อิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อทางเดินน้ำดี

นางสาวบุษบา สมใจวงษ์

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาพยาบาลศาสตรดุษฎีบัณฑิต
สาขาวิชาพยาบาลศาสตร์
คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
ปีการศึกษา 2553

THE INFLUENCE OF SYMPTOMS, SOCIAL SUPPORT, UNCERTAINTY, AND COPING ON HEALTH-RELATED QUALITY OF LIFE AMONG CHOLANGIOCARCINOMA PATIENTS

Miss Busaba Somjaivong

A Dissertation Submitted in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy Program in Nursing Science
Faculty of Nursing
Chulalongkorn University
Academic year 2010

Thesis Title	THE INFLUENCE OF SYMPTOMS, SOCIAL SUPPORT, UNCERTAINTY, AND COPING ON HEALTH-RELATED QUALITY OF LIFE AMONG CHOLANGIOCARCINOMA PATIENTS
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Field of Study	Nursing Science
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บุษบา สมใจวงษ์: อิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อทางเดินน้ำดี (THE INFLUENCE OF SYMPTOMS, SOCIAL SUPPORT, UNCERTAINTY, AND COPING ON HEALTH-RELATED QUALITY OF LIFE AMONG CHOLANGIOCARCINOMA PATIENTS) อ. ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ดร. สุรีพร ธนศิลป์, อ. ที่ปรึกษาวิทยานิพนธ์ร่วม: ผศ. ดร. สุนิดา ปรีชาวงษ์, 245 หน้า

การศึกษาภาคตัดขวางเชิงบรรยายในครั้งนี้ มีวัตถุประสงค์เพื่อพัฒนาและทดสอบโมเดลที่อธิบายอิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อทางเดินน้ำดี โดยใช้ทฤษฎีความรู้สึกไม่แน่นอนในความเจ็บป่วยเป็นกรอบแนวคิดในการศึกษา ผู้เข้าร่วมการวิจัยคือผู้ป่วยมะเร็งท่อทางเดินน้ำดีจำนวน 260 คน ซึ่งมารับการรักษาที่ห้องตรวจผู้ป่วยนอก แผนกศัลยกรรมจากโรงพยาบาลศูนย์ 1 แห่ง และโรงพยาบาลของมหาวิทยาลัย 1 แห่ง ในภาคตะวันออกเฉียงเหนือของประเทศไทย คัดเลือกกลุ่มตัวอย่างแบบเรียงลำดับต่อเนื่อง เก็บรวบรวมข้อมูลโดยการสัมภาษณ์อย่างมีโครงสร้าง เครื่องมือที่ใช้ประกอบด้วย แบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามอาการ แบบสอบถามแรงสนับสนุนทางสังคม แบบสอบถามความรู้สึกไม่แน่นอนในความเจ็บป่วย แบบสอบถามการเผชิญความเครียด และแบบสอบถามคุณภาพชีวิต ทดสอบเส้นทางอิทธิพลของสมมติฐานการวิจัยโดยใช้โปรแกรมลิสเรล 8.72

ผลการวิจัยพบว่า โมเดลที่สร้างขึ้นมีความสอดคล้องกับข้อมูลเชิงประจักษ์ และสามารถอธิบายความผันแปรของคุณภาพชีวิตในผู้ป่วยมะเร็งท่อทางเดินน้ำดีได้ร้อยละ 70 ($\chi^2 = 0.10$, df = 1, p = 0.75, χ^2/df = 0.10, RMSEA = 0.00, GFI = 1.00, AGFI = 1.00) อาการเป็นปัจจัยที่มีอิทธิพลต่อคุณภาพชีวิตมากที่สุด โดยมีอิทธิพลทั้งทางตรง (-.65, $p < .001$) และทางอ้อม (-.13, $p < .001$) ผ่านความรู้สึกไม่แน่นอนและการเผชิญความเครียดแบบมุ่งจัดการกับอารมณ์ นอกจากนี้แรงสนับสนุนทางสังคมมีอิทธิพลทางบวกทั้งทางตรง (.12, $p < .01$) และทางอ้อม (.13, $p < .01$) ต่อคุณภาพชีวิตผ่านความรู้สึกไม่แน่นอน อย่างไรก็ตามแรงสนับสนุนทางสังคมไม่มีอิทธิพลทางอ้อม (-.12, $p > .05$) ต่อคุณภาพชีวิตผ่านอาการ ในขณะที่ความรู้สึกไม่แน่นอนมีอิทธิพลทางลบโดยตรง (-.18, $p < .001$) ต่อคุณภาพชีวิต แต่ไม่มีอิทธิพลทางอ้อม (-.01, $p > .05$) ต่อคุณภาพชีวิตผ่านการเผชิญความเครียดแบบมุ่งจัดการกับอารมณ์ การเผชิญความเครียดแบบมุ่งจัดการกับอารมณ์มีอิทธิพลทางลบโดยตรง (-.10, $p < .05$) ต่อคุณภาพชีวิต

การศึกษาในครั้งนี้แสดงให้เห็นว่าอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดแบบมุ่งจัดการกับอารมณ์เป็นปัจจัยที่มีอิทธิพลต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อทางเดินน้ำดี ดังนั้นการพัฒนาการปฏิบัติการพยาบาลต้องคำนึงถึงการจัดการเพื่อควบคุมอาการและลดความรู้สึกไม่แน่นอน รวมทั้งส่งเสริมแรงสนับสนุนทางสังคม และการเผชิญความเครียดอย่างมีประสิทธิภาพ เพื่อส่งเสริมหรือคงไว้ซึ่งคุณภาพชีวิตที่ดีของผู้ป่วยมะเร็งท่อทางเดินน้ำดี

สาขาวิชา : พยาบาลศาสตร์ ลายมือชื่อนิสิต

ปีการศึกษา : 2553 ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์หลัก

ลายมือชื่อ อ.ที่ปรึกษาวิทยานิพนธ์ร่วม สุนิดา ปรีชาวงษ์

4977972736: MAJOR NURSING SCIENCE

KEYWORDS: HEALTH-RELATED QUALITY OF LIFE / SYMPTOMS / SOCIAL SUPPORT / UNCERTAINTY / COPING / CHOLANGIOCARCINOMA PATIENT

BUSABA SOMJAIVONG : THE INFLUENCE OF SYMPTOMS, SOCIAL SUPPORT, UNCERTAINTY, AND COPING ON HEALTH- RELATED QUALITY OF LIFE AMONG CHOLANGIOCARCINOMA PATIENTS. THESIS ADVISOR: ASSOC.PROF. SUREEPORN THANASILP, DNS, APN, RN, THESIS CO-ADVISOR: ASST.PROF. SUNIDA PREECHAWONG, PhD, RN, 245 pp.

The purpose of this cross-sectional, descriptive correlation study was to develop and test a model that explains the influence of symptoms, social support, uncertainty, and coping on the health-related quality of life (HRQOL) in cholangiocarcinoma (CCA) patients. The conceptual framework was the uncertainty in illness theory. A consecutive sample of 260 CCA patients was recruited from the outpatient surgery department at a regional hospital and a university hospital in the northeast of Thailand. All participants responded to a set of six questionnaires in a structured interview format. Data collection instruments included the Demographic Characteristics Questionnaire, the Modified Memorial Symptoms Assessment Scale, the Social Support Questionnaire, Mishel's Uncertainty in Illness Scale: Community Form, the Jalowiec Coping Scale, and the Functional Assessment of Cancer Therapy General Scale. A linear structural relationship (LISREL) 8.72 was used to test the hypothesized path model.

The study findings revealed that the hypothesized model fit the empirical data and explained 70% of the variance of HRQOL ($\chi^2 = 0.10$, df = 1, $p = 0.75$, $\chi^2/df = 0.10$, RMSEA = 0.00, GFI = 1.00, AGFI = 1.00). Symptoms were the most influential factor affecting HRQOL directly (-.65, $p < .001$) and indirectly (-.13, $p < .001$) through uncertainty and emotive coping. In addition, social support had a positive direct effect (.12, $p < .01$) on HRQOL and an indirect effect (.13, $p < .01$) on HRQOL through uncertainty. However, social support had a non-significant indirect effect (-.12, $p > .05$) on HRQOL through symptoms, while uncertainty had a negative direct effect (-.18, $p < .001$) on HRQOL and non-significant indirect effect (-.01, $p > .05$) on HRQOL through emotive coping. Finally, emotive coping had a negative direct effect (-.10, $p < .05$) on HRQOL.

These findings demonstrated that symptoms, social support, uncertainty, and emotive coping were important factors influencing HRQOL in CCA patients. Therefore, further nursing interventions should take managing symptoms, motivating social support, reducing uncertainty, and promoting effective coping into account so as to maintain or improve HRQOL in CCA patients.

Field of Study : Nursing Science
Academic Year : 2010

Student's Signature ....
Advisor's Signature ....
Co-Advisor's Signature ....

ACKNOWLEDGEMENTS

This research could not have been successfully completed without the assistance of many persons. I would like to express my profound thanks and sincere appreciation to my major advisor Assoc. Prof. Dr. Sureeporn Thanasilp, for her valuable advice, guidance, directions, motivation, and warm support throughout the dissertation process. I am also very grateful to Assist. Prof. Dr. Sunida Preechawong, my co-advisor, who has provided constructive comments and suggestions leading me to better understanding of what I have been working on. My special thanks are extended to Assoc. Prof. Dr. Rebecca Sloan, my research mentor, for her expertise and time she shared with me during my studies at the School of Nursing, Indiana University, Indianapolis, Indiana, U.S.A. as well.

My deep gratitude goes to Prof. Dr. Michael Weaver for his kind assistance and guidance in data analysis and interpretation. I greatly appreciate the help I received from Dr. Paul Buelow who edited my English language in my research proposal while I was studying at the School of Nursing, Indiana University. Also, I am thankful to Assoc. Prof. Dr. Punchalee Wasanasomsithi for editing and editorial advice. My acknowledgement is extended to all the experts for their thoughtful suggestions through the translation and validation processes of the research instruments. I also express many thanks to FACIT for the permission to use the FACT-G (Thai version), Prof. Dr. Merle H. Mishel who kindly granted me permission to use MUIS-C, and Prof. Dr. Anne Jalowiec who gave me permission to use her JCS.

I am greatly thankful to my dissertation committee members: Assoc. Prof. Dr. Jintana Yunibhand, Assoc. Prof. Dr. Waraporn Chaiyawat, Assoc. Prof. Dr. Siripaarn Suwanmonkha, and Assoc. Prof. Dr. Yupapin Sirapo-ngam for the experience and knowledge they have graciously shared with me. Their contributions have definitely increased the merits of my dissertation.

I am deeply indebted to the CCA patients who willingly participated in my study and spent their time providing me the data I needed. Furthermore, I would like to express my gratitude to all staff members of the surgical outpatient departments of Srinagarind Hospital and Khon Kaen Hospital for their cooperation in the study.

