A CASUAL MODEL OF PSYCHOSOCIAL ADJUSTMENT IN
POST RADIOThERAPY CERVICAL CANCER WOMEN

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With compliments of

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Chanpen Santawaja
The purpose of this cross-sectional descriptive study is to examine the causal relationships among age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, emotion-focused coping and psychosocial adjustment in post radiotherapy cervical cancer women.

A conceptual framework was based on Mishel's uncertainty in illness theory (Mishel, 1988) and empirical data. Purposive sampling was employed to recruit 300 post radiotherapy cervical cancer women who came for follow-up care at the radiotherapy outpatient clinics of three public hospitals in Bangkok Metropolitan area. The instruments used in this study included Personal Information Questionnaire, The Symptom Distress Scale, The Social Support Questionnaire, The Mishel's Uncertainty in Illness Scale: Community Version, The Jalowiec Coping Scale, and The Psychosocial Adjustment to Illness Scale. The hypothesized model was tested and modified by using the LISREL 8.30 Program.

The results demonstrated that sixty-two percent ($R^2 = .62$) of the total variance in psychosocial adjustment were explained by family and health authority support, symptom distress, uncertainty, and emotion-focused coping. Family and health authority support had direct effect ($\beta = 0.09$, $p<.001$) and indirect effect ($\beta = -0.15$, $p<.01$; $\gamma = 0.11$, $p<.05$) on psychosocial adjustment through uncertainty and problem-focused coping, respectively. Symptom distress had direct effect ($\beta = -0.19$, $p<.01$) and indirect effect ($\beta = 1.54$, $p<.001$) on psychosocial adjustment through uncertainty. Uncertainty had direct effect ($\beta = -0.05$, $p<.05$) and indirect effect ($\beta = 0.14$, $p<.01$) on psychosocial adjustment through emotion-focused coping. Emotion-focused coping had an direct effect on psychosocial adjustment ($\beta = -0.09$, $p<.001$). Where as, problem-focused coping had an indirect effect on psychosocial adjustment ($\beta = -0.19$, $p<.001$) through symptom distress. Time since completing radiotherapy had indirect effect on psychosocial adjustment ($\gamma = -0.07$, $p<.05$; $\gamma = -0.23$, $p<.01$; $\gamma = -0.23$, $p<.01$) through symptom distress, family and health authority support, and uncertainty, respectively. Education had indirect effect on psychosocial adjustment ($\gamma = 1.16$, $p<.001$; $\gamma = -0.04$, $p<.01$) through problem-focused coping and emotion-focused coping, respectively; and age had an indirect effect on psychosocial adjustment ($\gamma = -0.26$, $p<.001$) through problem-focused coping.

These findings have implications for health care systems and nursing practices in planning interventions to promote psychosocial adjustment in post radiotherapy cervical cancer women. A longitudinal study and experimental study are recommended for further study.
การศึกษาข้อความวิรัติประสงค์เพื่อทดสอบความสมัครของผู้หญิงคุณวัยระหว่างอายุ ระดับการศึกษา ระดับศีลธรรม ผู้รับรู้ผลการรักษา แรงจูงใจทางบางส่วนของครอบครัวและเจ้าหน้าที่สุขภาพ ความรู้ที่ไม่แน่นอน การศึกษาความเครียดแบบมู่จักการกับปัญหา การระดับความเครียดแบบมู่จักการกับอารมณ์ และการรับรู้ตัวตนจิตสังคมของครัวเรือนและผลผลิตของลูกหลานได้รับรู้โดยผ่านการศึกษา

การศึกษาพบว่า ด้วยการสนับสนุนทางสังคมของครอบครัวและเจ้าหน้าที่สุขภาพ อาการไม่สุข สมรรถภาพ ความรู้สึกไม่แน่นอน และการศึกษาความเครียดแบบมู่จักการกับอารมณ์ร่วมกับการความสบายของอาการรับรู้ตัวตนจิตสังคม (β = 0.09, p < 0.01) และความรู้สึกทางอารมณ์ (β = 0.15, p < 0.01; β = 0.11, p < 0.05) ต่อการรับรู้ตัวตนจิตสังคม โดยผ่านความรู้สึกไม่แน่นอนและการศึกษาความเครียดแบบมู่จักการกับปัญหาตามลำดับ อาการไม่สุขสมรรถภาพมีอิทธิพลทางอารมณ์ (β = 0.19, p < 0.01) และอิทธิพลทางอารมณ์ (β = 1.54, p < 0.01) ต่อการรับรู้ตัวตนจิตสังคม โดยผ่านความรู้สึกไม่แน่นอน ความรู้สึกไม่แน่นอนมีอิทธิพลทางอารมณ์ (β = 0.05, p < 0.05) และอิทธิพลทางอารมณ์ (β = 0.14, p < 0.01) ต่อการรับรู้ตัวตนจิตสังคม โดยผ่านความรู้สึกไม่แน่นอน และความรู้สึกไม่แน่นอนมีอิทธิพลทางอารมณ์ (β = 0.19, p < 0.01) ต่อการรับรู้ตัวตนจิตสังคม โดยผ่านความรู้สึกไม่แน่นอน และความรู้สึกไม่แน่นอนมีอิทธิพลทางอารมณ์ (γ = 0.07, p < 0.05; γ = 0.23, p < 0.01; γ = 0.23, p < 0.01) ดังนั้นการไม่สุขสมรรถภาพ แรงจูงใจทางบางส่วนของครอบครัวและเจ้าหน้าที่สุขภาพ และความรู้สึกไม่แน่นอนสามารถ ระดับการศึกามีอิทธิพลทางอารมณ์ต่อการรับรู้ตัวตนจิตสังคม (γ = 1.16, p < 0.01; γ = 0.04, p < 0.01) โดยผ่านการศึกษาความเครียดแบบมู่จักการกับปัญหาและการศึกษาความเครียดแบบมู่จักการกับอารมณ์ตามลำดับ และอิทธิพลทางอารมณ์ต่อการรับรู้ตัวตนจิตสังคม (γ = 0.26, p < 0.01) โดยผ่านการศึกษาความเครียดแบบมู่จักการกับปัญหา

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CHAPTER I
INTRODUCTION

Background and Rationale of the Study:

The purpose of this study is to develop and test a causal model of psychosocial adjustment derived from Mishel's uncertainty in illness theory in Thai post radiotherapy cervical cancer women. As more women survive the acute phases of cancer, interest has developed in determining how women who face these unfavorable effects continue their lives and to what extent do they experience acceptable psychosocial adjustment. The proposed model suggests relationships among age, education, time since completing radiotherapy, symptom distress, family and health authority support, uncertainty, problem-focused coping, emotion-focused coping, and psychosocial adjustment in this population.

Cancer is a major health problem that is the second cause of mortality of women in Thailand following cardiovascular disease (Chooprapawan, 2000: 43). Thirty-three percent of Thai women with cancer are cervical cancer women (National Cancer Institute, 1995: 7), and the incident rate of mortality from cervical cancer is 13.8 per million (Chooprapawan, 2000: 43). Furthermore, invasive cervical cancer occurs most commonly among women between the age of 45 and 55 years old. Recent trends indicate an increasing incidence of cervical cancer in younger women and
women of low socioeconomic status (Srisomboon, 1997). Moreover, the survival rate of patients with cervical cancer in Thailand is more than 60% (Ruengsanam, 1998).

The word “cancer” in English language or “mareang” in Thai language is perceived as an incredibly frightening word that no one wants to hear (Kestsumpan, 1993). The Thai public's perception of cancer is one of horror related to an incurable disease. Thai people equate cancer with death, uncertainty, and lack of cure. Cancer is referred to a life threatening condition and a disease that causes suffering, as well. The word “cancer” may not be used by most patients because they are afraid the word “cancer” will induce feelings of helplessness, stress, depression, and other negative connotations (Kestsumpan, 1993). Furthermore, cancer is one of the stigmatized diseases in Thai society. Most Thai people view cancer as a hopeless disease and associate it with a slow and painful death (Pongthavornkamol, 2000). Many believe that radiotherapy is used only when nothing else can be offered, a last treatment resort (Tarathamarat, 2000: 16). Moreover, they fear the disease will recur and spread because the cancer cells have not been removed (McMullin, 1982: 853).

The diagnosis of cancer not only changes a person's life at the time of diagnosis or during hospitalization, but also changes their life forever (Mahol & Casperson, 1997: 179). Some cancer survivors reported negative effects that decreased their quality of life because of long-term after-treatment effects, and continuing physical, psychological and social problems caused by the cancer. According to a cervical cancer survival study in Thailand, more than 60 percent of five years post diagnosis survivors were women who received complicated treatment regimens (Ruengsanam, 1998). This result indicated the effective treatment for cervical cancer as radiotherapy and chemotherapy. Radiotherapy is one of the most
common treatment modalities for treating cervical cancer in the initial stages and for reducing complications of the disease in the terminal stages (Einhorn, 1996: 75). The two main modalities of radiotherapy used in the treatment of cervical cancer are external beam and brachytherapy. External beam radiation is used to treat the whole pelvis and the parametria, including the common iliac lymph nodes. Brachytherapy using intracavitary radioactive sources, is employed to treat areas of central disease (Dow, 1992). Although radiotherapy has many advantages, it can produce many side effects that complicate both physical and psychological health (King, et al., 1985: 59; Oberst, et al., 1991: 75-76; Teparux, 1992: 49).

Women, who receive treatment such as radiation therapy, may deal with long-term problems including acute radiation enteritis, diarrhea, weight loss, bone marrow depression, fatigue, bladder damage, dysuria, fistula formation, and/or vagina stenosis (Clark, 1994; Dow, 1992). Symptoms of bowel and bladder dysfunction may also impede enjoyment of intercourse. In addition, a common fear that intercourse might cause injury, spread the disease, and/or allow for contagion to the partner often prevents sexual activity for many cervical cancer patients (Saunders, 1981).

The subjective experience of living with cancer is far more complex than simply feeling fatigued, bearing pain, or living with the physical symptoms that the disease or its treatment might bring. Cancer patients must deal with the side effects of diagnosis, drugs, and other forms of treatment along with many other sources of discomfort, these may lead to suffering (Halldorsdottir & Hamrin, 1996: 34). Psychological consequences for adult survivors include emotional outcomes such as uncertainty, somatic and psychological distress, and decreased self-esteem. In addition, poor body image, fear of recurrence and death, and distress related to
physical compromise can occur (Corney, et al., 1992: 670). Several areas of social adjustment have been identified as important after cancer treatment including marital relationship distress, sexual problems, feeling of isolation, changes in social support, and discrimination related to employment and health insurance (Wyatt & Friedman, 1996: 2).

From the situation described above, it can be seen that post radiotherapy cervical cancer women must face many physical discomforts, and the cervical cancer and long-term radiotherapy side effects can lead to psychosocial maladjustment. Some of these maladjustments can occur from the fear and bad attitudes towards the meaning of cancer and its treatments. In addition, women may feel that they can not perform their duty as a wife because of vaginal stenosis and uncomfortable or painful sexual intercourse. Data show that many women abstain completely from having sexual intercourse with their husbands. This can put a strain on their marital relationships and cause women to fear that their husbands will abandon them and find new wives (Kitcharoen & Nuaklong, 1999; Tarathamarat, 2000: 16).

Additionally, cervical cancer can interfere with social functioning. Similar to other women, post radiotherapy cervical cancer women usually attempt to go back to their normal lives following treatment. After radiotherapy, they continue their usual household, family, social community, and occupational activities. The patterns of Thai social and family relationships are different from those in the Western countries. Most Thai women have close relationships with extended family members and also have a lot of interaction with neighbors and friends, whereas Western women tend to be more focused on their nuclear families. The results of Bloom and colleague’s study (1987) showed that the diagnosis of cancer and its treatment caused difficulties among
relationships with health care professionals, family, and significant others, as well as, concern about finances, role incapacity, possible loss of employment, and cognitive changes among Western women. Little is know, however, about psychosocial adjustment in Thai cervical cancer women especially after completing radiotherapy.

Most oncology studies have been conducted with Western women, breast cancer populations, and cancer survivors (Ali & Khalil, 1991; Bloom, 1982; Budin, 1998; Carter, 1993; Fredette, 1995; Graydon, 1994; Lavery & Clarke, 1996; Northouse, 1988; 1989). Many of these studies were done with cervical cancer patients receiving radiotherapy in Thailand and have been experimental studies. The major focus of these studies have been the effects of supportive nursing systems on uncertainty, quality of life, vulnerability, and self-care deficit (Hanucharurnkul, et al., 1995; Sukkasame, 1989; Teparux, 1992; Wattanakittisak, 1992) and the effect of educational programs on anxiety and depression (Kiatgungwalgri, 1997; Kongphantu, 1992; Tongsuchote, 1992). Most of psychosocial adjustment studies in the Thai population have been conducted in Thai women with breast cancer (Chanpaung, 1991; Kaveevivitchai, 1993; Saneha, 1999), in patients with retinal detachment (Kunawat, 1992), and HIV patients (Vadtanapong, 1996). Few have examined post radiotherapy cervical cancer women. To better understand post radiotherapy cervical cancer women, this study sought to test a causal model of psychosocial adjustment in this population.
Research Question:

In what way do age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, and emotion-focused coping explain psychosocial adjustment in post radiotherapy cervical cancer women?

Purpose of the Study:

To investigate causal relationships among age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, emotion-focused coping, and psychosocial adjustment in post radiotherapy cervical cancer women.

Theoretical Framework:

This study is guided by Mishel’s uncertainty in illness theory (Mishel, 1988), and selected variables (age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, and emotion-focused coping) from the empirical literature. The middle range theory of uncertainty in illness was first developed to explain how persons’ cognitively process illness-related stimuli and construct meaning in these events (Mishel, 1988: 225). Furthermore, Mishel proposed uncertainty as a cognitive state that individual experience when the course of their disease or the efficacy of its treatment is
unpredictable. Although the theory focuses on uncertainty, uncertainty is the major experience of most cancer survivors, Mishel also proposes appraisal of uncertainty, coping strategies, and adaptational outcomes as elements.

Since the early 1980s, Mishel has articulated and studied uncertainty in the context of illness within a theoretical model of uncertainty appraisal, coping, and adaptation. Mishel (1981) proposed her first Model of Perceived Uncertainty in Illness that focused on uncertainty related to acute illness. According to this view, factors within the person and characteristics of the stimuli influence the person’s perception of illness-related events. When stimuli are perceived as uncertainty, the individual is unable to objectively evaluate illness, treatment, and hospitalization events. Uncertain events are appraised as threatening, and require coping. When the person is unable to resolve the uncertainty, stress occurs. An Uncertainty in Illness Scale was developed and tested during this time (Mishel, 1981; 1982; 1983).

Later, Mishel conducted research that examined the relationships among various factors and uncertainty such as stress (Mishel, 1984), severity of illness, optimism, and psychosocial adjustment (Mishel, et al., 1984), social support (Mishel & Braden, 1987; 1988; Mishel, et al., 1984), symptom pattern, and structure providers (Mishel & Braden, 1988). Using these empirical data, Mishel (1988) proposed her uncertainty in illness theory, and defined uncertainty as, “the inability to determine the meaning or value of illness events” (Mishel, 1988: 225). This occurs when a person cannot structure the cognitive state for illness events because of insufficient or ambiguous cues. Uncertainty can arise from poorly defined signs and symptoms, complex treatments, inadequate information about the diagnosis or the seriousness of the illness, and unpredictable prognoses. In addition, uncertainty can result from the
unfamiliarity or unpredictability of illness-related events, and the incongruence between the personal expectation and experience about disease and illness (Mishel, 1988: 225). Mishel’s theory of uncertainty in illness is shown in Figure 1.

**Figure 1: Theory of Uncertainty in Illness**


In it the primary antecedent of uncertainty is *stimuli frame* with its three components: *symptom pattern, event familiarity, and event congruence* (Mishel, 1988). *Symptom pattern* is the degree to which symptoms present with sufficient consistency to be perceived as having a pattern or configuration. Based on this pattern, the meaning of the symptoms can be determined. *Event familiarity* is the degree to which the situation is habitual, repetitive, or contains recognizable cues.
When event is recognized, they can be associated with other events from memory and their meaning can be determined. *Event congruence* is the consistency between the expected and the experienced illness-related situation. This consistency implies a reliability and stability of events, thus facilitating interpretation and understanding. These stimuli frame's components are inversely related to uncertainty.

The stimuli frames are positively influenced by *cognitive capacity* and *structure providers*. *Cognitive capacity* is the information processing abilities of the person. Limited cognitive capacity can reduce or confuse the ability to perceive symptom pattern, event familiarity, and the congruence of events. *Structure providers*, the resources available to assist the person in the interpretation of the stimuli frame, can reduce uncertainty both directly and indirectly. Uncertainty can be reduced directly when the patient relies on the structure providers to interpret the events, and, indirectly, when structure providers aid the patient in determining the stimuli frame.

Two appraisal processes used to determine the value placed on uncertainty are *inference* and *illusion*. *Inference* refers to the evaluation of uncertainty based on examples of related situations. If inferences are seen as positive, then the uncertainty can be appraised as opportunity; if the inferences are seen as threatening, then the uncertainty may be appraised as a danger. *Illusion* refers to the construction of a generally positive belief system; it will usually result in a view of uncertainty as opportunity. If appraised as danger, coping strategies are sought to decrease uncertainty, if appraised as opportunity, coping in term of buffering strategies may be used to reduce the uncertainty. Coping strategies to decrease uncertainty are *mobilizing or affect-control strategies*. Coping strategies to maintain uncertainty are
structured to include *buffering strategies*. If the coping strategies are effective for an uncertain event appraised as either a danger or an opportunity, adaptation can occur.

Mishel (1988: 231) defined adaptation as “biopsychosocial adjustment occurring within persons' individually defined range of usual behavior”. She viewed adaptation difficulty as behavior outside of the usual range with a level of activation that is higher or lower than the individual’s norm (Mishel, 1988: 231). In most of the studies on uncertainty and adaptation, adaptation has been operationalized as psychosocial adjustment, recovery, life quality, or health. (Christman, et al., 1988; Mishel & Braden, 1987; Mishel, et al., 1984). This study focused on psychosocial adjustment.

**Psychosocial adjustment**

In this study, psychosocial adjustment is the end result of an adaptive process that begins with symptom distress from long-term radiation side effect and family and health authority support that can generate perceived uncertainty, and incorporates problem-focused coping and emotion focused coping to manipulate uncertainty in positive psychosocial adjustment. Psychosocial adjustment may be intrapsychic or behavioral, which are the individual’s attempt to manage the demands that tax or exceed available resources (Derogatis, 1983). The individual’s personal characteristics, experiences, and coping process promote different personal adjustment. According to Mishel’s uncertainty in illness theory, psychological and social functioning serve as outcomes of effective coping with uncertainty. Cervical cancer and radiotherapy not only affect the psychological functioning of the patients,
but also influence the patients’ relationships with others around them. Psychosocial adjustment is a multidimensional concept that includes both psychological and social functioning (Derogatis & Derogatis, 1990; Irvin, 1996; Northouse, 1989). In this study, psychosocial adjustment was defined as “the ability to maintain psychological and social functioning by post radiation cervical cancer women”.

According to Mishel’s uncertainty in illness theory and the empirical literature, selected variables that influence psychosocial adjustment include age (Budin, 1998; Lemaire, 1999; Mast, 1998; Stanton & Snider, 1993; Vinokur, et al., 1989; 1990); education (Chanpuang, 1991; Christman, et al., 1988; Hanucharurnkul, et al., 1991; Limthongkul, 1992; Maunsell, et al., 1992; Vongsvivat, 1993; Vrolan, 1992); time since completing radiotherapy (Krouse, 1985); family and health authority support (Bennett, 1993; Budin, 1998; Courtens, et al., 1996; Maneechai, 1999; Mishel & Braden, 1987; 1988; Steginga & Dunn, 1997; White & Frasure-Smith, 1995); symptom distress (Budin, 1998; Mast, 1998; Northouse, et al., 1995); uncertainty (Christman, et al., 1988; Mishel, 1981; 1984; Mishel & Braden, 1987; Mishel, et al., 1991; Redeker, 1992; Wineman, et al., 1994); problem-focused coping (Billings & Moos, 1981; Dunkel-Schetter, et al., 1992; Powers & Jalowiec, 1987); and emotion-focused coping (Bolger, 1990; Felton, et al., 1984; Friedman, et al., 1990; Moore, 1999; Saneha, 1999). Figure 2 depicts these study variables and the proposed relationships that were studied in a structural equation model.
Figure 2: The model of psychosocial adjustment in post radiotherapy cervical cancer women
Age

Age of individuals, the number of years since birth, reflects an individual's lived experience. In general, older people tend to have had more experiences in their lives and works that they have dealt with for a long period of time. When individuals are ill, they can interpret and cope with their illness drawing from life experiences. An inverse relationship between age and symptom distress was found indicating that older participants reported less symptom distress (Budin, 1998) and younger person had more difficulty with psychosocial adjustment than older one (Mast, 1998; Stanton & Snider, 1993; Vinokur, et al., 1989; 1990). It may be that older person with illness adapts to their situation with less trouble because they view their current situation within the context of their whole life. In addition, age was found to have an inverse relationship to uncertainty (Lemaire, 1999). Younger patients perceived more uncertainty in hospital events because they lacked an experiential frame of reference (Mishel, 1981). Therefore, it is postulated that age will be negatively related to symptom distress and uncertainty, and positively related to psychosocial adjustment.

Education

Education, the number of years of formal schooling, is a major factor in cognitive capacities. Education can assist in supplying a structure to the symptoms by providing a knowledge base with which to associate symptoms (Mishel, 1988). People with higher education tended to have higher levels of social support (Muhlenkamp &
Sayles, 1986) to seek social support, and to share their information and experiences more than those with less education. Post radiotherapy cervical cancer women with more education seem to be able to modify and interpret their distress more objectively than those with less education (Degner & Sloan, 1995; Tishelman, et al, 1991). Thus, symptom distress is reduced. Education was found to have an inversely relationship with uncertainty (Christman, et al, 1988; Hanucharurnkul, et al., 1991; Limthongkul, 1992; Vongsvivat, 1993; Vrolan, 1992). Patients with lower education were found to have more uncertainty than those with more education. Less education may contribute to the lack of understanding of events causing the perceived uncertainty. Furthermore, less were educated patients were found to have higher levels of psychological distress than more educated patients (Maunsell, et al., 1992), and education was positively related to adjustment (Chanpuang, 1991). Thus it is predicted that education will negatively influence symptom distress and uncertainty, and positively influence family and health authority support and psychosocial adjustment.

**Time since completing radiotherapy**

Time since completing radiotherapy refers to the length of time in months since cervical cancer women finished receiving radiotherapy to the time that the women were interviewed for this study. The empirical data show that radiotherapy side effects can occur during radiotherapy and can still remain up to 18 months after treatment (Dow, 1992; Graydon, 1994; Hilderly, 1992; King, et al., 1985). Furthermore, observation in clinical practice found that patients experienced the severity of symptom differently at different points in time. Although no empirical data
were found that proposed the relationship between duration after treatment and symptom distress, clinical observations found that the longer as the period completing radiotherapy, the less symptom distress. Moreover, Capone and colleague (as cited in Krouse, 1985: 46) proposed that the newly diagnosed gynecological cancer patients were less confused, and more consistent in their self-perceptions within three months following treatment. They were also more likely to return to employment and typical sexual functioning within the first year following treatment. Therefore, it is expected that time since completing radiotherapy will be negatively related to symptom distress and positively related to psychosocial adjustment.

**Family and health authority support**

Family and health authority support refers to emotional, informational and tangible aids that post radiotherapy cervical cancer women receive from family members and health authority. Mishel (1988: 228) described that the opportunity to clarify a situation through discussion and supportive interactions with others clarifies contingencies and aids in the forming of a cognitive schema. Post radiotherapy cervical cancer women who can share information about their discomfort with family members or health care providers may appraise their symptoms in a more positive way (Courtens, et al., 1996; White & Frasure-Smith, 1995). Thus, post radiotherapy cervical cancer women who perceive higher family and health authority support, would have less symptom distress. Social support also functions as a means of avoiding uncertainty by establishing a network whereby members depend on one another's expertise of handling various threatening events. Family and health
authorities influence uncertainty by providing information on the causes and consequences of symptoms, and enhancing event congruence. With higher levels of support, patients have a clearer view of a symptom pattern and a greater degree of familiarity with events (Mishel & Braden, 1988: 99).

Studies show that patients desire information to help them cope in uncertain situation (Lazarus & Folkman, 1984). Resources that are available will also influence the coping process that the support of others is to enhance. Social support provides patients with resources such as informational, emotional and tangible aid to engage in active coping activities, or problem solving (Courtens, et al., 1996; Steginga & Dunn, 1997). The perceived availability of social support was positively related to problem-focused coping and emotion-focused coping (Bennett, 1993; Maneechai, 1999). Increased social support contributes to having additional coping resources available to deal with stressful encounters. Emotion-focused coping tends to be used to regulate emotional responses to problems that are not changeable or to reconstruct the meaning of the stressful event without changing or distorting reality (Lazarus & Folkman, 1984). In the long run, patients use more problem-focused coping than emotion-focused coping for solving problem or releasing the tension of the situation, and making the situation better. Moreover, social support provided patients with more communication opportunities that facilitate emotional expression and emotional support seeking (McQueency, et al., 1997). Therefore, as social support increases, it helps patients to perceive the situation better. In turn, it reduces anxiety and helps patients to manage their emotions and feelings appropriate to the situation. Then, less emotion-focused coping is used.
Additionally, social support was stressed as a predictor of psychosocial adjustment that positive social support enhanced psychosocial adjustment to illness (Budin, 1998; Mishel & Braden, 1987). It is proposed that post radiotherapy cervical cancer women who perceived more family and health authority supports will have less psychosocial distress. Therefore, it is postulated that family and health authority support will be negatively related to symptom distress, uncertainty, and emotion-focused coping, and positively related to problem-focused coping and psychosocial adjustment.

**Symptom distress**

Symptom distress is defined as the degree of discomfort reported by patients in relation to their perception of the symptoms being experienced (McCorkle & Young, 1978). Symptom distress refers to meaning that the illness holds for the individual, and the meanings ascribed to symptoms are relative to one’s life satisfaction (Rhodes & Watson, 1987). Therefore, physical or mental distress related to symptoms is dependent upon the individual’s subjective perceptions.

