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The Relationship Between Knowledge of Menopause and Perception of Menopause

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THE RELATIONSHIP BETWEEN KNOWLEDGE OF MENOPAUSE AND PERCEPTION OF MENOPAUSE

By

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ABSTRACT

THE RELATIONSHIP BETWEEN KNOWLEDGE OF MENOPAUSE AND PERCEPTION OF MENOPAUSE

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This study was undertaken to determine whether knowledge of menopause is associated with perception of menopause. From a volunteer group of peri-menopausal women (N=300), data from ninety-four pre-menopausal women were used in a secondary analysis. Perception of menopause was measured using a nine item, Likert-type scale (α=.86). Knowledge of menopause was assessed using 24 multiple choice items covering: physiology, risk factor changes, common symptoms and their treatments, and the pros and cons of hormone replacement therapy (HRT). Pearson's *r* was used to determine the relationship between knowledge and perception of menopause. A small positive correlation was found between a favorable perception of menopause and both overall knowledge (r=.247, p=.016), and the pros and cons of HRT (r=.265, p=.010). No significant correlation was found between perception of menopause and any other category of knowledge. These results indicate that pre-menopausal women should be provided with information about menopause, including the pros and cons of HRT.

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THE RELATIONSHIP BETWEEN KNOWLEDGE OF MENOPAUSE AND PERCEPTION OF MENOPAUSE

Introduction

In the first decade of the 21st century, more than 21 million women will become menopausal according to statistics from the US Department of Commerce, Bureau of the Census (1989). Although the term *menopause* is used widely to refer to the loss of reproductive capacity, it most accurately refers to a single physiological event, the last menstrual period (Fishbein, 1992). In the absence of pregnancy or disease, a period of one year without spontaneous bleeding usually denotes that menopause has occurred (Harper, 1991). Perimenopause encompasses the transitional time when changes due to altered hormone levels occur, and may be divided into three phases: the climacteric, which is the 8-10 years before the last menstrual period, menopause, which marks the last menstrual period, and post-menopause, which begins one year after menopause and is characterized by the signs of estrogen decline (Fishbein, 1992).

It is believed that a woman's view of her menopause experience is largely her perception of the physical, social, and psychological changes she undergoes (Engel, 1987). Perception is an overarching concept that encompasses attitudes, feelings, and beliefs (Abraham, Llewellyn-Jones, & Perz, 1995; Fishbein & Ajzen, 1975) which develop from the accumulation and interpretation of information, or knowledge, a person has received about an event from various sources. These sources would include both formal and informal sources of knowledge about menopause.

In a six year prospective study (N=167), Avis and McKinlay (1991) found that attitudes prior to menopause were strongly related to subsequent symptom reporting during menopause. This suggests that a woman's pre-menopausal perception of menopause is important in determining her actual experience during the peri-and post-menopausal periods. This view is supported by cross-cultural research. For example, in some cultures, age is respected and prestige increases with age. In these cultures, menopause is viewed as a transition to higher status (Li, Carlson, Snyder, & Holm, 1995). However, in the North American culture, the entire menopausal process has historically been regarded as a negative experience, and is often accompanied by ambivalent feelings about the changes which occur (Jones, 1994). Anxiety and negative attitudes concerning menopause result in menopause being blamed for events and situations unrelated to menopause (Greer, 1992). For example, while irritability, depression, emotional lability, and palpitations are frequently attributed to menopause (Bernhard & Sheppard, 1993), only sweating and hot flushing have been shown to actually correlate with decreasing levels of estrogen (Hunter, 1990). Notably, these vasomotor symptoms are rarely experienced among women in China, where age is revered (Haines, Rong, Chung, & Leung, 1995). Although Beyene (1986) cautions that factors such as variations in environment, diet, fertility patterns, and genetic differences need also be considered as possible reasons for cross-cultural differences, the importance of social and cultural factors has received empirical support in these and other studies (Avis & McKinlay, 1995; Avis & McKinlay, 1991; Huerta, Mena, Malacara, & Diaz-de-Leon, 1995; Standing & Glazer, 1992).

In summary, the experience of menopause is, in part, dependent on a woman's perception of menopause. It is important, therefore, to identify factors which the Advanced Practice Nurse can influence in order to help a woman form a maximally favorable perception of menopause. Only a few of these factors have been identified. One of the most important goals of the Advanced Practice Nurse is to plan care for the individual which promotes health, and allows the individual to achieve his or her maximum potential. Knowing how to foster a more positive perception of menopause would be a valuable tool in achieving this goal. If an association can be shown to exist between the level of menopausal knowledge and the favorableness of perception of menopause, then providing timely and appropriate teaching to the pre-menopausal woman could promote a more positive menopausal experience.

Literature Review

A review of literature clarifies what is meant by *perception* and *knowledge* of menopause. It also reveals the effects of a woman's perception of menopause, and factors found to correlate with this perception. Insight into the relationship between perception of menopause and knowledge of menopause can be gained from studies of other health-related concepts.

Conceptual Definitions

Perception is a broad term which encompasses several concepts. Guralnik (1980) defines perception as a specific idea, concept or impression formed by perceiving. Abraham et al. (1995) imply that perceptions include both feelings and attitudes. Fishbein and Ajzen (1975) define attitude as a person's feeling toward, and evaluation of, an

event which is determined by his or her beliefs about, and expectations of, that event. These beliefs represent information that a person has accumulated from various sources, including sociocultural definitions, and include the expectation that a specific relationship exists between that event and some other event or feeling. For the purposes of this paper, *perception of menopause* will be defined as the idea, concept or impression of menopause as evidenced by feelings toward menopause, and the expectations of the experience of menopause. *Knowledge of menopause* will be defined as the knowledge of facts relating to menopause.

Effects of Perception of Menopause

In addition to the Avis and McKinlay study previously described, there have been several recently published studies, in the United States and internationally, which help to establish that a pre-menopausal woman's perception of menopause does help determine her later experience of menopause. In a study of 222 women, pre-menopausal attitude toward menopause was found to be associated with menopausal symptoms in women (Huerta et al., 1995). Women who agreed more with statements describing the advantages of menopause (as opposed to its disadvantages) had higher scores in their level of well-being (N=274, r=-.25) (Groeneveld, Bareman, Barentsen, Dokter, & Hoes, 1993). A similar finding was reported by Dennerstein, Smith, and Morse (1994) in a study of 2000 randomly selected Australian women in which a positive attitude toward menopause was moderately correlated with high overall well-being and low negative affect. A key, ten year longitudinal study, in which 60 women were followed from pre- to post-menopause, found that the expected menopausal symptoms and their severity cited

by women significantly predicted the type and severity of the menopausal symptoms experienced, with Pearson correlation coefficients from .45 to .58) (Abraham et al., 1995). So, evidence supports that a pre-menopausal woman's perception of menopause does help determine her later experience of menopause.

