control is defined by a score obtained from nine questions related to the feelings or beliefs about abilities to do something about menopausal symptoms. These questions measured the subject's feelings of high of low levels of control over various menopausal symptoms that can occur during the menopausal experience. A five point Likert scale was used. The respondents had to choose from 1. strongly agree, to 5. strongly disagree in each of the nine questions. The original scale was developed for research by Rothert et al. (1990), and tested with a coefficient alpha of .66. It was revised for the next study, Decision Support Intervention (Rothert et al., 1990) to increase its reliability and retested with a coefficient alpha of .79.

Susceptibility

The variable susceptibility is defined by the individual score on five items relating to a subject's feeling about menopausal symptoms, long term risks such as osteoporosis and heart disease, side effects of HRT and risk of endometrial cancer. Susceptibility was originally evaluated based on such models as Subjective Expected Utility (SEU) model (Edwards, 1961), Fear

Communicating Theory (Leventhal, 1970) and Protection Motivation Theory (Rogers, 1975). All three of these models try to explain the effect of a health threat.

Edwards (1961) introduced the Subjective Expected Utility Model. According to the model, an individual's decision will depend upon, 1. an individuals' utility and 2. a person's subjective probability that the outcome will occur if current action is continued, or if she/he adopts a recommended action.

Leventhal (1970) studied the theory of fear communication, which proposes that fear acts as a drive to motivate the search for a response that will reduce it. Constructs of the model include: 1. Fear appeal-a persuasive message that attempts to scare people into compliance, 2. Perceived susceptibility-an individuals's belief about her/his chances of experiencing the threat, 3. Perceived Self-Efficacy-an individual's beliefs about the effectiveness of the message's recommendations in deterring the threat. Fear appeal, as an outcome variable, may influence an individual positively, negatively or have no influence at all.

Rogers (1975) introduced the Protection Motivation Theory, which included three components of fear appeal, magnitude of events, probability of events, efficacy of response, and added a cognitive mediating process. The mediating process formed the protection motivation and effected the outcome by affecting attitude changes and adoption of recommended responses.

Susceptibility is defined as an individual's belief in experiencing a great according to Leventhal (1970), and a cognitive mediating process based on

expectancy of exposure, according to Rogers (1975). From these works, the original researchers developed susceptibility questions pertaining to women and the menopausal experience. An example being: On a scale of 1 to 100 percent, how likely do you think you are to get heart disease? This was further divided into ten sections each divided by 10 percent (example: section 1=rating of 10 percent or less, section 2=rating of 10 to 20 percent). The susceptibility measure was not created to be a "scale", but to determine categories of susceptibility based upon each question individually. Due to this individuality, there has been no testing of reliability. For the purposes of this study, the individual questions pertaining to susceptibility will continue to be evaluated separately to enhance the knowledge about different categories of susceptibility that each one can provide. No scale will be created to combine all categories of susceptibility. The questions themselves, due to their distinct wording, do offer face validity.

Likelihood of HRT

The variable concerning the likelihood of taking HRT will be measured by two questions, one concerning the use of estrogen alone, and one concerning the use of the combination of estrogen and progesterone. Using a five-point Likert scale, the women were asked to respond to each question from 1. very certain that you would not take hormone therapy to 5. very certain that you would take hormone therapy. Each question will be examined as to the relationship to the categories of susceptibility and to control.

Data Collection

Participants completed written questionnaires after researchers described the purpose of the study and gave instructions concerning the instruments. Informed consent was also obtained at this time. Data collections for this study of 252 women were collected during Time 1 of the primary investigation. The women were randomly assigned to three groups at this first gathering, but only the data collected at Time 1 prior to any intervention were used for the purposes of this study.

Data Analysis

Data were collected form the previously described sample and instruments. Using the SPSS for windows program, analysis of the data was done using descriptive statistics to determine the categories of perceived susceptibility, level of perceived control and the likelihood of taking HRT in the sample of women.

To determine the relationship between the categories of perceived susceptibility and HRT, multiple regression was employed. The response to each question concerning susceptibility was entered as the independent variable and either the likelihood of taking estrogen replacement therapy (ERT) or estrogen/progesterone therapy (PERT) was entered as the dependent variable. To examine the relationship of control to susceptibility and the likelihood of taking HRT, a hierarchal regression was used. Either ERT or PERT was entered as the dependent variable, with one of the categories of susceptibility entered as the first independent variable, then control entered next

as an independent variable.