Post radiotherapy cervical cancer women can experience discomforts related to the long-term side effects of radiotherapy (i.e., fatigue, diarrhea, weight loss, dysuria, fistula formation, post radiation pain syndromes, vagina stenosis, and insomnia) (Clark, 1994; Dow, 1992; Kitcharoen & Nuaklong, 1999). If these symptoms are characterized by inconsistency in intensity, frequency, number, location, and duration, patients may not perceive the symptom patterns. Patients regard these discomforts with anxiety and fear of recurrent cancer because of the
unfamiliarity and incongruent of the symptoms. Moreover, post radiotherapy cervical cancer women may not gauge the reliably of the state of their illness because of inconsistent symptoms. Thus, they perceive their futures as uncertain. Empirical data support symptom distress as positively related to uncertainty (Mast, 1998). When stimuli such as symptoms and treatments are perceived as uncertain, the perceptual tasks of recognition and classification are hampered and the cognitive structure of the event is not formed (Mishel, 1988). Therefore, patients’ ability to adequately appraise their situations and choose appropriate actions is limited. Symptom distress has emerged as the factor accounting for most of the variance in psychosocial adjustment in patients who experience distress from the side effects of treatment. They also experienced more problems in psychosocial adjustment (Budin, 1998; Mast, 1998; Northouse, et al., 1995). Therefore, it is expected that symptom distress will positively influence uncertainty, and negatively influence psychosocial adjustment.

Uncertainty

Mishel (1988: 225) defined uncertainty as "the inability to determine the meaning or value of illness-related events". This forms when the person cannot structure the cognitive state for illness events because of insufficient cues and ambiguity events. Perceived uncertainty by post radiotherapy cervical cancer women contain discomfort of the symptoms that result from long-term radiotherapy side effect, lack of information and unpredictability about their future, and fear of recurrence (Carter, 1993: 354-361; Hilton, 1988: 217-238; Weiner & Dodd, 1993: 17-31). According to the uncertainty in illness theory, uncertainty results from an
instability in symptom patterns of the disease, unfamiliarity or unpredictability of illness-related events, and incongruent between the personal expectations and experiences about disease and illness. These causes are inversely related to uncertainty (Mishel, 1988: 225).

The relationship between uncertainty and coping has been reported to be associated with the use of emotion-focused coping and lower levels of uncertainty with the use of problem-focused coping (Mishel, et al., 1991; Redeker, 1992; Wineman, et al., 1994). It seems that in uncertain situations, emotion-focused coping is used to manage the accompanying emotional distress. Once the emotional distress is brought under control, the opportunity for more goal-directed behaviors emerges through the use of problem-focused coping (Wineman, et al., 1994). An adaptive strategy for coping with physical discomfort might be a problem-focused coping strategy like taking pain medication, whereas, the best strategies for dealing with ambiguity about the future might be emotion regulation like denial (Dunkel-Schetter, et al., 1992). Moreover, greater uncertainty has also been associated with more negative emotions, and poorer psychosocial adjustment (Christman, et al.,' 1988; Folkman & Lazarus, 1985; Mishel, 1981, 1984; Mishel & Braden, 1987). Finding have shown that continued uncertainty about the future and fixation with interpreting cues about treatment might have a negative effect on the return to normal roles and function, and contribute to poor psychosocial adjustment outcomes. Thus, it is expected that uncertainty will positively influence emotion-focused coping, and negatively influence problem-focused coping and psychosocial adjustment.
Coping

Lazarus & Folkman (1984: 141) defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person". Coping is emphasized as being process-oriented with changes over time and it depends on the specific context that it is encountered. Coping is concerned with what a person actually thinks or does in a specific event. There are two functions of coping: problem-focused and emotion-focused. Problem-focused coping emphasizes managing or altering a problem in the environment that cause distress or regulating goal-directed behaviors. Likewise, emotion-focused coping emphasizes changing or reconstructing the meaning of the stressful event without changing or distorting reality or regulating emotional responses to problem. Persons use both problem-focused and emotion-focused coping interchangeably or simultaneously to face with stressful situations. Both strategies can facilitate each other in the coping process. In general, problem-focused coping is more adaptive and reality-oriented. Persons using problem-focused coping try to change their behavior or change the environment in order to make the situation better. Emotion-focused coping is the strategy by which persons try to manage their emotions and feelings, which are reactions to stressful situations. In a chronic disease study, Pollock (1989) asserted that when illness is appraised as harmful, individuals who used both problem-focused and emotion-focused coping have better adaptational outcomes than if they use only problem-focused or emotion-focused coping.
In this study, the symptom distress of post radiotherapy cervical cancer women may encourage perceived uncertainty that promotes different uses of coping. If the coping is effective for an uncertain event appraised as either a danger or an opportunity, adaptation or adjustment can occur (Mishel, 1988). The long-term radiation side effects impact psychosocial adjustment in post radiotherapy cervical cancer women. Problem-focused and emotion-focused coping can positively affect psychosocial adjustment as in problem-solving, emotional management, self-esteem maintenance, and positive outlook preservation. Although empirical studies provide evidence that person use both problem-focused coping and emotion-focused coping in the stressful situation (Folkman & Lazarus, 1980; 1985; Pollock, 1989), in different situations, different coping strategies are related to different outcome. Empirical data that studied each function of coping strategies and adjustment, found that problem-focused coping has been viewed as more efficacious and conducive to adjustment (Billings & Moos, 1981; Dunkel-Schetter, et al., 1992; Powers & Jalowiec, 1987). Whereas, emotion-focused coping increased emotional distress that related to maladjustment (Bolger, 1990; Felton, et al., 1984; Friedman, et al., 1990; Moore, 1999; Saneha, 1999). Therefore, it seems to be expected that problem-focused coping will positively predict psychosocial adjustment, and emotion-focused coping would negatively predict psychosocial adjustment.
Hypotheses:

1. Education positively influences family and health authority support.

2. Age, education, time since completing radiotherapy, and family and health authority support negatively influence symptom distress.

3. Age, education, and family and health authority support negatively influence uncertainty, and symptom distress positively influences uncertainty.

4. Family and health authority support positively influences problem-focused coping, and uncertainty negatively influences problem-focused coping.

5. Family and health authority support negatively influences emotion-focused coping, and uncertainty positively influences emotion-focused coping.

6. Age, education, time since completing radiotherapy, family and health authority support, problem-focused coping positively influence psychosocial adjustment, and symptom distress, uncertainty, emotion-focused coping negatively influence psychosocial adjustment.

Scope of the Study:

This study tested a causal model of psychosocial adjustment in post radiotherapy cervical cancer women. The study involved only women with cervical cancer who have finished receiving the radiation therapy for at least one month up to two years, have lived without recurrence of the cancer and came to follow up at the
radiotherapy OPD clinic of Chulalongkorn Hospital, Ramathibodi Hospital, and Rajavithee Hospital.

**Definition of Terms:**

The operational definition of terms used in this study are as follows:

1. **Age** refers to the number of years since birth.

2. **Education** refers to the number of years of formal schooling.

3. **Time since completing radiotherapy** refers to the length of time in month since post radiotherapy cervical cancer women finished receiving radiotherapy to the time, that the women were interviewed at the radiotherapy out patient clinic for this study.

4. **Symptom distress** refers to the degree of discomfort reported by the post radiotherapy cervical cancer women in relation to the perception of symptoms experienced from radiation therapy for cervical cancer. It pertains to nausea, appetite, insomnia, pain, mobility, fatigue, bowel pattern, and voiding pattern. It is operationally defined as the sum scores for 8 items of Symptom Distress Scale (McCorkle & Young, 1978). The higher the scores the more symptom distress.

5. **Family and health authority support** refers to the emotional support, tangible support and informational support that post radiotherapy cervical cancer women receive from their family members and health authority. Total family and health authority support is operationally defined as the sum of the scores of the 14 items for perceived emotional, tangible, and informational support on the Social
Support Questionnaire (Schalfer, Coyne, & Lazarus, 1981). The higher the scores the higher level of support.

6. **Uncertainty** refers to an inability of post radiotherapy cervical cancer women to determine the post radiotherapy events because of ambiguous or incongruent symptom distress, or lack of information. It is operationally defined as the sum of scores of the 23 items of the Mishel’s Uncertainty in Illness Scale: Community Form (MUIS-C) (Mishel, 1997). The higher the scores the higher level of uncertainty.

7. **Problem-focused coping** refers to behavior and cognitive effort of the patients in managing or altering a problem that causes distress or regulating goal-directed behaviors, which post radiotherapy cervical cancer women select individually in response to uncertainty event post radiotherapy. It is operationally defined as the raw score for 15 items of problem-focused coping of The Jalowiec Coping Scale (Jalowiec, 1979). The higher the raw scores the more frequently use of problem-focused coping.

8. **Emotion-focused coping** refers to behavior and cognitive effort of the patients in regulating emotional responses to the problem, which post radiotherapy cervical cancer women select individually in response to uncertainty event post radiotherapy. It is operationally defined as the raw score for 25 items of emotion-focused coping of The Jalowiec Coping Scale (Jalowiec, 1979). The higher the raw scores the more frequently use of emotion-focused coping.

9. **Psychosocial adjustment** refers to the ability to maintain psychological and social functioning by post radiotherapy cervical cancer women. It is operationally defined as the sum scores for 45 items of The Psychosocial Adjustment to Illness
Scale, which included 7 domains: healthcare orientation, vocational assessment, domestic environment, sexual relationships, extended family relationships, social environment, and psychological distress. (Morrow, Chiarello, & Derogatis, 1978). The higher the scores the better psychosocial adjustment.

10. Post radiotherapy cervical cancer women refer to women with cervical cancer who have finished receiving the radiation therapy for at least one month up to two years, and have lived without recurrence of the cancer.

Significance of the Study:

This study examines the causal relationships among age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, emotion-focused coping, and psychosocial adjustment in post radiotherapy cervical cancer women. This study will propose a middle range theory of psychosocial adjustment in post radiotherapy cervical cancer women. It will provide a database about the relationships among these variables that will help nurses understand post radiotherapy cervical cancer women' perception of symptom distress, family and health authority support, and uncertainty, and their coping strategies. Therefore, the results of this research will aid in the development of nursing knowledge about the psychosocial adjustment in post radiotherapy cervical cancer women. As a result, nurses will be able to design research and nursing interventions to help cervical cancer women and families to live with uncertainty for the better psychosocial adjustment.
Assumptions:


2. Cervical cancer women appraise uncertainty as a stressful situation.
CHAPTER II
LITERATURE REVIEW

In this chapter, research literature pertaining to psychosocial adjustment in post radiotherapy cervical cancer women and factors that influence their psychosocial adjustment are critiqued and reviewed. The first section focuses on the main study outcome, psychosocial adjustment. The second section examines factors found to influence psychosocial adjustment including coping, uncertainty, symptom distress, family and health authority support, age, education, and time since completing radiotherapy, and their relationships with one another.

Psychosocial Adjustment

Psychosocial adjustment consists of the word ‘psychosocial’ and ‘adjustment’. According to dictionary, psychosocial means pertaining to or concerning the mental factors or activities, which determine the social relations of an individual; adjustment is the act of adjusting, regulation, making fit or comfortable (McKeche, 1980: 20, 1454). Furthermore, Anderson and colleagues (1994: 11) defined adjustment as the continuous process or effort of the individual to adapt or adjust to surrounding to maintain a state of homeostasis, both physiologically and psychologically.
Moreover, most of the reviewed studies did not clearly define psychosocial adjustment. There were only a few investigators who provided a clear definition of psychosocial adjustment. Both Northhouse (1989) and Derogatis and Derogatis (1990) viewed psychosocial adjustment as a multidimensional construct. However, Northhouse (1989) included psychological state and social functioning domains: a positive balance of mood states, the absence of extreme psychiatric distress, and the ability to function in work, family, and social roles. Whereas, Derogatis and Derogatis (1990) included intrapsychic processes and interactions between the individual and other individuals and the institutes representing his or her sociocultural environment domain. Furthermore, Irvine (1996) defined psychosocial adjustment as the process of adaptation or change related to woman's emotional or psychological and social well being and its impact upon her lifestyle.

Therefore, psychosocial adjustment is a multidimensional concept that includes both psychological and social functioning aspects. In this study, the researcher proposes psychosocial adjustment as the ability of post radiotherapy cervical cancer women to maintain psychological and social functioning.

Individuals adjust differently to the same severity of a situation and some individuals seem to adjust better than others do. Haber and Runyon (1984: 25) proposed some factors that influence a good adjustment:

a) Accurate perception of reality includes individuals’ tendency to distort their reality perception and their interpretation of events.

b) Ability to cope with stress and anxiety includes long-term goals that give direction to life, and make them better able to resist the frustration and stress.
c) A positive self-image is self appraisal that should include the positive as well as the negative.

d) Ability to express the full range of emotions, which include over control and under control.

e) Good interpersonal relationships are capable of relating to others in productive and mutually beneficial ways.

It is obvious that adjusting to and living with chronic illness can be difficult. As with any of the chronic illness, the adjustment process itself can be long time, and compounded by the psychological implications of the illness. LaRocca and colleagues (1983 cited in Hastings, 2000: 303) proposed four stages of the process of adjustment that patients with Multiple Sclerosis (MS) experience as follow. The first stage is uncertainty, which may prevail after the symptoms first appear and before a diagnosis is made. The patient may feel nervous and confused because of indefinite time of diagnosis. The second stage is acceptance, which feelings such as shock, disbelief, denial, and confusion may be experienced. Acceptance is difficult because it means coming to hold with forced change due to loss, which is both painful and upsetting. The third stage is adaptation, which begins when some degree of change has started to take place. This stage is the preservation of quality of life while being able to incorporate the physical, psychological, and social changes brought about by the illness into daily life. The fourth stage is emergence, which begins at a lessening of nervousness and anger and a widening of perspective. The accomplished action is to place the illness in perspective as one carries on with everyday life. The physical,
emotional, and social changes have been met and integrated as much as possible into the person's lifestyle.

The cervical cancer not only changes a patient's life at the time of diagnosis or during hospitalization, but also changes her life undergoing the treatment. In addition, long-term radiotherapy side effects, and the diagnosis of cancer itself affect patient's psychological and social functioning during post radiation period. Krouse (1985: 45-49) presented a four stage process of behavioral and psychological adjustment to gynecologic cancer:

Stage 1 Recognition-Exploration: this stage involves the women's first awareness of disease symptoms and diagnosis. Women seek to understand the disease and its meaning. The diagnosis of cancer often creates feelings of uncertainty and hopelessness in the patient. The uncertainty during the diagnostic phase in gynecological cancer predisposes the women to a loss of motivation, sadness, and pessimism contributing to greater family stress and strained relationships with significant others.

Stage 2 Crisis-Climax: this stage is the most stressful for the women both physically and emotionally. The women face the full impact of cancer, its treatments, and implications.

Stage 3 Adaptation-Maladaptation: Women attempt to adjust to their cancer and begin to develop processes through which they may interact more effectively with their environment. The manners in which the women confront the physical and psychological complications determine how well they adjust. Furthermore, adequate information about the disease and its treatment, family
relationships, and previous coping mechanisms, may pay a major role in the successful or unsuccessful adaptation in the following years.

Stage 4 Resolution-Disorganization: the women are either able to return to some level of previous function, leading to a positive resolution of the crisis or to an extended period of disorganization both behaviorally and emotionally. For resolution, the women regain much of their physical health and energy level; become more interested in work and social activities; and develop an improved sense of self-esteem and lessening of negative affect. In the contrast, the women may continue to experience physical debilitation and emotional exhaustion, and social withdrawal and dissatisfaction with sexual roles and relationships.

There are various instruments that measure psychosocial adjustment in the previous studies (Bloom, et al., 1984; Ganz, et al., 1991; Nelson, et al., 1994; Northouse, 1989; Northouse & Swain, 1987; Zemore & Shepel, 1989). Psychosocial Adjustment to Illness Scale (PAIS) is a well-known instrument that has been used to measure psychosocial adjustment in cancer population (Budin, 1998; Morse & fife, 1998; Northouse, et al., 1995; 2000), and in Thai sample (Kaveevivitchai, 1993; Kunawat, 1992; Saneha, 1999; Vadtanapong, 1996; Sittichamlong, 1999). The Psychosocial Adjustment to Illness Scale (PAIS), which composed of seven domains, was developed by Marrow, Chiarello, and Derogatis (1978). They derived these domains from their generally widespread acceptance in clinical practice. The seven domains of psychosocial adjustment consisted of:
a) Health care orientation: this domain of adjustment is concerned with the patient's current health care posture and whether it is conductive to positive adjustment to illness and its treatment.

b) Vocational assessment: This domain assesses disruption in job performance, satisfaction, and adjustment, which is attributable to the present illness.

c) Domestic environment: this domain is oriented towards illness-induced difficulties that arise primarily in the home or usual family environment.

d) Sexual relationships: this domain is oriented towards an evaluation of any shifts in the quality of sexual behavior or relationships attributable to the present illness or its outcome.

e) Extend family relationships: This domain reflects any difficulties in relationships with the extended family constellation attributable to the illness.

f) Social environment: This domain is concerned with the degree to which the illness has impaired the patient's social and leisure activities.

g) Psychological distress: It covers the degree to which pertinent psychological difficulties have arisen associated with the occurrence of the disease.

According to the long-term radiotherapy side effects, the post radiotherapy cervical cancer women experienced symptom distress and perceived uncertainty that affect to their psychological and social functioning such as psychological distress, ability to work, relationships with spouse, family, and friends. The Psychosocial Adjustment to Illness Scale includes seven dimensions that relevant to the experiences of the post radiotherapy cervical cancer women. Therefore, in this study, the Psychosocial Adjustment to Illness Scale is used to evaluate the ability of post
radiotherapy cervical cancer women to maintain psychological and social functioning to live with cervical cancer.

**Researches Related to Psychosocial Adjustment.**

There had been increased in the number of patients with cancer and advances in technology and in treatment resulting a longer disease-free periods. Recently, research studies have increased attention to psychosocial adjustment as a consequence of cancer diagnosis and its treatment. A number of studies have supported that cancer and its treatment cause changes in sexual and family relationships, social vocational roles, lifestyle, and daily living activities (Anderson & Jochimsen, 1985; Dean, 1987; Ganz, et al., 1987; Germino, et al., 1995; Hilton, 1993; Northouse, 1989; Northouse & Swain, 1987).

The study of sexual functioning in women with breast cancer showed significantly lower levels of current sexual activity, frequency of sexual intercourse, frequency of kissing, and lower sexual arousability index than did women with gynecological cancer or healthy out-patients (Anderson & Jochimsen, 1985). Similarly, forty percent of women who had undergone mastectomy reported a decrease in frequency of sexual intercourse (Ganz, et al, 1987). Furthermore, Dean (1987) proposed that Scottish women in the mastectomy group demonstrated more minor depressive disorders than did the healthy groups, and more impaired ability with household tasks, deteriorating sexual relationships, decreased social activities, and not returning to work at three months after surgery.
A study of psychosocial adjustment in 50 mastectomy patients and their husbands, which was conducted by Northouse and Swain (1987), found that patients had significantly more mood disturbances at three days after surgery as well as psychological distress and role adjustment problems at thirty days after surgery than did their husbands. The results also showed that the patients had some role adjustment problems including missing time from work and fatigue leading to less social activities. Later, Northouse (1989) interviewed these groups at 18 months after surgery. Results revealed that mood disturbance and role-function problems decreased overtime, but psychological distress persisted overtime for both patients and their husbands.

Hilton (1993) studied about communication and family relationships in women with early stages of breast cancer. The result showed that 10% of the patients and their spouses had difficulty communicating, which was usually accompanied by considerable difficulty in the marital relationship. These results were congruent with Germino and colleagues’ study (1995). They found that women newly diagnosed with breast cancer had greater difficulty family relationship adjustment than did their husbands. Furthermore, communication between couples was significant associated with lower levels of anxiety and depression, a greater sense of personal control, and more positive adjustment for patients and their spouses.

There have been a number of studies related to the adjustment of Thai patients (Chanpuang, 1991; Kaveevivitchai, 1993; Kunawat, 1992; Saneha, 1999; Vadtanapong, 1996). Chanpaung (1991) conducted a study about perception of the disease, spousal support, and adaptation in 100 Thai women with breast cancer who
had undergone mastectomy at least one month prior to the study. Adaptation was defined as the abilities of the patients to respond to the internal and external environment as related to physiological needs, self-concept, role function, and interrelationship to others. The findings indicated that 45% of women with breast cancer had an overall maladjustment and 40% had maladjustment in their roles and their relationships to others.

The experimental study, conducted by Kunawat (1992), tested the effects of promoting patients’ participation in self-care deficit and social adjustment in 42 patients with retinal detachment. The result demonstrated that on the discharge day, patients in the experimental group had significant less self-care deficit and better health orientation adjustment than patients in the control group had. On the follow up within 1-2 weeks patients in the experimental group still had significantly less self-care deficit, and better adjustment in health orientation, extended family, social environment, and psychological distress than the control group. These findings supported the beneficial of promoting patients’ participation in self-care and better psychosocial adjustment.

In another study of Thai women with breast cancer who had undergone mastectomy and were receiving chemotherapy, Kaveevivitchai (1993) examined the relationships among uncertainty, social support and adaptation. Adaptation was defined as role adjustments, morale and life satisfaction, and symptom distress, was measured by Thai Psychosocial Adjustment to Illness (Kunawat, 1992) and Thai Modified Symptom Distress Scale (Kritsanapun, 1989). The results found that the majority of patients had good overall adjustment, but had maladjustment in the moral
and life satisfaction subscale. Additionally, multiple regression analysis revealed that uncertainty in illness and economic problem were significant predictors of adaptation and accounted for 36% of variance. These findings seemed to support the validity of Mishel’s uncertainty in illness theory, which postulated the relationships of uncertainty and adaptation.

Vadtaanapong (1996) studied the ways of coping and psychosocial adjustment in 60 HIV infected clients. Psychosocial adjustment was defined as the outcome of coping in seven domains. The findings showed that subjects who better adjustment could adapt well in the domain of domestic environment, sexual relationships, and psychological distress, whereas, those who had worse adjustment did not adapt well in the domain of social environment, vocational assessment, and health care orientation.

Sanenha (1999) examined the relationships among optimism, appraisal, coping strategies, and psychosocial adjustment in 129 Thai women newly diagnosed with breast cancer who undergone mastectomy. Psychosocial adjustment was defined as a multidimensional construct comprising the change in individuals’ emotional or psychological and social well-being and its impact on individual life style. The findings revealed that psychosocial adjustment was moderately related to age, marital status, education, time since diagnosis, harm/loss appraisal, threat appraisal, and emotion-focused coping strategies. Hierarchical multiple regression showed that marital status, perception of financial ability, time since diagnosis, and threat appraisal explained 26% of the variance in overall psychosocial adjustment. These findings
provided an understanding of the important role of appraisal in the psychosocial adjustment.

In short, cancer and its treatment influence their physiological, psychological, and social functioning. Little is known about psychosocial adjustment in Thai patients especially cervical cancer in post radiotherapy period. Individuals adjust differently to the same situation and some individuals seem to adjust better than others do. Different adjustment between individuals in similar situation may be related to the individual's differences that impact the adjustment. According to Mishel's uncertainty in illness theory and empirical data, factors influencing psychosocial adjustment include coping, uncertainty, symptom distress, family and health authority support, age, education, and time since completing radiotherapy.

Coping

Coping is a term that is currently widespread use. The paradigm of coping provides three perspectives of coping: reductionism, interactionism, and transactionism (Aldwin, 1994). Reductionists view coping behaviors as simple responses to stressful environment stimuli. Interactionists view coping as a response of appraisal of mutual stimuli that influence both personal and environmental variables. Coping outcomes in the transactionists' perspective can provide feedback as two ways of influencing the appraisal process, person, and environment within the stress context. A well-known definition of coping from the perspective of transactionism was defined by Lazarus and Folkman (1984). Coping was defined as
“constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (Lazarus & Folkman, 1984).

Coping was emphasized as process-oriented rather than trait-oriented because coping changes over time and is concerned with what an individual actually thinks or does in a specific situation. Coping is the process through which the person manages the demands of the person-environment relationship, that are appraised as stressful and the emotions they create. Similarly, Weisman (1979) defined coping as a process that combines and mixes different types of tactics, depending on the problem and available resources. Jalowiec and colleagues (1984) defined coping more specifically to health as a process in which the individual attempts to alleviate stress. Nyamathi (1989) stated coping as the thoughts and actions that individuals engage to overcome threats to health, and deal with crises encountered in order to attain or retain optimal health and functioning. Therefore, coping is cognitive and behavioral efforts to manage problems and emotion.

Lazarus and Folkman (1984) mentioned two types of functions of coping strategies: (a) problem-focused coping strategies refer to managing or altering a problem that causes distress or regulating goal-directed behaviors; and (b) emotion-focused coping strategies refer to regulating emotional responses to the problem that lead to change or reconstruct the meaning of the stressful event without changing or distorting reality. Both problem-focused and emotion-focused coping strategies can facilitate each other in the coping process. Furthermore, both coping strategies serve
important functions of human adaptation, which requires maintaining a balance between the two functions of coping (Lazarus, 1990).

Folkman and Lazarus (1988) stated that problem-focused coping strategies are more adaptive and reality-oriented. These strategies are focused on problem solving or releasing the tension of the situation. Persons using these strategies try to change their behavior or the environment in order to make the situation better. Whereas, emotion-focused coping strategies are the methods which persons try to manage their emotions and feelings. These strategies are reactions to stressful situations, but do not try to solve the problem or correct the cause of problem. Individuals use both problem-focused and emotion-focused coping strategies interchangeably or simultaneously to face stressful situations (Folkman & Lazarus, 1988).

Weisman (1979: 42-43) acknowledged that coping with cancer was an extension of how well a person coped during health. The process of coping was a combination of perception, performance, appraisal, and correction followed by logical behavior. He stated that there is no secret formula for good coping that fits everyone with cancer. The most effective copers followed a set of positive directives that guided them through stressful situations as: (a) avoid avoidance, do not deny; (b) confront realities, and take appropriate action; (c) focus on solutions or redefine a problem into solvable form; (d) always consider alternatives; (e) maintain open, mutual communication with significant others; (f) seek and use constructive help, including decent medical care; (g) accept support when offered, be assertive when necessary; (h) keep up morale through self-reliance or resources that are available; (i) self-concept is as important as symptom relief; and (j) hope is self-pride, not self-
deception. These directives contained many of the same components as problem-focused coping strategies by Lazarus and Folkman (1984).

Moreover, Jalowiec (1993: 70) summarized the nursing literature on coping from 1980-1990 and found that persons tried to cope with illness situations by using five main types of coping strategies. These five approaches to coping with illness were: (a) trying to remain optimism about the outcome of the illness; (b) using social support; (c) making use of spiritual resources; (d) trying to maintain some control either over the situation or over themselves; and (e) trying to accept the situation. These types of coping strategies are congruent with two functions of coping strategies that proposed by Lazarus and Folkman (1984). Staying optimistic is congruent with emotion-focused coping strategies, whereas, maintaining control and accepting the situation are congruent with problem-focused coping strategies. Furthermore, using social support and using spiritual resources are congruent with both emotion-focused and problem-focused coping strategies.