Factors Contributing to Perception of Menopause

Studies have found a number of variables to be associated with the perception of menopause. Avis and McKinlay (1991) found education and psychological health to be highly related to attitudes towards menopause (N=1935). The same researchers later determined that feelings toward menopause were significantly related to menopausal status (N=2572) (Avis & McKinlay, 1995). Menopausal status, age, physical health, menopausal symptoms, and ease and number of people with whom the woman could talk about menopause, are five variables found to correlate with menopausal attitude in a study (N=287) done by Theisen, Mansfield, Seery, and Voda (1995). Specifically, premenopausal women were found to have more negative attitudes towards menopause than peri-menopausal or post-menopausal women. They also found that age, degree of health, and number of people with whom women could talk were positively related to attitude (r's=.20, .23, and .11), while the number and severity of menopausal symptoms were negatively related to attitude (r=-.15). Race and socio-economic status has also been related to perception of menopause. A study of 66 low-income African-American women found they had significantly more positive attitudes toward menopause than white, middle class women (Standing & Glazer, 1992), with means on the Bowles Menopausal Attitude Scale (Bowles, 1986) as much as ten points higher than Bowles' original sample. Among Mexican

American women (N=130), Bell (1995) found that perception of menopause was negatively correlated to acculturation (r=-.20), and positively correlated to self-esteem (r=.19). Knowledge of menopause has not been studied for its contribution to the formation of a woman's perceptions of menopause.

These studies indicate that a more positive perception of menopause is linked to a more positive experience of menopause. They also indicate menopausal status and symptoms, age, physical and psychological health, social support, race, socio-economic status, and education to be factors related to perception of menopause. Of these identified factors, menopausal symptoms, psychologic and physical health, and quality of the support system are alterable by interventions in the primary care setting. It is important to determine other factors which are related to a woman's perception of menopause and which can be influenced by the APN.

Knowledge of Menopause

Very little research has been done on the topic of knowledge of menopause. A classic study of 167 women aged 40 to 50 years and published by LaRocco & Polit in 1980 concluded that younger women, employed women, and women with higher levels of education all scored higher in knowledge of menopause. A decade later Dickson (1990) explored the languages of discourses about menopause in order to explore the "interrelation between the knowledge in the scientific discourses and the knowledge in the everyday discourses of midlife women" (p. 21) regarding menopause. Her findings challenged the scientific and medical communities to acknowledge cultural and

historical context and not to minimize the "truths" as experienced by midlife women in regard to menopause.

Inferring Relationship From Studies

Knowledge of menopause has not yet been explored for any connection to perception of menopause, but there are studies from which we may infer this relationship. More positive perception of menopause has been strongly linked to higher level of education (N=1935) (Avis & McKinlay, 1991), and higher levels of education have been linked to higher levels of knowledge of menopause (LaRocco & Polit, 1980). This may suggest that knowledge of menopause is positively correlated to perception of menopause. In a similar vein, a study by Berman (1991) found that nurse practitioners (N=74) had a significantly more positive perception of menopause than other women (N=271). This difference persisted when results were adjusted for age. While Berman did not specifically link menopausal knowledge with this outcome, one may presume that a Nurse Practitioner's knowledge would, on the whole, be more extensive than other women's, again suggesting a positive correlation. Kroll (1989) determined that women (N=269) who scored higher in menopausal knowledge perceived more internal control over menopausal symptoms (r=.24). If we hypothesize that more perceived control over menopausal symptoms is correlated with more favorable perception, then knowledge may also correlate with perception. These studies seem to indicate that higher levels of knowledge may correlate with more favorable perception of menopause.

Relationship of Knowledge to Perception of Other Phenomena

While no studies have been done on the relationship between knowledge and perception of menopause, a number of studies have

been carried out on other concepts. These studies indicate that a higher level of knowledge can be correlated with more positive perceptions of a health-related phenomena. In one study, an increase in knowledge of nutrition among 60 college-age athletes was accompanied by an increase in favorableness of attitude toward nutrition (Collison, Kuczmarski, & Vickery, 1996). Similarly, several studies have shown that the level of knowledge of AIDS significantly affects one's attitude toward AIDS, with greater knowledge moderately correlated with a more positive attitude (Bowman, Brown, & Eason, 1994; Gershon, et al., 1994; Leasure, McKenney, & Merrill, 1995). Among senior occupational therapy students, more positive attitudes toward geriatric sexuality accompanied an increase of knowledge of this topic (Goldstein-Lohman, & Aitken, 1995). Given these studies, a similar relationship between knowledge and perception of menopause may be considered, but evidence was deemed insufficient to so postulate.

Purpose of the Study

In light of these studies, it can be concluded that the relationship between knowledge of menopause and perception of menopause has been unexplored. Therefore, the purpose of this study is to answer the following questions: Is there a relationship between a pre-menopausal woman's overall level of knowledge of menopause and her perception of menopause? Is there a relationship between perception of menopause and the level of knowledge about a) physiology of menopause, b) risk factor changes post menopause, c) menopausal symptoms and treatment, or d) the pros and cons of HRT?

Theoretical Framework

Imogene King's conceptual framework will be used to help illustrate the relationship between the concepts of interest in this study, namely perception of menopause and knowledge of menopause.

King's Theory.

King's theory draws from systems theory and identifies three specific systems as integral: personal systems, interpersonal systems, and social systems. Each system possesses permeable boundaries which allow for the exchange of matter, energy, and information between levels. These systems are continuously and dynamically interacting (see Figure 1).

The personal system describes individuals in which the fundamental concept is perception (King, 1971). King defines perception as "each individual's representation or image of reality; an awareness of objects, persons, and events" (1971, p. 22). It is the means by which individuals experience direct contact with the environment, and involves a transaction between the human and the event, person or object being perceived (King, 1971). Individuals differ in "what they select to enter their perceptual milieu" since the "perceptual tools, sensory and intellectual, vary from person to person" (King, 1971, p. 94). An individual's perception is determined by psychological, sociocultural, and physiological factors (King, 1971, p.96). These factors would include such things as past experiences, self-concept, biological inheritance, socioeconomic status, and educational background.