I am grateful to the Faculty of Nursing at Khon Kaen University for financial support that enabled me to complete my doctoral study, as well as the 90th Anniversary of Chulalongkorn University Fund (Ratchadaphiseksomphot Endowment Fund) and Thailand Nursing Council for research grants.

My special thanks go to my colleagues at Khon Kaen University, especially my colleagues at the Division of Adult Nursing, Faculty of Nursing who worked hard to cover my workload while I was undertaking this study program.

I owe my entire doctoral classmates for the knowledge, experience, assistance, and particularly friendship they shared with me during my stay in the program.

Last but not least, my dissertation would not have been achievable without the unconditional love, understanding, encouragement, and tremendous support from my beloved family members. My thanks go to all other people whose name I have not mentioned here for their assistance and support that have become the driving force behind me and enabled me to complete my dissertation.

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CHAPTER I

INTRODUCTION

Background and significance of the study

Health-related quality of life (HRQOL) is a significant health outcome indicator for people with chronic disease and is the main concern for health service researchers and policy analysts around the world. An acceptable HRQOL is a multidimensional construct that at a minimum consists of physical, psychological, and social dimensions (Ferran, 2005a). It is noteworthy that some researchers and publications use the terms HRQOL and quality of life (QOL) interchangeably (Padilla, Frank-Stromborg, and Koresawa, 2004; Varricchio and Ferrans, 2010). The current study uses the term HRQOL only to indicate that the QOL is specifically related to health, illness, and treatment. Cancer is one of chronic diseases whose trajectory has an effect on HRQOL. Generally, healthcare teams realize that tumor response and survival times are inadequate to guarantee cancer care (Grant and Dean, 2003; King, 2006; Osoba, 2005). The main goal of cancer care is to improve and maintain the HRQOL. To date, HRQOL has been an important outcome for evaluating the effectiveness of cancer care.

Liver and bile duct cancer is a leading type of cancer—the first among males and third among females in Thailand (Srivatanakul and Attasara, 2007). It ranks first in both sexes in the northeastern region of Thailand (Khuhaprema and Srivatanakul, 2007). Cholangiocarcinoma (CCA) accounts for 75.6% to 85.9% of all liver and bile duct cancer, with the highest incidence in the northeast (Khuhaprema and

Srivatanakul, 2007). Throughout the CCA trajectory, there are few guarantees of successful treatment or supportive care. Currently, surgery is considered the treatment of choice for the early stages of CCA (Lazaridis and Gores, 2005; Narong Khuntikao, 2005; Patel and Singh, 2007). However, generally the majority of CCA patients do not seek healthcare services until the disease is in an advanced stage (Anderson et al., 2004; Narong Khuntikao, 2005). Palliative therapies include surgical biliary-enteric bypass, chemotherapy, radiation, and supportive care, all of which can be suitable for the advanced stages of CCA (Pack, O’Connor, and O’Hagan, 2001; Patel and Singh, 2007). Unfortunately, most CCA patients with unresectable tumors die within a year of diagnosis (Anderson et al., 2004; Khan et al., 2005). In general, the overall five years survival rate of CCA patients, including cases receiving tumor resection, is less than five percent (Khan et al., 2005). Therefore, CCA is a major pubic health problem in the northeast of Thailand.

CCA patients have to encounter many difficulties (Chusri Kuchaisit et al., 2004; Ubol Juangpanich et al., 2003) that can impair various dimensions of HRQOL. In the physical dimension, the pathology of CCA and the side effects of treatment can cause many undesirable symptoms, such as abdominal pain, indigestion, anorexia, fatigue, fever, itching, and sleep disturbance (Chusri Kuchaisit et al., 2005; Khan et al., 2005; Vajarabhongsa Bhudhisawasdi et al., 2002). These symptoms can recur throughout the disease trajectory because the majority of the tumors cannot be completely removed. CCA patients may suffer from a single symptom or many symptoms simultaneously (Chalearmsri Sorasit, 2005), and such suffering from symptoms causes impaired physical well-being and a decreased HRQOL.

Regarding the social/family and functional dimensions, previous studies have reported that losing one’s body image due to yellow skin, itching, and having a biliary stent impairs the patient’s social life (Chusri Kuchaisit et al., 2004; Sumon Pincharoen and Orasa Kongtaln, 2005). In addition, fatigue and pain can decrease day-to-day living and working abilities, enjoyment of leisure activities, and social relationships, as well as cause disruption in the patient’s lifestyle (Chusri Kuchaisit et al., 2004; Nuanchan Thaninsurat et al., 2002; Ubol Juangpanich et al., 2003). Some CCA patients are unable to continue working when the disease progresses. In addition, when CCA strikes males in mid-career, it affects their ability to take care of their family and fulfill other responsibilities in life (Chalearmsri Sorasit, 2005; Chusri Kuchaisit et al., 2004; Nuanchan Thaninsurat et al., 2002). Thus, CCA patients experience reduced social/family and functional well-being.

Concerning the emotional dimension, receiving a diagnosis of CCA causes the patient to have negative reactions, including despair, fear, stress, insomnia, anorexia, and isolation (Chusri Kuchaisit et al., 2004). The majority of CCA patients believe that CCA is an incurable disease and that surgery may stimulate the spread of cancer tumor throughout the body. CCA patients tend to be concerned with treatment results, financial burden, interruption to their daily living, possibility of death, and the recurrence of the tumor (Chusri Kuchaisit et al., 2004; Sumon Pincharoen and Orasa Kongtaln, 2005; Ubol Juangpanich et al., 2003). Previous studies have indicated that CCA patients experience a spiritual disequilibrium (Chusri Kuchaisit et al., 2004; Sumon Pincharoen and Orasa Kongtaln, 2005; Ubol Juangpanich et al., 2003). Such instability includes feelings of uncertainty, hopelessness, powerlessness, and loneliness. Because of this, the emotional and/or psychological well-being of CCA patients is diminished.

From the evidence presented above, CCA patients face many problems that affect HRQOL. However, only a small amount of evidence has reported on specific HRQOL as the primary outcome. In a pilot study, Kittisak Thungsattayatisathan and colleagues (2001) assessed the Functional Assessment of Cancer Therapy-General (FACT-G) measurement with 23 CCA patients in Thailand and reported that these CCA patients had moderate HRQOL impairment, which was lower than that among breast cancer patients (Ratanatharathorn et al., 2001) and head and neck cancer patients (Detprapon et al., 2009). Moreover, Chusri Kuchaisit and colleagues (2004) investigated whether the intervention with integrated empowerment process and case management could improve HRQOL among 75 CCA patients admitted for surgery, with the HRQOL of this study being mainly concerned with life satisfaction. However, the statistical results did not present significant improvement of HRQOL in pre-or post-treatment or during follow-up stages. However, it was worth noting that such results may have been skewed because the majority of patients in their study were at an advanced stage of cancer. If so, the result of surgery may not have been verifiable. Besides this, when the disease exacerbates, CCA patients may experience the feeling of uncertainty, powerlessness, and hopelessness (Chalearmsri Sorasit, 2005; Nuanchan Thaninsurat et al., 2002). The experience of CCA patients tends to reflect complex problem; thus, though it may be helpful, a process that enables patients to increase their control and improve their own health may be insufficient for improving the patient’s own perception of HRQOL.

HRQOL is an essential aspect of nursing practice (King, 2006; Padilla and Grant, 1985). A new trend in oncology care is the assessment of HRQOL as a part of clinical practice that provides the effective of nursing interventions (Varricchio and

Ferrans, 2010). Nurses can have a significant effect on various aspect of HRQOL for cancer patients because they can help patients adjust to challenges of cancer and treatment due to their relationships with their patients (King, 2006). In caring for CCA patients, nursing is concerned not only with decreased morbidity, but also with their HRQOL. Nurses help patients to manage the side effects of therapy and assist the patient with adjustment to changes in symptom, role function, and to living with a CCA. Presently, there is insufficient evidence to support the effective nursing intervention for improving and maintaining HRQOL among CCA patients. In developing the effective nursing intervention, there is a need to better understand the contribution of the multiple factors that affect CCA patients' perception of HRQOL.

Conceptual and theoretical model is needed to guide HRQOL research (Nuamah, et al., 1999). Two conceptual models that have most frequency been used to guide research and practice dealing with HRQOL in clients with cancer are the City of Hope Model (Ferrell et al., 1991), and the Ferrans and Powers' QOL Model (1985), all of which omit the relationship between specific interventions and the factors that affects HRQOL (Bredow and Peterson, 2004). Mishel (1988) has proposed appraisal of uncertainty, coping strategies, and adaptation as components of the uncertainty in illness theory (UIT) for understanding the individual's cognitive and coping response to chronic illness. The UIT offers the specificity need to test the direction and strength of the relationships betweens concepts (Mishel and Clayton, 2003). Although UIT did not specifically mention HRQOL, some researchers have interpreted the adaptation outcome of UIT as HRQOL (Detprapon et al., 2009; Padilla, Mishel, and Grant, 1992; Wonghongkul et al., 2006). Lazarus and Folkman (1984) used the term "adaptation outcome" to describe as the adjustment of social functioning, moral or life satisfaction and somatic heath. Morale is concerned with how people feel about themselves and their conditions, related to happiness, satisfaction, and subjective well-being (Lazarus and Folkman, 1984). The current study defined HRQOL as CCA patients' perception with their current level of physical, social/family, emotional, and functional well-beings. Thus, this study will adopt HRQOL as the adaptation outcome of UTI for describing and predicting HRQOL in CCA patients.

According to the UIT (Mishel, 1988), uncertainty in illness is defined as the inability to arrive at understanding regarding the illness-related events. Sources of uncertainty are inconsistency in the patterns of symptoms, inconsistency between the expected and experienced illness-related events, and the unfamiliarity and complexity of cues and events. Cognitive capacity refers to the ability of a person to process information. Limited cognitive capacity will reduce the ability to perceive symptom patterns, event familiarity, and event congruence. Structure providers such as education, social support, and credible authorities are resources that may be used to decrease uncertainty by assisting the patient's interpretation during the illness-related events. The results of a patient's appraisal may be that he or she considers uncertainty as a danger or as an opportunity. If patients view uncertainty as a danger, coping strategies to control or decrease this uncertainty will be used. If patients view uncertainty as an opportunity, then buffering coping strategies to maintain uncertainty will be used. Coping strategies help patients' adaptation. Adaptation refers to returning to the individual's level of pre-illness functioning (Mishel and Clayton, 2003). HRQOL is proposed as an adaptation outcome. Theory-testing research derive from UIT was tested in various cancer patients such as breast cancer survivors (Sammarco, 2001, 2003; Sammarco and Konecny, 2008; Wonghongkul et al., 2006), cervical cancer patients (Santawaja et al., 2002), prostate cancer patients (Wallace, 2003), and head and neck cancer patients (Detprapon et al., 2009).