Human Subjects Protection

The project was approved by the University Committee on Researach Involving Human Subjects (UCHRIS). Protection of the rights and welfare of the human subjects was done by adhering to the protocal and reporting the data in the aggregate.

RESULTS

Study Sample Description

The sample used in this research was a convenience sample of 252 women forty years of age or older. Characteristics of age, race, religion, marital status, employment and income level were collected. Information on current menopause status, medication use and health history items such as hysterectomy, cancer, fractures and heart disease was also obtained, although these variables were not used for selection of the sample.

The majority of women were Caucasian (94%, n=237), married (66%, n=166), and employed (62.3%, n=157). The age of the subjects ranged from 40 to 65, with the largest group being between the ages of 46 to 50 (46%, n=115). More than half of the sample had greater than twelve years of education (80%, n=226) and had a income level of >$50.000 (56%, n=141). Of the 252 women, more than half reported having regular menstrual periods, and only thirty-six had a hysterectomy, with twenty-five women reporting removal of one or both ovaries. Half of the women reported that they were currently experiencing menopausal symptoms, while one quarter of the women could not

be sure if they were having menopausal symptoms. In addition, the majority of women (59%) reported that they had minor to moderate menstrual problems, with 25 percent reporting no problems and 16 percent reporting severe to very severe menstrual problems. Finally in regards to health history, 94 percent of the women reported no history of cancer, 99.9 percent had no history of fracture and 96.4 percent reported no history of heart disease.

Analysis by Research Question

Question 1

The first question this research asks is: how does perceived susceptibility contribute to the likelihood of taking HRT?

Analysis was done using multiple regression with both the likelihood of taking estrogen (ERT) or estrogen/progesterone (PERT) as the dependent variable. Each category of susceptibility to menopausal symptoms, osteoporosis, heart disease, medication side effects and endometrial cancer were entered separately as the independent variable.

Regardless of the dependent variable used, ERT or PERT, the data showed similar results for each category of the independent variable of susceptibility. Only two of the categories, perceived susceptibility to menopausal symptoms and perceived susceptibility to the risk of experiencing osteoporosis were significantly related to the likelihood of taking ERT or PERT. Menopause symptoms was the most significant factor (Table 1, Step 1). Risk of osteoporosis was the next most significant factor in the likelihood of taking HRT, displaying a smaller amount of significance. The categories of heart

Table 1

Hierarchical Regression of PERT & ERT on Susceptibility and Control

Step 1 Susceptibility	PERT	ERT
Menopausal Symptoms	R^2=.048, F=12.42*	R^2=.073, F=19.38*
Osteoporosis	R^2=.036, F=9.27*	R^2=.046, F=11.85*
Medication Side Effects	R^2=.017, F=4.32**	R^2=.000, F=00.01**
Heart Disease	R^2=.007, F=1.67**	R^2=.002, F=00.66**
Endometrial Cancer	R^2=.000, F=0.04**	R^2=.000, F=00.00**

Step 2 Control	PERT	ERT
Menopausal Symptoms	R^2=.052, F=6.77**	R^2=.073, F=9.70**
Osteoporosis	R^2=.039, F=5.00**	R^2=.047, F=6.60**
Medication Side Effects	R^2=.018, F=2.26**	R^2=.001, F=0.19**
Heart Disease	R^2=.011, F=1.42**	R^2=.033, F=0.39**
Endometrial Cancer	R^2=.022, F-0.33**	R^2=.011, F=0.19**

*=p<.05. **=NS (not significant)

disease, HRT side effects and endometrial cancer showed no significance to the likelihood of taking HRT.

In summary, perceived susceptibility to menopausal symptoms and to the risk of osteoporosis are significant in contributing to the likelihood of taking HRT. Perceived susceptibility to heart disease, medication side effects and endometrial cancer were not significant enough to show a contribution to the likelihood of taking HRT.

Question 2

The second question this research asks is: Does control contribute over and above susceptibility in understanding the likelihood of taking HRT?