Interpersonal systems describe groups in which a basic concept is interpersonal relations (King, 1971). King defines interpersonal relation as the "interaction of two or more individuals in the existential moments in time for some purpose or goal" (1971, p. 23), and involves action, reaction,

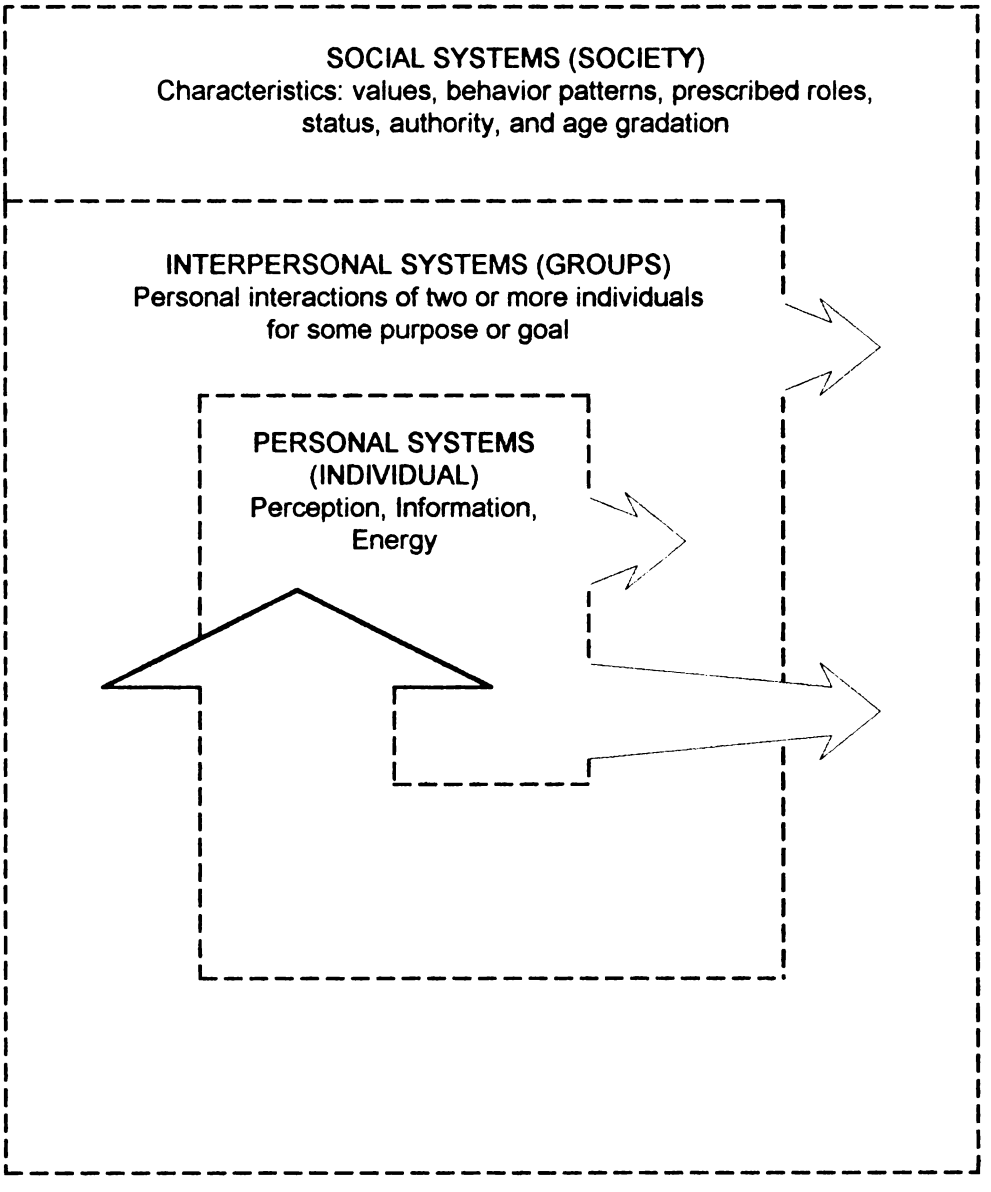


Figure 1. King's Dynamic Interacting Systems (Adapted from King, 1971, p. 20).

interaction and transaction to achieve mutually set goals. It is in this system that nursing primarily occurs (King, 1981), the goal of which is "to help individuals maintain their health so they can function in their roles" (King, 1981, pp. 4-5). The scope of nursing includes the "physical, emotional, social, and intellectual state and capacity of individuals and groups" and occurs through "dynamic interacting processes" (King, 1971, p. 21). It is by means of these interacting processes that nurses assist individuals to "meet their basic needs in performing activities of daily living and to cope with health and illness at some particular point in the life cycle" (King, 1971, p. 89). An important concept of interpersonal relations is communication. Communication, both verbal and non-verbal, involves the perception of those involved and an "interchange of thoughts and opinions among individuals, and is a means whereby social interaction and learning take place" (King, 1981, p. 62).

The individual functions in social systems through interpersonal relationships (King, 1971). It is through these interpersonal relationships that "individuals form groups to maintain life and health" (King, 1971, p. 25). Within this system, "social forces are in constant motion" (King, 1971, p. 51), and "influence social behavior, interactions, perceptions, and health" (King, 1981, p. 113). Certain characteristics are found in all social systems and are derived from, as well as influence, the individual. These characteristics include values, behavior patterns, prescribed roles, status, authority and age gradation (King, 1971).

The environment is conceived of as an open system with permeable boundaries permitting an exchange of matter, energy, and information with human beings (King, 1981, p.69). King makes reference to the internal and external environment of human beings (1981). Internal

environment would include biophysical and psychological factors. Some external environmental factors would be food, clothing, and social forces. Nurses "control environmental factors" by removing restrictions, providing information and by increasing the individual's abilities (King, 1971, p. 89).

King identifies three fundamental health needs: 1) usable health information at a time when it is needed and can be used, 2) preventive care, and 3) care when ill (1971, p.83). She defines health as "dynamic life experiences of a human being which implies continuous adjustment to stressors in the internal and external environment through optimum use of one's resources to achieve maximum potential for daily living" (King, 1981, p.5). She goes on to say that health encompasses the physical, emotional, and social aspects of the individual, and "relates to the way in which an individual deals with the stresses of growth and development while functioning within the cultural pattern in which he was born and to which he attempts to conform" (King, 1971, p. 67).

King's theory applied.