Using the UIT and existing knowledge, this study selected the factors that can be modified by nursing intervention, including 1) symptoms, 2) social support, 3) uncertainty, and 4) coping in order to describe and predict HRQOL in CCA patients. The existence of relationships among these factors that influence HRQOL has been reported in various types of cancer patients (Detprapon et al., 2009; Padilla et al., 1992; Sammarco, 2001, 2003; Sammarco and Konecny, 2008; Wallace, 2003; Wonghongkul et al., 2006). However, few studies have completely examined the outcome portion of the model, including all of the factors mentioned above (symptoms, social support, uncertainty, coping, and HRQOL). In addition, most studies have focused on the direct effects of these factors on HRQOL, while only a limited number of studies have focused on their indirect effects. In reality, the relationships among the factors that determine HRQOL are complex (Vallerand, and Payne, 2003). No study has examined whether the relationships among such factors and HRQOL exist in CCA patients. In order to fill this gap in the existing body of knowledge, a path model was to develop and test a model capable of explaining the influences of symptoms, social support, uncertainty, and coping on one another and on patients' perception of HRQOL in CCA patients. Path analysis provides information about the relationships among a set of variables both direct and indirect effect (Norris, 2005). It is believed that a clear understanding of these factors affecting this perception will facilitate the design of an optimal and effective nursing intervention to maintain and improve HRQOL in CCA patients.

Research questions

The following research questions were proposed for this investigation:

1. What are the relationships among symptoms, social support, uncertainty, coping, and HRQOL in CCA patients?

2. Does the hypothesized model explain the HRQOL of CCA patients, including symptoms, social support, uncertainty, and coping, and does it adequately fit the data?

Purpose of the study

1. To explore the relationships among symptoms, social support, uncertainty, coping, and HRQOL in CCA patients

2. To develop and test a model that explains the influences of the symptoms, social support, uncertainty, and coping on HRQOL in CCA patients

Conceptual framework of the study

The UIT of Mishel (1988) was employed as the theoretical framework of this study. The UIT was selected as the guiding framework because uncertainty on the part of cancer patients can affect their HRQOL (Elphee, 2008; Detprapon et al., 2009; Sammarco, 2001, 2003; Sammarco and Konecny, 2008; Wonghongkul et al., 2006). Presently, the UIT is being used as a conceptual framework in nursing research worldwide, and it has had strong empirical support in research with a variety of populations (Mishel, 1997a, 1999), particularly cancer patients (Detprapon et al., 2009; Sammarco, 2001, 2003; Sammarco and Konecny, 2008; Santawaja et al., 2002; Wonghongkul et al., 2006).

Mishel (1988) developed the UIT from the stress and coping theory of Lazarus and Folkman (1984). Uncertainty is viewed as the greatest psychological stressor for patients coping with a life-threatening illness. From Mishel’s perspective, “uncertainty is the inability to determine the meaning of illness-related events that occur when the decision maker is unable to assign definite value to objects or events and/or is unable to predict outcomes because sufficient cues are lacking” (Mishel, 1990: 256). The UIT is composed of three major themes: antecedent of uncertainty, appraisal of uncertainty, and coping with uncertainty (Mishel and Clayton, 2003). First, the antecedent of uncertainty theme includes the stimuli frame, cognitive capacity, and structure providers. Second, the appraisal is the interpretation of uncertainty as a danger or as an opportunity. Third, coping with uncertainty is the process of changing the cognitive and behavioral effort to manage the uncertainty. Adaptation is a desirable outcome of the coping process. In this conceptual framework, the antecedents of uncertainty are symptoms and social support. Uncertainty and coping strategies comprise the process of appraisal and coping with uncertainty, and HRQOL is an adaptation outcome.

The UIT is a middle-range theory that provides a roadmap for exploring the relationships among stimuli frame, structure providers, appraisal of uncertainty in illness, and adaptation outcome. Such more concrete concepts must have hypotheses that are operationally defined and empirically testable and must be derived from propositions of the theory. Each concept is linked to empirical indicators, which provide a method to measure the variables (Fawcett, 2000). Therefore, an explicit conceptual-theoretical-empirical structure using the UIT was developed to test the proposition of HRQOL in CCA patients in the present study (see Figure 1.1).

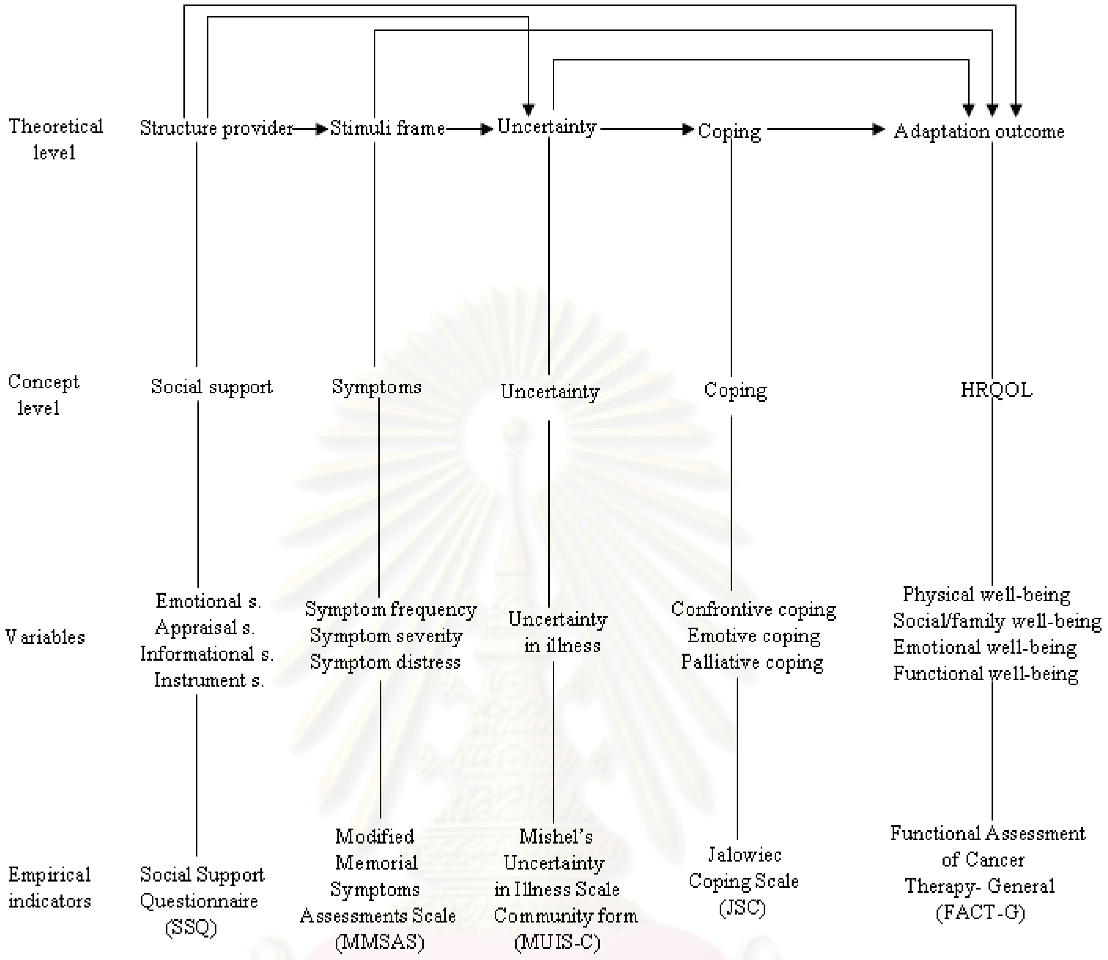


Figure 1.1: Theoretical substruction diagram

Symptoms are the stimuli frame and one of the antecedents of uncertainty. In some chronic disease, pattern of symptom is not discernable, the characteristics of symptoms, which include inconsistency in intensity, frequency, duration, number, and location can generate uncertainty (Mishel, 1988). The nature of symptoms in cancer patients fluctuates due to remissions and exacerbations of the disease. In addition, uncertainty is exacerbated by the unpredictability of the symptoms, unfamiliarity with the symptoms, and lack of information as to how to manage or control the symptoms. Many studies have confirmed that symptom severity has had a positive direct effect on the perceived uncertainty of the illness (Clayton, Mishel, and Belyean, 2006; Mast, 1998; Santawaja et al., 2002). Similarly, Detprapon and colleagues (2009) have reported that symptom experience had a strong positive direct impact on uncertainty and an indirect impact on HRQOL through uncertainty. Previous studies have also indicated that the number of symptoms experienced was negatively correlated with HRQOL (Chang et al., 2000; Hagelin, Seiger, and Furst, 2005; Longman, Braden, and Mishel, 1999). Additionally, symptom severity has had a significant negative effect on HRQOL (Cella, 1998; Curt, 2000; Thanasilp and Kongsaktrakul, 2005). Furthermore, according to another study, symptom distress was directly and negatively associated with HRQOL and explained 39% of the variance in the HRQOL for breast cancer patients (Manning-Walsh, 2005).

In CCA patients, symptoms are associated with the trajectory of the disease and the side effects of treatment. After being diagnosed with CCA (one-52 months), 90% of CCA patients have suffered from at least one symptom and sometimes many symptoms (Chalearmsri Sorasit, 2005). These symptoms can trigger suffering that impairs HRQOL. CCA patients that have high intensity of symptoms and lack information on how to manage these symptoms may have a higher level of uncertainty and lower perceived HRQOL. In this study, it was hypothesized that symptoms had a negative direct effect on HRQOL and an indirect effect on HRQOL through uncertainty (see Figure 1.2).

Social support is one of the components of structure providers that can assist the individual with his or her interpretation of the stimuli frame and can reduce uncertainty both directly and indirectly (Mishel, 1988). Such social support may buffer some of the negative effects of the illness by mitigating symptom distress on the part of cancer patients (Lewis et al., 2001) and enabling them to garner additional coping resources (Bourjolly and Hirschman, 2001; Krishnasamy, 1996; Manning-Walsh, 2005). Emotional support from family and friends can also reduce psychological distress symptoms (Ali and Khali, 1991). In one study, it was discovered that personal support had a negative effect on symptom distress in breast cancer patients (Manning-Walsh, 2005). In addition, social support in the form of affirmation has also shown to have a direct impact on uncertainty (Mishel and Braden, 1988). Affirmation from another implies that other person shares one's ideas and opinions about a situation and the preferred interpretation of the uncertainty-generating event. Support in the form of information from healthcare providers can also reduce uncertainty regarding the illness by promoting confidence in symptom management (Mishel and Braden, 1988). Several studies have revealed that social support was negatively related to uncertainty in patients with various types of cancer (Mishel and Braden, 1988; Palsson and Norberg, 1995; Sammarco, 2001, 2003; Sammarco and Konecny, 2008; Santawaja et al., 2002). In the present study, it was assumed that social support had a negative direct effect on uncertainty and an indirect effect on uncertainty through symptoms (see Figure 1.2).