In Mishel's uncertainty in illness theory, Mishel (1988) posited that after the uncertainty appraisal was evaluated, specific types of coping strategies would be chosen. Coping strategies that were selected in relation to danger appraisal are mobilizing strategies and affect-control strategies. Mobilizing strategies included strategy of direct action, vigilance, and information seeking, while affect-control strategies affected management as a whole, including the coping methods of faith, disengagement, and cognitive support. Both mobilizing and affect-control strategies were relevant to problem-focused coping strategies. In contrast, when opportunity was appraised, the specific types of buffering coping strategies were selected.
Buffering strategies included avoidance, selective ignoring, reordering priorities, and neutralizing. These strategies were congruent with problem-focused coping strategies. Buffering coping strategies had a stronger possibility of positive outcome than negative outcome (Mishel, 1988).

Researches Related to Coping

The important role of coping strategies in cancer patients was proposed as predictors of changes in personal stress level, perspective, and attitude (Reardon & Aydin, 1993), and of depression reactions (Manos & Christakis, 1985). Furthermore, two functions of coping: problem-focused and emotion focused coping strategies, were used to deal with a personal illness and survivorship. There were studies that assessed coping strategies of cancer patients by interview technique, the findings were congruent with both problem-focused and emotion-focused coping strategies (Ali & Khalil, 1991; Fredette, 1995; Kanjanajari, 1993; Krouse, 1993; Pittayaparn, 1999). Ali and Khalil (1991) categorized coping strategies in 64 Egyptian women who had undergone mastectomy into four groups: faith, compliance with social regimen, information seeking and social support, and self-distraction. They proposed that patients frequently used faith or disengagement (emotion-focused coping) when they believed that nothing could be done to decrease uncertainties about their illness.

Krause (1993) explored coping strategies in 125 cancer patients. The results showed that 11 coping with cancer upon hearing the diagnosis were: attempts to find information about the disease, emotional evaluation of situation, emotion on
the basis of an earlier comparable predicament, comparison with patients who had recovered from cancer, hope, social activity, support from relatives and professional helper, religious help, allowance of pessimistic feeling, comparison with patients who had succumbed to cancer, and passive defensive mechanisms.

Fredette's study (1995) in breast cancer survivors reported that participants used coping strategies including: trying to gain continuity and normalcy in life by working both inside and outside the home; concentrating on religion, praying, meditating, and trying to believe in God; information seeking; hopeful attitudes; and positive attitudes concerned in the impact of cancer.

In a study which explored coping strategies in Thailand, Kanjanajari (1993) proposed 12 coping strategies used by the patients with hematological malignancy: cooperative compliance, mutuality, seek more information, enduringness, displacement/redirection, crying, using herb, morale, having essential food, denial, masochism, and blame someone else. Whereas, Pittayaparn (1999) reported coping efforts of cervical cancer patients receiving radiotherapy as: situational control, optimistic, spiritual, social support, and passive acceptance that consistent with Jalowiec's study (1993).

In conclude, the empirical literature showed that patients used different coping strategies to deal with their illness. However, these coping strategies can be categorized in two functions: problem-focused and emotion-focused coping. Furthermore, individuals use different coping strategies in the stressful situation that may lead to different adjustment or outcome.
Coping and Psychosocial Adjustment

Coping strategies have been reported to be associated with psychosocial adjustment. Keckesen and Nyamathi (1990) reported that patients with myocardial infarction used problem-focused coping more frequently than emotion-focused coping, and patients who used more problem-focused coping had better social and psychological adjustment to their illness.

In cancer population, Friedman and colleagues' replication study (1990) of adjustment to breast cancer found that fighting spirit was related reliably to better health care orientation, vocational, domestic, social, and psychological adjustment. Similarly, reliable relationships were found between coping by avoidance and poorer domestic, sexual, social, and psychological adjustment.

Dunkel-Schetter and colleagues (1992) found that less emotional distress was significantly associated with more coping through social support. More psychological distress was associated with using more of both cognitive and behavioral escape-avoidance. They proposed that although both problem-focused and emotion-focused coping were found to have a significant relationship with emotional distress, no all strategies functioned to reduce emotional distress.

A study of coping in women with early stage of breast cancer conducted by Carver and colleagues (1993) showed that three coping strategies: acceptance, use of humor, and positive reforming, were related to good emotional adjustment. Denial and disengagement were consistently related to simultaneous
distress. These findings were supported by previous studies in chronic illness (Felton, et al., 1984) and in stress in general life events (Billing & Moos, 1981).

Lutgendorf and colleagues (2000) investigated relationships of coping styles to quality of life and mood in women who had received intensive chemotherapy for at least 1 year for advanced gynecologic cancers. The result showed that patients using avoidance coping reported poorer physical and emotional well-being, along with greater anxiety, depression, fatigue, and total mood disturbance. Those using active coping reported better social well-being, better relationships with their doctors, and less overall distress.

In summary, the relationships between coping strategies and psychosocial adjustment were congruent in that problem-focused coping strategies were positive relationship with psychosocial adjustment, whereas, emotion-focused coping strategies were negative relationship with psychosocial adjustment.

When patients perceived uncertainty in their illness experience, continued uncertainty about the future and fixation with interpreting cues about treatment might impact on their normal role and function. Thus, uncertainty seems to influence patient's adjustment.

**Uncertainty**

Uncertainty is a concept that has been used in variety of disciplines, but the meaning of uncertainty is similar in each field. The implications of the uncertainty concept range from a specific lack of absolute sureness to general sense of vagueness, uncertainty is stated as a noun that means lack of certainty or something doubtful or
unknown (Neufeldt & Guralnik, 1994). In area of business, uncertainty is viewed as a source of financial risk and organizational stress and a business decision is influenced by the degree of uncertainty in the situation (McKenna, 1985). The meaning of uncertainty in organization is defined as a condition that decision-makers do not have sufficient information about environment factors, and they have a difficult time predicting external changes. Uncertainty in system engineering is viewed as a probability of causally related events (Yuen & Lam, 1995). In Psychology, Lazarus and Folkman (1984) defined uncertainty as the person's confusion about the meaning of the environmental configuration.

In nursing, uncertainty is used to describe the perception that people confront signs and symptoms. The Theory of Uncertainty in Illness created and has been tested since 1981. Mishel (1981) has articulated and studied uncertainty in the context of illness as a research construct within a theoretical model of uncertainty perception, coping and adaptation. Uncertainty from Mishel's perspective emphasizes individual's inability to clarify the meaning of illness events when these events are ambiguous, highly complex, lacking of information, or when outcomes cannot be predicted. (Mishel, 1988; 1990). Weitz (1989) viewed uncertainty as subject's lack of a cognitive framework for understanding their situations, and an inability to predict outcome. Hilton (1992) defined uncertainty as a cognitive state created when an event can not be adequately defined or categorized due to lack of information.

Uncertainty is a cognitive state that individuals may experience when the course of their disease or the efficacy of the treatment for their disease is unpredictable. In the illness experience, uncertainty had four forms: (a) ambiguity...
concerning the state of the illness, (b) complexity regarding treatment and system of care, (c) lack of information about the diagnosis and seriousness of the illness, and (d) unpredictability of the course of the disease and prognosis (Mishel, 1988). There were three possible operative situations, when an event is being perceived as an uncertainty. These operative situations were: (a) the event is not recognizable; (b) the event is recognizable but not classified; and (c) the event is recognizable but incorrectly classified (Mishel, 1988).

Mishel emphasized that the experience of uncertainty was neutral and it was neither a desirable nor avoidable experience until it was appraised as a threat. A person can appraise uncertainty event by using inference and illusion. Based on the appraisal, uncertainty was viewed as being either a danger or an opportunity. If uncertainty was appraised as a danger, there was an expectation of a harmful outcome resulting in the activating of coping strategies to reduce the uncertainty. If uncertainty was inferred to be an opportunity, a positive outcome was implied, and coping strategies to maintain the uncertainty were implemented. If the coping strategies were effective for an uncertainty event appraised as either a danger or an opportunity, adaptation or adjustment will occur (Mishel, 1988).

Cancer survivors experienced uncertainty in all stages of cancer: the diagnostic phase (is it cancer?), the treatment phase (will the treatment work?), during the post treatment phase (will I get cancer again?), and in the terminal phase (when will I die?) (Halldorsdotter & Hamrin, 1996). Uncertainty about the future was a common concern that usually emerged once the acute phase of treatment was completed. However, the acute side effects subside and the more long-term existential concern
become evident as the patients attempted to cope with surviving with the illness (Dow, 1991).

At any point after radiotherapy, the occurrence of unexplained symptoms or the appearance of ambiguous test results may propel patients into a state of increased anxiety until findings are clear. Women who completed treatment for cervical cancer faced a host of challenges on their way to psychological recovery. While they contended with cancer risks to their future, they might also deal with impaired fertility, treatment-related menopause, diminished sexual response, and relationship concerns that were specific to cervical cancer. The prognosis for recurrence might be worrisome, and social perception of their cancer might be burdensome and stigmatizing. Moreover, as patients moved from treatment to follow-up, they often experienced diminished contacts with oncology professionals as a loss because they felt physicians and nurses have escorted them through “the valley of death”, cared for them, and saved their life. Less contact with these health professionals can cause greater vulnerability and exposure, and patients may fear that if they do not return to their care providers, the cancer will come back (Auchincloss, 1995). Therefore, post radiotherapy cervical cancer women can experience uncertainty from long-term side effects, lack of information, fear of recurrence, and ambiguous future.

**Researches Related to Uncertainty**

In a cancer population, uncertainty is their main experience. Hilton (1988) explored the experience of uncertainty in sixteen women diagnosed with breast
cancer. Categories of the uncertainty included not being able to foretell the future, not feeling secure and safe from danger, being in doubt, being undecided, perceptions of vagueness, and not being able to rely on someone or something. Wong and Bramwell (1992) reported that post mastectomy patients were uncertain about whether the cancer cells were still in their bodies or the cancer could recur. Newton and Mateo (1994) mentioned that patients with brain tumor and their families were faced with doubt regarding their prognosis and further neurological impairment with consequences for disability. When tumor progression was evident, uncertainty and crisis became more profound because feelings of hope were diminished. In addition, Nelson (1996) explored the uncertainty experiences of women living with breast cancer. It was reported that uncertainty was a dynamic process that evolved from diagnosis to living with the disease. Fear of disease recurrence, fear of dying, undercurrent of anxiety, lack of progress related to the treatment and cure of breast cancer, feelings of lacking control were associated with uncertainty over time.

Furthermore, Small and Graydon (1993) described the perceptions of uncertainty of hospitalized patients with chronic bronchitis and/or emphysema using grounded theory. They proposed three themes of uncertainty in: (a) managing home and self-care; (b) planning for the future; and (c) unpredictable course of the illness; and two themes that reflected coping resources: positive thinking, and social support and material resources. These findings provided support for Mishel’s (1990) proposition that people with chronic illness live with continual uncertainty but learn to cope.
Likewise, Cohen (1993) used grounded theory to study how families of children with cancer lived under conditions of sustained uncertainty. Management of uncertainty involved developing strategies to manipulate the known, and the unknowable. Management of uncertainty referred not only to strategies that were intended to reduce uncertainty, but also to strategies that created and/or maintained uncertainty in the service of stress reduction. The management of uncertainty required that parents to work with six interactive dimensions of daily life: time, social interaction, information, awareness, the illness, and the environment. This study provided some empirical support for Mishel’s (1990) hypotheses, as well.

In Thailand, Rugwongprayoon (1996) studied the meaning of uncertainty in illness in 29 patients with heart disease. The findings indicated that uncertainties in illness of patients with heart disease were feeling of unexpected experiences or happenings related to heart disease. She found two types of uncertainty: uncertainty caused threats, and uncertainty related to hope. Uncertainty caused threats related to the severity of heart disease: indirect experiences of losing significant others from heart disease, receiving negative information, aging, and financial problems. Uncertainty also created hope from these with no heart disease symptom: receiving positive information related to heart disease, belief in empowering of will-power, and having no financial problems. She claimed that these findings supported Mishel’s (1990) proposition of uncertainty as a process.

Consequently, patients with cancer experienced uncertainty that emerged from receiving diagnosis to living with cancer. Uncertainty resulted from feeling unsecured, being in doubt, vagueness of disease and treatment, and fear of
cancer recurrence. In addition, long-term radiation side effects may generate perceived uncertainty, incorporate coping strategies to deal with uncertainty in positive adjustment

**Uncertainty and Psychosocial Adjustment**

The relationships between uncertainty and psychosocial adjustment were consistent that uncertainty was positive relationship with adjustment problem. Mishel and colleagues (1984) found that higher uncertainty levels of 54 women with gynecologic cancer during the time period between receiving a diagnosis and beginning treatment were significantly associated with more adjustment problems.

Furthermore, Mishel and Braden (1987) reported that uncertainty functions as a mediator between social support and adjustment in gynecological cancer patients. Consistently, Christman and colleagues (1988) examined the influence of uncertainty in illness and use of coping methods on emotional distress and recovery following myocardial infarction. The results revealed that uncertainty was significant and positive related with emotional distress.

Similarly, Christman (1990) examined the relationships among uncertainty, hope, symptom severity, control preference, and psychosocial adjustment in 68 gynecologic cancer patients receiving radiotherapy. The finding showed that patients who perceived their illness experiences as more uncertainty also reported more adjustment problems, and symptom severity was positive associated with adjustment problem.
In addition, Failla and colleagues (1996) examined the influence of uncertainty, social support, hopeless and health related hardiness on the adjustment of 31 women with Systematic Lupus Erythematosus (SLE). The result showed that uncertainty and total adjustment had a low moderate significant negative association. Several of adjustment’s subscales (healthcare orientation, domestic environment, extended family relationships, and psychological distress) had low to low moderate significant negative correlation with uncertainty.

**Uncertainty and Coping**

There were many studies that were studied the relationships between uncertainty and coping strategies. Webster and Christman (1988) conducted a study in 20 post myocardial infarction patients and found that increased uncertainty was associated with greater use of affective coping methods, while lower levels of uncertainty were related to greater use of problem-focused coping methods. It was consistent with the relationships between uncertainty in illness and coping behaviors in 70 cancer patients receiving radiotherapy (Rojtinnakorn, 1993), and 443 multiple sclerosis and 257 spinal cord injury patients (Wineman, et al., 1994). The results indicated that subjects who had high uncertainty used more emotion-focused coping, and who had no uncertainty used more problem-focused coping.

Christman and colleagues (1988) found that the greater the uncertainty experienced, the fewer the confrontive coping behaviors used in 70 myocardial infarction patients after discharge from hospital. The results were found consistent
with Hilton's (1988), which studied in 277 breast cancer women after diagnosis from one month to 28.5 years. Patients who perceived high levels of uncertainty used more escape-avoidance coping strategies and less positive reappraisal coping strategies.

In addition, Redeker (1992) found that at one week after following 129 coronary artery bypass surgery (CABG) patients, uncertainty was related to emotion-focused coping (avoidance, blame-self, wishful thinking), but not related to problem-focused coping (seeking social support, direct action). This study was consistent with Katekaewmanee's study (1997), that examined the relationships between stressors, uncertainty in illness, and coping behaviors in 100 pregnant women with HIV seropositive. The finding demonstrated that uncertainty in illness was significant associated with avoidance coping behavior.

Srisuwattanasakul (1999) examined the relationships between education level, severity of illness, length of time waiting for surgery, uncertainty in illness and coping in 80 patients before open-heart surgery. Uncertainty in illness was positive correlated with palliative and emotive coping, but negative correlated with confrontive coping.

Maneechai (1999) examined the relationships between demography, uncertainty in illness, health authority support and coping of 156 family of critically ill patients. The result indicated that uncertainty in illness and health authority support had positive relationship with problem-focused and emotion-focused coping. Furthermore, uncertainty in illness and health authority support significantly accounted for 32% of variation in problem-focused coping and 15% of variation in emotion-focused coping. The result suggested that health authority support was the
strongest variable to account for variance of problem-focused coping, whereas, uncertainty in illness was the strongest variable to account for variance of emotion-focused coping.

The relationship between uncertainty and coping was also explored by using qualitative methods to assess how patients manage uncertainty in particular stressful events. Weem and Patterson (1989) studied coping strategies that renal transplant patients used to deal with uncertainty. The major strategies used including did not inquire or let it be, created more certainty from information given, maintained hopefulness, and tempered hope. Furthermore, Weiner and Dodd's study (1993) showed that coping strategies of 100 cancer patients during six months of chemotherapy included pacing, becoming professional patients, seeking reinforcing comparisons, engaging in reviews, setting goals, covering up, finding a safe place to let down, choosing a supportive network, and taking charge. These results indicated that coping with uncertainty was also congruent with problem-focused coping strategies.

In conclude, the relationships between uncertainty and coping were congruent that uncertainty had positive relationship with emotion-focused coping, and negative relationship with problem-focused coping.

**Symptom Distress**

Symptoms have been viewed simply as indicators of disease or as inevitable side-effects of therapy, particularly by physicians (Rhodes & Watson, 1987). Indeed,
patients themselves appear to believe that unpleasant symptoms are simply a consequence of therapy which must be endured (Dodd, 1982). Symptom distress was an aspect of the symptom experience and included the human response to symptom occurrence. Symptom distress included awareness of the distress and recognition of degree of upset, strain, and mental anguish (Rhodes, et al., 2000).

Though the term “symptom distress” was frequently alluded to in the literature, a lack of consensus exists regarding the definition of this concept. In the adult cancer population, McCorkle and Young (1978), and Rhodes and Watson (1987) offered specific and precise the definition of symptom distress. McCorkle and Young (1978) defined symptom distress as the degree of discomfort reported by the patient in relation to the perception of the symptoms being experienced. Rhodes and Watson (1987) characterized symptom distress as the physical or mental anguish or suffering that resulted from the experience of symptom occurrence and/or the perception of feeling states. Additionally, Tishelman and colleagues (1991) described symptom distress as multifaceted and complex reflections of illness (both personal and cultural experience) and sickness process. It could be explained by the fact that symptom distress refers to the illness holds for an individual, and is relative to one’s life situation. Therefore, physical and mental anguish related to the symptom is dependent upon the individual’s subjective perceptions.

Radiotherapy is the most common treatment modality for cervical cancer. The treatment involves a combination of external beam radiation to the whole pelvis to treat the regional nodes and central disease in conjunction with intracavitary radiation or implants for the central disease. Acute side effects during external radiotherapy
included radiation-induced menopause, fatigue, diarrhea, cystitis, and some degree of skin alteration. The implant phase of treatment produced some degree of vaginal stenosis and loss of vaginal lubrication (McMullin, 1982). Moreover, cervical cancer women who received radiotherapy also faced with long-term side effects of radiotherapy that remained after the treatment.

Researches Related to Symptom Distress

Symptom distress that cervical cancer women experienced after radiotherapy included fatigue, skin reactions, decreased appetite, diarrhea, nausea, cystitis, radiation pain syndrome, and sexual dysfunction (Dow, 1992; Hilderly, 1992; Kitcharoen & Nuaklong, 1999; McCarthy, 1992; Pongthavornkamol, 2000). Fatigue was commonly associated with radiation therapy. Fatigue was described as a number of uncomfortable symptoms: feeling tired in the whole body, need to rest or sleep, and decreasing ability to think and concentrate attention. A number of studies have found that fatigue increased over the course of radiation therapy and still experienced 4-12 weeks after completing radiotherapy (Graydon, 1994; King, et al, 1985; Kobashi-Schoot, et al, 1985). Skin reactions at the treatment site included reports of anal irritation and vulva/vaginal itching, which described as red, dry, itchy, scaly, and tingling. Late effects of radiotherapy to the abdomen and pelvis were complex problems that occurred within 6 to 18 months following completion of treatment. The effects included decreased appetite, nausea, proctitis, colitis, enteritis, and chronic cystitis. Radiation-induced pain syndromes that persisted 6 months to years following
a course of radiotherapy were usually attributable to fibrosis affecting a nerve plexus, myelopathy a peripheral nerve tumors. In addition, women treated with radiotherapy for cervical cancer experienced decreasing in vaginal lubrication and sensation that effected to sexual activities.

Symptom distress was a multidimensional phenomenon, there was a need to examine and understand the variables influencing or mediating the level of symptom distress that patients experience. McCorkle and Benoliel (1983) found that disease was an important factor influencing the symptom distress that patients experienced. Whereas, Tishelman and colleagues (1991) identified that disease, itself could not explain the degree of symptom distress experienced by a heterogeneous group of patients with cancer. Rather, gender, age, marital status, sense of coherence, and the type of treatment were variables, which significantly related to patients’ degree of symptom distress. Over 67% of the variance was accounted for by these variables.

McCorkel and colleagues (1989) conducted a randomized clinical trial of home nursing care for lung cancer patients, suggested that the type of home nursing care treatment received may influence symptom distress, health perceptions, and social dependency. Patients with lung cancer receiving home nursing care experienced less distress and greater independence than patients receiving nonhome nursing care. In addition, Peruselli and colleagues (1993) also proposed that home care nursing helped to reduce symptom distress in patients with advanced cancer.

There are many additional factors such as socioeconomic status, race, culture, role, education, health knowledge, values, and past experience that influenced
symptom distress (McClement & Woodgate, 1997). For example, McCorkel and Benoliel (1983) reported that cancer patients experienced more symptom distress, more health and existential concerns, and suffered more mood disturbances than heart attack patients did. In addition, symptom distress contributed to increased mood disturbances for cancer patients. In a study of patients receiving radiation therapy (Oberst, et al., 1991), symptom distress was the best predictor of universal self-care burden. Those with more symptom distress had marked disruption of daily activities and considerable self-care burden, leading to appraisal of the illness situation as very stressful. Degner and Sloan (1995) found that patients with advanced cancer disease reported more distress than those with early stage disease; women reported more distress than men; older patients had less distress than younger patients.

The symptom distress study in Thailand, Hanprasitxam (1992) examined the effects of promoting patients’ participation in self-care on symptom distress, mood state, and self-care deficit in patients receiving chemotherapy. The result indicated that subjects receiving supportive-educative nursing system and usual care had significant lower mean score of symptom distress only on the second post chemotherapy day and significantly lower mean score on self-care deficit on the first, second and third post chemotherapy day than patients receiving only usual care. These findings supported the validity of Orem’s nursing premise that nurses and patients should act together to allocate the role of each in development of patients’ self-care capabilities.

Kutchamach (1997) studied symptom distress and social dependency among patients with HIV/AIDS. The results showed that subjects perceived high level
of distress in shortness of breath, skin itching, and skin lesion. Most of the subjects perceived fatigue at a moderate level of distress in all stages of the disease. As the disease progressed, subjects increased their awareness of symptom distress and distress levels. Moreover, symptom distress was positively associated with activities of daily living, social interaction, and social dependency.

Symptom distress was a major variable that had been considered in predicting survival in patients with cancer (Degner & Sloan, 1995; Ganz, et al., 1990). Symptom distress seemed to be a significant prognostic indicator even when other psychosocial variables are considered. It was found that high symptom distress scores could affect health care providers' efforts to help patients who have a limited time in which to deal with life completion issues.

**Symptom Distress and Psychosocial Adjustment**

Christman (1990) conducted a study in 68 gynecologic cancer patients receiving radiotherapy, and found that patients who perceived symptom severity was positive associated with adjustment problem. Similarly in a study conducted by Northouse and colleagues (1995), they proposed that women with recurrent breast cancer who reported more symptom distress experienced more emotional distress and more problems carrying out their psychosocial roles.

Budin (1998) studied relationships among primary treatment alternatives, symptom distress, perceived social support, and psychosocial adjustment to breast cancer in 101 unmarried women. The findings indicated that symptom
distress is inverse related to psychosocial adjustment. The symptoms that participants rated as particularly distressful included fatigue, insomnia, and ability to concentrate. As a result, women with these symptoms would be likely to have difficulty with vocational, domestic, social, sexual, and emotional aspects of life.

A correlational study in 109 breast cancer survivors conducted by Mast (1998) explored association between symptom distress, fear of recurrence, illness uncertainty, positive reappraisal, and emotion distress. The results revealed that antecedent variables were positive related to emotional distress. In addition, results further showed that fear of cancer returning and distressing physical symptoms might contribute directly to emotional distress.

In short, the relationships between symptom distress and psychosocial adjustment were consistent that symptom distress negatively influences adjustment. Post radiotherapy cervical cancer women experienced symptom distress that affected by long-term side effects of radiotherapy. If these symptoms are unfamiliar and inconsistent with the women’s expectation, the women could not perceive the patterns of the symptom that emerged uncertainty.

**Symptom Distress and Uncertainty**

If symptom distress that cervical cancer women experienced after radiotherapy were characterized by inconsistency in intensity, frequency, location, and duration, a pattern would be not perceptible. Because of unfamiliarity and incongruent of the symptoms, the patients regarded these discomforts with anxiety,
fear of recurrent cancer, and could not gauge reliably the state of their illness. Thus they perceived that their futures were uncertain.

Hanucharurnkul and colleagues (1991) tested a path model depicting the relationships among educational level, event familiarity, symptom severity, personal control, and perceived uncertainty in 128 cancer patients receiving radiotherapy. The result indicated that educational level, event familiarity, symptom severity and personal control explained 50% of variance in perceived uncertainty. Educational level and symptom severity had a direct effect on perceived uncertainty. This finding was congruent with Mast's study (1998), the result found that symptom distress related positively and significantly to illness uncertainty. She suggested that symptoms, which were residuals of cancer treatments, caused intensity illness uncertainty. Therefore, it was expected that symptom distress positively influenced uncertainty that more symptom distress tended to increase more uncertainty.

Family and Health Authority Support

Family and health authority support is the support that post radiotherapy cervical cancer women received from their family members and health authority. Social support is a personal resource that is important to both physical and psychological well-being. It has been claimed to have positive effects on a wide variety of outcomes, including physical health, mental well-being, and social functioning (Wortman, 1984). Furthermore, social support had a protective function and served as a stress buffering or moderating role in health outcomes (Cohen &
Wills, 1985). Social support was considered as coping assistance (Thoits, 1986), or coping resources (Thoits, 1995) to protect people in stressful or difficult situations, as well.

To provide a framework for conceptualizing social support as structure providers within uncertainty in illness theory, major conceptualizations of social support are reviewed in the following section.

Weiss (1974) and Cobb (1976) proposed informational and emotional support. Social support was stated by Weiss (1974) proposed six categories of provisions of social relationships necessary to maintain psychological well being: (a) attachment or intimacy; (b) social integration; (c) the opportunity for nurturance; (d) reassurance of worth; (e) a sense of reliable alliance; and (f) the obtaining of guidance. Whereas, Cobb (1976) described social support as the provision of information leading the person to believe that he or she is cared for and loved, esteemed and valued, and part of a network of communication and mutual obligation.

Caplan (1974) and Kahn (1979) included the characteristic of reciprocity in their conceptualization of social support. Caplan (1974 cited in Stewart, 1993) defined social support as the primary group in which people participate affords them three kinds of support provisions. The significant others helped the individual in mobilizing psychological resources, mastering emotional burdens and sharing tasks, and in providing material supplies, skills, and cognitive guidance. In addition, Kahn (1979) conceptualized social support as consisting of interpersonal transactions that included the expression of positive affect of one person toward another, the
affirmation of another’s behaviors, perceptions, or expressed views, and the giving of symbolic or material aid to another person.