The concepts addressed in this study may be viewed through King's theoretical framework (see Figure 2). The perception of menopause is the individual's representation or image of menopause and lies within the personal system. This perception is shaped by past and present interactions within the personal system, with the interpersonal system, and with the social system. Factors which determine perception are categorized by King as physiological, psychologic, and sociocultural factors. Some identified physiological factors are menopausal status, age, health, and menopausal symptoms. An identified psychologic factor is psychological health. Sociocultural factors would be the individual's education, race, socio-economic status, and the number of

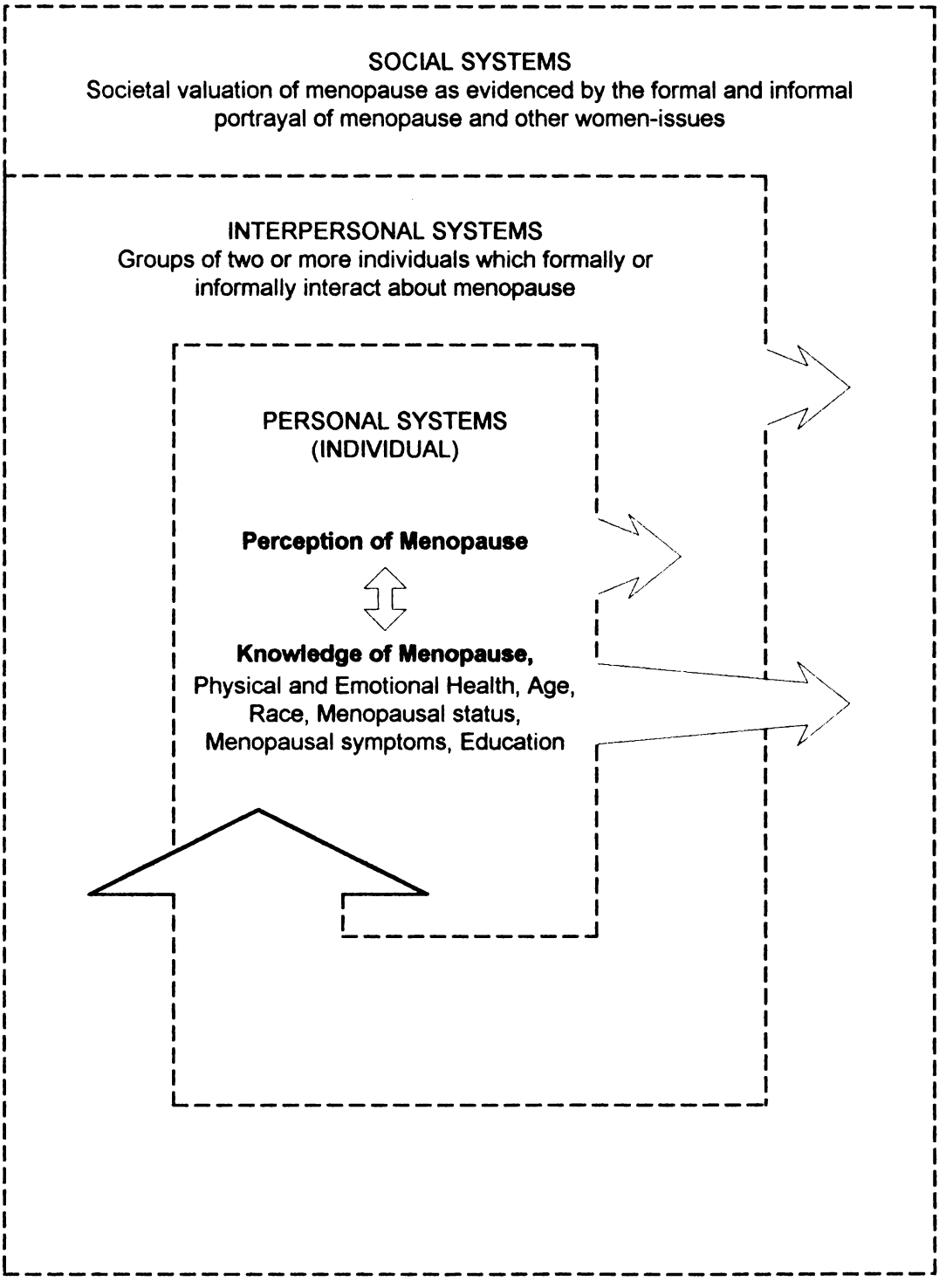


Figure 2. Relationship Between Knowledge and Perception of Menopause within King's Framework (Adapted from King, 1971, p. 20).

individuals with whom a woman can talk about menopause and quality of this support system. An individual's perception of menopause is dynamic in that new information is constantly being received from the environment (both internal and external).

According to King's framework, knowledge of menopause is the product of a lifetime of interacting with the environment. Some knowledge is gained formally, for example, through classes on biology and human sexuality or from articles on menopause. Other knowledge is informally attained, or even inferred. Sources may include "old wives' tales" an individual has heard about menopause, what she infers from the actions of menopausal or post-menopausal women, or the portrayal of women in the media.

If a woman's perception of menopause partially determines her experience, then fostering the development of a positive perception of menopause is important to primary care. While all three of the fundamental health needs as delineated by King (provision of usable health information, preventive care, and care when ill) are addressed by the advanced practice nurse in primary care, the first, provision of usable health information at the appropriate time, has traditionally been a priority for the nursing community. Proactive care spares the client unnecessary adverse experiences, and may be more cost-effective in the long run. If providing usable information about menopause can be shown to contribute to a woman's perception of menopause, then the APN can easily provide cost-effective and proactive care. By helping the individual to deal with the stresses of growth and development during this transition in her life, the APN does indeed have the health of the woman as a goal.

The results of this study will provide information on how the advanced practice nurse can most suitably modify environmental factors in order to promote a maximally positive perception of menopause. Specifically, this will help to identify which, if any, types of information about menopause correlate most strongly with a favorable perception of menopause. This can be provided through an interpersonal system whereby each individual, nurse and client, act, react, interact and transact to exchange information and attain goals.

Methods

The Original Study

The present study is based on secondary data analysis. The purpose of the original study (Rothert et al, 1997) was to design an educational intervention to aid women in becoming more effective in decision-making regarding menopause and hormone replacement therapy (HRT). Three hundred women, age 40-65, were recruited for the study from a medium sized midwestern university community through the print and television media.

The goal of the intervention was to communicate information about menopause and HRT, and to assist women to make informed decisions, consistent with their values, based on this information. The study tested three interventions: 1) written information only, 2) guided discussion format, and 3) high involvement format. Information was comparable in each intervention. Participants received an explanation of the study, and signed consent forms initially. Data were collected from subjects prior to any intervention (T1), post intervention (T2), six months later (T3), and twelve months later (T4). Data were collected in a multiple choice format on health history, socio-demographic characteristics, knowledge of

menopause, satisfaction with health care provider, satisfaction with decision, decisional conflict, health care self-efficacy, perceptions of menopause, perceived control related to menopause, self-report of menopausal symptoms, and symptom management strategies used. Instruments were administered in all areas at T1 except satisfaction with decision and decisional conflict.