Social support is an important factor influencing HRQOL in cancer patients. An extensive review of literature has revealed that social support has a significant positive correlation with HRQOL in patients with various types of cancer (Courtens et al., 1996; Mannig-Walsh, 2005; Pedro, 2001; Sammarco, 2001, 2003; Sammarco and Konecny, 2008; Thanasilp and Kongsaktrakul, 2005). Social support can predict HRQOL in cancer patients receiving chemotherapy (Thanasilp and Kongsaktrakul, 2005). Moreover, personal support and symptom distress explained 49.4% of the variance in HRQOL in a study of breast cancer patients (Manning-Walsh, 2005). Sammarco (2001, 2003), and Sammarco and Konecny (2008) have suggested that increased social support together with decreased uncertainty may result in a better HRQOL in breast cancer survivors. CCA patients that receive good social support will not only reduce their symptoms and uncertainty but also increase their perceived HRQOL. In the present study, it was hypothesized that social support had a positive direct effect on HRQOL and an indirect effect on HRQOL through symptoms and uncertainty (see Figure 1.2).

Uncertainty is a prevailing experience among all patients diagnosed with cancer (Halldorsdottir and Hamrin, 1996; Shana et al., 2008). Shana and colleagues (2008) reported that uncertainty in cancer patients comprises three main themes: uncertainty due to limited or lack of information, uncertainty concerning the course and treatment choices related to the disease, and uncertainty related to everyday life and coping. Uncertainty may be viewed as either negative or positive depending on how it is appraised (Mishel, 1988). Appraisal of uncertainty involves the aspects of personality, dispositions, attitudes, and beliefs which influence the patient’s appraisal, whether the uncertainty is appraised as a danger or as an opportunity (Mishel and Clayton, 2003). Higher uncertainty is associated with danger appraisal, which can reduce one’s optimism, sense of coherence, and level of resourcefulness (Christman, 1990). Additionally, a greater level of uncertainty has been reported to be associated with higher frequency of use of emotional coping (Christman, 1990; Mishel and Sorenson, 1991; Santawaja et al., 2002). In general, emotion-focused coping is a mediator between uncertainty and psychological adjustment (Santawaja et al., 2002). Existing evidence has proved that a higher uncertainty experience is linked to lower

HRQOL in breast cancer survivors (Sammarco and Konecny, 2008; Wonghongkul et al., 2006), head and neck cancer patients (Detprapon et al., 2009), and prostate cancer patients (Wallace, 2003). By the same token, CCA patients who perceive higher uncertainty may have less perceived resourcefulness to eliminate uncertainty, hence a low level of HRQOL. Therefore, it was hypothesized in the present study that uncertainty had a negative direct effect on HRQOL and an indirect effect on HRQOL through coping (see Figure 1.2).

Coping refers to the attitudes and behaviors of individuals used to manage uncertainty (Mast, 1995). According to the UIT (Mishel, 1988), patients select coping strategies to deal with uncertainty based on their appraisal. When patients appraise danger, they mobilize strategies to reduce uncertainty by using direct action and affective control to manage the emotion that is generated. If the mobilized strategies are not effective in reducing uncertainty, then affective-control strategies are called into action. When coping with opportunity appraisal, buffering strategies are used to handle uncertainty. The strategies of confrontive or problem coping, emotional coping, and palliative coping are similarly described by both Mishel (1988) and Jalowiec (1988). Each strategy can facilitate each other in the coping process. Mishel (1988) has noted that if the coping strategies are effective for an uncertainty event appraised as either a danger or an opportunity, adaptation will occur. The effectiveness of a coping strategy depends on the extent to which it is appropriate to the internal and/or external demand of the situation (Lazarus and Folkman, 1984). Most previous studies that focused on the relationships among uncertainty, coping and adaptation outcomes of the UIT (Mishel and Sorenson, 1991; Santawaja et al., 2002; Wonghongkul et al., 2006) or the relationship between coping and HRQOL (Green et al., 2002, Meifen, 1997; Pranee Sanee, 1996) measured only the degree to which coping strategies were used. This may be because the definition of effective coping is subjective to measure. Thus, the present study focused only on the degree to which CCA patients used coping strategies to manage uncertainty including confrontive, emotive, and palliative coping.

With regard to chronic disease, Pollock (1989) has confirmed that when illness is appraised as harmful, patients who use both problem-focused coping strategies and emotion-focused coping strategies tend to have better adaptation outcomes than those who use only problem-focused coping strategies or emotion-focused coping strategies. To date, evidence that supports an association between coping strategies and HRQOL is inconsistent in cancer patients. For example, Green and colleagues (2002) found that higher use of either emotion-focused or problem-focused coping strategies was associated with lower HRQOL in prostate cancer patients. In contrast, the studies in breast cancer patients have supported a positive association between the total score of emotion-focused and problem-focused coping and HRQOL (Meifen, 1997). Additionally, the total score of emotion-focused and problem-focused coping was a predictor of HRQOL (Pranee Sanee, 1996). Nevertheless, Wonghongkul and colleagues (2006) have reported that eight coping strategies (confrontive, escape avoidance, self-controlling, seeking social support, acceptance, distracting, and positive reappraisal) did not predict HRQOL in breast cancer survivors. These inconsistencies may have been related to the instrument used to assess coping strategies and differences in the population. In the present study, it was assumed that CCA patients who could adopt confrontive, emotive, and palliative strategies were likely to exhibit a better HRQOL than those who did not adopt such strategies. It was expected that coping had a positive direct effect on HRQOL (see Figure 1.2).

HRQOL is postulated as an adaptation outcome of the UIT. Adaptation is a desirable outcome of the coping process. Adaptation refers to “biopsychosocial behaviors occurring within a person’s individually defined range of usual behavior” (Mishel, 1988: 231). However, this definition is too broad to be employed as an operational definition in research. In most studies on uncertainty and adaptation among cancer patients, adaptation has been operationalized as psychosocial adjustment (Christman, 1990; Mishel and Braden, 1988). Previous research has interpreted the adaptation outcome to imply several outcomes, such as HRQOL (Detpapon et al., 2009; Padilla et al., 1992; Wallaec, 2003; Wonghongkul et al., 2006) and psychosocial adjustment (Hilton, 1994; Mishel and Sorenson, 1991; Santawaja et al., 2002). In the present study, HRQOL was included as a desirable outcome of an adaptation in the UIT.

A significant amount of literature asserts the relationships among symptoms, social support, uncertainty, coping, and HRQOL in various cancer patients. However, as previously mentioned, research examining the relationships among such factors has so far been nonexistent for CCA patients. CCA is an endemic disease in the northeastern region of Thailand. It is more prevalent in men than in women, and it typically presents itself in advanced stages. Therefore, the results from previous studies may not be generalizable to CCA patients. However, prior studies describing the relationships among these factors and HRQOL can provide clues for testing a hypothesized model of HRQOL in CCA patients (see Figure 1.2).

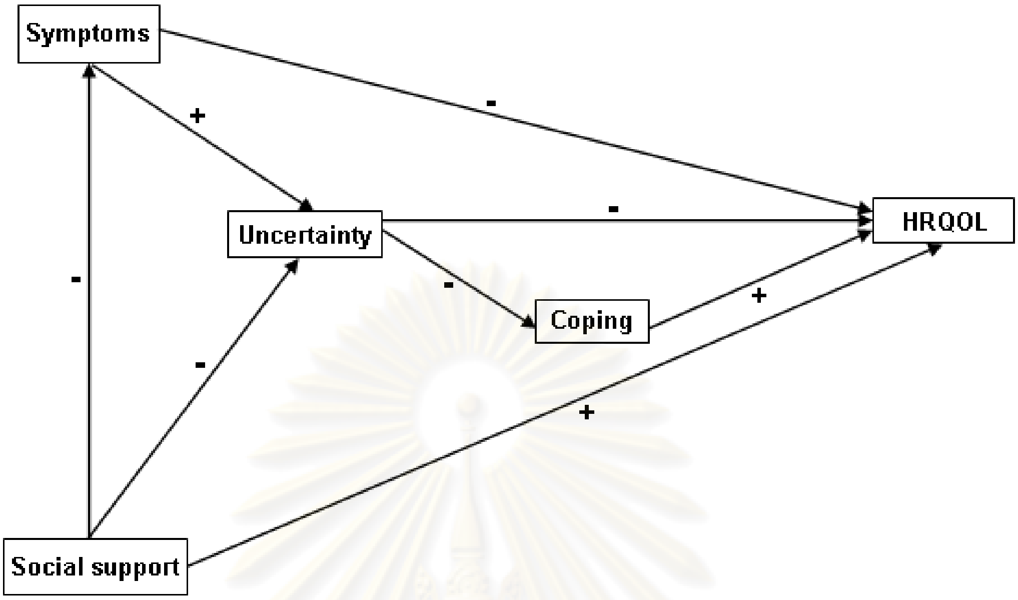


Figure 1.2: A hypothesized model of HRQOL in CCA patients

Research hypotheses

In this study, the following research hypotheses were formulated:

1. Symptoms have a negative direct effect on HRQOL and an indirect effect on HRQOL through uncertainty in CCA patients.

2. Social support has a positive direct effect on HRQOL and an indirect effect on HRQOL through symptoms and uncertainty in CCA patients.

3. Uncertainty has a negative direct effect on HRQOL and an indirect effect on HRQOL through coping in CCA patients.

4. Coping has a positive direct effect on HRQOL in CCA patients.

Scope of the study

This study described and explored the model relationships of HRQOL in CCA patients. The potential factors were symptoms, social support, uncertainty, and coping, while HRQOL was the outcome of the study. The study was carried out at the outpatient department of a regional hospital and a university hospital in northeast Thailand.

Definitions of terms

Health-related quality of life (HRQOL) refers to CCA patients' perception with their current level of physical, social/family, emotional, and functional well-beings. In this study, HRQOL was measured using the Thai version of the Functional Assessment of Cancer Therapy-General Scale (FACT-G) (Ratanatharathorn et al., 2001). A higher score indicated a higher level of HRQOL and vice versa.

Symptoms are defined as a degree of subjective experience reported by CCA patients on the change changes in their biopsychosocial functioning, sensations, or cognition state in relation to the perception of symptom frequency, symptom severity, and symptom distress. It pertains to abdominal pain or dyspepsia, lack of appetite, nausea, vomiting, fatigue, fever, itching, difficulty in sleeping, anxiety, and loss of body image from jaundice or biliary drainage. These symptoms were measured with the Modified Memorial Symptoms Assessments Scale (MMSAS), which evaluated the frequency, severity, and distress of each symptom. The total MMSAS (TMMSAS) score was obtained by summing all ten symptoms. A higher TMMSAS score indicated a higher intensity of symptoms in each dimension of frequency, severity, and distress, and vice versa.