Hierarchical regression was used with ERT and PERT as the dependent variables. The categories of susceptibility were entered separately as the first independent variable and the variable control then entered as the second independent variable. Regardless of the dependent variable used, ERT or PERT, control showed no significance in relation to any of the categories of susceptibility in understanding the likelihood of taking HRT (Table 1, Step 2). This was further demonstrated by a non-significant correlation between control and the variables of susceptibility and HRT (Table 2).

In summary, there was no significant relationship between the level of control and the categories of susceptibility in determining the likelihood of taking HRT.

Table 2

Intercorrelation between control and PERT, ERT and the categories of susceptibility

Variable	P/E	Con	S1	S2	S3	S4	S5	
PERT	1.00	-.05	.22	.19	-.13	.08	.01	n=244
CONTROL	-.05	1.00	.03	-.03	.17	.11	.08	
SUS 1	.22	.03	*	*	*	*	*	
SUS 2	.19	-.03	*	*	*	*	*	
SUS 3	-.13	.17	*	*	*	*	*	
SUS 4	.08	.11	*	*	*	*	*	
SUS 5	.01	.08	*	*	*	*	*	
ERT	1.00	.03	.21	.22	-.01	.05	.00	n=246
CONTROL	.03	1.00	.04	-.02	.17	.11	.08	
SUS 1	.30	.04	*	*	*	*	*	
SUS 2	.22	-.02	*	*	*	*	*	
SUS 3	-.01	.17	*	*	*	*	*	
SUS 4	.05	.11	*	*	*	*	*	
SUS 5	.00	.08	*	*	*	*	*	

Note.
PERT (P)=likelihood of taking progesterone/estrogen therapy
ERT (E)=likelihood of taking estrogen replacement therapy
Con=Control of menopausal symptoms
sus 1 (S1)=susceptibility to menopausal symptoms
sus 2 (S2)=susceptibility to osteoporosis
sus 3 (S3)=susceptibility to medication side effects
sus 4 (S4)=susceptibility to heart disease
sus 5 (S5)=susceptibility to endometrial cancer
* not tested

DISCUSSION

An overview of the results of this study along with a discussion of the relevance to the research questions will be presented. This will be followed by an evaluation of the framework used in this study, implication for use of the research by Advanced Practice Nurses (APN), limitations of the current research and ideas for future research.

As this study utilized a convenience sample or non-probability sampling technique, the characteristics of the sample can be considered unique and therefore only be generalized to the population with similar characteristics.

Susceptibility

It has been shown with previous research, that susceptibility is a factor in health behavior (Janz and Becker, 1984, Yep, 1993, Hallal, 1993, Gielen, 1994). What was not clear was how susceptibility related to menopause and the decision for HRT.

According to the current research, susceptibility may be examined in multiple categories. The one review of susceptibility and menopause (Logothetis, 1991) showed a very small to no significance in susceptibility when developed as a scale in relation to perceptions of menopausal problems. The current research showed that two categories of susceptibility, menopausal symptoms and osteoporosis were significant for the likelihood of taking HRT, while the categories of heart disease, medication side effects and endometrial cancer were not significant. This indicates that susceptibility to several factors may influence the likelihood of taking HRT. The differences in susceptibility may

be due in part to knowledge or value disparity on such subjects as medication side effects, or the degree to which the risk of heart disease if effected at menopause. Another factor in the different responses may be due to the fact that many women do not view most menopausal events as threatening (Logothetis, 1991), so that their feelings of susceptibility will not be evident upon screening. The fact that menopausal symptoms showed the most significance in this research supports the previous research by Rothert, et al. (1990) which reported that women were most concerned with factors that currently disrupted their lives. The small level of significance with osteoporosis and the likelihood of taking HRT may be indicative of an intense education of women in general concerning the risk of osteoporosis during the late 1980's. The relationship of the concepts of susceptibility and its relationship to the likelihood of taking HRT (Figure 1) cannot be discarded, but needs to be more specific with regards to the categories of susceptibility.