Each subject signed a consent form before participation in any of the interventions. The consent form described the nature of the study, time frame, and expectations. Participants were free to withdraw from the study at any time without penalty. Each participant was assigned a code number which was used, rather than names, to identify subjects throughout the study. All data were released in aggregate form only.

Research Design

The design of the present study was a cross-sectional, correlational analysis for the purpose of determining: 1) the relationship between the level of knowledge of menopause and perception of menopause, and 2) the relationship between the type of menopausal knowledge possessed and perception of menopause in pre-menopausal women. Data were drawn for this study from the data collected at T1 only.

The Sample

Three hundred women attended session I, and 58% (N= 174) of these were still having natural periods unrelated to hormone therapy, and 41% (N=123) of the women either were symptomless or unsure of whether or not they had experienced symptoms of menopause. Since both menopausal status, and the number and severity of menopausal symptoms have been shown to correlate to perceptions of menopause,

pre-menopausal, non-symptomatic women were selected from this group for the sample. There were 94 women who fell into this sub-group.

Instruments/Reliability and Validity

Socio-demographic data such as age, race, marital status, and household income were determined from study questions #1-7 (See appendix A). Pre-menopausal women were selected as those who responded to question #9 by stating that they "still have natural periods". Women who are asymptomatic were determined by a response to question #11 of "No, (I) have never experienced menopausal symptoms" or "(I am) not sure" (whether or not I have experienced menopausal symptoms). Although it would have been preferable to exclude those who were unsure of their symptomatology, this would have reduced the sample size. It was felt that having a larger sample would be more advantageous than excluding the "unsure" group. Both of these factors (menopausal status and menopausal symptoms) have been determined to impact menopausal attitude (Theisen et al., 1995).

The Knowledge Of Menopause Scale (Rothert et al., 1997) (see appendix B) covers the most common facts about menopausal physiology, risk factor changes post menopause, common symptoms of menopause and their treatments, and the pros and cons of hormone replacement therapy. Content validity is verifiable from several recent sources (Bond, 1991; Crosignani et al., 1994; Freeman, 1991; Lichtman & Papera, 1991; and Matthews et al., 1997). It was administered to 300 women between the ages of 40 and 65 years. The women were mostly white, middle-class and well educated. Cronbach alpha reliability for this scale was found to be .85.

The Menopause as Problem Scale (see appendix C) consists of nine questions with responses forming a five point Likert-type scale from 1="Strongly Agree" to 5="Strongly Disagree", and broadly samples some of the perceptions that a woman might have about menopause and the problems that she perceives will accompany it. It determines, for example, whether she believes that menopause will be "unpleasant" or "disturbing" for her, or whether she expects to experience "physical trouble", "emotional trouble", being "more tired than usual", or "mood changes" during menopause. Content is almost identical to the scale used by Kroll (1989), and covers much of the same territory as Dennerstein et al. (1994). Cronbach alpha reliability for this scale was found to be .86.

Operational Definition of Terms

level of knowledge of menopause: The knowledge of facts relating to menopause as measured by the total number of items answered correctly on the Knowledge of Menopause Scale (Items # 68-91 of the original questionnaire).

type of knowledge of menopause: Categories of knowledge of menopause possessed by participants; specifically about menopausal physiology (Items # 68, 69, 71, 74, 85, 86), risk factor changes post menopause (Items # 70, 72, 76, 84, 89, 90, 91), common symptoms of menopause and their treatments (Items # 73, 75, 78, 82, 83), and the pros and cons of hormone replacement therapy (Items # 77, 79, 80, 81, 87, 88). The number of correct responses in each category indicate the level of each type of knowledge of menopause.

perception of menopause: A woman's idea, concept, or impression of menopause as evidenced by her feelings toward menopause, and

her expectations of the experience of menopause. Perception of menopause will be determined by summing the scores for items #31-39 (using the inverse of #35). Higher scores indicate a more favorable perception of menopause.

Protection of Human Subjects

The researcher had access to data identified only by subject numbers. Data is released in aggregate form only.

Results

Sample

In order to describe the sample, descriptive statistics were computed for the sample demographic data, including age, race, marital and employment status, household income, educational level, and religious preference. The subjects of this study were predominantly white (N=89), Christian (N=68), married or divorced (N=87), and between the ages of 40 and 50 (N=91). Most were employed at least part time (N=84) and eight-four percent (N=80) identified family incomes of $30,000 or more per year (Median=$50-99 thousand). Ninety-eight percent (N=92) of these women were high school graduates, with more than half (N=55) having obtained a Bachelor's degree or higher.

Findings

Measures of central tendency and dispersion, such as the mean and standard deviation, were used to describe sample averages for the favorableness of perception of menopause, the level of menopausal knowledge, and type of knowledge of menopause.

The data were analyzed to determine the nature and degree of significance of the relationships between the pertinent variables. Pearson's *r*, which may be used with ordinal, interval, or ratio data (Munro

& Page, 1993), was utilized to test for a statistically significant correlation between the level of menopausal knowledge (total score of number of questions answered correctly), and the favorableness of perception of menopause (sum of choices for questions 31-39, using the reverse for #35: 1=5, 2=4, 3=3, 4=2, 5=1). Pearson's correlation coefficient was also used to determine the correlation between perception of menopause and the level of each of the four types of knowledge of menopause. Significance was set at $p < .05$ for all analyses.

The mean score on the overall Knowledge of Menopause scale was 13.6 (56.7% answered correctly) (See Table 1). When subdivided into the four categories of knowledge, the mean score was highest in the knowledge of physiology (63.7% correct). Knowledge of risk factor changes post-menopause followed closely at 62.9%. The mean score for knowledge of common menopausal symptoms and their treatment was 53.2%, and the mean score was lowest for the knowledge of the pros and cons of hormone replacement therapy (45.2%). For such a highly educated and motivated group of women, these score were particularly low. This may indicate that society in general, and health care in particular, has failed to address this issue adequately and appropriately.

The Perception of Menopause scale had a Cronbach's alpha of .86 for this group of pre-menopausal subjects. The lowest possible score was 9, the highest possible was 45. A score of 27 was the neutral point, representing neither a favorable nor an unfavorable perception of menopause. Higher scores corresponded to a more favorable perception of menopause. Scores for this population ranged from 15 to 43, and fell into an approximately normal distribution around the neutral point of 27 (M=27.5, SD=5.8), with a very slight skew (.63) towards a less

Table 1. Mean Scores of Knowledge of Menopause by Type.