House (1981), Bloom (1985), and Thoits (1995) stated social support including tangible or instrumental support. House (1981) proposed that social support had four supportive behavior categories: (a) informational support occurred through the provision of information that the person can use in coping with personal and environmental problems; (b) appraisal support was the transmission of information relevant to self-evaluation; (c) instrumental support was the access of the individual to behaviors that directly help in time of need; and (d) the emotional support was the provision of empathy and demonstration of love, trust, and caring.

Bloom (1985 cited in Lindsey, 1992) proposed five components of social support: (a) feedback to the individual about himself or herself; (b) the expression of acceptance and affection; (c) tangible material support; (d) information; and (e) affiliative aspects. Additionally, Thoits (1995) defined social support as the functions performed for the individual by significant others who can provide emotional, information, and instrumental aid.

In summary, although social support was classified in different ways, the content of social support was fairly similar. Social support included one or more of these aspects; (a) the reception or perception of one or more of these characteristics: care, love, value, esteem, trust, respect, belonging to group, sharing concern, empathy, or admiration; (b) the information people use to evaluate themselves, solve problems, show agreement or acknowledgement of the behaviors and the ideas of another person; and (c) assistance such as money, time, labor, things, and services.
Research Related to Social Support

Social support has been found to be associated with individual physical and psychological well-being through direct and indirect effects of stress reduction (Bloom, 1990; Yates, 1995). The direct effect of social support promoted health through effect on biological processes or through changing health behaviors (Cohen, 1990; Cohen & Wills, 1985). The indirect effect of social support referred to the mechanisms by which it moderated the effects of stressful situation by facilitating coping mechanisms and maintaining or enhancing self-esteem and sense of mastery (Cobb, 1976; Cohen & McKay, 1984).

Within Mishel's uncertainty in illness theory (Mishel, 1988), social support was viewed as structure providers who were the resources available to assist the person in the interpretation of the stimuli frame. Mishel (1988) stated that the opportunity to clarify a situation through discussion and supportive interactions with others clarified events and aided the patient in forming a cognitive schema. Moreover, social support provided patients with resources such as emotional, informational, and tangible support to engage in active coping activities, or problem solving with disease (Courtens, et al, 1996; Steginga & Dunn, 1993).

The most important sources of support for most cancer patients were their spouses, physician, family members, friends, and other health care providers (Wortman, 1984). Dunkel-Schetter (1984) stated that family members and health care providers were the most important sources of support. Whereas, emotional and tangible support were reported as equally helpful across sources, that was, family,
friends, and health professionals. In addition, information and advice were reported as helpful when provided by physicians and/or other health professionals almost exclusively. Furthermore, social support was claimed to have positive effects on physical health, mental well-being, and social functioning throughout the life course both for its direct contributions and for its ability to moderate the effects of stress (Cohen, 1988; Tilden & Weiner, 1987).

In the studies of social support and chronic illness, Primomo and colleagues (1990) found that physical functioning, social adjustment, and well-being have all been positively affected by expressive support derived from the family. This study was supported by Tell and colleagues’ study (1995) that identified the factors related to well-being in 256 end staged renal disease (ESRD) patients treated with hemodialysis. The results indicated that good social support was the strongest predictor of holistic well-being. It was also mentioned that individuals’ health care behaviors could be positively affected by supportive social networks took better care of themselves by engaging in more positive health practices and adherence to health routines than did people with less supportive networks. (Aaronson, 1989; Muhlenkamp & Sayles, 1986).

**Family and Health Authority Support and Psychosocial Adjustment**

Primomo and colleagues (1990) explored the relationship among sources and types of social support to psychosocial adjustment in 125 chronically ill women. The findings reported that the greater the woman's perception of affect and
affirmation from her partner and family members, the greater her self-reported marital quality and family functioning, and the lower her illness demands and depression. This study was congruent with Kaveevivitchai's study (1993) which examined the relationships among selected factors of duration of formal education, number of courses of chemotherapy, uncertainty in illness, social support and adaptation in 130 breast cancer patients receiving chemotherapy. The results found that social support was negative related to uncertainty in illness, and positive related to adaptation.

Budin's study (1998) of psychosocial adjustment to breast cancer in unmarried women found that perceived social support was positive related psychosocial adjustment to breast cancer. This finding was consistent with the direct effect hypothesis of social support that social support had directly related to health outcome by fulfilling basic social needs.

Morse, and Fife (1998) proposed that adjustment in 175 partners of patients with cancer was positive associated with all three sources of social support (family, friends, and health care providers) as well as the quality of the partner relationship. Whereas, Sittichamlong (1999) found that there was a positive relationship between social support and psychosocial adjustment in HIV infected pregnant women at the moderate level.

**Family and Health Authority Support and Coping**

The relationships between social support and coping strategies, Bloom (1982) developed a model specifying the interrelationships between social support, coping response, and adjustment to illness. The model showed that social support was
the strongest predictor of coping response and had indirect effect on adjustment. In addition, the results indicated that coping mediated the relationship between social support and adjustment in women with breast cancer.

Bennett (1993) proposed causal model to test relationships among perceived availability of social support, uncertainty, degree of threat, coping strategies, emotions, and coping effectiveness. In the revised model, perceived availability of social support was significant and positive related to problem-focused and emotion-focused coping. She proposed that increased social support might contribute to having additional coping resources available to deal with stressful encounters. Additionally, increased social support might indicate the use of support resources within problem-focused and emotion-focused coping.

O'Brien (1993) examined the relationship of self-esteem and social support to problem-focused coping behavior in 101 individuals with multiple sclerosis. The finding indicated that the relationship between social support and problem-focused coping was in a positive direction, but was not statistical significant. That was, as social support increased, subjects used more problem-focused coping. These findings were congruent with Maneechai's study (1999) which indicated that health authority support had positive relationship with problem-focused and emotion-focused coping. Both uncertainty in illness and health authority support could significantly account for 32% of variation in problem-focused coping and 15% of variation in emotion-focused coping. The result suggested that health authority support was the strongest variable to account for variance of problem-focused coping,
whereas, uncertainty in illness was the strongest variable to account for variance of emotion-focused coping.

In conclude, empirical data showed that family and health authority support positively related to both problem-focused and emotion-focused coping. However, in chronic illness, the reports showed that patients used more problem-focused coping than emotion-focused coping. Therefore, as social support increased it helped patients to perceive a situation better. In turn, it reduced anxiety and helped patients to manage their emotions and feelings appropriate with the situation. Then the patients used less emotion-focused coping.

**Family and Health Authority Support and Uncertainty**

Mishel and Braden (1988) studied a portion of the uncertainty in illness in 61 women with gynecological cancer at time of major treatment. The result indicated that social support, credible authority, and event familiarity had the greatest influenced on lowering the level of uncertainty. Event familiarity and credible authority were primary effective in reducing the complexity surrounding treatment and the system of care. Social support functioned to decrease the level of ambiguity concerning the state of the illness.

Kaveevivitchai (1993) examined the relationships among selected factors of duration of formal education, number of courses of chemotherapy, uncertainty in illness, social support and adaptation in 130 breast cancer patients receiving chemotherapy. She found that social support was negative related to uncertainty in illness, and positive associated with adaptation. Consistently, White
and Frasure-Smith's research (1995) studied the impact of social support on uncertainty and psychological stress in 39 coronary artery bypass surgery (CABG) patients. They found that patients with high social support had less uncertainty and psychological stress than patients with low support had.

In short, the empirical data about the relationships between social support and coping strategies found that social support was significant and positive related to problem-focused and emotion-focused coping. However, the studies conducting in chronic illness seemed to show that as social support increased, patients used more problem-focused for solving problem and making the situation better. In turn, it helped patients to manage their emotions and feelings appropriate with the situation. Then the patients use less emotion-focused coping.

**Family and Health Authority Support and Symptom Distress**

The supports from their family members and health authorities provide post radiotherapy cervical cancer women to interpret their symptoms in the positive way. A longitudinal study on quality of life and social support in cancer patients conducted by Courtens and colleagues (1996) showed that patients who perceived more emotional support reported fewer symptoms and better global evaluation of their life. It seemed to be that patients who can share expression about their discomfort with family members or health care providers might appraise their symptoms in a more positive way.
Age and Psychosocial Adjustment

The relationships among age and psychosocial adjustment have been inconsistent. Several studies indicated that younger women with breast cancer had more difficulty with psychosocial adjustment than older women with breast cancer had (Stantor & Snider, 1993; Vinokur, et al., 1989; 1990). In addition, younger women tended to report more distress than did older women at the first week after surgery (Northouse & Swain, 1987). Moreover, Stantor and Snider (1993) found that age was negative related to tension and anger. On the contrary, Some studies reported that age had little or no relation to psychosocial adjustment (Bloom, et al., 1987; Chanpaung, 1991; Kaveevivitchai, 1993).

Age and Uncertainty

Lemaire (1999) identified predictors of uncertainty among a convenience sample of 298 women with endometriosis attending an educational program on the disease. The result revealed that uncertainty was negative related to age, and perceived knowledge, and positive related to the factors of psychological distress and perceived nonreproductive symptoms.

Age and Symptom Distress

A study of psychosocial adjustment to breast cancer in 101 unmarried women was investigated the relationships among age and symptom distress using data
collected during the late post operative recovery phases (Budin, 1998). The finding showed that a moderately low, but statistically significant inverse relation was found between age and symptom distress, indicating that older participants experienced less symptom distress. She also suggested that older women with illness adapted to their situation with less turmoil because they viewed their current situation within the context of their whole life. Another explanation offered that at the same time, younger women might be more likely to be involved in multiple roles, and might find symptoms associated with treatment interfere with these roles and, thus, perceive them as more distressful.

**Education and Psychosocial Adjustment**

The studies about the relationships between education and psychosocial adjustment were inconsistent. The study of Maunsell and colleagues (1989) on psychological distress after mastectomy and lumpectomy found that education had a slightly modified effect on psychological distress, but no statistical significance. The less educated women had higher levels of psychological distress than the more educated women had. On the contrary, Stanton and Snider (1993) found that number of years of education were the only unique significant predictor of negative mood after biopsy. Moreover, the results of two studies in Thai sample were slightly different. Chanpuang's study (1991) found that education were positive related to adjustment, while, Kaveevivitchai's study (1993) revealed that education had no relation to the adjustment.
Education and Uncertainty

For the relationship between education and uncertainty, Christman and colleagues (1988) examined the influence of uncertainty in illness and use of coping methods on emotional distress and recovery following myocardial infarction in 70 myocardial infarction patients. They found that education was inverse related to uncertainty at all three times (prior to hospital discharge, 1 and 4 weeks after discharge). This finding was consistent with studies among Thai sample that level of education correlated with uncertainty in illness in negative direction (E-Kasingh, 1999; Hanucharurnkul, et al., 1991; Nilmanat, 1995; Vongsvivat, 1993; Vrolan, 1992). Furthermore, Lemaire's study (1999) revealed that uncertainty was negative associated with perceived knowledge in 298 women with endometriosis attending an educational program on the disease.

Education and Symptom Distress

Education assisted in supplying a structure to the symptoms by providing a knowledge base with which to associate these symptoms. Patients with more education may be better able to modify and interpret their distress more objectively than those with less education. These empirical data were supported by Tishelman and colleagues' study (1991). Their findings indicated that symptom distress was significantly increased in younger persons. In addition, Degner and Sloan (1995)
found that older patients with lung cancer had less symptom distress than younger patients had.

**Education and Social Support**

Muhlenkamp and Sayles (1986) examined the relationships among age, education, and income with social support in adults. Testing path analysis, gender and education demonstrated a significant direct relationship with social support. The results indicated that adults with higher education tended to have higher levels of social support. Furthermore, patients with more education could seek various social supports and shared their information and experiences better than those with less education.

**Time Since Completing Radiotherapy and Psychosocial Adjustment**

Recently, little is known about the empirical data that studied relationship among time since completing radiotherapy and psychosocial adjustment. Capone and colleagues (1980 cited in Krouse, 1985) proposed that the newly diagnosed gynecological cancer patients were less confused and more consistent in their self-perceptions within three months following treatment. They were also more likely to return to employment and typical sexual functioning within the first year following treatment. These results were congruent with Pongthavornkamol's study (2000) that examined the relationships between side effects, and emotional distress and disruption.
in function at four points: (a) pretreatment, (b) treatment week, (c) last week of treatment, and (d) one month after treatment ended. The findings indicated that anxiety scores peaked at pretreatment and decreased significantly during treatment and post treatment in cervical cancer patients. In addition, degree of disruption in function increased over time during radiation therapy, peaked during the last week of treatment, and gradually decreased at one-month post treatment.

**Time Since Completing Radiotherapy and Symptom Distress**

The study of relationship between time since completing radiotherapy and symptom distress was not clear. The empirical data proposed that radiotherapy side effects occurred during radiotherapy and still remained about 18 months after treatment (Dow, 1992; Graydon, 1994; Hilderly, 1992; King, et al., 1985). In addition, Pongthavornkamol (2000) studied coping with side effects and emotional distress among Thai cancer patients receiving radiation therapy. The results showed that most symptoms became less intense and subsided at one-month post treatment for cervical cancer patients. Moreover, the data from clinical observation found that as more time since after completing, the patients perceived less symptom distress. Therefore, it is expected that time since completing radiotherapy was negative related to symptom distress.
Summary

This chapter has presented the literature regarding the psychosocial adjustment and factors influencing psychosocial adjustment including coping, uncertainty, symptom distress, family and health authority support, age, education, time since completing radiotherapy, and their relationships one another. In summary, cancer and treatment not only affect the physiological and psychological functions of the patients, but also influence the relationships between the patients and others. Findings suggested that post radiotherapy cervical cancer women experience symptom distress with nausea, decreased appetite, insomnia, pain, fatigue, cystitis, and colitis (Clark, 1994; Dow, 1992; Kitcharoen & Nuaklong, 1999). The unfamiliarity and incongruent of these symptoms caused cervical cancer women could not predict their future about the illness, and affected women's psychological and social functioning at post radiotherapy period. However, informational, emotional, and tangible supports from family members and health authorities seemed to help the patient to interpret their symptoms in the positive way that reduces uncertainty (Courtens, et al., 1996; White & Frasure-Smith, 1995). Furthermore, patients used both problem-focused and emotion-focused coping strategies to deal with their uncertainty related to better psychosocial adjustment.

Most of the studies of psychosocial adjustment and factors influencing psychosocial adjustment in Western and Thailand were found to be correlational study. Findings indicated that symptom distress and uncertainty were associated with a poor psychosocial adjustment, whereas, social support, coping strategies, age,
education, and time since completing radiotherapy were related to better psychosocial adjustment. Furthermore, the studies of relationships among social support, uncertainty, and coping strategies showed that social support had a positive relationship with problem-focused coping strategies and was negative related to emotion-focused coping strategies. Whereas, uncertainty had a positive relationship with emotion-focused coping strategies, and had a negative relationship with problem-focused coping strategies. Symptom distress tended to increase uncertainty, whereas, age, education, time since completing radiotherapy, and social support tended to decrease symptom distress and uncertainty.

However, few studies of psychosocial adjustment in post radiotherapy cervical cancer women were found in the literature. To understand psychosocial adjustment in post radiotherapy cervical cancer women, this study proposed a causal model of psychosocial adjustment in this population.
CHAPTER III

METHODOLOGY

This chapter described the methodology, including a description of the research design, population and sampling, setting, instrumentation, data collection, protection of human subjects and data analysis methods.

Research Design

A cross-sectional descriptive design was used for this study to examine the casual relationships among age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, emotion-focused coping and psychosocial adjustment in post radiotherapy cervical cancer women. Structural equation modeling was used for this study to test a proposed model of factors contributing to psychosocial adjustment in post radiotherapy cervical cancer women. Burns and Grove (1993: 549) stated that structural equation modeling was designed to test theories. In a theory, all of the concepts were expected to be interrelated. Testing the structure of relationships within the theory as a whole provides much more information about the validity of the model than testing only specific propositions. Furthermore, it expected that the statistical model derived from the structural equations will be consistent with the theoretical proposed model. Of course, this consistency did not prove the accuracy
of the theory but provided support for it (Burns & Grove, 1993: 550). There were multiple dependents as well as independent variables. The relationships examined in the model were casual, linear, and additional, and the casual pathways were unidirectional. The weights of the coefficients and the level of statistical significance were considered. A large coefficient that was highly significant validates the casual pathway.

**Population and Sampling**

**Population**

The population of this study was post radiotherapy cervical cancer women who came for follow up care at least one month after treatment up to two years at the radiotherapy outpatient clinic of Chulalongkorn Hospital, Ramathibodi Hospital, and Rajavithee Hospital.

**Sample**

The sample was randomly selected from cervical cancer women, using the radiotherapy clinic who met the study inclusion criteria:

a) Have finished receiving the radiation therapy course (20-30 times) at least one month up to two years for first time diagnosis with cancer.

b) Have lived without a recurrence of cancer.
c) Were able to understand, and communicate in Thai language

d) Alert and having the ability to communicate verbally.

e) Adult over the age of 18 years.

f) Agree to participate in this study.

Exclusion criteria were these:

a) Diagnosed with another cancers.

b) Receiving chemotherapy treatment.

c) With cognitive impairment.

Sample Size

Because of unknown population of the post radiotherapy cervical cancer women, the variance of psychosocial adjustment acquisition calculated from a pilot study was used to determine the sample size of this study. The formula used to calculate the number of sample size was:

\[ n = \frac{Z^2\sigma^2}{d^2} \]

(Cochran, 1977: 76-78)

\[ n = \text{Sample size} \]

\[ Z = \text{Standard estimate under normal curve at } \alpha = .05, \alpha/2 = .025, Z = 1.96 \]

\[ \sigma^2_X = \text{Variance of psychosocial adjustment acquisition calculated from the pilot study} = (15.22)^2 \]
\[ d = \text{The accepted error estimate of the mean of psychosocial adjustment} = \] 
\[ .12\sigma = 1.83 \]

\[ n = (1.96)^2 \times (15.22)^2 \]
\[ = (1.83)^2 \]
\[ = 266 \]

For the structural equation modeling, the required sample size was calculated to be a minimum of 20 subjects for each observed variable (Munro, 1997). According to the structural equation model of psychosocial adjustment in post radiotherapy cervical cancer women (Figure 2) fourteen observed variables were proposed. Therefore, a minimum of 280 post radiotherapy cervical cancer women was obtained. To allow for incomplete data or random dropout a sample size of 300 subjects was recruited for this study.

**Sampling**

Potential subjects were recruited by a random sampling process from the selected research settings to enhance variability. Potential subjects who met the inclusion criteria were selected from a sample frame using a table random numbers. Therefore, 100 subjects each were recruited from three hospitals.
Setting

Data collection took place at the radiotherapy outpatient clinic of three government hospitals in Bangkok Metropolitan (Chulalongkorn Hospital, Ramathibodi Hospital, and Rajavithee Hospital). These hospitals serve as tertiary care centers for patients from various provinces in Thailand. Especially, they provide the radiotherapy service for patients with cancer, including cervical cancer. The radiotherapy outpatient clinic provides services 8.00 a.m. to 4.00 p.m. daily for consulting with the physician, receiving radiotherapy, and follow up after radiotherapy.

Instrumentation

The instruments used in this study (Appendix A) include: (a) Personal Information Questionnaire; (b) The Symptom Distress Scale (McCorkle & Young, 1978); (c) The Social Support Questionnaire (Schaefer, Coyne, & Lazarus, 1981); (d) The Mishel Uncertainty in Illness Scale: Community Version (Mishel, 1997); (e) The Jalowiec Coping Scale (Jalowiec, 1979); and (f) The Psychosocial adjustment to Illness Scale (Morrow, Chiarello, & Derogatis, 1978). All the details of each instrument are presented below.
Personal Information Questionnaire

The Personal Information Questionnaire, developed by researcher, included demographic questions for collecting subjects’ age, marital status, occupation, education, income, family members, time since completing of radiotherapy, diagnosis, and treatment. Age, education, and time since completing radiotherapy were tested in the casual model. The demographic data were used to describe the sample.

The Symptom Distress Scale (SDS)

Symptom distress was measured by the Symptom Distress Scale (SDS) developed by McCorkle and Young (1978) translated into Thai language and modified by this researcher. The SDS indexes the subjective distress experienced by patients as a result of either cancer or its treatment. Symptom distress was related to nausea, mood, appetite, insomnia, pain, mobility, fatigue, bowel pattern, concentration, and appearance on a five-point rating scale (1-5). One represents ‘the least amount of distress for a given symptom’ and five represents ‘extreme distress’, with score of two, three, and four intermediate levels of distress. Subjects were asked to put a circle around the number that most closely measured their distress at that moment or for that day.

McCorkle and Young (1978) conducted two pilot studies to develop the SDS. In their first pilot study, they sought to identify human concerns of patients
receiving active cancer treatments in twelve subjects from a medical oncology clinic and fourteen from radiation therapy division. Their findings indicated that newly diagnosed cancer patients appeared to be more concerned with problems related to acceptance of the disease and anxiety over the future; whereas, long-term cancer patients appear to have more concern over physical discomforts that interfered with their daily living. In the second pilot study, interviews were conducted in sixty cancer patients (30 women and 30 men) from the radiation and medical clinic. There were initially eight symptoms on the SDS (nausea, mood, appetite, insomnia, pain, mobility, fatigue, and bowel pattern). These were the major concerns identified by cancer patients in the first pilot study. However, McCorkle and Young decided to include 'concentration' as an item in this scale because some respondents kept apologizing for the need to have questions repeated. 'Appearance' was also added since several women reported distress from weight gain or loss after treatment. The completed scale has 10 items.

In this study, the researcher added one additional item (voiding pattern) that reflected a primary symptom most patients with cervical cancer women experience in the post radiotherapy period experience. Thus the 11 item SDS was used for measuring symptom distress in my pilot study. According to that study, there was high correlation between symptom distress and psychosocial adjustment (r = .712). When the researcher deleted three items (mood, concentration, and appearance) that represented psychological distress, which was also redundant with psychosocial adjustment, the correlation between symptom distress and psychosocial adjustment was .526. Thus, the 8 item SDS were used to measure symptom distress in
post radiotherapy cervical cancer women. Possible range of scores was from 8 to 40. Higher total scores indicated more symptom distress.

Validity

McCorkel (1987) reported convergent validity of SDS. That was the correlation obtained between Ware's health perception questionnaire and the SDS ($r = .90$). The scale could discriminate cancer patients from heart patient survivors.

In this study, the researcher translated SDS into Thai language. The Thai version of SDS was back translated to evaluate the accuracy of using Thai language by bilingual instructor major in language education. Then it was evaluated for content validity by five experts (two adult nursing instructors, one psychiatric nursing instructor, one psychiatric doctor, and one psychologist) (Appendix B). The experts evaluated by rating the items on a 3-point scale (1 = irrelevance, 2 = relevance but items are slightly modified, and 3 = relevance) for three issues: (a) conceptual equivalence, (b) clarity item, and (c) colloquial language. The researcher evaluated rating scores given by all five experts and calculated a content validity index (CVI = the items given a rating of 2 or 3 by both judges divided by total items) (Waltz, et al, 1991: 172-173). All five experts who rated 2 or 3 were required to establish content validity (Lynn, 1986: 382-385). The CVI of conceptual equivalence, clarity item, and colloquial language of SDS were 1.00 (CVI= 8/8), .6 (CVI= 5/8), and .7 (CVI= 6/8), respectively.
In this study, SDS was examined for construct validity by factor analysis in 300 post radiotherapy cervical cancer women. Findings showed that only one factor was extracted that accounted 38.3% of the variance.

Reliability

The SDS scale was tested on 53 patients with advanced medical conditions. Total symptom distress scores for these patients ranged from 10 to 41; the mean was 20. The reliability coefficient alpha was .821 and the standardized alpha was .825, indicating that the scale had good reliability (McCorkle & Young, 1978). Subsequently, the reliability was established on 60 patients with chronic illness. The reliability coefficient alpha was between .79 and .89 (McCorkle, 1987). In this study, the Thai version of SDS was tested by Cronbach's alpha reliability in 300 post radiotherapy patients with cervical cancer. The reliability was .74.

The Social Support Questionnaire (SSQ)

Family and health authority support was measured by using the Social Support Questionnaire (SSQ), developed by Schaefer, Coyne, and Lazarus (1981) and modified by Hanucharurnkul (1988). The SSQ was designed to separately measure the perceived informational, emotional, and tangible sources of social support. The SSQ Part I was concerned with tangible support, and the SSQ Part II designed to measure informational and emotional support. Hanucharurnkul (1988) modified the
SSQ Part II, the perceived informational and emotional support subscale, for studying Thai cancer patients receiving radiation therapy. Items were changed slightly to be more specific about the support participants reported receiving from persons on their list. In addition, the categories were modified slightly to fit the typical sources of support for cancer patients receiving radiation therapy in the Thai society. The SSQ Part I, the tangible support scales was not used because of its low pilot study reliability (Hanucharunulkul, 1988) and because the situations described are not applicable to cancer patients receiving radiation therapy. Instead, two aid items from the Norbeck Social Support Questionnaire (NSSQ) (Norbeck, Lindsy, & Carrieri, 1981) for measuring tangible support were added.

In conclusion, the SSQ modified by Hanucharunulkul (1988) was designed to measure informational, emotional, and tangible support in Thai cancer patients. The first question served as a measure of informational support. The second to fifth questions measure the domain of emotional support with an emphasis on perception of reliability, morale building, affiliative concern, and trust. The last two questions measure the domain of tangible support.

In this study, the SSQ was used to measure social support that post radiotherapy cervical cancer women received from their family members and health authority. The 14-item instrument, including a self-report inventory, assessed the quantity of social support. This instrument included two sources of support; family members and health care providers; and three types of support: information, emotional, and tangible support. Each subject was asked to rate the amount of support that they receive from their family members and health authority on a five rating scale.
(0 = not at all, 1 = a little, 2 = moderate, 3 = quite a bit, 4 = a great deal) for each item. An overall total social support score was calculated by summing the scores of the 14 items. Possible scores ranged from 0 to 56. Higher scores indicated higher levels of support.

Validity

The SSQ was translated into Thai language by Hanucharurnkul (1988). The stability of the SSQ was examined by test-retest with a period of 3 days in 10 cancer patients receiving radiation therapy. The Pearson product moment correlation was .94 for the total SSQ.

In this study, the Thai version of SSQ was back translated and then evaluated the content validity by five experts. The coefficient of content validity index for conceptual equivalence, clarity item, and colloquial language of SSQ were .86 (CVI= 6/7), .86 (CVI= 6/7), and .86 (CVI= 6/7), respectively.

For construct validity, the Thai version of SSQ was tested by factor analysis in 300 post radiotherapy cervical cancer women. The result revealed that one factor was extracted, and 70.87% of the variance was explained. Therefore, SSQ was examined as one factor from multiple sources in this study.