Control

Although research has indicated the high levels of control contribute to health behavior (Strickland, 1978, Wallston et al., 1976, Bundek et al., 1993), research on menopause issues and control was not supportive of a relationship (Duffy, 1988, Kroll, 1989. Lind, 1984). The current research showed that the sample of 252 women reported a higher perceived control over menopausal symptoms than the general population (Figure 3, mean=2.236, S.D.=.53 with 1=higher control and 5=lower control). This added no significance to any of the categories of susceptibility in the likelihood of taking HRT. The hypothesized

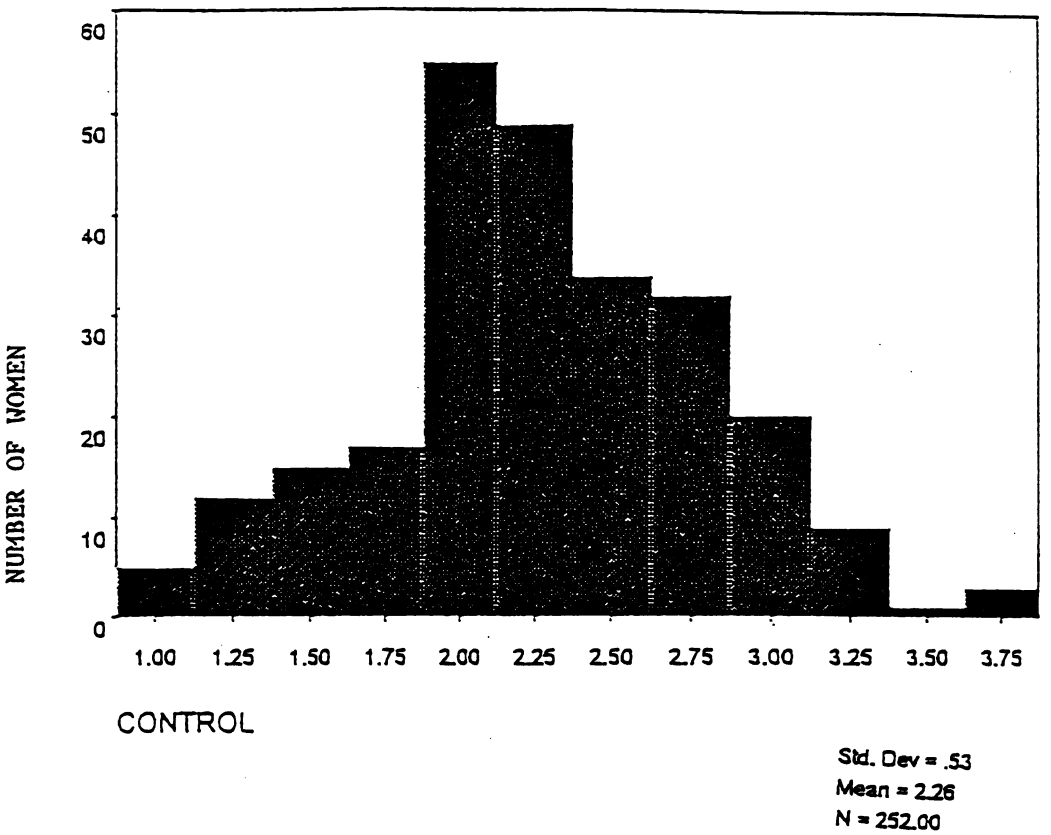

Figure 3. Frequency distribution of control scores

relationship between control and susceptibility (Figures 1 and 2) and the likelihood of taking HRT were not supported by the current study.

This does not mean that health care providers should disregard the effects of their client's locus of control upon health behavior. The current study only shows that control did not add to the understanding of the likelihood of taking HRT. As mentioned previously, the fact that menopause may not be interpreted as a threatening situation, once again may play a role in how a woman's control contributes to the likelihood of taking HRT. The use of HRT may not be viewed as a positive action (Rotter, 1975) to achieve a desired outcome. This may be due to the many trade offs that need to be taken into account with the decision for HRT, such as the risk of side effects to the medication or increased risk of cancer.

In summary, while two categories of susceptibility showed significance in the likelihood of taking HRT, the addition of control into the equation did not contribute to the understanding of the decision making process. This study was not able to the support the proposed relationship between susceptibility, control and the likelihood of taking HRT (Figures 1 and 2). The use of the dimensions of susceptibility from the Health Belief Model and the construct of control from the Social Learning Theory provided a useful framework with which to study these variables, but the current study shows that the choice of HRT is a more complex process that cannot be evaluated solely with the variables of susceptibility and control.