Social support is defined as emotional, appraisal, informational, and instrumental support that CCA patients receive from family, friends, healthcare providers, and others. In this study, social support was measured using the Social Support Questionnaire (SSQ) (Nuanchan Thaninsurat et al., 2002) which was modified from the conceptualization of social support by House (1981). SSQ assessed emotional, appraisal, informational, and instrumental support. A higher score depicted a higher level of social support and vice versa.

Uncertainty is defined as the perception of CCA patients of their lack of ability to determine the meaning of illness-related events or to foresee an outcome in the future because of ambiguous or incongruent symptoms, or because of a lack of information. In this study, uncertainty was measured using Mishel's Uncertainty in Illness Scale: Community Form (MUIS-C) (Mishel, 1997b). A higher score showed a higher level of uncertainty and vice versa.

Coping is defined as the strategies of CCA patients who use both cognitive and behavioral means to manage uncertainty regarding their illness. In the present study, coping was measured using the Jalowiec Coping Scale (JCS) which was translated into the Thai language by Paiporn Saetia (2001). It assessed three components of coping: confrontive, emotive, and palliative coping strategies, with a high score indicating a greater use of a particular coping strategy.

Cholangiocarcinoma patients are patients who have malignant tumors of the biliary tree, including the intrahepatic and extrahepatic portions, and who have been medically diagnosed with cholangiocarcinoma.

Expected outcomes and benefits of the study

1. The findings of the present study provide baseline data that can be used to explain and predict the phenomena of HRQOL in CCA patients.

2. A middle range theory underpins the conceptual framework of this study and will explain nursing phenomena and contribute to the strength of nursing science. Nurses will be able to use the findings of this study to develop research and nursing interventions to help CCA patients maintain and improve their HRQOL.

3. The utility of the path model provide significant information for health care providers, multidisciplinary teams and policy makers in order to offer suitable support and guidance to CCA patients and to enhance their HRQOL.

CHAPTER II

LITERATURE REVIEW

This chapter presents an integrative review of the theoretical and empirical literature describing interesting concepts and interrelationships among factors affecting health related-quality of life (HRQOL) in cholangiocarcinoma (CCA) patients. The review covers the following topics:

1. Overview of CCA and nursing care
2. Health-related quality of life (HRQOL) in CCA patients
3. Uncertainty in illness theory
4. Factors associated with HRQOL in cancer patients
5. The relationships among symptoms, social support, uncertainty, and coping, and HRQOL in cancer patients

1. Overview of CCA and nursing care

1.1 Definition and classification of CCA

CCA is defined as adenocarcinoma originating anywhere in the biliary tree, excluding the gallbladder and the ampulla of vater (Narong Khuntikao, 2005; Patel and Singh, 2007). CCA is classified into the extrahepatic and intrahepatic types (Lazaridis and Gores, 2005; Pack, Connor, and O'Hagan, 2001). The extrahepatic type (central type) refers to tumors developing from bile ducts outside the liver and can be divided into: 1) hilar (the tumor involving the proximal third of the bile duct, usually involving the biliary confluence), 2) middle (the tumor located in the middle third of the bile duct), and 3) distal tumors (the tumor located in the distal third of the bile duct, near the duodenum and the head of pancreas). The intrahepatic type (peripheral type) is defined as tumors originating from the bile ducts inside the liver. Approximately, 5-10% of CCA arise from the intrahepatic ducts, and 90-95% from the extrahepatic ducts (Forsmo et al., 2008).

1.2 Epidemiology of CCA

CCA is a carcinoma with wide variation in incidence rates throughout the world (Ben-Menachem, 2007). The high incident rates occur in Asia, whereas the low incident rates occur in Europe and America (Khan et al., 2005; Shaib and El-Serag, 2004). However, in general, incidence rates of CCA have increased worldwide (Khuhaprema and Srivatanakul, 2007; Patel and Singh, 2007; Shaib and El-Serag, 2004). Liver and bile duct cancer is the first leading cancer in males and females in the northeast of Thailand (Srivatanakul and Attasara, 2007). The age-standardized incidence rate (ASR) reported from the northeast ranges between 63.4 and 113.4 per 100,000 cases in males and 31.1 and 49.8 per 100,000 cases in females (Khuhaprema and Srivatanakul, 2007). CCA has been found in about 75.6-85.9% of all liver and bile cancer cases (Khuhaprema and Srivatanakul, 2007). The northeast of Thailand is reported to have the highest incidence rate of intrahepatic CCA in the world (96 per 100,000 cases in males) (Shaib and El-Serag, 2004; Khan et al., 2005), and the estimated new cases are approximately 8,000 per year (Narong Khuntikao, 2005). Liver fluke infection is an important risk factor of CCA in the northeastern region of Thailand (Sripa et al., 2007). Uncooked cyprinoid fish is a common source of infection with liver fluke. This popular dish is a dietary staple of many people in the northeast of Thailand, thus making CCA a major public health problem in that region.

According to previous studies conducted in the northeast of Thailand, CCA affects both sexes, and most cases are those in their middle ages (Chalearmsri Sorasit, 2005; Chusri Kuchaisit et al., 2004; Nuanchan Thaninsurat et al., 2002). The male and female ratio is approximately 3:1. These findings differ from those reported in studies conducted in western countries, where the male and female ratio for CCA is approximately 1.5:1 (Lazaridis and Gores, 2005) and the high prevalence rate occurs in patients who are older than 65 years of age (Anderson et al., 2004; Khan et al., 2002). Therefore, it is interesting to document that the risk factors of CCA regarding age and gender of Thai and westerners seem to be different.

1.3 Symptoms of CCA

The symptoms of CCA usually manifest themselves after the disease is advanced (Khan et al., 2002; Narong Khuntikao, 2005). The symptoms and clinical presentation of CCA depend on the location of the tumor (Khan et al., 2005; Mosconi et al., 2009). Jaundice without pain is the most common symptoms (more than 90%) in extrahepatic bile duct cancer, while it is less frequent in patients with intrahepatic cholangiocarcinoma (Mosconi et al., 2009). Other common symptoms include in order of frequency, generalized itching (66%), abdominal pain (30%-50%), weight loss (30%-50%), and fever (up to 20%) (Nagorney et al., 1993). Similarly, a study carried out by Chusri Kuchaisit and colleagues (2004) involving 75 CCA patients admitted for surgery found that the symptoms leading to needs for treatment were dyspepsia right upper quadrant, fever, chills, yellowish urine, jaundice, and itching. In addition, patients developed psychological symptoms such as anxiety, fear, despair, and uncertainty when receiving diagnosed of CCA. Ninety percent of CCA patients after diagnosis (1-52 months) suffered from at least one symptom (Chalearmsri

Sorasit, 2005). These symptoms can occur from cancer pathology and its treatment. Besides this, as the majority of CCA patients have unresectable lesions, many symptoms can exacerbate throughout the trajectory of the illness. Symptoms of CCA patients not only indicate severity of the disease but also disrupt their social functioning (Nuanchan Thaninsurat et al., 2002; Ubol Juangpanich et al., 2003) as well as lead to significant patient distress. Nevertheless, the knowledge of the symptoms influencing HRQOL in CCA patients is limited. Additional research that explores the effects of the symptoms on HRQOL in CCA patients is therefore necessary.

1.4 Clinical evaluation of CCA

The common symptoms of CCA make it difficult to confirm the disease due to a wild range of alternative diagnoses such as cholangitis, benign stricture of the bile duct, or other carcinomas (Patel and Singh, 2007). Currently, there is no blood test that can be used to diagnose CCA (Khan et al., 2002). Generally, imaging studies can provide information that is required for the evaluation and management of patients with suspected CCA. At present, ultrasound, computerized tomography, magnetic resonance, cholangiopancreatogram, endoscopic, cholangiogram, and percutaneous transhepatic cholangiography (PTC) are most commonly used to diagnose CCA (Khan et al., 2002; Lazaridis and Gores, 2005).

1.5 Treatment and prognosis of CCA

Surgery is the only curative option for CCA (Lazaridis and Gores, 2005; Narong Khuntikao, 2005; Patel and Singh, 2007). The goals of surgery treatment are complete excision of the tumor with negative margins and biliary reconstruction. However, the surgery approach may be influenced by the extent of the spread and associated co-morbidity. Furthermore, surgery is not effective in advanced CCA patients (Khan et al., 2005; Patel and Singh, 2007). In unresectable patients, biliary bypass or nonoperative biliary drainage procedures can provide palliation. Other palliative treatments include chemotherapy, radiation, photodynamic therapy, and supportive care (Lazaridis and Gores, 2005; Pack et al., 2001; Patel and Singh, 2007). Liver transplant as a primary treatment for hilar and intrahepatic cholangiocarcinoma is controversial because of the limited organ availability and the high recurrence rate of the tumor (Mosconi et al., 2009). The results of liver transplantation with 207 cholangiocarcinoma patients with 2- and 5-year-survival rates were 48% and 23%, respectively, but more than 50% of the patients had a recurrence within two years (Meyer, Penn, and James, 2000).

The prognosis of patients with unresectable tumor is poor, and the mean survival time is less than one year after being diagnosed (Anderson et al., 2004). Approximately the 5-year-survival rate is between 10% and 40% with negative margin resection (DeOliveira et al., 2007; Dinant et al., 2006; Forsmo et al., 2008), but virtually zero with any positive margin resection (Patel and Singh, 2007). Most of the patients will die within two years after being diagnosed (Forsmo et al., 2008). Therefore, CCA patients have a short life expectancy.

1.6 Nursing care for CCA patients

CCA is a life threatening illness that necessitates several adjustments in patients’ lives. Nursing care of the CCA patients is complex and requires the nurse to be knowledge about the treatment and needs of the patients and their family. The individual and the stage of the disease must be considered when deciding on the appropriate nursing care for CCA patients and their family. The roles of nurses are discussed as follows:

At the time of diagnosis, nurses must use effective communication when educating CCA patients and family members about what to expect during tests and therapeutic procedures (Workman, 2010). This is to encourage CCA patients and family members to express their feelings about the diagnosis of cancer, its prognosis, and the treatment. In addition, nurses should assess the CCA patients' and their family members' use of coping strategies related to the disease, its treatment, possible role changes, and possible outcomes of the disease and its treatment (Coleman, 2005; Pack el al., 2001; Workman, 2010).

Pre- and post-operative care is essential for CCA patients who have potentially curative surgery or operative palliation (Coleman, 2005). Pack and colleagues (2001) have suggested that nurses should initiate preoperative teaching. Patient-education materials should cover a guide for patients and families before, during, and after surgery such as "getting ready for surgery," "operations for tumors of the bile duct," "liver resection," "handling fatigue during and after cancer treatment," "Patient-Controlled Anesthesia (PCA)," and "care of the biliary catheter." In addition, emotional support should be provided for CCA patients and families by nurses.