Reliability

Internal consistency was established from 112 cancer patients receiving radiation therapy. The coefficient alpha for total SSQ was .97 (Hanucharurnkul,
1988). This instrument was modified for use with breast cancer population for which the Cronbach's alpha was .77 (Kaveevivitchai, 1993) and .85 (Saneha, 1999).

In this study, Thai version of the SSQ was evaluated for reliability using Cronbach's alpha coefficient in 300 post radiotherapy cervical cancer women. The alpha coefficient for the total SSQ was .88.

**The Mishel Uncertainty in Illness Scale: Community Version (MUIS-C)**

Uncertainty was measured by the 23 items Mishel Uncertainty in Illness Scale: Community Version (MUIS-C) (Mishel, 1997). The MUIS-C was a one-factor (multiatributed ambiguity), 23-item scale with a 5-point Likert scale (1 = strongly not close to your feeling, 2 = not close to your feeling, 3 = not sure, 4 = close to your feeling, and 5 = strongly close to your feeling). All positive items (number 6, 8, 19, 20, 22, 23) received reversed scoring before calculating the total score. A total score was obtained by summing the responses to the 23 items. Possible scores ranged from 23 to 115, higher scores indicated higher levels of uncertainty.

The original Uncertainty in Illness Scale (MUIS) was developed by Mishel in 1981 to measure uncertainty in hospitalized patients. The MUIS was a 5-point Likert scale that contained 28 items measuring two dimensions of uncertainty (ambiguity and complexity). Later Mishel (1983) revised the MUIS, adding six items. The scale was factor analyzed into four factors: ambiguity, complexity, lack of information, and unpredictability.
Based on the 34-item Mishel Uncertainty in Illness Scale (MUIS) (Mishel, 1983), which is intended for use with hospitalized individuals, 28-item MUIS-C was developed in 1986 for non-hospitalized individuals with chronic illness or their families. The scale contained the same items as the MUIS, expect that 6 items related to uncertainty during hospitalization and treatment have been deleted. In 1989, the MUIS-C was tested a factor analysis. As the result, one-factor (Multiattributed ambiguity) with 23 items were reported, 5 items were deleted based on inadequate loading.

Validity

Mishel (1981) conducted three validation studies for the MUIS. Content validity was assessed in earlier studies by interviewing hospitalized patients informally. A list of statements was created from these interviews and was submitted to a group of hospitalized patients for judgment about content accuracy. Discriminate construct validity was shown by discriminating among patients admitted for diagnostic, medical, or surgical procedures. Findings indicated that patients hospitalized for diagnosis procedures had significantly higher uncertainty scores than those admitted for medical or surgical procedures. Convergent validity was shown by determining the relationship between uncertainty and stress in 100 medical patients. The Pearson product-moment correlation showed that patients' levels of uncertainty were strongly related to their ratings of hospital stress events.
In this study, the Thai version of MUIS-C was back translated to evaluate its accuracy in Thai language. Then, it was evaluated for content validity by five experts. The CVI for conceptual equivalence was .83 (CVI= 19/23), clarity item was .78 (CVI= 18/23), and colloquial language was .74 (CVI= 17/23).

The 23-items were tested construct validity by factor analysis during data analysis for this research. The finding showed that 22.2% of variance was explained when fixed with one factor as a theoretical base.

Reliability

The MUIS-C has been used with subjects who have colon and gynecological cancer, and those with coronary artery bypass surgery, post-myocardial infarction, irritable bowel disease, epilepsy, lupus, multiple sclerosis, and HIV-Aids. The internal consistency of the MUIS-C showed a moderate to high range of reliability coefficient ranging from .74 to .92 (Mishel, 1997).

In studies with Thai patients, Wonghongkul (1990) and Wongsunopparat (1990) translated The MUIS into Thai and tested reliability in patients receiving radiation, the coefficient alphas were .79 and .89, respectively. The MUIS with slightly modified, it was found that alpha reliability coefficient ranged from .74 to .89 (E-kasingh, 1999; Kaveevivitchai, 1993; Katekaewmanee, 1998; Limthongkul, 1992; Maneechai, 1999; Nilmanat, 1995; Norason, 1997; Srisuwattansakul, 1999; Vongsvivat, 1993).
In this study, MUIS-C was evaluated for reliability by using Cronbach’s alpha coefficient technique in 300 post radiotherapy cervical cancer women. The result showed that the alpha coefficient was .82.

The Jalowiec Coping Scale (JCS)

The Jalowiec Coping Scale (JCS) used in this study was the first version of JCS developed by Jalowiec (1979). It was translated into Thai language by Suthayakorn (1988). It was developed based on Lazarus’ conceptual framework (Lazarus & Folkman, 1984). This instrument consists of 40 items with two subscales: 15 problem-oriented and 25 affective-oriented (or emotion-oriented) coping strategies. Problem-oriented coping strategies deal with the stressful situation itself. Affective-oriented coping strategies address the emotion distress evoked by the situation. Jalowiec (1988) revised JCS by using the LISREL confirmatory factor analysis method and deleted 4 items (crying, drinking alcoholic beverages, taking drugs, meditating), leaving a remainder of 36 items. These were classified into three subscales: confrontive coping (13 items), emotive coping (9 items), and palliative coping (14 items). However, several studies in Thailand found that the four deleted strategies were still used by family caregivers of critically ill patients (Maneechai, 1999), women with breast lump (Sangchan, 1998; Thipsuwanakul, 1998), patients waiting for elective surgery (Norason, 1997). Therefore, in this study, the first version of JCS was used for measuring problem-focused and emotion-focused coping in post radiotherapy cervical cancer women to manage their uncertainty.
Subjects were asked to rate the frequency of using each strategy on a five point scale (1 = never used, 2 = seldom used, 3 = sometimes used, 4 = often used, 5 = almost always). Possible raw scores of problem-focused coping strategies were ranged 15-75, and emotion-focused coping strategies were ranged 25-125. Higher raw scores indicated frequency use of coping strategies in each subscale.

Validity

The JCS was used to either assess general coping behavior or situation-specific coping. The 40 coping strategies on the scale were selected on the basis of a comprehensive and critical review of the literature on stress, coping and adaptation. Content validity of the JCS was measured by the agreement of 20 volunteer judges, composed of individuals familiar with aspects of behavioral research on stress and illness. Overall agreement on classifying the 40 items was 85%. Inter-rater agreement on the problem-oriented items was 88%, and on the affective-oriented items was 83% (Jalowiec & Powers, 1981).

In Thailand, Suthayakorn (1988) translated the JCS into Thai language and tested for content validity by experts. In this study, the Thai version of JCS was back translated to evaluate the accuracy of using Thai language. Then, the JCS was evaluated for content validity by five experts. The CVI for conceptual equivalence was .98 (CVI= 39/40), clarity item was .98 (CVI= 39/40), and colloquial language was .95 (CVI= 38/40).
The 40-items of JCS were tested for construct validity. When fixed with two factors as a theoretical base, result revealed that total items explained 23.5% of the total coping variance. The problem-focused coping accounted for 15.2% of variance, and the emotion-focused coping accounted for 8.3% of variance. Furthermore, there were four items of problem-focused coping and seventeen items of emotion-focused coping, which did not load on either components (factor loading less than .30). After confirmatory factor analysis by LISREL, the result showed that only ten items (five items of problem-focused coping and five items of emotion-focused coping) were remained to fit the data of Thai subjects. Based on this result, the content validity of JCS was loss. Thus, the 40-items of JCS with two factors was examined in this study to maintain content validity.

Reliability

JCS reliability was first evaluated by two weeks test-retest method using 28 subjects from a general population. The test-retest data yielded significant reliability coefficients of .79 for total coping scores, .85 for problem-oriented scores, and .86 for affective scores. Additionally, Langner (1981 cited in Jalowiec, et al., 1984) used this tool to study 30 subjects at a one-month retest interval and found similarly significant coefficients were .78, .84 and .83, respectively.

Thai language JCS was used for measuring coping in 30 relatives of hospitalized stroke patients and the alpha reliability coefficient was .88 for the total scale (Suthayakorn, 1988). Maneechai (1999) used this scale to study coping of 156
family caregivers of critically ill patients and found that the total alpha reliability coefficient was .81.

In this study, The JCS was tested for reliability using Cronbach’s alpha coefficient technique in 300 post radiotherapy cervical cancer women. The alpha coefficient was .65 for total coping scores, .56 for emotion-focused coping scores, and .85 for problem-focused coping scores.

The Psychosocial Adjustment to Illness Scale (PAIS)

Psychosocial adjustment was measured by the Psychosocial Adjustment to Illness Scale (PAIS) (Morrow, Chiarello, & Derogatis, 1978). This 45 item self-report inventory assesses the quality of adaptation to illness in seven areas of psychological and social role functioning. There were (a) health-care orientation, which is composed of eight items and measured patients attitude, knowledge, and expectation about illness and treatment and their relationship with the health-care team; (b) vocational assessment, which is composed of six items and measured the impact of illness on work, school, or home; (c) domestic environment, which is composed of eight items and measured the impact of illness on the quality of various aspect of family environment; (d) sexual relationships, which is composed of six items and reflected the impact of illness on patients' sexual relationships and functioning; (e) extended family relationships, which is composed of five items measuring difficulties in the patients' relationships with family members as direct and indirect results of illness; (f) social environment, which is composed of five items and measured the
impact of illness on the patients' typical social and leisure time activities; and (g) psychological distress, which is composed of seven items and assessed disturbances in affect, self-esteem, and body image as results of illness.

The PAIS is comprised of 45 items, which are cast in a semi-structured interview with ratings on 4-point scale. Questions in each of the above-mentioned domains assess that aspect of the patient's adjustment. The instrument can be administered either as an interview or as a self-report questionnaire and can be completed in 20-25 minutes. The reference point for the administration of most questions in a reflection on the respondent's post radiotherapy period. The odd items (positive items) are rated on a 4-point (0-3) scale (3 = very well adjusted to, 0 = not were adjusted at all). Whereas, the even items (negative items) are reversed scored. The scores were summed for each of the principal domains and an overall adjustment score. Health-care orientation domain scores ranged from 0 to 24. Vocational assessment scores were from 0 to 18. Domestic environment domain items were 0 to 24, and sexual relationships were 0 to 18. Extended family relationships scores ranged from 0 to 15. Social environment domain scores were 0 to 15. Psychological distress domain scores ranged from 0 to 21. Overall score was ranged from 0 to 135. Higher scores indicated better adjustment.

Validity

Morrow, Chiarello, and Derogatis (1978) tested the PAIS in 37 Hodgkin's disease patients and 38 parents of children with Hodgkin's disease or solid
tumor, the scores were analyzed for inter-rater reliability as well as construct and criterion validity. The PAIS was administered to the subjects by six different raters in order to provide a more rigorous test of inter-rater reliability. The interviewer team consisted of a physician, two technicians, a medical student, a clinical psychologist, and a social worker. It was conducted with each of the 75 subjects at their home by one of the six interviewers. A second member of the team was also present at the interview to provide an additional independent rating of the patients' responses. An inter-rater reliability coefficient of .83 was obtained for the total scale score. In addition, the inter-rater reliability coefficient for each of subscale ranged from .33 to .82. With regard to construct validity, the seven subscale scores were shown to be relatively independent of each other, with five contributing the most to the total score. Subscales analyzed for criterion validity were shown to correlate significantly with independent assessments of their domains of adjustment. Result indicated that interviewers could administer the PAIS with an acceptable degree of reliability and with initial confidence in its validity.

Kunawat (1992) translated the PAIS into Thai language and tested the content validity of the PAIS by using five experts' judgement. Vadtanapong (1996) examined the construct validity of the PAIS, and found correlations of the seven domains to range from .01 to .33. These results indicated Thai translated version of each of the domains was not related to the other.

In this study, the Thai version of the PAIS was back translated, and then the content validity evaluated by five experts. The CVI for conceptual
equivalence, clarity item, and colloquial language of PAIS were .91 (CVI = 41/45), .78 (CVI = 35/45), and .76 (CVI = 34/45), respectively.

For construct validity, PAIS was tested by factor analysis in 300 post radiotherapy patients with cervical cancer. Findings showed that 55.2% of variance was explained when fixed with seven factors as a theoretical base.

Reliability

The Thai version of the PAIS was used for measuring psychosocial adjustment in 42 patients with retinal detachment, the alpha reliability coefficient was .86 (Kunawat, 1992). Vadtanapong (1996) used this scale as a measurement of psychosocial adjustment in 60 HIV-infected clients and found the coefficient alpha for the total PAIS was .85.

In this study, the Cronbach' alpha coefficient was used to analyze reliability in 300 post radiotherapy cervical cancer women. The results showed that the alpha coefficient of total PIAS was .87 and of seven domains (health-care orientation, vocational assessment, domestic environment, sexual relationships, extended family relationships, social environment, and psychological distress) were .71, .84, .61, .93, .82, .85, and .77, respectively.
Data Collection

Upon approval of the proposal by the examination committee, Faculty of Nursing dissertation committee at Mahidol University, this researcher conducted data collection using a structured interview process at three radiotherapy outpatient clinics. The interviews technique was used in this study because this approach can be used with participants who were illiterate, or visually impaired to reduce ambiguity and confusion presents, has an opportunity to obtain additional useful data, and can reduce fatigue, and missing data. Data collection took place between April and August 2001. The process for data collection was as follow:

1) Permission was obtained from the Directors of the three hospitals for the investigator to approach potential participants at the radiotherapy outpatient clinic.

2) This researcher made appointments to meet the head nurses of each radiotherapy outpatient clinic to introduce herself and to inform them about the study and to ask for their cooperation. Then, the researcher collaborated with the head nurse and staff nurse attending the women regarding the best time to approach for the purpose of the study.

3) On data collection day, potential subjects' profiles were checked against the inclusion criteria of the study. Before the physicians and nurses began routine procedures, this researcher contacted the women by introducing herself, and explaining the research project. The researcher then informed the women of their rights to be participated in the study and requested permissions (See inform consent in
Appendix C). When subjects gave signed or verbal consents, they were interviewed by the researcher.

4) To examine the causal relationships among the variables, the researcher interviewed subjects using the structured interview technique with the SDS, SSQ, MUIS-C, JCS, and PAIS questionnaire. The interviews last approximately 40 minutes.

**Protection of Human Subjects**

This research was submitted to and approved by the dissertation committee of the Faculty of Nursing, Mahidol University, and the Human Research Committee of Chulalongkorn Hospital, Ramathibodi Hospital, and Rajavithee Hospital. Additionally, approvals for this investigator to contact potential subjects at the radiotherapy outpatient clinics were obtained from the Directors of each of the three hospitals.

In this study, there were no known major risks to participation for the subjects, except for the possibility of inconvenience, fatigue, and using time. Participants were assured that they could refuse at any time or withdraw from the study by simple discarding the questionnaires or by omitting answers for any questions. If they discontinued participation, they were assured that it would not affect any services received from doctors and nurses.

During data collection, the name of the subjects was attached only until their profiles are reviewed. Then, the name was deleted from the questionnaires, and the participants were protected with code numbers on the questionnaires instead. All data
were kept in a locked cabinet accessible only to the researcher when not in use and filed separately from the informed consent. Finally, all questionnaires were destroyed at the end of the study.

**Data Analysis**

SPSS version 7.5 and LISREL 8.30 were used for data analyses. There were 1) Descriptive statistics including frequency, percentage, range, mean and standard deviation to describe the characteristic of the sample, and examine the distribution of demographic and other major variables in the study.

2) Examination of the assumptions underlying multivariate analysis for structural equation model and the relationships among the variables. Pearson Product Moment Correlation was used to test the bivariate relationships among pairs of variables and to assess multicollinearity among the independent variables. Multiple regression analyses were used to compute variance inflation factor (VIF) and Tolerance to examine multicollinearity among the key variables.

3) Prelis procedure was performed for data preparation in a covariance matrix form.

4) The hypothesized causal model was tested, and modified for best fit and parsimony. This was used to address the hypotheses.
CHAPTER IV

RESULTS

In this chapter, analyses of the study findings are reported. Demographic and characteristics of the sample are presented, followed by the descriptive statistics of the study variables. Then, presents of testing the research hypotheses are described. Lastly, the hypothesized model of psychosocial adjustment in post radiotherapy cervical cancer women was tested and the causal model was modified.

Demographic and Characteristics of the Sample

A sample of 300 post radiotherapy cervical cancer women was recruited. Ages ranged from 28 to 84 years, with a mean of 52.96 years (SD = 10.88). Formal education ranged from 0 to 18 years, with a mean of 5.11 years (SD = 3.90). Most of the women (71.3%) had completed elementary education, and 32 participants (10.7%) reported they had no formal education. The mean time since completing radiotherapy was 10.64 months (SD = 6.68). More than half of the participants (64.3%) were married, two (0.7%) were single, and the rest were divorced (21.0%) and widowed (14.0%). Nearly half of the participants (48%) were unemployed/housewives, and the rest worked as business owners, employees, agriculturists and government officers, respectively. Sixty-seven percent (67%) of the women did not work after
completing treatment. Half (55.7%) earned less than 5,000 Baht per month for income. Thirty-seven percent (37%) of the participants were diagnosed with cervical cancer stage IIB, and 31.7% in stage IIIB. After completing radiotherapy, 77.3% of them reported that they did not receive any medication, while 22.7% received vitamins, hormone, and supportive medications. Detailed characteristics of the patients are presented in Table 1.

Table 1: Demographic Characteristics of the Participants (n = 300)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>193</td>
<td>64.3</td>
</tr>
<tr>
<td>Single</td>
<td>2</td>
<td>0.7</td>
</tr>
<tr>
<td>Divorced</td>
<td>63</td>
<td>21.0</td>
</tr>
<tr>
<td>Widowed</td>
<td>42</td>
<td>14.0</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed/Housewives</td>
<td>144</td>
<td>48.0</td>
</tr>
<tr>
<td>Employee</td>
<td>42</td>
<td>14.0</td>
</tr>
<tr>
<td>Agriculturist</td>
<td>26</td>
<td>8.7</td>
</tr>
<tr>
<td>Government officer</td>
<td>18</td>
<td>6.0</td>
</tr>
<tr>
<td>Business</td>
<td>54</td>
<td>18.0</td>
</tr>
<tr>
<td>Others (Dress-makers, hair-dressers)</td>
<td>16</td>
<td>5.3</td>
</tr>
<tr>
<td>Working after treatment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>99</td>
<td>33.0</td>
</tr>
<tr>
<td>No</td>
<td>201</td>
<td>67.0</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No formal education</td>
<td>32</td>
<td>10.7</td>
</tr>
<tr>
<td>Elementary school (grade 1-6)</td>
<td>214</td>
<td>71.3</td>
</tr>
<tr>
<td>High school (grade 7-12)</td>
<td>25</td>
<td>8.3</td>
</tr>
<tr>
<td>Diploma</td>
<td>19</td>
<td>6.4</td>
</tr>
<tr>
<td>Bachelor</td>
<td>10</td>
<td>3.3</td>
</tr>
</tbody>
</table>
Table 1: Demographic Characteristics of the Samples (n = 300) (cont.)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Number</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income / month</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5,000 Baht</td>
<td>167</td>
<td>55.7</td>
</tr>
<tr>
<td>5,001 - 10,000 Baht</td>
<td>69</td>
<td>23.0</td>
</tr>
<tr>
<td>10,001 - 15,000 Baht</td>
<td>33</td>
<td>11.0</td>
</tr>
<tr>
<td>15,001 -20,000 Baht</td>
<td>8</td>
<td>2.6</td>
</tr>
<tr>
<td>Higher than 20,000 Baht</td>
<td>23</td>
<td>7.7</td>
</tr>
<tr>
<td>Stage of cervical cancer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IIB</td>
<td>49</td>
<td>16.3</td>
</tr>
<tr>
<td>IIA</td>
<td>32</td>
<td>10.7</td>
</tr>
<tr>
<td>IIB</td>
<td>111</td>
<td>37.0</td>
</tr>
<tr>
<td>IIIA</td>
<td>9</td>
<td>3.0</td>
</tr>
<tr>
<td>IIIB</td>
<td>95</td>
<td>31.7</td>
</tr>
<tr>
<td>IVA</td>
<td>4</td>
<td>1.3</td>
</tr>
<tr>
<td>Received medicine after radiotherapy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>232</td>
<td>77.3</td>
</tr>
<tr>
<td>Yes</td>
<td>68</td>
<td>22.7</td>
</tr>
</tbody>
</table>

Table 2 presents the possible range, actual range, mean, and standard deviations for study variables in 300 post radiotherapy cervical cancer women. In addition, an interpretation of the score's meaning is included.
Table 2: Possible range, Actual range, Mean, Standard Deviation (SD), and Meaning of the Mean Score of the Study Variables (n = 300).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Possible range</th>
<th>Actual range</th>
<th>Mean</th>
<th>SD</th>
<th>Interpretation of the Mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptom distress</td>
<td>8-40</td>
<td>8-34</td>
<td>12.14</td>
<td>4.05</td>
<td>Low distress</td>
</tr>
<tr>
<td>Family and health authority support</td>
<td>0-56</td>
<td>1-53</td>
<td>32.49</td>
<td>11.28</td>
<td>Moderate support</td>
</tr>
<tr>
<td>- Family support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>0-4</td>
<td>0-4</td>
<td>1.74</td>
<td>1.65</td>
<td>Low support</td>
</tr>
<tr>
<td>Emotion</td>
<td>0-16</td>
<td>0-16</td>
<td>12.51</td>
<td>4.82</td>
<td>High support</td>
</tr>
<tr>
<td>Tangible</td>
<td>0-8</td>
<td>0-8</td>
<td>5.06</td>
<td>2.66</td>
<td>Moderate support</td>
</tr>
<tr>
<td>- Health authority support</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>0-4</td>
<td>0-4</td>
<td>2.70</td>
<td>1.12</td>
<td>High support</td>
</tr>
<tr>
<td>Emotion</td>
<td>0-16</td>
<td>0-16</td>
<td>8.83</td>
<td>3.85</td>
<td>Moderate support</td>
</tr>
<tr>
<td>Tangible</td>
<td>0-8</td>
<td>0-6</td>
<td>1.65</td>
<td>1.68</td>
<td>Low support</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>23-115</td>
<td>27-83</td>
<td>47.17</td>
<td>11.71</td>
<td>Low uncertainty</td>
</tr>
<tr>
<td>Problem-focused coping</td>
<td>15-75</td>
<td>21-70</td>
<td>43.83</td>
<td>10.86</td>
<td>Moderate frequency use P-F coping</td>
</tr>
<tr>
<td>Emotion-focused coping</td>
<td>25-125</td>
<td>44-89</td>
<td>65.63</td>
<td>9.34</td>
<td>Moderate frequency use E-F coping</td>
</tr>
<tr>
<td>Psychosocial adjustment</td>
<td>0-135</td>
<td>40-134</td>
<td>104.35</td>
<td>17.61</td>
<td>Good</td>
</tr>
<tr>
<td>Health-care orientation</td>
<td>0-24</td>
<td>7-24</td>
<td>19.80</td>
<td>3.90</td>
<td>Good</td>
</tr>
<tr>
<td>Vocational assessment</td>
<td>0-18</td>
<td>0-18</td>
<td>11.57</td>
<td>5.45</td>
<td>Good</td>
</tr>
<tr>
<td>Domestic environment</td>
<td>0-24</td>
<td>3-24</td>
<td>19.43</td>
<td>3.84</td>
<td>Good</td>
</tr>
<tr>
<td>Sexual relationship</td>
<td>0-18</td>
<td>0-18</td>
<td>12.51</td>
<td>6.15</td>
<td>Good</td>
</tr>
<tr>
<td>Extended family relationship</td>
<td>0-15</td>
<td>0-12</td>
<td>10.38</td>
<td>3.03</td>
<td>Good</td>
</tr>
<tr>
<td>Social environment</td>
<td>0-18</td>
<td>0-18</td>
<td>13.64</td>
<td>4.95</td>
<td>Good</td>
</tr>
<tr>
<td>Psychological distress</td>
<td>0-21</td>
<td>0-21</td>
<td>17.02</td>
<td>3.68</td>
<td>Good</td>
</tr>
</tbody>
</table>

Assessment of Linear Relationships and Multicollinearity among Variables

Pearson Product Moment Correlations are used to analyze the variables in the psychosocial adjustment model to determine the linear relationships among the
predictive variables and psychosocial adjustment, and to examine multicollinearity among the independent variables. Multicollinearity among the predictive variables was assessed prior to the multivariate analysis for structural equation model (SEM). Multicollinearity among variables leads to the problems in identifying which predictive variables are significant in the regression equation.

The results showed that correlation coefficients among the predictors ranged from -.46 to .55, indicating low multicollinearity (See Table 3). Research findings revealed that psychosocial adjustment had a significantly positive relationship with education \( (r = .20, p<.001) \), family and health authority support \( (r = .27, p<.001) \), and problem-focused coping \( (r = .16, p<.001) \). In addition, psychosocial adjustment was significantly and negatively related to symptom distress \( (r = -.46, p<.001) \), uncertainty \( (r = -.54, p<.001) \), and emotion-focused coping \( (r = -.31, p<.001) \). As a consequence, psychosocial adjustment had significantly linear relationships with most of the predictive variables selected for study except for age and time since completing radiotherapy.

Tolerance and Variance Inflation Factor (ViF) were tested to examine the strength of the linear relationships among the predictive variables. As presented in Table 4, Tolerance of the predictive variables ranged from .67 to .97, indicating a low multicollinearity problem (Noruisis, 1995: 485). All VIF values of predictive variables were less than 10, indicating little evidence of multicollinearity (Steven, 1996: 77). The values of the Tolerance and VIF are shown in Table 4.
Table 3: Correlation Matrix of the Studied Variables (n = 300).