Implications for the Advanced Practice Nurse

As forty million American women will be experiencing menopause by the year 2010 (Javanovic & Kevert, 1993), it will be most important for the Advanced Practice Nurse (APN) to be aware of the factors that are involved in decision making during this time. In primary care, the APN acts a gatekeeper to health care. This gives the APN the responsibility for health promotion, illness prevention and continuity of care. In using the knowledge from this research to enhance the base of knowledge brought into practice, the APN can work with clients to create a plan of care that best fits the client's needs during the menopausal experience.

This study has indicated that women do feel susceptible to menopausal symptoms and osteoporosis to the point of considering the use of HRT. As a client advocate, it will be very important for the APN to evaluate a client's feelings of susceptibility to all concerns at menopause in order to determine the needs for assistance in decision making. As it is unclear as to why the different categories of susceptibility encourage action, the role of educator is needed to broaden the client's knowledge of changes that occur at menopause, the norms of the menopausal experience and the risks that can occur with estrogen decline. As an assessor, the APN must identify family history and personal history to evaluate current risk levels for menopausal problems, than as a clinician use this information to assist the client to formulate a plan of care based upon her specific wants and needs.

Beyond the confines of the office, the APN can use the knowledge from research to assist in the education of the community. In order to expand others knowledge of the menopausal experiences and help others understand the complexity of decision making during this time, the APN can share her/his expertise through seminars, articles or direct consultation with the public or other health care workers.

Limitations of the Study

The limitations of this study can be connected to the homogeneity of the sample and the measurement tools. As the sample represented a fairly non-diverse group of women, it would be difficult to generalize the research findings to any other group of women except those with the same general characteristics.

As this was a secondary analysis, time produced a limitation due to the fact that information in the health field changes rapidly. At the time of the original study, more concern was placed upon such items as endometrial cancer and osteoporosis. Currently, the issues for women during the menopausal experience have more of an emphasis on heart disease and breast cancer.

Finally, the limitations of one of the tools must be considered. Only two questions were asked to obtain the information on the likelihood of taking HRT. Possibly a more thorough assessment of the reason why or why not to choose HRT would have given more complete data to relate to susceptibility and control.

Recommendations for Future Research

The purpose of this study was to look at specific variables pertaining to decision making during menopause and describe the results to encourage an increased understanding of the menopausal experience. Building on this study, more information is needed regarding decision making during menopause.

Future research could include evaluating the relationship between knowledge and susceptibility during the menopausal experience. This information could help explain if such things as low perceived susceptibility is related to lack of knowledge about the course and sequela during menopause, or if high perceived susceptibility is due to knowledge or personal history.

Research of women who choose HRT could be studied using all the factors of the Health Belief Model: susceptibility, severity, benefits and barriers, to evaluate if the model contributes to understanding the decision for taking HRT. As the decision making process for HRT has been shown to be complex, a more thorough assessment could possibly be made by evaluating more than just susceptibility and control. This would add to the knowledge for health care workers who are assisting clients with decision making at menopause.

Future research could include the examination of the levels of control related to menopausal symptoms and how this may or may not relate to the level of susceptibility to menopausal symptoms. Current research has shown no relationship to control and susceptibility, but a closer examination specifically looking at menopausal symptoms may clarify this lack of relationship.

Finally, more long term research could be initiated that evaluated the decisions for care during the menopausal experience and then at a later time re-evaluated the various decisions and the resulting outcomes. As health care is moving towards more accountability by outcomes, this could give valuable information to health care providers. Formation of positive interventions during the menopausal experience could be produced to help guide women in their decision making.