	N = 94		
Types of Knowledge	Highest Score Possible	Mean Correct (%)	SD
Physiology	6	3.8 (63.7)	1.47
Risk factor changes	7	4.4 (62.9)	1.82
Symptoms and treatment	5	2.7 (53.2)	1.32
Pros & cons of HRT	6	2.7 (45.2)	1.66
Overall Knowledge	24	13.6 (56.7)	5.13

Table 2. Correlation of Knowledge and Perception.

	KNOWLEDGE				
	Physiology	Risk Factors Changes	Symp/Tx	Pros/Cons of HRT	Overall Knowledge
PERCEPTION	.1438 p=.167	.1986 p=.055	.1936 p=.062	.2650 p=.010	.2471 p=.016

favorable perception of menopause. More than half (54.2%) scored within three points of neutral (i.e. between 24 and 30).

The study questions were answered by this analysis. It was found that both the overall knowledge of menopause (r=.247, p=.016) and the knowledge of the pros and cons of HRT (r=.265, p=.010) were positively correlated to a favorable perception of menopause. Although there was no significant correlation between perception and any of the other three types of knowledge (See Table 2), knowledge of risk factor changes post menopause (r=.199, p=.055), and knowledge of common symptoms and their treatment (r=.194, p=.062) approached statistically significant correlations, and may be found to become significant using a larger or less skewed population.

Interpretation

King's framework may be used to help interpret these results. An individual's perception and knowledge of menopause are a part of the personal system, and, as such, constantly adjust as they interact with other components of the personal system (within the individual), and as the individual interacts with other individuals (interpersonal systems), and with groups (social systems). These interactions mold and help determine what a woman "knows" about menopause and how she perceives the process. Interactions in the personal system would include the experience of her own physical and emotional health, and how she experiences menses. Within interpersonal systems, interactions occur by which information is exchanged about menopause. These interactions might be informal as when the individual observes her mother's menopausal transition or when she discusses menopause with friends. Interactions may be more formal as when the APN provider assesses the client's knowledge

and shares information on the topic. Menopausal information is also gained through interaction with social systems. The information may be very subtly implied as with the depiction of women in the media, or more direct as in articles on the subject of menopause. Each of these sources of information helps to shape a woman's knowledge and perception of menopause.

The low levels of knowledge (56.7% correct overall and 45.2% correct in knowledge of HRT) on the part of this well educated group of women implies that the interactions within these systems have been lacking in some way. The knowledge possessed may be incorrect or lacking, or the interactions may impede its transmission. This may reflect, among other things, the "taboo" status of menopause as a topic (Jones, 1994), the fear of aging in our society, or the failure of the health community to provide appropriate information.

King states that an individual's perception of menopause is determined by psychologic, sociocultural and physiological factors. The study results indicate that both the overall knowledge of menopause and knowledge of the pros and cons of HRT are factors which are associated with a woman's perception of menopause. Higher levels of knowledge of menopause in general, and of the pros and cons of HRT in particular, correlate with a more favorable perception of menopause. Although knowledge is primarily a psychological factor, a woman's knowledge of menopause is influenced by other psychological factors (e.g. psychological health), physiological factors (e.g. physical health), and sociocultural factors (e.g. level of education).

The correlations demonstrated do not necessarily imply that higher levels of knowledge of menopause cause more positive perception, but

suggest a contribution. This correlation could result from several different relationships (Polit & Hungler, 1995): 1) possessing higher levels of correct information about menopause may encourage a woman to feel more favorably about the event, 2) feeling more positive about menopause may lead her to seek more information which would result in higher levels of knowledge, or 3) both information-seeking behavior and a more favorable perception result from a common cause (e.g. a more optimistic personality). While the correlations found do not prove causality, providing accurate and timely information still lies within the scope of nursing as seen by King.

It is interesting to note that while the knowledge of the pros and cons of HRT showed the strongest correlation with a favorable perception, it was also the area about which these women knew the least (i.e. lowest mean score).

Discussion

Limitations

The sample used for this study, was socio-demographically skewed, consisting mostly of women who were white, middle-class, and well educated. Results cannot be extrapolated to other racial or socio-economic groups. The original 300 women self-selected into the study and consisted of those seeking information about menopause. The subgroup used for this study were pre-menopausal and non-symptomatic, yet seeking information about a physiologic process which may conceivably be in the relatively distant future. As such, they would differ in ways unknown from women who would not elect to seek information about menopause at this stage in their lives. This subgroup may differ in its

perception of menopause from the general population, regardless of knowledge of menopause.

Controlling for all variables which have previously been shown to influence perception of menopause was not possible, without severely limiting the sample size or requiring data not available from the original study. For example, emotional health, and support systems available were variables not measured in the original study.

There were a few items in the Knowledge of Menopause scale which were difficult to categorize, as there was some overlap of the four types of knowledge. In those cases, the researcher tried to determine the overall intent of the question in order to categorize the item.

There is no single model which can adequately explain or predict any phenomena of interest. In this study, King's model was useful in that it provided a holistic view of the factors which provide input for the formation perception of menopause, however it provided no explanation of the process, and therefore is not useful in predicting the relative importance of factors.

Implications for Existing Literature

The results of this study are entirely consistent with the literature reviewed. Higher levels of education have been associated with greater knowledge of menopause (LaRocco & Polit, 1980), and also with more positive perceptions of menopause (Avis & McKinlay, 1991). Now the association has been made between knowledge and perception. The study in which Nurse Practitioners were found to have a more positive perception of menopause than other women (Berman, 1991) may now be partially explained by their presumably higher level of knowledge of menopause. Kroll's study (1989) determined that scoring higher in

knowledge of menopause correlated with greater perceived internal control over menopausal symptoms. While the association of perceived control with perception of menopause has not been delineated, it would seem logical that those who perceive they will have the ability to control their menopausal symptoms may feel more favorably toward menopause. Finally, this study is consistent with the studies of other health-related phenomena which consistently revealed that higher levels of knowledge were associated with more positive perceptions of those phenomena (Bowman et al., 1994; Collison et al., 1996; Gershon, et al., 1994; Goldstein-Lohman, & Aitken, 1995; Leasure, McKenney, & Merrill, 1995).

Implications for Advanced Practice Nursing and Primary Care

According to King, patient health is a goal of nursing (1971, p. 66), and relates to the way the individual deals with the stresses of growth and development (p. 67). Menopause is one of these natural, inevitable transition periods which King would see as lying within the scope of the APN's practice, and as one appropriately addressed by the APN long before the actual event. For the APN, the primary care setting is a natural setting to help a woman prepare for this stage of her life.