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.Age</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.Education</td>
<td>-.27***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.Time since completing radiotherapy</td>
<td>.11</td>
<td>.001</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.Family and health authority support</td>
<td>.02</td>
<td>-.01</td>
<td>-.15**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.Symptom distress</td>
<td>.15**</td>
<td>-.22***</td>
<td>-.11</td>
<td>-.03</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.Uncertainty</td>
<td>-.09</td>
<td>-.16**</td>
<td>-.16**</td>
<td>-.15**</td>
<td>.55***</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.Emotion-focused coping</td>
<td>-.02</td>
<td>-.22***</td>
<td>-.01</td>
<td>.02</td>
<td>.21***</td>
<td>.22***</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.Problem-focused coping</td>
<td>-.38***</td>
<td>.51***</td>
<td>-.03</td>
<td>.10</td>
<td>-.20***</td>
<td>-.02</td>
<td>-.14*</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>9.Psychosocial adjustment</td>
<td>-.01</td>
<td>.20***</td>
<td>.03</td>
<td>.27***</td>
<td>-.46***</td>
<td>-.54***</td>
<td>-.31***</td>
<td>.16**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* p<0.05,  ** p<0.01,  *** p<0.001
Table 4: The Tolerance and VIF of Predictor Variables

<table>
<thead>
<tr>
<th>Predictor variables</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>.94</td>
<td>1.07</td>
</tr>
<tr>
<td>Education</td>
<td>.92</td>
<td>1.09</td>
</tr>
<tr>
<td>Time since completing radiotherapy</td>
<td>.94</td>
<td>1.07</td>
</tr>
<tr>
<td>Family and health authority support</td>
<td>.97</td>
<td>1.03</td>
</tr>
<tr>
<td>Symptom distress</td>
<td>.69</td>
<td>1.46</td>
</tr>
<tr>
<td>Uncertainty</td>
<td>.67</td>
<td>1.50</td>
</tr>
<tr>
<td>Emotion-focused coping</td>
<td>.94</td>
<td>1.06</td>
</tr>
<tr>
<td>Problem-focused coping</td>
<td>.92</td>
<td>1.09</td>
</tr>
</tbody>
</table>

Model Testing and Modification

The hypothesized causal model (See Figure 2) was tested with a structural equation modeling (SEM) using LISREL 8.30. LISREL examines the model as a system of equations and estimates all the structural coefficients directly (Joreskog & Sorbom, 1993: 12). Joreskog and Sorbom propose that model testing finds a model that not only fits the data well statistically, but also has the property of every parameter having a substantively meaningful interpretation. Thus, it is possible to get a more precise test of theories. The goodness of fit of the whole model was determined through four measures of overall fit [Chi-square ($\chi^2$), Goodness-of-fit indices (GFI), Adjusted goodness-of-fit indices (AGFI), and Root mean square error of approximation (RMSEA)].

Chi-square ($\chi^2$) is a statistically based measure of goodness-of-fit available in SEM. Low Chi-square values at the non-significant level ($p>.05$) show the actual and predicted input matrices were not statistically different (Hair, et al, 1998: 654-655).
GFI and AGFI compared the squared residuals from prediction with the actual data. GFI and AGFI represented the overall degree of fit and ranged in value from 0 (poor fit) to 1 (perfect fit), the value over .90 was acceptable. RMSEA was the discrepancy per degree of freedom measured in term of population. The acceptable value was under .08 (Hair, et al, 1998: 654-656).

The variables were entered into SEM based on the hypothesized model (See Figure 2). The output demonstrated $\chi^2 (df = 74) = 528.90$, $p = 0.00$; GFI = .80; AGFI = .68; RMSEA = .15. These results revealed that all fit indexes were at an unacceptable level, indicating the model did not fit the data. Therefore, the magnitude of the modification indices was examined to improve fit. The results of the hypothesized model testing are displayed in Figure 3.
Figure 3: The hypothesized model of psychosocial adjustment in post radiotherapy cervical cancer women

\[ \chi^2 = 528.90 \ (p = 0.00) \ \text{df} = 74; \ \text{GFI} = 0.80; \ \text{AGFI} = 0.68; \ \text{RMSEA} = 0.15 \]
In the next step, the researcher tried to adjust the model to achieve the fitted model based on the modification indices and theoretical reasoning. The researcher modified the model by deleting all paths with level of significance greater than .05 (t-value < 1.96) and adding several paths suggested by the modification indices. After the modified model was examined, the goodness-of-fit indexes of the modified model were at an acceptable level: \( \chi^2 (df = 26) = 11.09, p = 1.00; \) GFI = .99; AGFI = .98; RMSEA = .00. These results showed that this modified model fits the data well.

In the model, sixty-two percent \( (R^2 = .62) \) of the total variance in psychosocial adjustment was explained by family and health authority support, symptom distress, uncertainty, and emotion-focused coping strategies. Thirty-four percent \( (R^2 = .34) \) of the total variance in uncertainty was explained by family and health authority support, symptom distress, and time since completing radiotherapy. Thirty-two percent \( (R^2 = .32) \) of the total variance in problem-focused coping was explained by family and health authority support, age, and education. Twenty-five percent \( (R^2 = .25) \) of the total variance in symptom distress was explained by problem-focused coping and time since completing radiotherapy. Eight percent \( (R^2 = .08) \) of the total variance in emotion-focused coping was explained by uncertainty and education, and two percent \( (R^2 = .02) \) of the total variance in family and health authority support was explained by time since completing radiotherapy. Figure 4 depict the path diagram of the modified model with standardized path coefficients. The direct, indirect, and total direct effects of the "caused" on the "affected" variables and square multiple correlation \( (R^2) \) of the modified model are presented in Table 5.
Figure 4: The modified model of psychosocial adjustment in post radiotherapy cervical cancer women
### Table 5: Direct Effect (DE), Indirect Effect (IE), and Total Effect (TE) of Caused Variables on Affected Variables

<table>
<thead>
<tr>
<th>Caused variables</th>
<th>Affected variables</th>
<th>SS</th>
<th>SD</th>
<th>UN</th>
<th>EFC</th>
<th>PFC</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>DE</td>
<td>IE</td>
<td>TE</td>
<td>DE</td>
<td>IE</td>
<td>TE</td>
</tr>
<tr>
<td>1. Age</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Education</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. Time</td>
<td></td>
<td>-23b</td>
<td>-23b</td>
<td>-07b</td>
<td>-23b</td>
<td>-06b</td>
<td>-29b</td>
</tr>
<tr>
<td>4. SS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. SD</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6. UN</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. EFC</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8. PFC</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>R² = 0.02</th>
<th>R² = 0.25</th>
<th>R² = 0.34</th>
<th>R² = 0.08</th>
<th>R² = 0.32</th>
<th>R² = 0.62</th>
</tr>
</thead>
</table>

a = p<0.05, b = p<0.01, c = p<0.001

Note: Time = Time since completing radiotherapy, SS = Family and health authority support, SD = Symptom distress

UN = Uncertainty, EFC = Emotion-focused coping, PFC = Problem-focused coping, PA = Psychosocial adjustment
Results of Research Hypotheses Testing

The following study hypotheses were tested with 300 post radiotherapy cervical cancer women.

**Hypothesis 1:** Education positively influences family and health authority support.

The parameter estimated in Table 5 and Figure 4 showed that education did not have a significant direct effect on family and health authority support. Time since completing radiotherapy had a significant and negative direct effect on family and health authority support ($\gamma = -0.23$, $p < .01$). Therefore, hypothesis one was not supported.

**Hypothesis 2:** Age, education, time since completing radiotherapy, and family and health authority support negatively influence symptom distress.

The results shown in Table 5 and Figure 4 illustrated that time since completing radiotherapy and problem-focused coping had significant and negative direct effect on symptom distress ($\gamma = -0.07$, $p < .05$; $\beta = -0.19$, $p < .001$, respectively). Therefore, hypothesis two was partially supported.

**Hypothesis 3:** Age, education, and family and health authority support negatively influence uncertainty, and symptom distress positively influences uncertainty.

The results (Table 5 and Figure 4) revealed that time since completing radiotherapy and family and health authority support had a significant and negative direct effect on uncertainty ($\gamma = -0.23$, $p < .01$; $\beta = -0.15$, $p < .01$, respectively). In addition,
symptom distress had a significant and positive direct effect on uncertainty ($\beta = 1.54$, $p < .001$). Thus, hypothesis three was mostly supported.

**Hypothesis 4**: Family and health authority support positively influences problem-focused coping, and uncertainty negatively influences problem-focused coping.

The parameter estimated results in Table 5 and Figure 4 showed that family and health authority support and education had significant and positive direct effect on problem-focused coping ($\beta = 0.11$, $p < .05$; $\gamma = 1.16$, $p < .001$, respectively). Age had a significant and negative direct effect on problem-focused coping ($\gamma = -0.26$, $p < .001$), whereas, uncertainty did not have a significant direct effect on problem-focused coping. Therefore, hypothesis four was partially supported.

**Hypothesis 5**: Family and health authority support negatively influences emotion-focused coping, and uncertainty positively influences emotion-focused coping.

The results (Table 5 and Figure 4) illustrated that education had a significant and negative direct effect on emotion-focused coping ($\gamma = -0.49$, $p < .01$). Uncertainty had a significant and positive direct effect on emotion-focused coping ($\beta = 0.14$, $p < .01$). Family and health authority support did not have a significant direct effect on emotion-focused coping. Thus, hypothesis five was partially supported.

**Hypothesis 6**: Age, education, time since completing radiotherapy, family and health authority support, problem-focused coping positively influence psychosocial adjustment, and symptom distress, uncertainty, and emotion-focused coping negatively influence psychosocial adjustment.
The results shown in Table 5 and Figure 4 revealed that family and health authority support had a significant and positive direct effect on psychosocial adjustment ($\beta = 0.09$, $p<.001$). Symptom distress, uncertainty, and emotion-focused coping had significant and negative direct effect on psychosocial adjustment ($\beta = -0.19$, $p<.01$; $\beta = -0.05$, $p<.05$; $\beta = -0.09$, $p<.001$, respectively). Age, education, time since completing radiotherapy, and problem-focused coping did not have significant direct effect on psychosocial adjustment. Therefore, hypothesis six was partially supported.
CHAPTER V

DISCUSSION

In this chapter, research findings are discussed. The first section focuses on explaining demographic characteristics of the sample and study variables. Later, the causal model of psychosocial adjustment in post radiotherapy cervical cancer women is discussed to describe the proposed hypothetical relationships among the variables.

Demographic Characteristics of the Samples.

The sample recruited in this study were 300 post radiotherapy cervical cancer women. Their mean age was 52.96 years, ranging from 28 to 84 years. This is consistent with report of Thai women with cervical cancer that invasive cervical cancer occurs most commonly among Thai women between the age of 45 and 55 years old (Chooprapawan, 2000: 43, 68-69). In addition, it is congruent with Chan and colleague's study in gynecologic cancer survivors that the mean age was 51.7 years old (Chan, et al., 2001: 389). Most of the women (71.3%) had completed elementary education, their average length of formal education was 5.11 years, and 10.7% reported no formal education. About fifty-five percent (55%) had income less than 5,000 Baht per month. Concerning these results, the sample were similar to the sample in Kitrungrote's study (2000: 62-63) which was conducted in cervical cancer
patients receiving radiation. It seems to confirm Srisomboon's report (1997) that
trends of incidence of cervical cancer increase in women with low education and low
socioeconomic status.

Symptom Distress

The results showed that post radiotherapy cervical cancer women rated
symptom distress ranging from 8 to 34 (mean = 12.14, SD = 4.05). This finding may
be due to the women reported that side effects during radiotherapy and discomfort
from cancer decreased after completing treatment. However, they still had
experiences in long-term side effects of the radiotherapy. The result revealed that
three majorities of symptom distress, which reported by post radiotherapy cervical
cancer women were fatigue, pain, and diarrhea, respectively. This result was
consistent with previous studies in cervical cancer survivors (Dow, 1992; Hilderly,
1992; Kitcharoen & Nuaklong, 1999; McCarthy, 1992; Pongthavornkamol, 2000)
which found that fatigue was the major distress of cervical cancer patients and it still
occurred about 18 months after treatment.

Family and Health Authority Support

The present study used the sum of the scores for informational, emotional, and
tangible support that post radiotherapy cervical cancer women received from family
members and health authorities to predict psychosocial adjustment. The mean family
and health authority support was 32.49 (SD = 11.28), with a range of 1-53. The result indicated that they perceived a moderate level of support from their family members and health care providers. In Thai culture, it is the obligation of the spouse and children to care for their spouse or parents while they are ill and recovering. During the post radiotherapy period in this study, most of the women were living with their family members, and they had contact with health authorities when they came for follow up or had health problems. In addition, the result revealed that family members were perceived to provide emotional and tangible support, whereas health authorities were perceived to provide information support (See Table 2). These findings are as expected and consistent with those of Dunkel-Schetter’s (1984), Saunders and McCorkel’s (1987), and Hanucharurnkul’s (1988) findings.

Uncertainty

In this study, the uncertainty reported by the post radiotherapy cervical cancer women ranged from 27 to 83, with a mean of 47.17 (SD = 11.71). This finding is consistent with mean levels of uncertainty (46.72) of breast cancer survivors (Wonghongkul, 1999). However, it is a lower level of uncertainty as compared with the levels of uncertainty in various studies using the same measure, such as women treated for breast cancer (Mast, 1998), women admitted for modified radical mastectomy (Wong & Bramwell, 1992), and patients with S.L.E. (Kaewthumrong, 2000). This finding may be due to the sample in this study had already finished receiving radiotherapy and lived with cancer for a longer period of time than the
patients mentioned above. Furthermore, the samples also perceived event familiarity and low level of symptom distress, which may lead them to perceive low level of uncertainty. During the post radiotherapy period, the women gained more experience to live with cancer and perceived more familiarity and less ambiguity with physical symptoms that resulted from long-term side effects. As a result, they experienced a low level of uncertainty.

Coping

In this study, the raw scores of problem-focused coping and emotion-focused coping were used to predict psychosocial adjustment. The results showed that post radiotherapy cervical cancer women used problem-focused coping as the coping strategy at the average of 43.83 (SD = 10.86), ranging from 21 to 70, and used emotion-focused coping at the average of 65.63 (SD = 9.34), with a range of 44-89. Findings from the raw scores demonstrated that the minimum actual raw score of both coping is higher than the minimum possible raw score. It indicated that all women used both problem-focused and emotion-focused coping strategies to deal with the situations during the post radiotherapy period. This is congruent with the coping literature that individuals use both problem-focused and emotion-focused coping strategies interchangeably or simultaneously to face stressful situations (Folkman & Lazarus, 1988). Furthermore, both coping strategies can facilitate each other in the coping process, and serve important functions of human adaptation, which requires maintaining a balance between the two functions of coping (Lazarus, 1990).
Psychosocial Adjustment

Post radiotherapy cervical cancer women in this study reported psychosocial adjustment ranging from 40 to 134 (mean = 104.35, SD = 17.61). The result indicated that the women reported overall psychosocial adjustment at a good level. This finding is similar to the adjustment, using the same tool, of Thai patients with retinal detachment (Kunawat, 1992), HIV infected patients (Vadtanapong, 1996), and Thai women who were newly diagnosed with breast cancer and had undergone mastectomy (Saneha, 1999). In addition, the result demonstrated that symptom distress negatively correlated with psychosocial adjustment ($r = -0.46$, $p < 0.001$).

It may be due to the women felt less discomfort from cancer and treatment that led them to have a positive attitude toward the disease, treatment, and health care providers, which is one component of psychosocial adjustment. They could take care of themselves and maintain family and individual leisure activities much more than prior to and during receiving radiotherapy, some of them could return to do their job. In this study the majority of the sample (64.3%) were married, the women and their spouses reported that they were not concerned about sexual relationships problems. Post radiotherapy cervical cancer women proposed that their spouses understood about their conditions that they should avoid having sexual activities while receiving treatment. However they were informed that they could have sexual activities after completing radiotherapy. About thirty-five percent (35%) of the sample were single, divorced, and widowed and 28% were more than 60 years old. These women reported that they did not have sexual relationships with others so radiotherapy did not affect
their sexual relationships. Furthermore, in Thai culture, when a family member is ill, their relatives would come to visit and take care of them more than usual. According to the reasons mentioned above, the women felt less psychological distress. Therefore, the overall psychosocial adjustment reported by post radiotherapy cervical cancer women was at a good level.

The Causal Model of Psychosocial Adjustment in Post Radiotherapy Cervical Cancer Women

A causal model of psychosocial adjustment in post radiotherapy cervical cancer women was hypothesized based on Mishel's uncertainty in illness theory (Mishel, 1988) and empirical data. The LISREL Program was used to test the fitness of empirical data within the hypothesized model of psychosocial adjustment in post radiotherapy cervical cancer women. The results found that the goodness-of-fit indexes of the modified model were at an acceptable level, indicating this modified model fits the data well. Concerning the proposed model, which hypothesized based on Mishel's uncertainty in illness theory, the results are discussed by explaining two models; model predicting uncertainty and model predicting psychosocial adjustment. Model predicting uncertainty demonstrates the factors influencing uncertainty that guide to explain the causal relationships among predictive variables and psychosocial adjustment in model predicting psychosocial adjustment.
Model Predicting Uncertainty

In the model, thirty-four percent ($R^2 = .34$) of the total variance in uncertainty were explained by family and health authority support, symptom distress, and time since completing radiotherapy. Findings showed that family and health authority support had a negative direct effect on uncertainty ($\beta = -0.15$, $p<.01$). The result indicated that post radiotherapy cervical cancer women who had a higher level of family and health authority support reported a lower level of uncertainty. This finding is consistent with the previous studies of women receiving treatment for gynecological cancer (Mishel & Braden, 1988), breast cancer patients receiving chemotherapy (Kaveevivitchai, 1993), and coronary artery bypass surgery patients (White & Frasure-Smith, 1995). It seems to support Mishel's uncertainty in illness theory (1988) that social support had a direct effect on uncertainty by supplying feedback on the meaning of events, so the precision of the event is asserted.

In this study, post radiotherapy cervical cancer women received informational, emotional, and tangible support from family members and health authorities. The women perceived that their family members were concerned with their problems and they can share their thoughts and experiences with them. This support helps the women to understand the aspects of their illness, treatment, and survivorship, which may reduce uncertainty. In addition, tangible support may reduce uncertainty by providing assurance of the environment's stability and may minimize the unpredictability of the outcome (Mishel, 1988: 228). Furthermore, information support from family members and health authorities may help the women to formulate
a realistic picture of the events that lead them to form a familiar cognitive pattern and congruence between the expected and experienced event.

In addition, symptom distress had a positive direct effect on uncertainty ($\beta = 1.54$, $p<.001$). It indicated that women with a higher level of symptom distress had a higher level of uncertainty. It is consistent with the study of rheumatoid arthritis (Braden, 1990), asthmatic adults (Janson-Bjerklie, et al, 1993) which found that severity of illness or symptoms was a major predictor of uncertainty. It seems to be that the post radiotherapy cervical cancer women who experienced symptom distress resulted from long-term side effects of radiotherapy may perceive any change in bodily function, inability to predict severity of symptoms, and unpredictability of symptoms. Furthermore, discomfort may disrupt the women's lifestyles that trigger uncertainty about the future and cancer recurrence.

Time since completing radiotherapy had a significant and negative direct effect on uncertainty ($\gamma = -0.23$, $p<.01$), indicating women with a longer time since completing radiotherapy had a lower level of uncertainty. One possible reason in explaining this finding may be that the longer time since completing radiotherapy provides the women more experiences to live with cancer and provides more familiarity and less ambiguity with the disease. Regarding the sample in this study's inclusive criteria, they had lived without recurrence of cancer, the residual symptoms that resulted from cervical cancer and radiation may be stabilized or decreased. The women may feel less unpredictability of radiotherapy since there was no evidence of cancer recurrence.
In this study, age and education did not have a direct effect on uncertainty. This is consistent with previous studies with hospitalized medical patients (Mishel, 1984), gynecological cancer patients (Mishel & Braden, 1988), and myocardial infarction patients (Webster & Christman, 1988). It may be that both older and younger post radiotherapy cervical cancer women similarly lack an experience about long-term radiotherapy side effects and do not know about the future. Furthermore, more education and less education patients may perceive the same unfamiliarity and unpredictability of the post radiotherapy situation. Therefore, the influence of age and education on uncertainty may not be found.

In summary, these findings revealed that a high level of family and health authority support, low level of symptom distress, and long time since completing radiotherapy can predict a low level of uncertainty in post radiotherapy cervical cancer women. In addition, these findings partially support Mishel's uncertainty in illness theory (Mishel, 1988) that event familiarity and social support had direct effect on uncertainty.

Model Predicting Psychosocial Adjustment

The causal model of psychosocial adjustment in post radiotherapy cervical cancer women was hypothesized to examine the causal relationships among age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, emotion-focused coping, and psychosocial adjustment. The results showed that all the fit indexes of the
hypothesized model were at an unacceptable level, indicating the model did not fit the data and the hypotheses were partially supported (Figure 3). After the modified model was examined, the goodness-of-fit indexes were at an acceptable level and indicated that this modified model fits the data well (Figure 4). The results revealed that sixty-two percent ($R^2 = .62$) of the total variance in psychosocial adjustment was explained by family and health authority support, symptom distress, uncertainty, and emotion-focused coping.

Family and health authority support had a positive direct effect on psychosocial adjustment ($\beta = 0.09$, $p<.001$). It indicated that post radiotherapy cervical cancer women with higher level of family and health authority support had a better psychosocial adjustment. This finding is congruent with Kaveevivitchai's (1993), Budin's (1998), Morse and Fife's (1998), and Sittichamlong's (1999) findings which found a positive relationship between social support and adjustment. It seems that family and health authority support assures the woman that she is loved and valued as a person regardless of achievement. In addition, the support may provide opportunities to exchange information, to obtain reassurance, and to reduce feelings of loneliness and isolation by making patients feel greater control, and knowing that others would help them. Family and health authority support facilitates post radiotherapy cervical cancer women to maintain psychological and social functioning, so they perceive better psychosocial adjustment.

Symptom distress had a negative direct effect on psychosocial adjustment ($\beta = -0.19$, $p<.01$), indicating post radiotherapy cervical cancer women, who had a higher level of symptom distress had a poorer psychosocial adjustment.
This finding is congruent with previous studies, which found that symptom severity or symptom distress was inversely related to psychosocial adjustment (Budin, 1998; Christman, 1990; Mast, 1998). In this study, the symptoms that the women rated as majority distress included fatigue, pain, and diarrhea. More symptoms distress enhanced the women to have difficulty with daily activities, vocational, domestic, social, sexual, and emotional aspects of life. As a result, the women have more problems in maintaining psychological and social functioning. Therefore, post radiotherapy cervical cancer women with more symptom distress had poorer psychosocial adjustment.

Uncertainty had a negative direct effect on psychosocial adjustment ($\beta = -0.05$, $p<.05$). It indicated that post radiotherapy cervical cancer women, who perceived a higher level of uncertainty had a poorer psychosocial adjustment. This result is congruent with the previous study of gynecologic cancer patients (Christman, 1990; Mishel, et al, 1984; Mishel & Braden, 1987), myocardial infarction patients (Christman, et al, 1988), and women with Systematic Lupus Erythematosus (Failla, et al, 1996). A possible explanation is that women may perceive ambiguity with physical discomfort that resulted from long-term side effects, which was difficult to interpret, experienced more disruption in their emotional state and daily life activities. In addition, at the post radiotherapy period, the women must deal with the probabilities associated with treatment effectiveness. Mishel and colleague (1984: 296) proposed that gynecological cancer patients, who were unsure about the state of their illness and viewed the treatment as too complex to understand, had less confidence in their physicians and the health care system. Furthermore, the women
may experience unpredictability about the future, so they felt that they were not able to control anything. As the women's uncertainty or unpredictability increased, they may have decreased participating in leisure and social activities. Since they may have difficulty maintaining their usual relationships with family members, friends and social network, they also have decreased their usual leisure activities. Therefore, uncertainty has a negative direct effect on psychosocial adjustment.

Furthermore, the finding showed that uncertainty had an indirect effect on psychosocial adjustment through emotion-focused coping. In the current study, uncertainty had a positive direct effect on emotion-focused coping ($\beta = 0.14$, $p<.01$). This finding indicated that post radiotherapy cervical cancer women with a higher level of uncertainty used more frequently emotion-focused coping. This is consistent with past empirical findings (Webster & Christman, 1988; Christman, et al, 1988; Rojinnakorn, 1993; Wineman, et al, 1994; Katekaewmance, 1997). In addition it seems to support Mishel's uncertainty in illness theory (Mishel, 1988) that emotion-focused coping was a mediator variable between uncertainty and psychosocial adjustment. It may be due to the women who perceive the post radiotherapy period as an ambiguity and unpredictable event were more likely to select emotion-focused coping such as avoidance, wishful thinking, and selecting ignoring to cope with this event. As Dunkel-Schetter and colleague (1992) proposed that the best strategies for dealing with ambiguity about the future might be emotion regulating like denial. High uncertainty may be accompanied by emotional arousal that patients must manage through emotion-focused coping. Therefore, uncertainty had a positive influence on emotion-focused coping.
Inversely, uncertainty did not have an indirect effect on psychosocial adjustment through problem-focused coping. The result found that uncertainty did not have a direct effect on problem-focused coping. This finding was in contrast with previous studies such as with multiple sclerosis patients (Wineman, et al, 1994), myocardial infarction patients (Christman, et al, 1988; Bennett, 1993), and coronary bypass surgery patients (Redecker, 1992) which found that uncertainty was inversely correlated with the use of problem-focused coping. It seems that women selected to use emotion-focused coping much more than problem-focused coping to deal with uncertainty. This is congruent with Dunkel-Schetter and colleagues' study (1992) which found that patients used emotion-focused coping for dealing with uncertainty. It also supported by Rice's review of nursing research studies of the phenomenon of coping which demonstrated that people used more problem-focused coping in general situation except in situations of uncertainty (Rice, 1993: 90). Therefore, the influence of uncertainty on problem-focused coping may not be found.

According to Mishel's uncertainty in illness theory, adaptation was defined as "biopsychosocial adjustment occurring within person's individually defined range of usual behavior" (Mishel, 1988: 231). This study examined adaptation as psychosocial adjustment. Findings revealed that there was an influence of emotion-focused coping on psychosocial adjustment, yet problem-focused coping influenced on symptom distress, which is biological adjustment that results from long-term radiotherapy side effects.

Emotion-focused coping had a negative direct effect on psychosocial adjustment ($\beta = -0.09$, $p<.001$), indicating post radiotherapy cervical cancer women,
who used more frequently emotion-focused coping had a poorer psychosocial adjustment. Whereas, problem-focused coping did not have a significant direct effect on psychosocial adjustment. This finding is similar to the finding in Moore's study (1999) and Saneha's study (1999), which found that emotion-focused coping was negatively related to psychosocial adjustment, whereas, problem-focused coping was not related to psychosocial adjustment. A possible explanation for this finding may be that as women perceived uncertainty, they used emotion-focused coping such as crying, avoidance, denial, wishful thinking, praying and meditation to cope with this situation. These emotion-focused coping strategies may keep the women involved in feelings of frustration, self-blame, and withdraw that may enhance low self-esteem, negative relationship with others, difficulty in maintaining social activities, and emotion distress. Thus, the women may loss ability to maintain psychological and social functioning. Therefore, the frequently use of emotion-focused coping had negative influences on psychosocial adjustment.