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APPENDICES

APPENDIX A

Research Team

Marilyn Rothert, R.N., PhD., F.A.A.N.	Primary Investigator
College of Nursing	
Geri Talarczyk, R.N., EdD.	Co-investigator
College of Nursing	
Georgia Padonu, R.N., DrPH.	Co-investigator
College of Nursing	
David Rovner, M.D.	Co-investigator
College of Human Medicine	
Margaret Holmes-Rovner	Co-investigator
College of Human Medicine	
Neal Schmitt, PhD.	Co-investigator
College of Social Science	
Jill Kroll, PhD.	Co-investigator
Research Associate	

APPENDIX B

Measure for HRT

Check your answer sheet. You should now be filling in row number 22

22. Please indicate your experience with birth control pills by choosing one of the following responses:

1 = I am currently taking birth control pills.
2 = I have never taken birth control pills.
3 = I have taken birth pills in the past but discontinued them because I experienced side effects from them.
4 = I have taken birth control pills in the past but discontinued them because I no longer needed them for birth control.
5 = I have taken birth control pills in the past but discontinued them for reasons not listed above.

23. Do you believe that your experience with birth control pills would be similar to or different than your experience with hormone replacement thearpy?

1 = Very different
2 = Different
3 = Neither different nor similar
4 = Similar
5 = Very similar
6 = Not applicable, I have never taken birth control pills.

Please use the following scale to answer questions 24 and 25 below.

1 = Very certain that you would not take hormone therapy.
2 = Probably would not take hormone therapy.
3 = May or may not take hormone therapy.
4 = Probably would take hormone therapy.
5 = Very certain that you would take hormone therapy.

24. How likely are you to take estrogen replacement therapy?

25. How likely are you to take estrogen/progestogen combined therapy?

APPENDIX B

Measure for Susceptibility

Check your answer sheet. You should now be filling in row number 26

26. On a scale of less than 1% to 100%, how likely DO YOU THINK YOU are to get menopausal symptoms bothersome enough to seek medical attention?

_____

27. On a scale of less than 1% to 100%, how likely DO YOU THINK YOU are to get a fracture due to osteoporosis?

_____

28. On a scale of less than 1% to 100%, how likely DO YOU THINK YOU are to get heart disease?

_____

29. On a scale of less than 1% to 100%, how likely DO YOU THINK YOU are to get cancer of the uterus?

_____

30. On a scale of less than 1% to 100%, how likely DO YOU THINK YOU are to get side effects from hormone replacement therapy?

_____

[illegible]
October 27, 1992

APPENDIX B

Measure for Control

Check your answer sheet. You should now be filling in row 40

Some of you will have not experienced menopause yet, and some of you are experiencing menopause now. We are interested in finding out what your perceptions are about menopause regardless of whether or not you are experiencing menopause. In the questions that follow, please circle the response that most represents HOW YOU FEEL about each statement. There are no right or wrong answers.

Use the following scale to answer questions 40-48.

1 = Strongly Agree
2 = Agree
3 = Neither Agree nor Disagree
4 = Disagree
5 = Strongly Disagree

CONTROL SCALE

40. Menopause symptoms that I might have can be helped.

41. There are things I can do to feel good during the menopause other than going to a health care provider.

42. There is little that an individual can do to control the symptoms of menopause.

43. I believe that I can control menopausal symptoms.

44. Special diets and foods may help control some of the symptoms of menopause.

45. Menopause is something I just have to put up with.

46. Understanding the symptoms of menopause helps me control the effects of menopause.

47. Women can do much to control the symptoms of menopause.

48. Women can do very little on their own to control the symptoms of menopause.

[illegible]
October 27, 1992

APPENDIX C

UCHRIS Approval

MICHIGAN STATE
UNIVERSITY

March 30, 1995

TO: Nancy Ambs
27031 CR 364
Mattawan, MI. 49071

RE: IRB#: 95-163
TITLE: THE RELATIONSHIP BETWEEN PERCEIVED SUSCEPTIBILITY TO MENOPAUSAL SYMPTOMS, LONG TERM RISKS AND MEDICATION SIDE EFFECTS WITH A WOMAN'S PERCEIVED CONTROL OVER MENOPAUSAL SYMPTOMS AND HER LIKELIHOOD IN CHOOSING HRT
REVISION REQUESTED: N/A
CATEGORY: 1-E
APPROVAL DATE: 03/29/95

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 including any revision 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)336-1171.

Sincerely,

David E. Wright, Ph.D
UCRIHS Chair

DEW:pjm

cc: Marilyn Rothert

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