In postoperative care, the main concerns are control of hemorrhage, replacement of blood loss, prevention of infection and pneumonia, and appropriate emotional support (Coleman, 2005). Furthermore, nurses should be careful about the complications from bile and liver surgery including biloma, abscess formation, liver failure after partial hepatectomy, renal insufficiency resulting from liver failure, biliary obstruction, wound infections, and cholangitis (Pack et al. 2001). Nurses should continuously evaluate patients' vital signs until they are in a stable condition.

Pain usually is managed with a PCA pump or oral analgesics. Strict monitoring of intake and output and daily weights are also needed. Imbalances may indicate renal insufficiency resulting from liver failure. A complete blood count and comprehensive chemistry panels should be monitored daily. An elevated white blood cell count may indicate abscess collection or infection, while an increase in serum bilirubin may indicate biloma, biliary obstruction, or liver failure. Phosphorous is often decreased during liver regeneration and must be replaced as needed. An elevated prothrombin time can occur during liver regeneration and is managed with fresh frozen plasma and vitamin K. Moreover, the incision should be assessed daily for infection (Chard, 2010; Coleman, 2005; Pack et al., 2001). For patients having biliary drainage, nurses should assess the amount, color, and odor of drainage and keep the drainage bag below the level of the gall bladder (Ignatavicus and Pettus, 2010). The patients and their families must be taught how to manage the biliary drainage as well (Coleman, 2005; Oran, Oran, and Memis, 2000).

In CCA patients with unresectable tumor, symptom management is a priority of support care (Coleman, 2005). Comfort is a goal of symptom management (Pack et al., 2001). Nurses should work with physicians and the hospice team to collaboratively coordinate symptom management and terminal care. Nurses should also encourage CCA patients to verbalize their feelings regarding the illness and diagnosis, educate them about hospice care and the dying process, and support them during end-of-life decision making. Referrals should be made to social services, patients’ religious leaders, or other people whom patients identify as those who can provide needed support (Chursri Kuchaisit, 2005; Martinez and Wagner, 2000). It is noteworthy that when the patients truly decline and enter the terminal stages of the disease, palliative care with an emphasis placed on quality of life becomes of paramount importance (Coleman, 2005). Nurses should help CCA patients and their families grieve and mourn based on their cultural beliefs, values, and practices as well.

HRQOL is a major concern issue for oncology nurse that relevant to the scope of nursing practice (King, 2006). Nursing is a caring practice and the holistic view point of nursing care delivery can help the patients to maintain or improve HRQOL (Grant and Dean, 2003). Since cancer and side effect of its treatment impact patient well-being, HRQOL information gathering by nurses can providing valuable nursing assessment data. The nurses can help the cancer patients to make the change need in order to adjust theirs life to challenge of cancer (King, 2006).

Burckhardt and Hanestad (2003) conducted a systematic review about nursing strategies that impact on HRQOL. They reported that the intervention strategies could be grouped into six categories: special nursing care (case management, hospice care, visiting nurse care in the home), patient education (information focused), cognitive-behavioral training (restructuring, relaxation, and guided imagery), counseling techniques (reminiscence, life review, and insight), exercise, and combination strategies (combined education, cognitive-behavioral techniques and exercise). Although these nursing interventions had a positive effect on HRQOL of patient, most studies with used small sample were included in their study. In addition, a little study had clearly definition of HRQOL and used standardized HRQOL measurement. At this point, generalization should be limited from these findings. Therefore, these nursing interventions should be tested in diverse setting and with a large sample size.

1.7 Research by nurses among CCA patients in Thailand

Although CCA has a high incidence rate in Thailand, there are few research studies conducted by nurses with CCA patients, some of which are cited as follows: Nuanchan Thaninsurat and colleagues (2002) conducted descriptive research to investigate factors influencing adaptation of postoperative CCA patients based on Roy's adaptation model. The sample consisted of 90 postoperative CCA patients seeking treatment at Srinagarind Hospital. The results indicated that male patients had better adaptation than female patients in the self-concept mode and role function mode and that younger patients (aged 31-60 years) adapted better than older patients (aged 61-80 years). Furthermore, the patients with realistic perceived severity of diseases had better adaptation than those with exaggerated perceived severity of the disease. The findings also revealed that health belief and young age could predict adaptation by 26%. Education, income, and social support were not correlated with adaptation. However, when separating social support into different aspects, it was found that the patients who received the emotion aspect of social support adapted better than those who did not receive such support.

In another study, Ubon Juangpanich and colleagues (2003) developed a self-care agency model in CCA patients receiving chemotherapy and conducted action research to determine its effectiveness. The study was divided into two phases: (1) to study the living experience of 30 CCA patients and (2) to devise a plan with patients for an appropriate self-care promotion model and to implement the self-care promotion model selected. The researchers proposed that the experience of these participants could be divided into physical, psychological, and spiritual problems. As for physical problems, participants described stomach pain, high fever, chill, and headache. Typical side effects were nausea, anorexia, fatigue, and so on. As regards psychological problems, participants experienced anxiety, fear about tumor recurrence, concern with financial burdens, hospitalization, as well as working status. In addition, the patients complained about disruption in their life-style. Finally, with regard to spiritual problems, participants felt uncertainty about their future including fear of death and reset of priority. In this study, the nursing model to help the patients was the case management system including 1) providing continuous counseling, 2) providing knowledge and information, 3) promoting mental support, 4) providing environment, 5) promoting positive attitude, 6) reinforcing continued treatment and self-care, 7) facilitating family participation, and 8) providing resources and collaborating with other healthcare providers. The findings also showed that the overall self-care behavior in CCA patients receiving chemotherapy statistically improved ($p < 0.05$).

Chusri Kuchaisit and colleagues (2004) conducted a randomized controlled trail. The trail was undertaken in Srinagarind Hospital, Khon Kaen University between November 1999 and October 2001. The aim of the study was to explore the background of patient self-care, coping, and HRQOL; and evaluate the effects of systematic care management on the self-care ability, coping, and HRQOL. The HRQOL of this study was mainly concerned with life satisfaction. The intervention involved an integrated empowerment process and case management. Seventy-five CCA patients admitted for surgery were allocated into two groups: 41 patients to the treatment group and 34 to the control group. Data collection followed two methods between qualitative techniques and quantitative evaluation after intervention and two weeks after discharge. The findings revealed that intervention was effective to improve self-care, coping, and life satisfaction, but the results were not statically significant in either pre/post treatment or follow-up. In addition, the symptoms leading to the need for medical care were dyspepsia, right upper quadrant pain, fever, chill, yellow urine, jaundice, and itching. The patients in the study took self-prescribed medications, sought counseling from traditional healers, and sought accredited healthcare services. Furthermore, the patients defined the disease as incurable and their reactions to liver tumor or cancer included despair, fear, crying, stress, insomnia, anorexia, and isolation. The perception of surgical treatment was that it might offer a cure and longer life. However, some patients perceived that it did not matter whether they received treatment or not. The self-care and living activities adopted to adapt to the disease included making up the mind to survive (*tam-jai*), seeking the accredited treatment and healthcare, seeking help from significant others, and integrating self-care, healthcare, and alternative care.

Chalearmsri Sorasit (2005) investigated the relationship between psychological hardiness and coping outcomes among CCA patients. The sample consisted of 130 CCA patients at least one month after diagnosis who were treated at Srinagarind Hospital. The results revealed that CCA patients had medium level mean scores of overall psychological hardiness and had medium level mean scores of overall coping outcomes. In three dimensions of hardiness, CCA patients had a high level mean scores of morale and somatic health and medium level mean scores of social functioning. Furthermore, overall psychological hardiness, commitment control, and challenge were positively significantly correlated with coping outcomes among cholangiocarcinoma patients ($r = .46$, $p < .001$; $r = .19$, $p < .05$; $r = .45$, $p < .001$; and $r = .32$, $p < .001$, respectively).

In addition, Sumon Pincharoen and Orasa Kongtaln (2005) used a qualitative design to explore the pattern of complementary therapy used by CCA patients and families. The key informants were four CCA patients and 14 family members. The results showed that the type of complementary therapy used by the informants was composed of conventional medicine (operational, PTBD, and chemotherapy) and folk medicine (herb, ritual, Mua song, and Mua Lum Pi Fa). Moreover, the results indicated that the complementary therapy could be used at every stage of the disease, treatment, and relief of symptoms. The reason for using complementary therapy were lack of treatment by modern doctors, uncertainty about diagnosis, hope, influence of neighbors, influence of family, cultural beliefs, and future prediction. The outcomes of complementary therapy were trying out every strategy for patients, mental relief (*Sa-bai Jai*), letting go (*Tum-Jai*), getting the needed answers, knowing the future for necessary preparation, having right treatment, lack of cure, bad experience, medical expenditures, and complementary therapy.

According to the available research by nurses in charge of care of CCA patients, nurses focus on assisting patients to live with the losses and some debilitating effects of cancer and its treatment. In addition, nurses are concerned with not only survival and morbidity but HRQOL as well. Nevertheless, the strategies to increased HRQOL among CCA patients were reported unclearly. This may have been because the experience of CCA patients often reflects complex problems that affect HRQOL. Therefore, there is a need to gain better understanding of the contribution of several factors affecting patients' perceived HRQOL. It is anticipated that a clear understanding of this causal relationship will facilitate the design of optimally effective nursing intervention to improve HRQOL in CCA patients.

2. HRQOL among CCA patients

2.1 Definition and dimension of quality of life (QOL) and HRQOL

Generally, “QOL” can be described as the goodness of life (Bowling, 2005). The World Health Organization (WHO, 1993: 3) has defined QOL as “individuals’ perceptions of their position in life in the context of the culture and value system in which they live and in relation to their goals, standards, and concerns.” It is a broad and complex concept that can have different meanings based on the context of application (Fayers and Machin, 2000). QOL has been regarded as an essential parameter for evaluating the quality and outcomes of healthcare in both research and clinical practice after WHO has declared health to be “a state of complete physical, mental, and social well-being, and not merely the absence of disease” (WHO, 1947). In order to understand the phenomena of the quality of life in the arena of health and illness, the term “HRQOL” has been developed to explain the perspective of an individual’s experiences, beliefs, expectations, and perception that are related both directly and indirectly to health, illness, and treatment (Guyatt, Feeny, and Patric, 1993; Moons, Budts, and Geest, 2006; Testa and Simonson, 1996). It is worth noting that in the area of oncology care, the terms HRQOL and QOL can be used interchangeably (Varricchio and Ferrans, 2010). The current study uses the term HRQOL only, indicating the QOL which is specially related to health, illness, and treatment.