In this current study, problem-focused coping did not have a significant direct effect on psychosocial adjustment, but problem-focused coping had an indirect effect ($\beta = -0.19$, $p<.001$) on psychosocial adjustment through symptom distress. It indicated that women who use more frequently problem-focused coping had a lower level of symptom distress, which provides a better psychosocial adjustment. This may be due to there was no relationship between uncertainty and problem-focused coping as mentioned above, whereas, there was negative relationship between problem-focused coping and symptom distress ($r = -0.20$, $p<.001$). These findings supported Lazarus's stress and coping theory that the aim of problem-focused coping is to
manage or alter the problem that causes distress, whereas, emotion-focused coping aims at regulating the emotional response to the problem (Lazarus & Folkman, 1984: 150-153). It seems that post radiotherapy cervical cancer women used problem-focused coping to manage symptom distress from long-term radiotherapy side effects, and they used emotion-focused coping to deal with uncertainty. Consistently, Dunkel-Schetter and colleagues' study (1992) which showed that coping strategies with physical discomfort might be problem-focused coping, where as, the best strategies for dealing with ambiguity about the future might be emotion-focused coping. Furthermore, in the post radiotherapy period, women may perceive symptom distress from long-term radiotherapy side effect as a stressor that disturbs their daily activities. Therefore, they acquired information and solved the problem in order to manage with distress. Thus, symptom distress was decreased. It is consistent with the previous study with multiple sclerosis patients (Pakenham, 1999: 390) that problem-focused coping was related to better subjective health status.

Furthermore, the results revealed that family and health authority support had a positive direct effect on problem-focused coping ($\beta = 0.11$, $p<.05$), whereas, it did not have a direct effect on emotion-focused coping. It indicated that women who had a higher level of family and health authority support used more frequently problem-focused coping. This finding was supported by the previous studies, which showed that social support was positively related to problem-focused coping (Bennett, 1993; Maneechai, 1999). It may be due to family and health authority support, especially informational support that provides post radiotherapy cervical cancer women with the opportunity to clarify their situation through
discussion and supportive interactions with others, to develop strategies for managing the problems more effectively, and to enhance problem solving skills. In addition, increased family and health authority support may contribute additional available coping resources to deal with the problems after completing radiotherapy. Therefore, family and health authority support had a positive direct effect on problem-focused coping, whereas, the influence of family and health authority support on emotion-focused coping was not found in this study.

In this study, age, education, and time since completing radiotherapy did not have a direct effect on psychosocial adjustment. However, these variables were found to have an indirect effect on psychosocial adjustment. Age had an indirect effect on psychosocial through problem-focused coping. Education had an indirect effect on psychosocial adjustment through problem-focused coping and emotion-focused coping. Time since completing radiotherapy had an indirect effect on psychosocial adjustment through family and health authority support, symptom distress, and uncertainty.

Age had a negative direct effect on problem-focused coping ($\gamma = -0.26$, $p < .001$), indicating older post radiotherapy cervical cancer women used less frequently problem-focused coping. In addition, the results showed that 67 elderly women use less frequently problem-focused coping (Appendix E). This finding is in contrast with Folkman and Lazarus's literature (1980) which stated that the older and the younger subjects did not differ in relative use of problem-focused and emotion-focused coping within situations related health. This may be due to older post radiotherapy cervical cancer women may perceive that they are fine and there are no
severe symptoms. Thus it is unnecessary to try to solve the problem or to change anything. In Thai culture, the elderly like to pray and mediate for a healthy mind. They also believe that if the mind is healthy, the body will be healthy too. When they have stress or health problems, they are not concerned to seek information to manage the problem, but they hope that everything will be better and accept the situation as it is. In addition, in this study, it was found that older women had a lower level of education ($r = -.27$, $p<.001$). Low educated patients seemed to have difficulty in seeking information, and gaining more knowledge and experiences to solve the problem. Therefore, older women used less frequently problem-focused coping.

Education had a positive direct effect on problem-focused coping ($\gamma = 1.16$, $p<.01$), and had a negative direct effect on emotion-focused coping ($\gamma = -0.49$, $p<.01$). Although the majority of the women participated in this study had completed elementary education, the result demonstrated that women with a higher education use more frequently problem-focused coping and use less frequently emotion-focused coping (Appendix E). These findings are congruent with the study of breast cancer patients, spouse and dyad (Ben-Zur, 2001) which found that a high level of education among patients contributed to low emotion-focused coping. One possible reason is that women with higher education are able to seek many sources of information, can use information to clarify the problems more clearly and can gain more experiences from learning to solve and analyze their problems. They may perceive that managing the problem is better than denial, avoidance, reject and displacement. Therefore, women with higher education used more frequently problem-focused coping and used less frequently emotion-focused coping than women with lower education.
Time since completing radiotherapy had a negative direct effect on family and health authority support ($\gamma = -0.23$, p<.05). The finding indicated that women with a longer time since completing radiotherapy had a lower level of family and health authority support. One possible reason in explaining this finding may be that, as time passes, the women may gain more experience to care for themselves and symptom distress from cancer and radiotherapy was decreased. Thus they decreased seeking support from others. In addition, family members treated them as a normal person who was not ill. Family members might avoid to communicate with the women about cancer and its consequences because they may fear they disturb the women’s feeling. It is consistent with Neuling and Winefield's (1988) study that as time passes and patients went on with their lives, it appeared that their need for a large supportive network decreased. In addition, some patients might adopt a more positive self-presentational strategy by indicating they were coping well and everything was fine. Thus support might not be needed (Sammarco, 2001: 217). Furthermore, the patients perceived less information support from health authorities when they came for follow up. The women reported that last information was provided by health authorities at completing their radiotherapy, after this the health authorities were only concerned with the physical examination. In addition, the health authorities might provide more information when the women discussed about their problems.

In current study, education did not have a significant direct effect on family and health authority support. This is in contrast with Muhlenkamp and Sayles's (1986) finding that adults with higher education tended to have higher levels of social support. One possible reason for this rejected hypothesis could be homogenous of
education level in this study. About 82% of the women had completed elementary education and no formal education. There might be no difference in seeking social support and sharing their information and experiences with others. Furthermore, in Thai context, the women with high education and low education seemed to receive similar supports from their family members and health authority.

Time since completing radiotherapy had a negative direct effect on symptom distress ($\gamma = -0.07$, $p<.05$). It indicated that women with a longer time since completing radiotherapy period had a lower level of symptom distress. A possible reason for this finding could be symptom distress from radiotherapy was decreased after completing radiotherapy. Three majorities of symptom distress, which were reported by these women, were fatigue, pain, and diarrhea, respectively. Although the women experienced long-term side effects of radiotherapy, as time passes the level of discomfort was decreased to normal, and the women learned to deal with these symptoms distress with rest, avoiding to work hard, and controlling their diet that may affect colitis. In addition, the women included in this study were those who had no cancer recurrence so they were not disrupted from the cancer. It is consistent with the empirical data that radiotherapy side effects occurred during receiving radiotherapy and continued up to 18 months after treatment (Dow, 1992; Graydon, 1994; Hilderly, 1992; King, et al, 1985).

In this study, age, education and family and health authority support did not have significant direct effect on symptom distress. This is in contrast with the previous studies (Budin, 1998; Courtens, et al, 1996; Degner & Sloan, 1995; Tishelman, et al, 1991) which showed an inverse relationship between age, education,
social support and symptom distress. It seems to be that both younger and older women may have no experiences about long-term radiotherapy side effects, thus they may perceive no different level of symptom distress. In addition, the majority of the women in this study had elementary education and no formal education. They may be able to modify and interpret their distress similarly. Although the support from family and health authorities provide the women to interpret their symptoms in the positive way, physical discomfort from radiotherapy side effects may remain such as fatigue, diarrhea, and insomnia. Therefore, age, education, and family and health authority support did not have a direct effect on symptom distress.

In summary, the model predicting uncertainty demonstrated that family and health authority support and symptom distress have a direct effect on uncertainty, and time since completing radiotherapy have a direct and indirect effect on uncertainty. The causal model of psychosocial adjustment in post radiotherapy patients with cervical cancer depicted that family and health authority support, symptom distress, and uncertainty have a direct and indirect effect on psychosocial adjustment. Whereas, emotion-focused coping has a direct effect on psychosocial adjustment. In addition, age, education, time since completing radiotherapy, and problem-focused coping have an indirect effect on psychosocial adjustment.

Methodological Issues

Measurement of coping is discussed as an important methodological issue in this study. Coping is emphasized as being process-oriented that changes over time
and it depends on the specific context that is encountered (Lazarus & Folkman, 1984). Problem-focused coping and emotion-focused coping are mentioned as two functions of coping. People use both problem-focused and emotion-focused coping interchangeably or simultaneously to face stressful situations. Both strategies can facilitate each other in the coping process.

Coping instruments were well-known and often used in nursing studies such as Lazarus Ways of Coping Checklist (WCC), Ways of Coping Inventory (WOC), and Jalowiec Coping Scale (JCS). These measurements were developed based on Lazarus's stress and coping theory to assess problem-focused coping and emotion-focused coping. Although these tools were revised and proposed new subscales such as JCS was classified into confrontive coping, emotive coping, and palliative coping; WOC was revised into confrontive coping, distancing, self-controlling, seeking social support, accepting responsibility, escape-avoidance, planful problem solving, and positive reappraisal. These tools also were claimed to assess two functions of coping. However, it was not clear to classify the influence of problem-focused coping and emotion-focused coping on coping outcome.

In Thailand, most of nursing studies of coping used coping instruments, which were developed in Western culture and context. In this study, the first version of Jalowiec Coping Scale (JCS) was used to assess the frequency using problem-focused and emotion-focused coping of post radiotherapy cervical cancer women to manage their uncertainty. JCS was translated into Thai language, back-translated, and tested for content validity. It was quite difficult to translate identical meanings from the original version into Thai language and context. Some items of JCS seemed to
approach the same meaning when they were translated into Thai language, and were
difficult to understand. For examples: do anything just to do something, even if you're
not sure it will work-- the sample did not understand what something is; resign
yourself to the situation because things look hopeless and resign yourself to the
situation because it's your fate, so there's no sense trying to do anything about it-- the
sample responded that they are similar. Furthermore, the interview method might be
inappropriate for JCS. Since listening to someone read an item, constructing the item,
and rating the scale is quite different than reading and responding to the item by
themselves. Furthermore, the data collector, who was familiar with the questionnaires
and the research hypotheses, might have influenced their reading and clarifying the
item to the sample. These errors may influence on the low internal consistency of the
translated instrument (Folkman, 1992: 217).

Based on coping, it is emphasized as coping-oriented, a cross-sectional design
is not limited to study the process. A cross-sectional design provided information of
the variability in each variable at a particular time. Therefore, the stability over time
of each variable was limited. A longitudinal study is required to be more valid for
studying the dynamics of the variables over time. Furthermore, the time sequence
provides more validity for the questions regarding changes, developmental process
317) suggested that a process-oriented measurement of coping must refer to specific
thoughts, feelings, and acts rather than to what a person reports he or she might or
would do. The tool must be examined in a specific context; and must be studied in
parts of time so that changes can be observed in what is thought, felt, and done as the requirements and appraisals of the encounter change.

In conclusion, to study and understand how a person copes with a specific stressor is quite difficult. Functions of problem-focused coping and emotion-focused coping in the coping process are not clear. Appropriate measurement of the coping process must be required to be developed in the Thai context.

**Methodological Limitation**

Although this study was based on Mishel’s uncertainty in illness theory, appraisal was not included in this study. The results demonstrated that uncertainty had a direct effect on emotion-focused coping, but did not a have direct effect on problem-focused coping. These findings may not clearly determine that post radiotherapy cervical cancer women appraised uncertainty as a danger or opportunity which offered specific coping strategies to deal with uncertainty. Furthermore, in this study, adaptation was defined as psychosocial adjustment, and symptom distress was defined as degree of discomfort that cervical women experienced from long-term radiotherapy side effect. However, symptom distress seemed to be biological adjustment. Therefore, findings showed that emotion-focused coping had influence on psychosocial adjustment, while problem-focused coping had influence on symptom distress.

In spite of sampling procedure, the samples for this study were a purposive sample of 300 post radiotherapy cervical cancer women. The samples reflected only
women who came for follow-up care at least one month after completing radiotherapy up to two years at the radiotherapy outpatient clinic of three hospitals within Bangkok Metropolitan. The selection was limited to women who have lived without recurrence of cancer and have not been diagnosed with another cancer. The limitations of the sampling procedure restricted the generalizability of these research findings. Furthermore, the Hawthorne effect may also have occurred since the samples were aware of their participation in the study and they may have responded to the questionnaire in a particular manner.

According to the data collection procedure, the five-structured interview questionnaires, 135 items, were used in this study. Listening to someone read an item, constructing the item, and rating the scale is quite different than reading and responding to the item by themselves. In addition, many women lost their ability to concentrate or to listen carefully since they were concerned about the order of the physician's examination. The data collector, who was identified as a nurse, might have increased social desirability bias, especially with regard to support from health authority, attitude toward and relationships with the health-care team. Furthermore, the data collector, who was familiar with the questionnaires and the research hypotheses, might have influenced their reading and clarifying the items to the sample. This might have influenced samples' responses.

Regarding Structural Equation Modeling, more than one model fit the data (Bollen, 1989; Stevens, 1996). Selecting one model over another in this study is considered based on the modification indices and theoretical reasoning. The fit indices of the modified model in this study indicated that the model fit the data well;
however, it does not mean that it is the only model that fits the data. Therefore, testing a model is a continuing procedure that requires taking both theoretical and empirical considerations into account.
CHAPTER VI
CONCLUSION

Summary of the Study

The purpose of this cross-sectional descriptive research was to examine the causal relationships among age, education, time since completing radiotherapy, family and health authority support, symptom distress, uncertainty, problem-focused coping, emotion-focused coping, and psychosocial adjustment in post radiotherapy cervical cancer women. The theoretical framework of this study was based on Mishel's uncertainty in illness theory (Mishel, 1988) and empirical data. Structural equation modeling was used to test a proposed model of factors contributing to psychosocial adjustment in post radiotherapy cervical cancer women. The sample was randomly selected from cervical cancer women who have finished receiving a radiotherapy course at least one month and up to two years, and have lived without a recurrence of cancer. Three hundred post radiotherapy cervical cancer women who came for follow-up care at least one month after completing radiotherapy and up to two years at the radiotherapy out patient clinic of three hospitals in Bangkok Metropolitan between April and August 2001 were recruited in this study.

The instruments used in this study included: (1) Personal Information Questionnaire; (2) The Symptom Distress Scale (SDS) (McCorkel & Young, 1978); (3) The Social Support Questionnaire (SSQ) (Schaefer, Coyne & Lazarus, 1981); (4)
The Mishel's Uncertainty in Illness Scale: Community Version (MUIS-C) (Mishel, 1997); (5) The Jalowiec Coping Scale (JCS) (Jalowiec, 1979); and (6) The Psychosocial Adjustment to Illness Scale (PAIS) (Morrow, Chiarello, & Derogatis, 1978). The five instruments, which were translated into Thai language, were translated back to evaluate the accuracy of using Thai language by a bilingual instructor major in language education. All instruments were evaluated for content validity by five experts. Internal consistency and factor analysis of each instrument were examined. Chronbach's alpha coefficient of each instrument was as follow: SDS was .74, SSQ was .88, MUIS-C was .82, JCS was .56 for emotion-focused coping scores and .85 for problem-focused coping, and PAIS was .87.

The characteristics of the samples in this study, the mean age of the women was 52.96 years, ranging from 28 to 84 years. Their formal education ranged from 0 to 18 years, with a mean of 5.11 years. Most of the women (71.3%) had completed elementary education. More than half of the sample (64.3%) were married. Forty-eight percent of the sample were unemployed/ housewives. Half of the sample (55.7%) earned income less than 5,000 Baht per month. Thirty-seven percent of the women had been diagnosed with cervical cancer stage IIB. The majority of the sample (77.3%) did not take any medication after completing radiotherapy.

The hypothesized model of psychosocial adjustment in post radiotherapy cervical cancer women was tested by using LISREL 8.30 Program. The modified model was performed to fit the empirical data at $\chi^2 (df = 26) = 11.09$, $p = 1.00$; GFI = 0.99; AGFI = 0.98; RMSEA = 0.00. In the modified model, thirty-four percent ($R^2 = .34$) of the total variance in uncertainty were explained by time since completing radiotherapy, family and health authority support, and symptom distress. Time since
completing radiotherapy and family and health authority support had a negative direct
effect on uncertainty ($\gamma = -0.23, p<.01$; $\beta = -0.15, p<.01$), respectively. Whereas,
symptom distress had a positive direct effect on uncertainty ($\beta = 1.54, p<.001$). These
findings partially support Mishel's uncertainty in illness theory (Mishel, 1988).

Sixty-two percent ($R^2 = .62$) of the total variance in psychosocial adjustment
was explained by family and health authority support, symptom distress, uncertainty
and emotion-focused coping. Family and health authority support had a positive direct
effect on psychosocial adjustment ($\beta = 0.09, p<.001$). Symptom distress, uncertainty,
and emotion-focused coping had a negative direct effect on psychosocial adjustment
($\beta = -0.19, p<.01$; $\beta = -0.05, p<.05$; $\beta = -0.09, p<.001$), respectively. In addition, the
indirect effects of the studied variables on psychosocial adjustment were as follows.
Time since completing radiotherapy had a negative direct effect on family and health
authority support ($\gamma = -0.23, p<.001$). Time since completing radiotherapy and
problem-focused coping had a negative direct effect on symptom distress ($\gamma = -0.07, p
<.05$; $\beta = -0.19, p<.001$), respectively. Family and health authority support and
education had a positive direct effect on problem-focused coping ($\beta = 0.11, p<.05$; $\gamma =
1.16, p<.001$), respectively. Age had a negative direct effect on problem-focused
coping ($\gamma = -0.26, p<.001$). Education had a negative direct effect on emotion-focused
coping ($\gamma = -0.49, p<.01$), whereas, uncertainty had a positive direct effect on emotion-
focused coping ($\beta = 0.14, p<.01$).
Implications and Recommendations

Implication for Nursing Theory / or Knowledge Development

The causal model of psychosocial adjustment in post radiotherapy cervical cancer women was tested and validated by this research finding and this model can contribute to nursing theory / or knowledge development as described in the following section. This study was based on Mishel's uncertainty in illness theory (Mishel, 1988) and empirical data from the literature. The findings from this study provide partially support for Mishel's theory. First, the findings that family and health authority support, symptom distress, and time since completing radiotherapy had influence on uncertainty validated Mishel's theory which proposed that social support and event familiarity have a direct effect on uncertainty. Secondly, the finding of the positive influence of uncertainty on emotion-focused coping support some parts of the uncertainty in illness theory in that when uncertainty is considered, affect-control strategies or emotion-focused coping are generated. In addition, this study can be considered as testing Mishel's uncertainty in illness theory in post radiotherapy cervical cancer women that contribute to develop psychosocial adjustment in post radiotherapy cervical cancer women model. The results of this study depicted the factors that influence uncertainty and psychosocial adjustment in post radiotherapy cervical cancer women and the causal relationships between these factors and psychosocial adjustment.

Psychosocial adjustment in post radiotherapy cervical cancer women model can be classified as middle-range theory (Fawcett, 1995: 25-29). Middle-range
theory describes, explains or predicts specific and concrete phenomena. It is made up of concepts and propositions that are empirically testable and may be directly applied in clinical practice. In addition, middle-range theory includes a detailed description of behavior or an explanation of how particular factors influence particular behaviors. This model can clarify how the factors influence psychosocial adjustment process and give an equation model to predict psychosocial adjustment in post radiotherapy cervical cancer women. The findings from this study have determined theoretical statements for further prescriptive studies as follows:

1. Family and health authority support affects psychosocial adjustment by reducing uncertainty.

2. Problem-focused coping affects psychosocial adjustment by reducing symptom distress.

3. Promoting family and health authority support, releasing symptom distress, managing uncertainty, and decreasing use of emotion-focused coping are important in promoting better psychosocial adjustment in post radiotherapy cervical cancer women.

Implications and Applications of Research Findings

The findings of this study revealed that many factors had influence on psychosocial adjustment. In order to succeed in promoting psychosocial adjustment in post radiotherapy cervical cancer women, nurses in the primary care system should act in a proactive role in reaching out to these patients in their communities. Appropriate referral system or health care networks for continuing care in cancer patients,
especially cervical cancer women, are necessary to be conducted in the health care system policy.

Nurses in the primary care system should be responsible to care for patients with chronic illness or completing treatment. During receiving radiotherapy, some patients stayed at home and went to receive their radiotherapy daily. Thus, nurses in the primary care system should coordinate with nurses in the tertiary care system in planning the care for cervical cancer women since the newly diagnosed period to post radiotherapy period. The finding that longer time since completing radiotherapy was related to a lower level of family and health authority support suggests that nurses in the primary care system should employ interventions to maintain these women's family and health authority support. While nurses in the tertiary care system should spend time to be concerned with these women's problems particularly at follow up appointments. In addition, a telephone support network, which could be provided by nurses, can be implemented to help women connect with health-care resources after completing radiotherapy.

Furthermore, family and health authority support seems to be an important factor that can help women improving their psychosocial adjustment. Support from family members and health-care providers have an influence on symptom distress, uncertainty, problem-focused coping, and emotion-focused coping both directly and indirectly. Thus nurses both in primary and tertiary care systems need to provide a high quality and up-to-date information regarding long-term side effects of radiotherapy and follow-up care issues appropriate for this group. In addition, nurses need to become more creative in providing information and in knowing how to provide it during a stressful time. Moreover, nurses may involve
family members by providing suggestions or interventions, in order to inform or enhance concern about the women's needs, problems, and psychosocial adjustment at the post radiotherapy period. Family members may also need informational and emotional support from health-care providers. Therefore, family-centered care for cancer patients is necessary for improving patients' psychosocial adjustment.

However, nurses must recognize that the social support needs of women with cervical cancer differ significantly from other patients. Supportive interventions should be adapted to the needs of women with particular attention to encouraging peer support group participation, and facilitation of emotional and tangible aid in the primary care system. Nurses should conduct individual or group psychosocial counseling regarding specific areas of uncertainty that may arise about sexual function, fear of recurrence and disease progression.

**Implications for Further Studies**

To test Mishel's uncertainty in illness theory, adaptation that is conceptualized as biopsychosocial adjustment is recommended to study the influence of coping strategies on adaptation. In addition, appraisal is suggested to determine that a person appraises uncertainty as a danger or opportunity. The appraisal provides the coping strategies, which a person uses to deal with uncertainty. The results will verify the relationships among variables in Mishel's theory.

Although the findings of this study showed that the modified model fits the data well, this model is tentative. Cross-validation with larger randomly selected sample is recommended. If the model specifications for the second samples are
identical to this model, the trustworthiness of the model will be increased. Furthermore, data from a large sample may have a better chance to meet the assumption of normality and thus increase generalizability.

In addition, a replication study should be conducted with patients with different sites of cancer, various types of treatment from various hospitals, and other chronic illnesses to compare findings and identify other predictive variables. The results may help to determine whether the same theoretical model proposes equally well for explaining this phenomena in other cancer patients and other chronic illness patients.

A longitudinal study (6 months) is recommended to study social support, symptom distress, uncertainty, coping strategies, and psychosocial adjustment of cancer patients at various times since completing treatment in order to clearly understand the psychosocial adjustment process and verify the theoretical construct of the model.

An intervention study should be conducted to promote family and health authority support and problem-focused coping, and to reduce symptom distress, uncertainty, and emotion-focused coping in promoting psychosocial adjustment. It will confirm the causal relationships within the model and the validity of the psychosocial adjustment model. Furthermore, it will contribute to the nursing practice and the nursing science development.

In order to gain a better understand of factors contributing to the psychosocial adjustment and psychosocial adjustment from the perspective of post radiotherapy patients, both qualitative and quantitative methodologies are recommended.
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APPENDIX
APPENDIX A

INSTRUMENTS

Personal Information Questionnaire

**Instruction:** Record the concerned information according in the blank area or check / in the blank in front of the statement.

1. Age.................. years
2. Marital Status
   1. Married
   2. Single
   3. Divorced
   4. Widowed
3. Occupation
   1. Unemployed/Housewife
   2. Employee
   3. Agriculturist
   4. Government officer
   5. Business
   6. Others............
4. Working after treatment
   1. Yes
   2. No
5. Education level
   1. No formal education
   2. Elementary school
   3. High school
   4. Diploma
   5. Bachelor
   6. Graduated
6. Length of formal education.................. years
7. Income / month
   1. Lower than 5,000 Baht
   2. 5,001-10,000 Baht
   3. 10,001-15,000 Baht
   4. 15,001-20,000 Baht
   5. Higher than 20,000 Baht
8. Number of family members.................. Including
9. Duration after completing radiotherapy............... months
10. Diagnosis Ca. Cervix stage............
11. Treatment...........................................
12. Current medication..................................
แบบสอบถามข้อมูลส่วนบุคคล

คำขึงข้อ: โปรดติดต่อลำดับในช่องว่าง หรือที่เครื่องหมาย / หน้าข้อที่ตรงกับข้อมูลส่วนบุคคลของท่าน

1. อายุ................ปี
2. สถานภาพสมรส
   ....(1) ผู้ ....(2) โสด
   ....(3) หย่า ....(4) หย่า / แยก
3. อาชีพ
   ....(1) งานบ้าน / ไม่ได้ประกอบอาชีพ ....(2) รับจ้าง
   ....(3) เกษตรกรรม ....(4) รัฐราชการ / รัฐวิสาหกิจ
   ....(5) ต้าเขาย ....(6) อื่น ๆ (ระบุ).................................
4. ขณะนี้ยังทำงานหรือไม่
   ....(1) ทำงาน ....(2) ไม่ได้ทำงาน
5. ระดับการศึกษา
   ....(1) ไม่ได้ศึกษา ....(2) ระดับศึกษาชั้นปีที่...........
   ....(3) มัธยมศึกษาชั้นปีที่............. ....(4) ปริญญา / ปริญญา ชั้นปีที่...........
   ....(5) ปริญญาตรี ....(6) ปริญญาโท / ปริญญาเอก
6. ระยะเวลาที่ได้รับการศึกษาทั้งหมด................ปี
7. รายได้ค่อนข้าง
   ....(1) ต่ำกว่า 5,000 บาท ....(2) 5,001 – 10,000 บาท
   ....(3) 10,001 – 15,000 บาท ....(4) 15,001 – 20,000 บาท
   ....(5) 20,001 บาทขึ้นไป
8. จำนวนสมาชิกในครอบครัว........คน ประกอบด้วย..................................................
9. ให้รับการเจาะหีคอกแล้วเป็นระยะเวลายัง.............เดือน
10. การวินิจฉัยโรค CA. Cervix stage.................................................................
11. การรักษาที่ได้รับ..........................................................
12. การรักษาทางยาที่ได้รับขณะนี้.................................................................
The Symptom Distress Scale

**Instruction:** Please take your time and think about what each statement says. Then place a circle around the number that most closely measures what you are experiencing today on a scale from one to five. Number one would indicate no problems in regard to that particular statement and number five would indicate a maximum amount of problems. Number two through four would indicate you feel somewhere in-between these two extremes.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Degree of Distress</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nausea</td>
<td>I feel as sick as I could possible be</td>
</tr>
<tr>
<td></td>
<td>5  4  3  2  1 I do not feel sick at all</td>
</tr>
<tr>
<td>2. Appetite</td>
<td>Can’t face food at all</td>
</tr>
<tr>
<td></td>
<td>5  4  3  2  1 Normal appetite</td>
</tr>
<tr>
<td>8. Bowel Pattern</td>
<td>The worst I’ve ever had</td>
</tr>
<tr>
<td></td>
<td>5  4  3  2  1 Normal bowel pattern</td>
</tr>
</tbody>
</table>
แบบวัดระดับความไม่สุขสบาย

คำจำกัด: โปรดลงมุมล้องรอบตัวเลขที่ท่านคิดว่าจดจ่อท่านมีระดับความไม่สุขสบายของอาการดังกล่าวอยู่ในระดับมากน้อยเพียงใด

<table>
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<tr>
<th>หมายเลข</th>
<th>ระดับ</th>
<th>ความไม่สุขสบาย</th>
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</thead>
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<tr>
<td>หมายเลข 1</td>
<td>หมายเลข 2</td>
<td>ไม่มีอาการไม่สุขสบาย</td>
</tr>
<tr>
<td>หมายเลข 3</td>
<td>หมายเลข 4</td>
<td>ไม่มีอาการไม่สุขสบายในระดับน้อย</td>
</tr>
<tr>
<td>หมายเลข 5</td>
<td>หมายเลข 6</td>
<td>ไม่มีอาการไม่สุขสบายในระดับใกล้สุด</td>
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<table>
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<tr>
<th>อาการ</th>
<th>ระดับของความไม่สุขสบาย</th>
</tr>
</thead>
<tbody>
<tr>
<td>รู้สึกคลื่นไส้มากที่สุด</td>
<td>5 4 3 2 1 ไม่มีอาการเลย</td>
</tr>
<tr>
<td>รู้สึกเต้นของกระดูก</td>
<td>5 4 3 2 1 รู้สึกอย่างกลิ่นอว่างปกติ</td>
</tr>
</tbody>
</table>

การจับล่างดูจำนวนระดับที่สุดที่เหลือเป็น 5 4 3 2 1 ซับล่างดูจระได้ตามปกติ
The Social Support Questionnaire

**Instruction:** Please check / in the column which you consider that your family members and health authority help you during the present illness in each category provided. Please give the score for each person listed as rating form provided.