For the individual, King (1971) identifies the three fundamental health needs as 1)usable health information at a time it is needed and can be used, 2) preventive care, and 3) care when ill (p. 83). In order to facilitate a maximally favorable perception of menopause, the APN meets these needs in a comprehensive manner, targeting those factors which have been identified in this and other studies. The APN can impact psychologic factors (such as emotional health and knowledge of menopause), physiological factors (such as physical health and menopausal symptoms), and sociocultural factors (such as the number

and quality of support system). Other factors (such as race, education, socio-economic status, and age) are either unalterable or beyond the scope of practice.

The APN impacts factors of perception by assessing and interacting with and through the systems. The individual's personal system is addressed by maximizing the individual's physical and emotional health by means of preventative care, and care during acute and chronic illness. Preventative care includes activities such as immunizations and appropriate screening to identify at-risk individuals. Ongoing care of long term problems such as diabetes, hypertension, and depression, and prompt care of acute problems such as infections are necessary to ensure an individual is able to function optimally. By addressing her health needs, the APN impacts those factors within the woman's personal system, and her ability to function within interpersonal and social systems.

Within the interpersonal system, the client and the APN (or other individuals) act, react, interact, and transact to achieve mutually set goals. One important goal of the interpersonal system, and role of the APN, is to target health promotion issues throughout the lifespan of the individual, providing 'usable information' at the appropriate time. While menopause is only one of these issues, it is one which has been sorely neglected. Before providing instruction, it is important that the APN first assess the client's knowledge base and perception of menopause. This may be accomplished by means of a simple questionnaire routinely provided to all women approaching menopause. Simple brochures might be available on each of the four areas: physiology of menopause, risk factor changes occurring with menopause, common symptoms of menopause and their treatment, and the pros and cons of HRT. This

information should be reinforced by brief videos or verbal explanations, allowing the client time to ask questions which clarify her understanding. The APN also needs to encourage the client to form other interpersonal systems to address menopause, perhaps by instituting discussion groups on the topic of menopause.

Social systems which influence the individual's perception of menopause may also be impacted by the APN. It is appropriate to address the issue of assessment and education not only with the individual but also on the community level. The APN is responsible and accountable to be aware of ethnicities and cultures representative of his or her practice, and to become familiar with concepts of menopause within these groups. Identification of cultural myths and misinformation will enable the APN to assess educational needs and provide information that is appropriate and culturally sensitive. The APN may wish to develop menopause education modules which would provide information in a progressive manner to women, their families, and the community. This might be accomplished by means of presentations, written or other media.

Beyond providing accurate information to individuals and groups, it is important that the APN function as an advocate for the dignity and worth of women. In this role, the APN should be aware of and teach others to recognize the subtle and often erroneous portrayal of peri- and post-menopausal women in the media. This at times requires one to take on the role of activist, with clear and appropriate communication to advertisers, entertainment industry, or governmental representatives.

In all of these endeavors, the primary care organization acts in collaboration with and support of the providers. These programs of

assessment and instruction need to be system-wide in order to be effective. In many settings, it is not always possible for an individual to receive care at every visit from the same provider. In these settings, it is even more imperative that programs be initiated, and that providers receive in-services as needed on topics such as menopause.

Many primary care settings now function within the managed care environment. Those, in particular, which are reimbursed on a per capita basis, have a disincentive for frequent or lengthy use of resources by individuals. Educational programs may be based on brochures or short videos, and may consume little of the provider's time. In the long run, visits from peri-menopausal women who are confused, depressed or dysfunctional secondary to lack of preparedness for menopause, can consume multiple resources better utilized in other ways. Being properly prepared for this natural transition also increases her rapport with and confidence in her provider, and increases her satisfaction with services.

Recommendations

This study's generalizability would be greatly enhanced by replication using a more representative sample, and specifically designed to control for confounding variables. Studies determining the differences in other sub-populations would be helpful to better clarify the role of culture, marital status, and other factors in the perception of menopause.

While this study does find an association between knowledge of menopause and perception of menopause, further research needs to be undertaken to establish cause and effect. That is, does provision of information about menopause actually change a woman's perception of menopause? Due to the importance of and emphasis on outcomes especially in the managed care setting, it would also be important to

document positive outcomes associated with pro-active interventions relating to menopause.

King's systems (personal, interpersonal, and social) provide us with three levels of interventions. Research needs to be focused on determining which level most greatly affects perception, in order to help determine where efforts need to be concentrated. If the client's "need for information at a time when it is needed" is to be met, it is important to determine, by research, at what point(s) in life, a woman needs input about menopause, and specifically what information would be "usable" at that time. It may well be found that perceptions of menopause are formed early in life, and that interventions aimed at 40 year old women is 'too little, too late'. It would also be of interest to determine the sources of information (both correct and incorrect) and whether negative misinformation is linked to less favorable perception of menopause.

Providing health promotion information in a pro-active manner, across the lifespan, is necessary to the provision of comprehensive care, and an important responsibility of the APN. Graduate programs will fail in their attempt to educate future APNs if the important topic of menopause is not adequately addressed. APN's need to be taught what information to convey, when it is most appropriately introduced, and how to integrate it into the plan of care.

In summary, menopause is a transition every woman will undergo. Advanced Practice Nurses can help assure a less stressful transition by fostering, in the pre-menopausal client, a more favorable perception of menopause. This may be accomplished by maximizing the client's psychological and physical health, strengthening and widening her support system, providing comprehensive and appropriately timed

instruction about menopause, and addressing, whenever possible, society's portrayal of women and menopause.

APPENDIX A

APPENDIX A

Demographic Questionnaire

The following questions ask you to give some background information about yourself. This information will help us to understand and interpret the study's results. The information will be completely confidential. Please answer each question.

1. How old are you?

    1=40-45

    2=46-50

    3=51-55

    4=56-60

    5=61-65

    6=66-70

    7=over 70

2. What is your present marital status?

    1=Married

    2=Divorced

    3=Single (never married)

    4=Widowed

    5=Separated

3. What is your principal employment status? (This question refers to work which you are paid to do).

    1=Employed full-time

    2=Employed part-time

    3=Retired

4=Not Employed

5=Other

4. What was your approximate total household income (before taxes) during the past year?

1=Under $14,999

2=$15,000-$29,999

3=$30,000-$49,999

4=$50,000-$99,999

5=$100,000-$200,000

6=over $200,000

5. What was the highest grade or class you completed in school?

1=Less than 12 years

2=High school graduate (includes G.E.D.)