In oncology research, researchers have defined the term HRQOL in various ways depending upon the phenomenon of interest. For instance, Padilla and Grant (1985, p. 45) have defined HRQOL as something “which makes life worth living and connotes the caring aspect of nursing,” while Homles and Dickerson (1987: 16) have stated that the term refers to “an abstract and complex form representing individual responses to the physical, mental, and social factors that contribute to ‘normal’ living.” Furthermore, Grant and colleagues (1990: 261) have defined HRQOL as “a personal statement of the positive and negative of attributes that characterize life,” whereas Ferrans (1990: 15) has defined the term as “a person’s sense of well-being that stems from satisfaction or dissatisfaction with the areas of life that are important to him/her.” In addition, according to Cella and Bonomi (1995: 49), HRQOL refers to “the extent to which one’s usual or expected physical, emotional, and social well-beings are affected by a medical condition or its treatment,” and to Ferrell (1996: 915), the term refers to “a personal sense of well-being encompassing physical, psychological, social, and spiritual dimensions.” Finally, Cooley (1998: 153-154) has defined HRQOL as “the impact of the disease and/or treatment on the functional status, physical symptoms, affective state, and interpersonal relationships as evaluated by the person with cancer.” In summary, HRQOL is a broad concept and often seems to be an umbrella term covering a variety of concepts such as normal life, life satisfaction, happiness, well-being, health status, and functioning.

It is noteworthy that there is a general agreement in the area of oncology care, which views “HRQOL” as a multidimensional construct that encompasses three to five general dimensions. For example, Padilla and Grant (1985: 53) have described five dimensions including physical well-being, social concerns, body image concerns, psychological well-being, and diagnosis/treatment response. Ferrans (1990) has also proposed four dimensions which focus on health and functioning, socioeconomic, psychological/spiritual, and family. Besides, Cella (1994: 188-189) has identified four dimensions which encompass physical well-being, functional well-being, emotional well-being, and social well-being. Finally, Hacker (2003) has proposed three dimensions: physical, psychological, and social. Therefore, a common core of dimensions consists of physical, psychological, and social dimensions.

In Thailand, researchers have commonly adopted and modified definitions and conceptual frameworks from the western countries. Most definitions and dimensions of HRQOL are based on definitions of health and QOL of the WHO. Therefore, the definitions and dimensions in the studies conducted in western countries and in Thailand are rather similar. For example, the terms that are commonly used as an indicator of HRQOL include well-being (Detprapon et al, 2009; Kanyarat Raethai, 2006; Pratum Soivong and Chawapornpan Chanprasit, 2003; Thanasilp and Kongsaktrakul, 2005; Wonghongkul et al., 2006), life satisfaction (Chalad Sangatid, 2003; Chusri Kuchaisit et al., 2004; Suganya Teachachokwiwat, 2001; Sureeporn Kitchroen and Kobkaew Suwan, 2000), and normal life (Pranee Sanee, 1996). In addition, most Thai researchers have described HRQOL as multidimensional and subjective concepts. The multidimensional aspect of HRQOL varies such as physical well-being, psychological well-being, body image concerns, diagnosis and treatment response, nutrition, and social interaction dimensions (Thanasilp and Kongsaktrakul, 2005; Wanida Ratananon and Sureeporn Thanasilp, 2003). According to Pratum Soivong and Chawapornpan Chanprasit (2003), HRQOL dimensions are composed of physical, psychological, social, and spiritual well-being. Kanyarat Raethai (2006) has also illustrated four dimensions encompassing physical, functional, emotional, and social/family well-being. Moreover, some researchers have proposed four categories of HRQOL including physical or functional, psychological/spiritual, family, and social and economic dimensions (Chalad Sangatid, 2003; Sureeporn Kitchroen and Kobkaew Suwan, 2000).

According to existing literatures in cancer patients, a critical attribute of HRQOL is the integration of patient values, judgments, and preferences. HRQOL covers the patient's perception of both positive and negative impacts of health, illness, and treatment on the whole aspect of life in a sense of well-being. In the current study, HRQOL is defined as patients' perception with their current level of physical, social/family, emotional, and functional well-beings.

2.2 HRQOL in CCA patients

Being diagnosed with CCA is a very stressful experience that affects physical, social/family, emotional, and functional well-beings. Physical well-being is perceived as a combination of disease symptoms, treatment side effects, and general physical well-being (Cella, 1994). For instance, the existing studies have proved that jaundice resulting from malignant biliary obstruction is one of the most troubling problems prior to treatment (Chusri Kuchaisit et al., 2004; Heffernan et al., 2002; Vajarabhongsa Bhudhisawasdi et al., 2002). Most CCA patients suffer from abdominal pain, indigestion, early satiety, and anorexia leading to weight loss (Chusri Kuchaisit et al., 2005; Vajarabhongsa Bhudhisawasdi et al., 2002), and some patients have sleep disturbance from itching (Chusri Kuchaisit et al., 2004). These symptoms cause energy depletion and muscle wasting that lead to weakness and fatigue. Moreover, side effects of chemotherapy including nausea, anorexia, and fatigue can induce suffering of patients (Ubol Juangpanich et al., 2003). Therefore, CCA patients suffering form such symptoms have impaired physical well-being.

Social and family well-being refers to the ability to communicate and maintain relationships with spouse, family, friends, and healthcare providers (Cella, 1994). Previous studies have reported that loss in body image from yellow skin and itching decreases social relationship in CCA patients (Chusri Kuchaisit et al., 2004; Sumon Pincharoen and Orasa Kongtaln, 2005). Moreover, fatigue can decrease enjoyment of leisure activity, adversely affect social relationship, and disrupt patients' lifestyle (Chusri Kuchaisit et al., 2004). CCA is commonly found in mid-career males (Chalearmsri Sorasit, 2005; Chusri Kuchaisit et al., 2004; Nuanchan Thaninsurat et al., 2002). These males are bonded with many family and community responsibilities, so CCA can reduce social and family well-being. However, some CCA patients receive more attention and support from family and friends than in the pre-diagnosis stage (Chusri Kuchaisit et al., 2004). Therefore, social support may help maintain social and family well-being.

Emotional or psychological well-being refers to perceived sense of control in the face of a life-threatening illness such as anxiety, depression, sad, or fears of the unknown (Cella, 1994). A majority of CCA patients believe that CCA is incurable and that surgery may actively spread the cancer throughout the body (Chusri Kuchaisit et al., 2004; Sumon Pincharoen and Orasa Kongtaln, 2005). Moreover, liver is a vital organ; once cancer is detected, it means a shorter lifespan. Therefore, CCA patients tend to exhibit anxiety toward the results of the treatment, including financial problems, interruption in daily living, fear of death, sadness, and the possibility of a recurrence of tumor (Chusri Kuchaisit et al., 2004; Sumon Pincharoen and Orasa Kongtaln, 2005; Ubol Juangpanich, et al., 2003). Pincharoen and Kongtaln (2005) have indicated that CCA patients develop spiritual disequilibrium such as uncertainty, hopelessness, powerlessness, and loneliness. Thus, CCA patients are faced with many sufferings, which can influence emotional and psychological status and well-being.

Functional well-being refers to patients' ability to perform the activities related to their personal needs, ambitions, or social roles (Cella, 1994). In CCA patients, fatigue and weakness can decrease patients' ability to perform activities of daily living and ability to work (Nuanchan Thaninsurat et al., 2002; Ubol Juangpanich et al., 2003). When the disease has progressed, some CCA patients have to resign from their work. Thus, symptoms and side effects of the treatment not only affect physical well-being but also disturb the functional well-being of the patients.

Although it is currently widely accepted in the field of cancer care that HRQOL is an important healthcare outcome, there is no study reporting specific HRQOL as the primary outcome of research in CCA patients. The outcome of research among CCA patients mostly focus on survival rate (Dinant et al., 2006; DeOliveira et al., 2007; Forsmo et al., 2008). In a pilot study, Kittisak Thungsattayatisathan and colleagues (2001) evaluated the FACT-G measurement in 23 CCA patients at an outpatient clinic of Khon Khan Hospital. They reported that these CCA patients had moderate impairment HRQOL (mean = 61.97, SD. = 12.36). In other studies, it was found that the mean score of HRQOL in CCA patients was lower than that in breast cancer patients (mean = 75.47, SD. = 16.12) (Ratanatharathorn et al., 2001) and that in head and neck cancer patients (mean = 82.58, SD. = 10.38) (Detprapon et al., 2009) which were also assessed using FACT-G. In brief, CCA patients have a poor HRQOL, lower than that in breast cancer patientsand head and neck cancer patients.

2.3 Measurement of HRQOL

There are numerous HRQOL instruments, which can be used in cancer patients. However, health researchers have no agreement on a gold standard or the best method of measuring HRQOL (King, 2003; Varricchio, 2006). The lacks of consensus may be because HRQOL is a complex natural construct and its description must be considered in the context of the phenomena in which the researcher is interested (Haberman and Bush, 2003). Researchers must consider the purpose of the evaluation, the nature of specific disease and treatment, and the characteristics of the patient population when choosing measurements. These considerations may influence the choice of a single or multiple-item scale, a generic or disease specific measure, and a single dimension or multidimensional measure of HRQOL (Sloan et al., 2002; Varricchio, 2006). In addition, instruments used to measure HRQOL need to be reliable and valid and have a minimal clinically significant difference (Hays and Woolley, 2000; Varricchio, 2006).

The measurements of HRQOL in cancer patients can be divided into two major approaches: generic and disease specific instruments.

2.3.1 Generic HRQOL instruments

Generic HRQOL instruments are designed to measure HRQOL over a range of situations and provide for comparison of HRQOL over a heterogeneous population (Varricchio, 2006). Generic instruments are useful for making comparisons with the general population, so they are particularly helpful for the interpretation of results. Additionally, they can be used across treatment groups and illness populations, making it possible to evaluate the relative impact of therapeutic interventions (Ferran, 2005b). Nevertheless, these instruments are so broad, so they tend to cover each area superficially and be unresponsive to changes in specific conditions (Ferran, 2005b; King, 2003). Examples of these instruments are Demand of Illness Inventory (Haberman, Woods, and Packard, 1990), the Medical Outcomes Study Short Form-36 (MOS SF-36) (Ware and Sherbourne, 1992), and the Sickness Impact Profile (Bergner et al., 1981).

2.3.2 Disease specific instruments

Disease specific instruments are intended to assess the specific symptoms and effects known to be associated with a condition or treatment (Padilla, et al., 2004; Varricchio, 2006). The instruments that have been developed for use in cancer patients include the Cancer Rehabilitation Evaluation System-Short form (CARES) (Schag, Heinrich, and Aadland, 1990), the European Organization for the Research and Treatment of Cancer Quality of Life Questionnaire (EORTC QLQ-C30) (Aaronson et al., 1993), the Quality of Life Index-Cancer Version (QLI) (Ferran and Power, 1992), and the Quality of Life Scale for Cancer (Ferrell, Dow, and Grant, 1995). Disease specific instruments are usually more responsive and powerful in detecting treatment effects and changes in specific condition (King, 2003). However, these instruments are not comprehensive and cannot be used to compare across diseases or conditions (King, 2003; Ferran, 2005b).