0 = not help | 1 = little help | 2 = some help | 3 = quite a bit | 4 = a great deal

For Spouse, Parents, and children

<table>
<thead>
<tr>
<th>Support</th>
<th>Not help</th>
<th>Little help</th>
<th>Some help</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Providing you information and guidance during your present illness that you found it helpful.</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Giving confidence that he/she is there when you need him/her during your present illness.</td>
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<td>3.</td>
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<td>4.</td>
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<tr>
<td>7. Helping you in your activities of daily living during your present illness.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Health authority

<table>
<thead>
<tr>
<th>Support</th>
<th>Not help</th>
<th>Little help</th>
<th>Some help</th>
<th>Quite a bit</th>
<th>A great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Providing you information and guidance during your present illness that you found it helpful.</td>
<td></td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Helping you in your activities of daily living during your present illness.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
แบบวัดแรงสนับสนุนทางสังคม

คำชี้แจง: โปรดทำเครื่องหมาย / ลงในช่องที่ทำให้ว่าสมาชิกในครอบครัวและเจ้าหน้าที่ในที่มีสุขภาพ
ให้ความช่วยเหลือทำหน้าที่ท่านได้รับชีวิตที่ดีแล้ว ขอความคัดไปเน้นมากน้อย
เพียงใด โดยให้ระดับคะแนน ดังนี้

<table>
<thead>
<tr>
<th>หมายเลข</th>
<th>ไม่ช่วยเหลือเลย</th>
<th>ช่วยเหลือน้อย</th>
<th>ช่วยเหลือยังเป็นครั้งคราว</th>
<th>ช่วยเหลือค่อนข้างมาก</th>
<th>ช่วยเหลือมากที่สุด</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>1</td>
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<td>2</td>
<td></td>
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<tr>
<td>3</td>
<td></td>
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<tr>
<td>4</td>
<td></td>
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</tr>
</tbody>
</table>

สมาชิกในครอบครัว ได้แก่ สามี บุตร ด้าน ญาติที่ใกล้ชิด

<table>
<thead>
<tr>
<th>การช่วยเหลือที่ได้รับ</th>
<th>ไม่ช่วยเหลือเลย</th>
<th>ช่วยเหลือน้อย</th>
<th>ช่วยเหลือยังเป็นครั้งคราว</th>
<th>ช่วยเหลือค่อนข้างมาก</th>
<th>ช่วยเหลือมากที่สุด</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ให้คำแนะนำและแนวทางการปฏิบัติที่เป็นประโยชน์</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2. ให้ความมั่นใจว่าจะอยู่ช่วยเหลือเมื่อทำนั่นคือการ</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>7. ให้ความช่วยเหลือในการทำกิจวัตรประจำวัน</td>
<td>0</td>
<td>1</td>
<td>2</td>
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<td>4</td>
</tr>
</tbody>
</table>

เจ้าหน้าที่ในกรณีฉุกเฉิน ได้แก่ แพทย์ พยาบาล เจ้าหน้าที่พยาบาล

<table>
<thead>
<tr>
<th>การช่วยเหลือที่ได้รับ</th>
<th>ไม่ช่วยเหลือเลย</th>
<th>ช่วยเหลือน้อย</th>
<th>ช่วยเหลือยังเป็นครั้งคราว</th>
<th>ช่วยเหลือค่อนข้างมาก</th>
<th>ช่วยเหลือมากที่สุด</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ให้คำแนะนำและแนวทางการปฏิบัติที่เป็นประโยชน์</td>
<td>0</td>
<td>1</td>
<td>2</td>
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</tr>
<tr>
<td>7. ให้ความช่วยเหลือในการทำกิจวัตรประจำวัน</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
The Mishel Uncertainty in Illness: Community Scale

**Instruction:** Please read each statement. Take your time and think about what each statement says. Then check / in the column that most closely measures how you are feeling. If you agree with a statement, then you would mark in either “Strongly Agree” or “Agree”. If you disagree with a statement, then mark in either “Strongly Disagree” or “Disagree”. If you are undecided about how you feel, then mark under “Undecided” for that statement. Please respond to every statement.

<table>
<thead>
<tr>
<th></th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I don’t know what is wrong with me.</td>
<td></td>
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<tr>
<td>2. I have a lot of questions without answers.</td>
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<td>3. I am unsure if my illness is getting better or worse.</td>
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<td>4. It is unclear how bad my pain will be.</td>
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<td>20.</td>
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<tr>
<td>21. They have not given me a specific diagnosis.</td>
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<tr>
<td>22. The seriousness of my illness has been determined.</td>
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<tr>
<td>23. The doctors and nurses use everyday language so I can understand what they are saying.</td>
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</tbody>
</table>
แบบสอบถามความรู้สึกไม่แน่นอนในความเข้าป่วย

คำชี้แจง: โรคพิษกระบาดความต่อไปนี้แต่ละขอ แล้วทำเครื่องหมาย / ลงในช่องที่ตรงกับความรู้สึกที่แท้จริงในขณะนี้ของการมีอาการที่สุด ซึ่งให้ทำเครื่องหมายเพื่อแสดงถึงความต่อเนื่องและกระวนวนรอบทุกขอ

<table>
<thead>
<tr>
<th>1. นั้นไม่รู้ว่าตัวบินป่วยเป็นอะไร</th>
<th>ตรงกับความรู้สึกมากที่สุด</th>
<th>ตรงกับความรู้สึกน้อยมาก</th>
<th>ไม่แน่ใจ</th>
<th>ไม่ควรกับความรู้สึกมาก</th>
<th>ไม่ควรกับความรู้สึกมากที่สุด</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. นั้นมีคำถามมากมายที่ยากต่อดูใจนี้</td>
<td></td>
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<tr>
<td>3. นั้นไม่แน่ใจว่าอาการเข้าป่วยของตัวนั้นจะดีขึ้นหรือแย่ลง</td>
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<tr>
<td>4. นั้นไม่แน่ใจว่าตัวนั้นจะดีขึ้นเข้าป่วยหรือยุ่งยากยิ่งขึ้น</td>
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<td>5.</td>
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<td>18.</td>
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<td>19.</td>
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<tr>
<td>20.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>21. หมอไม่ได้บอกอาการอะไรที่แน่นอนให้พิเศษ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. นั้นสามารถประเมินความรู้สึกของความเข้าป่วยของตัวนั้นได้</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>23. หมอและพยาบาลให้คำแนะนำป่วย ๆ ที่นั้นเข้าใจไม่ได้</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Chanpen Santawaja
Appendix A / 176
The Jalowiec Coping Scale

**Instruction:** Please estimate how often you use the following ways to cope with your uncertainty in illness during post radiotherapy period. Then check / in the column that most closely to you.

<table>
<thead>
<tr>
<th>Coping Method</th>
<th>Never</th>
<th>Occasionally</th>
<th>About half the time</th>
<th>Often</th>
<th>Almost Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Worry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Cry</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Work off tension with physical activity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Or exercise</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Hope that things will get better</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Laugh it off, figuring that things could be worse</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
<tr>
<td>37. Go to sleep, figuring things will look better in the morning</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>38. Set specific goals to help you solve the Problem</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>39. “Don’t worry about it everything will probably work out fine</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>40. Settled for the next best thing to what you really wanted</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
แบบวัดวิธีการพิจารณารายงาน

ค่าที่แจ้ง: โปรดทราบว่ามีความเป็นจริงของท่านมากที่สุด โดยทีมวิจัยจะตั้งค่า

1. ที่อยู่ใด
2. วันที่

3. ระบายความเครียดด้วยการออกแรงหรือออกกำลังกาย
4. ระหว่างทุกข์ทุกโทษอย่างจะศึกษา
5. คิดว่าเห็นได้ชัดเจน อะไรบางอย่างจะแย่มากกว่านี้ได้ก็ได้

---

37. เข้าสอนและคิดว่าทุกเสียงอาจดูดีขึ้นในช่วงบวม
38. ก้าวหน้าเป้าหมายเฉพาะเพื่อช่วยแก้ปัญหา
39. ปล่อยใจตนเองว่า "อย่ากลัวไปเลยทุกสิ่งทุกอย่างจะคลี่คลาย

ไปในทางที่ดีขึ้น

40. ยอมรับในสิ่งที่ต้องยอมรับจากสิ่งที่ต้องการทำในการเรียน

<table>
<thead>
<tr>
<th>วิธีเสริมความแคล %.</th>
<th>นิยม</th>
<th>มาก</th>
<th>เป็น</th>
<th>.chomp</th>
<th>ทุก</th>
<th>ครั้ง</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. กังวลใจ</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. ร้องไห้</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>3. ระบายความเครียดด้วยการออกแรงหรือออกกำลังกาย</td>
<td></td>
<td></td>
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<tr>
<td>4. ระหว่างทุกข์ทุกโทษอย่างจะศึกษา</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5. คิดว่าเห็นได้ชัดเจน อะไรบางอย่างจะแย่มากกว่านี้ได้</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

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| | | | | | | |
| | | | | | | |
The Psychosocial Adjustment to Illness Scale

**Instruction:** Please place a circle around the number that most closely measures what you are experienced.

**Section 1: Health Orientation**

1. Which of the following statements best describes your usual attitude about taking care of your health?
   - [ ] a) I am very concerned and pay close attention to my personal health.
   - [ ] b) Most of the time I pay attention to my health care needs.
   - [ ] c) Usually, I try to take care of health matters but sometimes I just don't get around to it.
   - [ ] d) Health care is something that I just don't worry too much about.

8. In an illness such as yours patients are given different amounts of information about their treatment. Please select a statement from those below which best describes information you have been given about your treatment.
   - [ ] a) I have been told almost nothing about my treatment and feel left out about it.
   - [ ] b) I have some information about my treatment but not as much as I would like to have.
   - [ ] c) My information concerning treatment is pretty complete, but there are one or two things I still want to know.
   - [ ] d) I feel my information concerning treatment is very complete and up-to-date.
Section 2: Vocational environment

9. Has your illness interfered with your ability to do your job (schoolwork)?
   [ ] a) No problems with my job.
   [ ] b) Some problems, but only minor ones.
   [ ] c) Some serious problems.
   [ ] d) Illness has totally prevented me from doing my job.

Section 3: Domestic environment

15. How would you describe your relationship with your husband or wife (partner, if not married) since your illness?
   [ ] a) Good.
   [ ] b) Fair.
   [ ] c) Poor.
   [ ] d) Very poor.

Section 4: Sexual relationship

23. Sometimes having an illness can cause problems in a relationship. Has your illness led to any problems with your husband or wife (partner, if not married)?
   [ ] a) There has been no change in our relationship.
   [ ] b) We are a little less close since my illness.
   [ ] c) We are definitely less close since my illness.
   [ ] d) We have had serious problems or a break in our relationship since my illness.
Section 5: Extended family relationship

29. Have you had as much contact (either personally or by telephone) with members of your family outside your household since your illness?
   [ ] a) Contact is the same or greater since illness.
   [ ] b) Contact is slightly less.
   [ ] c) Contact is marked less.
   [ ] d) No contact since illness.

Section 6: Social environment

33. Are you still as interested in your leisure time activities and hobbies as you were prior to your illness?
   [ ] a) Same level of interest as previously.
   [ ] b) Slightly less interest than before.
   [ ] c) Significantly less interest than before.
   [ ] d) Little or no interest remaining.

Section 7: Psychological distress

39. Recently, have you felt afraid, tense, nervous, or anxious?
   [ ] a) Not at all.
   [ ] b) A little bit.
   [ ] c) Quite a bit.
   [ ] d) Extremely.

45. Recently, have you been concerned that your illness has caused changes in your appearance that make you less attractive?
   [ ] a) Not at all.
   [ ] b) A little bit.
   [ ] c) Quite a bit.
   [ ] d) Extremely.
แบบวัดการปรับตัวด้านจิตสังคมต่อภาวะการเจ็บป่วย

คำชี้แจง: โปรดทำเครื่องหมายถูกด้านข้างบนหัวข้อที่ทำคิดว่าตรงกับความเป็นจริงของคุณมากที่สุด
เพียง 1 ข้อเท่านั้น

ด้านที่ 1 ภาวะสุขภาพ

1. ขอตรงกับทัศนคติของคุณเกี่ยวกับการดูแลสุขภาพของตัวเองที่สุด
   ก) ฉันรักษาตัวเองดีที่สุด
   ข) ฉันสนใจดูแลสุขภาพ
   ค) ฉันสนใจดูแลสุขภาพแล้วแต่ระยะเวลา
   ง) ฉันไม่คิดถึงการดูแลสุขภาพมากนัก

8. ความมั่นใจในย่างโถงที่เห็นถึงการได้รับข้อมูลเกี่ยวกับการรักษาโรคอย่างชัดเจน
   ก) ฉันมั่นใจไม่ได้รับข้อมูลเกี่ยวกับการรักษาโรค
   ข) ฉันมั่นใจได้รับข้อมูลเกี่ยวกับการรักษาโรค
   ค) ฉันมั่นใจได้รับข้อมูลเกี่ยวกับการรักษาโรค
   ง) ฉันมั่นใจได้รับข้อมูลเกี่ยวกับการรักษาโรค

ด้านที่ 2 อาชีพการทำงาน

9. การเข้าสู่ชีวิตการทำงานต่อความสามารถในการทำงาน (หรือการเรียน) ของฉันหรือไม่
   ก) ไม่สามารถ
   ข) มีปัญหาบางแง่เป็นปัญหาเล็ก ๆ น้อย ๆ
   ค) มีปัญหาสุขภาพมากพอควร
   ง) ทำให้ฉันทำงานไม่ได้เลย
คำถามที่ 3 สถานภาพคัดออกไม่ถูกต้อง
15. ภายนอกโครงลายสาง สถานพยาบาลวาระท่านกับสามี หรือคู่รัก (ต้องไม่แต่งงาน) เป็นอย่างไร
ก) ดีมาก
ข) ดีพอควร
ค) ไม่ค่อยดี
ง) แย่มาก

คำถามที่ 4 สถานภาพทางเพศ
23. การเจ็บป่วยและการหายแสงทำให้เกิดปัญหาเรื่องสถานพยาบาลทางเพศระหว่างท่านกับสามีหรือคู่รัก
หรือไม่
ก) ไม่มีปัญหา
ข) มีปัญหาเล็กน้อย
ค) มีปัญหามากพอควร
ง) มีปัญหาเกิดขึ้นอย่างมาก หรือไม่มีสถานภาพทางเพศ

คำถามที่ 5 สถานภาพตกบกับสมาชิกในครอบครัวที่ไม่ได้ดื่มด่ำสัมมันต์
29. ภายนอกการจมย่องท่านได้พูดคุยกับหรือคิดต่อทางโทรศัพท์กับสมาชิกในครอบครัวที่ไม่ได้ดื่มด่ำสัมมันต์
มากน้อยเพียงใด
ก) แทบจะไม่คุย หรือมากมายกว่าเดิม
ข) ลดลงเล็กน้อย
ค) ลดลงมากพอควร
ง) ไม่มีการคิดต่อเลย
คำถามที่ 6 สภาพแวดล้อมในสัตว์
33. ท่านมีความสนใจในการใช้วัตถุวางหรือท่านได้เรียนรู้เพื่อนที่เคยท่านมาเกี่ยวกับความมีป่วยหรือไม่ (ชื่นชมรูปการโทรศัพท์ออกหนังสือเป็นต้น)
ก) เหมือนเดิม
ข) ลอกมาจากเดิมเล็กน้อย
ค) ลอกมาจากเดิมมาก
ง) น้อยหรือไม่มีเลย

คำถามที่ 7 ความไม่สุจริตทางใจ
39. ในขณะที่ท่านรู้สึกกับร่าง ค่ำครึ้ม คาดใจหรือไม่
ก) ไม่เคยรู้สึกเลย
ข) รู้สึกบ้างเล็กน้อย
ค) รู้สึกมากพอควร
ง) รู้สึกอย่างมาก

45. ในขณะที่ท่านรู้สึกว่าการเข้าป่วยทำให้รู้สึกหน้าต่างของท่านเปลี่ยนแปลงไป หรือมีสภาพร่างอย่าง
ก) ไม่เคยรู้สึกเลย
ข) รู้สึกบ้างเล็กน้อย
ค) รู้สึกมากพอควร
ง) รู้สึกอย่างมาก
APPENDIX B

LIST OF EXPERTS

1. Assoc. Prof. Dr. Saipin Gasemgitvatana
   Faculty of Nursing, Mahidol University

2. Assist. Prof. Dr. Atirat Wattanapailin
   Faculty of Nursing, Mahidol University

3. Assist. Prof. Dr. Sucheera Phatharayutwat
   Faculty of Medicine, Siriraj Hospital, Mahidol University

4. Assist. Prof. Dr. Tipaporn Wonghongkul
   Faculty of Nursing, Chiang Mai University

5. Assist. Prof. Dr. Tana Nilchaikovit
   Faculty of Medicine, Ramathibodi Hospital, Mahidol University

6. Assist. Prof. Dr. Punchalee Wasanasomsithi
   Chulalongkorn University Language Institute
APPENDIX C

CONSENT FORM

My name is Chanpen Santawaja. I am a doctoral student at Faculty of Nursing, Mahidol University. I am studying "A Causal Model of Psychosocial Adjustment in Post Radiotherapy Cervical Cancer Women". The purpose of the study is to examine the causal relationships among predictor variables and psychosocial adjustment in post radiotherapy cervical cancer women.

If you agree to participate in this study, I would like you to answer questionnaires including symptom distress, family and health authority support, uncertainty, coping strategies, and psychosocial adjustment. It will take approximately 45-60 minutes.

This study may have no direct benefit for you, but information I gain will help the health care teams to improve the quality of services and give the direction in caring post radiotherapy cervical cancer women. Your participation in this study is strictly voluntary. Your refusal will no effect the services that you receive from the health care teams. You have the right to withdraw at any time. All the information will be confidential, without disclosure of name to others. All the data will be analyzed in total for post radiotherapy cervical cancer women.

Thank you

(Chanpen Santawaja)

For participant
I agree to participate in this study

(Subject signature)

(Witness signature)
หลักสูตรพยาบาลศาสตรบัณฑิต คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล

เรื่อง การขอความร่วมมือในการเข้าร่วมวิจัย

เรียน ผู้เข้าร่วมการวิจัย

คัดนั้นมาจักร์เพื่อสันทนา นักศึกษาพยาบาลปริญญาเอก คณะพยาบาลศาสตร์ มหาวิทยาลัยมหิดล ก้าลังทำการวิจัยเรื่อง “รูปแบบพยาบาลด้านจิตสังคมของผู้ป่วยมะเร็งปากนิ่วระยะที่ 3 ระยะหลังการรักษา” การวิจัยนี้ต้องการศึกษาปัจจัยที่มีอิทธิพลต่อการปรับตัวด้านจิตสังคมของผู้ป่วยมะเร็งปากนิ่วระยะที่ 3 ระยะหลังการรักษา ท่านจะได้รับการสอบถามเกี่ยวกับอาการไม่สุขสบายในขณะนี้ แรงงานสุขภาพสังคมที่ท่านได้รับจากครอบครัวและสิ่งที่ท่านต้องการ ความรู้สึกใจไม่แน่นอน การเดินทางความเครียด และการปรับตัวด้านจิตสังคม โดยใช้เวลาในการตอบแบบสอบถามประมาณ 45-60 นาที

การวิจัยครั้งนี้จะไม่ให้ประโยชน์แก่บุคคลใดบุคคลหนึ่ง แต่จะยุติที่ได้จากทุกคนจะเป็นประโยชน์ในการปรับปรุงบริการ ให้เหมาะสมในการดูแลสุขภาพที่มากกว่าการดูแลสุขภาพหลังการรักษา ในกรณีการเข้าร่วมการวิจัยจะเป็นไปโดยความสมัครใจของท่าน ไม่ว่าท่านจะเข้าร่วมการวิจัยหรือไม่ก็ตาม จะไม่มีผลต่อท่านและผลการวิจัยของท่านแต่อย่างไร ในการจัดการเข้าร่วมการวิจัย ท่านมีเสรีภาพที่จะออกจากการเข้าร่วมการวิจัยได้โดยไม่มีข้อเกี่ยวกับ สิ่งที่ท่านต้องการจะเข้าร่วมหรือไม่ ขอให้ท่านตัดสินใจตามความต้องการของท่าน ท่านทุกคนจะเป็นความลับ และเสนอผลการวิจัยเป็นสาระเรื่องปากนิ่วระยะหลังการรักษาในภาพรวม

ขอขอบคุณครับ

(จักร์เพื่อสันทนา)

สำหรับผู้เข้าร่วมการวิจัย

จำนวนผู้เข้าร่วมในการวิจัยครั้งนี้

(ลงชื่อ) __________________________

( )

(ลงชื่อ) __________________________

( )

พาน
APPENDIX D

THE STRUCTURAL EQUATION OF PSYCHOSOCIAL ADJUSTMENT IN POST RADIOTHERAPY CERVICAL WOMEN

Equation 1: Family and health authority support = -.23 Time since completing radiotherapy + .99

Equation 2: Symptom distress = -.07 Time since completing radiotherapy - .19 Problem-focused coping radiotherapy + .87

Equation 3: Uncertainty = -.23 Time since completing radiotherapy - .15 Family and health authority support + 1.54 Symptom distress + .81

Equation 4: Problem-focused coping = -.26 Age + 1.16 Education + .11 family and health authority support + .82

Equation 5: Emotion-focused coping = -.49 Education + .14 Uncertainty + .96

Equation 6: Psychosocial adjustment = .09 Family and health authority support - .19 Symptom distress - .09 Emotion-focused coping + .62
## APPENDIX E

### ADDITIONAL ANALYSES

**Age by Problem-focused coping**

<table>
<thead>
<tr>
<th>Problem-focused coping</th>
<th>Age</th>
<th>28-44 years</th>
<th>45-59 years</th>
<th>60-84 years</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use less frequently</td>
<td></td>
<td>19</td>
<td>75</td>
<td>67</td>
<td>161</td>
<td>53.7 %</td>
</tr>
<tr>
<td>Use more frequently</td>
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<td>59</td>
<td>63</td>
<td>17</td>
<td>139</td>
<td>46.3 %</td>
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<tr>
<td>Total</td>
<td></td>
<td>78</td>
<td>138</td>
<td>84</td>
<td>300</td>
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<table>
<thead>
<tr>
<th>Chi-Square</th>
<th>Value</th>
<th>DF</th>
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<tr>
<td>Pearson</td>
<td>49.97</td>
<td>2</td>
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</tr>
<tr>
<td>Likelihood ratio</td>
<td>52.78</td>
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<td>.000</td>
</tr>
<tr>
<td>Linear-by-linear</td>
<td>49.65</td>
<td>1</td>
<td>.000</td>
</tr>
</tbody>
</table>
### Education by Problem-focused coping

<table>
<thead>
<tr>
<th>Problem-focused coping</th>
<th>Education</th>
<th>No formal Education</th>
<th>Elementary School</th>
<th>High School</th>
<th>Diploma &amp; Bachelor</th>
<th>Total</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Use less frequently</td>
<td></td>
<td>28</td>
<td>126</td>
<td>4</td>
<td>3</td>
<td>161</td>
<td>53.2 %</td>
</tr>
<tr>
<td>Use more frequently</td>
<td></td>
<td>4</td>
<td>88</td>
<td>21</td>
<td>26</td>
<td>139</td>
<td>46.3 %</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32</td>
<td>214</td>
<td>25</td>
<td>29</td>
<td>300</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Chi-Square

- Pearson: 53.22, DF: 3, Significant: .000
- Likelihood ratio: 59.00, DF: 3, Significant: .000
- Linear-by-linear: 50.21, DF: 1, Significant: .000

### Education by Emotion-focused coping

<table>
<thead>
<tr>
<th>Emotion-focused coping</th>
<th>Education</th>
<th>No formal Education</th>
<th>Elementary School</th>
<th>High School</th>
<th>Diploma &amp; Bachelor</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use less frequently</td>
<td></td>
<td>17</td>
<td>99</td>
<td>16</td>
<td>22</td>
<td>154</td>
<td>51.3 %</td>
</tr>
<tr>
<td>Use more frequently</td>
<td></td>
<td>15</td>
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<td>9</td>
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<td>146</td>
<td>48.7 %</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>32</td>
<td>214</td>
<td>25</td>
<td>29</td>
<td>300</td>
<td>100 %</td>
</tr>
</tbody>
</table>

Chi-Square

- Pearson: 10.83, DF: 3, Significant: .013
- Likelihood ratio: 11.24, DF: 3, Significant: .010
- Linear-by-linear: 6.87, DF: 1, Significant: .009
BIOGRAPHY

NAME Mrs. Chanpen Santawaja

DATE OF BIRTH July 13, 1965

PLACE OF BIRTH Bangkok, Thailand

INSTITUTIONS ATTEND

Boromarajonani College of Nursing, Bangkok,

1984-1988:
Diploma in Nursing and Midwifery
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Mahidol University, 1992-1994:
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Mahidol University, 1998-2002:
Doctor of Nursing Science

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