3=Greater than 12 years, but no degree

4=Technical trade/Community college degree

5=Bachelor's degree

6=Master's degree

7=Ph.D./Professional degree

8= Other

6. Please indicate your religious preference/affiliation.

1=None

2=Jewish

3=Protestant (Baptist, Lutheran, Methodist, Presbyterian, etc.)

4=Catholic

5=Other

7. What is your race?

1=African-American

2=Hispanic

3=American Indian

4=Caucasian

5=Asian/Pacific Islander

6=Other

9. How many months ago was your last natural menstrual period (unrelated to hormone therapy)?

1=still have natural menstrual periods

2=less than 3 months ago

3=3 to 12 months ago

4=more than 12 months ago

5=Not Sure

11. Do you currently consider yourself to be experiencing menopausal symptoms?

1=No, have never experienced menopausal symptoms

2=Yes, currently experiencing menopausal symptoms

3=Not presently experiencing menopausal symptoms but have in the past

4=Not sure

APPENDIX B

APPENDIX B

Knowledge of Menopause Scale

The following questionnaire contains questions about menopause, (the change of life) a time which signifies the end of the menstrual cycle. In this section we are interested in your knowledge about the process of menopause. Answers to some of the questions will depend on whether or not a woman has a uterus. Please answer all questions assuming the woman has a uterus.

68. What can be said about birth control after menstruation stops?

    1=Birth control should be used for 1 year

    2=Birth control should be used up to 5 years

    3=Birth control should be used as long as sexually active

    4=Birth control is not necessary

    5=Don't know

69. What causes the symptoms of menopause?

    1=The pituitary gland stops functioning

    2=The uterus will not allow egg implantation

    3=The fallopian tube becomes blocked

    4=The ovaries produce less estrogen (female hormone)

    5=All of the above

    6=Don't know

70. Menopause increases the risk for which of the following?

    1=Liver disease

    2=Eye disease

    3=Kidney disease

4=Lung disease

5=Osteoporosis

6=All of the above

7=None of the above

8=Don't know

71. What physical changes can occur in the vagina due to menopause?

1=It becomes dryer, shorter and less elastic

2=It becomes less easily injured

3=The vagina remains the same following menopause

4=Don't know

72. Risk of osteoporosis (brittle bones) can be reduced by:

1=Vitamin C

2=Estrogen pills

3= Relaxation exercises

4=Don't know

73. To help reduce the uncomfortable feelings associated with hot flashes, a person can...

1=Increase caffeine intake

2=Take vitamins above recommended daily allowance

3=Wear several light wraps so one can be removed

4=Increase spices and seasoning in food

5=Don't know

74. Vaginal dryness caused by menopause may lead to...

1=Increased chance of vaginal infection

2=Decreased chance of vaginal infection

3=No change in chance of vaginal infection

4=Don't know

75. Vaginal dryness can best be relieved by...

1=Using a petroleum jelly lubricant (Vaseline ^{R})

2=Estrogen replacement therapy

3=Using cold cream

4=Don't know

76. After menopause, a woman's risk of heart disease:

1=Decreases

2=Increases

3=Is the same as before menopause

4=Don't know

77. Estrogen replacement therapy:

1=Increases a woman's risk of heart disease

2=Decreases a woman's risk of heart disease

3=Has no effect on a woman's risk of heart disease

4=Don't know

Please answer questions 78-90 using the following scale:

1=True

2=False

3=Don't know

78. Although many women have menopausal symptoms, approximately 20% seek medical relief.

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

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

81. Estrogen therapy without progestogen increases the risk of cancer of the uterus.

82. If a menopausal woman unexpectedly bleeds or spots a year after she completely stops menstruating she should report this to her physician.
83. Symptoms most often reported during menopause are hot flashes and night sweats.
84. Once a woman is through menopause she no longer has to be concerned with breast cancer or other female cancers.
85. As long as a woman is ovulating she can still become pregnant.
86. Ovulation may occur without menstrual bleeding occurring.
87. The addition of a progestional agent (Provera ^{R}) to estrogen replacement therapy frequently results in monthly menstrual flow.
88. The additions of a progestional agent (Provera ^{R}) to estrogen replacement therapy increases the risk of cancer to the uterus.
89. The most common cause of death among women is breast cancer.
90. A woman's chance of dying from cancer of the uterus is greater than her chance of experiencing osteoporosis fractures.

CONTINUED ON NEXT PAGE

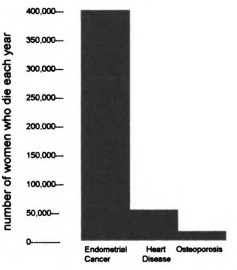
91. Choose the graph below which correctly shows the number of women who die each year from these medical problems. Darken the circle on your answer sheet corresponding to the correct graph. Use the following scale:

1=Graph 1

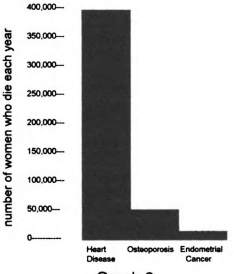
2=Graph 2

3=Graph 3

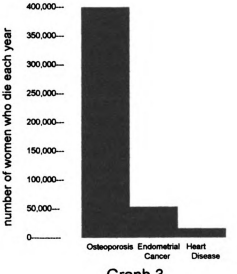
4=Don't know



Graph 1



Graph 2



Graph 3

APPENDIX C

APPENDIX C

Perception of Menopause Scale

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 31-39.

1=Strongly Agree

2=Agree

3=Neither Agree nor Disagree

4=Disagree

5=Strongly Agree

31. Menopause has been/will be an unpleasant experience for me.
32. The thought of menopause is disturbing to me.
33. I expect to (do) experience physical trouble during menopause.
34. I expect to experience emotional trouble during menopause.
35. Menopause will bring/has brought many positive changes to my life.
36. Menopause will/did cause me to be sick a lot.
37. Menopause will/did have a negative effect on me.
38. Women are more tired than usual during menopause.
39. Menopause is associated with mood changes.

APPENDIX D

APPENDIX D

UCRIHS Committee Approval

January 21, 1997

TO: Celia E. Wills
A202 Life Sciences Bldg.

RE: IRB#: 96-763
TITLE: THE RELATIONSHIP BETWEEN KNOWLEDGE OF MENOPAUSE AND THE PRECEPTION OF MENOPAUSE IN PRE-MENOPAUSAL WOMEN
REVISION REQUESTED: N/A
CATEGORY: 2-H
APPROVAL DATE: 01/21/97

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

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

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

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

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

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Georgia Padonu
Sharon Spanbauer

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