To date, some instruments used with cancer patients are a blend of both generic and diseases-specific measurements. For instance, the Functional Assessment of Cancer Therapy General (FACT-G) (Cella and Tulsky, 1990) has been developed for use with patients with any form of cancer. Subsequently, the FACT-G core scale has been added with symptom concern for specific types of cancers such as breast, colon, prostate, head and neck, and lung cancer and hapatobiliary cancers. Validation of this core instrument also allows for the evaluation of multiple chronic diseases such as HIV/AIDA, multiple sclerosis, renal disease, and heart diseases (Haberman and Bush, 2003; Webster, Cella, and Yost, 2003).

The current study employed the FACT-G to measure HRQOL because this instrument can measure the multidimensional construct of well-being, which agrees with the definition of HRQOL in this study. Additionally, FACTG has been developed with careful attention to the principles of scale construction and evaluation (Cella et al., 1993). The validity and reliability of the instrument have been repeatedly confirmed and reported worldwide (FACIT.org, 2008). FACT-G has also been cross-validated in the Thai population context with acceptable results on its reliability and validity (Detprapon et al., 2009; Pratheepawanit et al., 2005; Ratanatharathorn et al., 2001).

3. **Uncertainty in illness theory (UIT)**

Uncertainty in illness is experienced by various cancer patients and can affect HRQOL (Detprapon et al., 2007; Sammacro, 2001, 2003; Sammacro and Konecny, 2008; Wonghongkul et al., 2006; Wallace, 2003). According to UIT, uncertainty can be characterized in four forms: (1) ambiguity concerning the state of the illness, (2) complexity regarding treatment and system of care, (3) lack of information about the diagnosis and seriousness of the illness, and (4) unpredictability of the course of the disease and prognosis (Mishel, 1988). Three major themes have been proposed: the antecedent of uncertainty, appraisal of uncertainty, and coping with uncertainty (Mishel and Clayton, 2003: 29-30), as depicted in Figure 2.1.

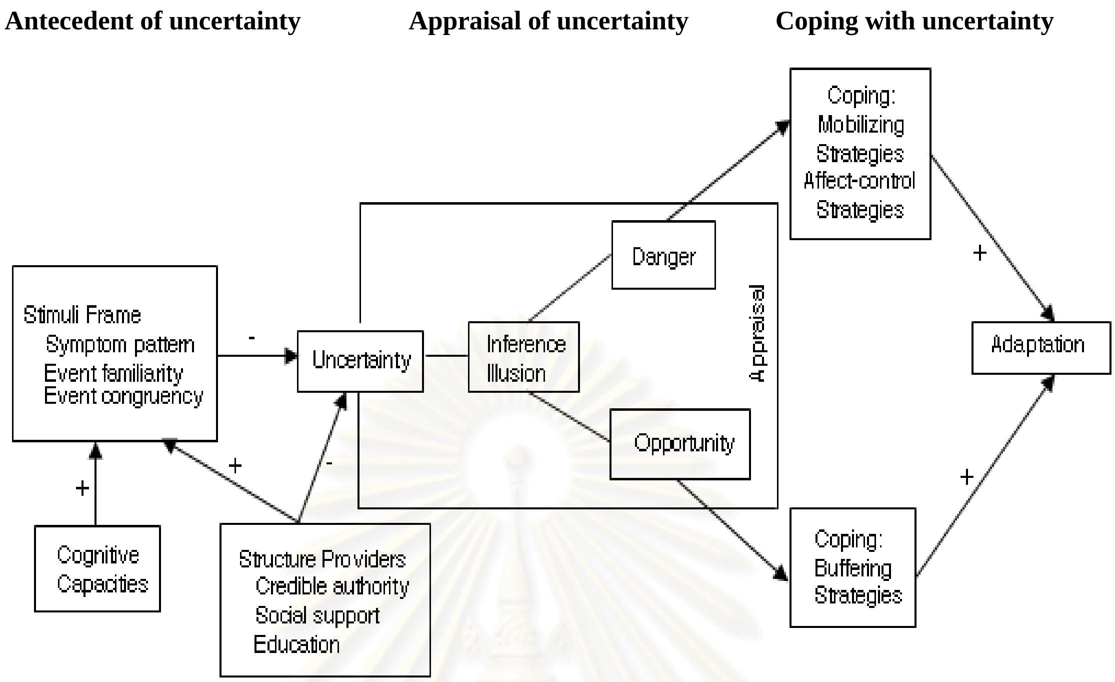


Figure 2.1: Model of perceived uncertainty in illness (Mishel, 1988: 226)

Antecedent of uncertainty is the first major theme of UIT, which is composed of the stimuli frame, cognitive capacity, and structure providers. Stimuli frame refers to the form, composition, and structure of the stimuli that a person perceives. It has three components: symptom pattern, event familiarity, and event congruency. Symptom pattern refers to the degree to which symptoms are present with sufficient consistency to be perceived as having a pattern or configuration. To appraisal symptom, patients evaluated their numbers, intensity, frequency, duration, and location. Pattern of symptom is not discernable in some chronic illness when the symptoms are characterized by the inconsistency in intensity, frequency, number, location, and duration. Event familiarity refers to the degree to which the situation is habitual, repetitive, or contains recognized cues. When events are recognized as familiar, they can be associated with events from memory and their meaning can be determined. Event congruence refers to the consistency between the expected and the experienced in illness-related events. This consistency implies reliability and stability of the events, thus facilitating interpretation and understanding. Mishel (1988) proposes that an inverse relationship exists between the components of the stimuli frame and uncertainty. An increase presence of the components of the stimuli frame will decrease uncertainty.

Cognitive capacity is ability of the person to process information. Limited cognitive capacity will reduce the ability to perceive symptom patterns, event familiarity, and event congruence. Structure providers are the resources available to assist the person in the interpretation of the stimuli frame. Structure providers are education, social support, and credible authority. Mishel (1988) has pointed out that the structure providers reduce uncertainty both directly and indirectly. The direct effect of structure providers on uncertainty occurs when the person relies on the structure providers to interpret the illness event, whereas the indirect effect of structure providers occur when the structure providers aid the person in determining the pattern of symptoms, the familiarity of events, and the congruence of experience.

The second major theme of UIT is appraisal of uncertainty that is defined as the process of placing a value on the uncertain event or situation. There are two components of appraisals as inference and illusion. Inference refers to the evaluation of uncertainty using related examples and it is built on personality dispositions, general experience, knowledge, and context clues. Illusion refers to the construction of beliefs on uncertainty that has a positive outlook. The result of appraisal is the valuing of uncertainty as a danger or an opportunity (Mishel and Clayton, 2003).

The third major theme of UIT is coping with uncertainty. It includes concepts of danger, opportunity, coping, and adaptation. If uncertainty is appraised as a danger, coping strategies are sought to decrease uncertainty by mobilizing or implementing affect-control strategies. If uncertainty is appraised as an opportunity, coping in terms of buffering strategies may be used to maintain uncertainty. According to Jalowiec (1988), coping strategies are classified into three types according to their purposes as follows:

1. Problem-focused coping or confrontive coping strategies are used to directly confront stress in order to eliminate stress or try to change the situation. The management of stress is to plan for correcting the problem, to seek information by limiting the scope of the problem, to find the way to correct the problem and to consider the positive and negative results of each way, and then to decide, select, and practice the selected way. Mishel (1988: 230) calls these coping strategies as mobilizing strategies which are composed of these behaviors: direct action, vigilance, and information seeking.

2. Emotion-focused coping or emotive coping is the strategies to directly manage emotional responses to problems or stress such as to get mad or to blame others for the problems. Mishel (1988: 230) calls these coping strategies as affect-control strategies. These strategies are used to manage the emotional responses, particularly the anxiety that occurs when the person believes that nothing can be done to modify the uncertainty. Affect-control strategies are composed of methods of faith, disengagement, and cognitive support.

3. Palliative coping is the avoidance from directly confronting stress by changing the perception while still maintaining the situation. The purpose of palliative

coping is to reduce the stress such as “try to put the problem out of mind and think of something else” or “do anything just to do something, even if not sure it will work.” According to Mishel (1988: 231), “Buffering serves the purpose of blocking input of new stimuli that could alter view of uncertainty as an opportunity.” Mishel calls these coping strategies as buffering strategies, which are composed of these behaviors: avoidance, selective ignoring, reordering priority, and neutralizing.

If the coping strategies are effective for an uncertainty event appraised as either a danger or an opportunity, adaptation can occur (Mishel 1988). Adaptation is defined as “biopsychosocial behavior occurring with the person’s individually defined range of usual behavior” (Mishel, 1988: 231). On the other hand, it refers to returning to the individual’s level of pre-illness functioning (Mishel and Clayton, 2003: 35). However, its definition is too board to be an operational definition in research. In most of the studies on uncertainty and adaptation among cancer patients, adaptation has been operationalized as psychosocial adjustment (Christman, 1990; Mishel and Braden, 1987; Santawaja et al., 2002). Some research studies have interpreted the result of an adaptation that begins with uncertainty in illness and is mediated by coping strategies such as HRQOL (Padilla et al., 1992; Wonghongkul et al., 2006). Additionally, HRQOL was employed as a positive adaptation outcome of UIT in one study that tested UIT among head and neck cancer patients (Detprapon et al., 2009).

There are some studies that have attempted to confirm at least parts of the relationships among antecedent of uncertainty, appraisal of uncertainty, coping with uncertainty, and adaptation outcomes. Some examples of the studies that were carried out to test UIT are as follows:

Padilla and colleagues (1992) evaluated the influence of different factors in the adaptation process activated by uncertainty in illness on HRQOL. The factors included uncertainty in illness from ambiguity, lack of information or unpredictability, danger or opportunity appraisal, problem or emotion focus coping, belief about mastery over events/outcomes, and positive or negative mood states. They conceptualized HRQOL as the end results of an adaptation process that began with uncertainty in illness and continued through appraisal of uncertainty as a danger or opportunity before incorporating coping strategies to manipulate the uncertainty in the desired direction. The sample included 100 women receiving treatment for newly diagnosed gynecological cancer. The results showed that positive mood states, ambiguity about illness-wellness state, danger focus appraisal, and mastery were key predictors of HRQOL ($R^2 = .57$). However, it was found that coping strategies did not predict HRQOL. These findings provided beginning support for conceptualizing HRQOL as the outcome of an adaptation process explained by the uncertainty in illness theory.

Santawaja and colleagues (2002) examined 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 300 post-radiotherapy cervical cancer women at the radiotherapy outpatient clinics. They employed psychosocial adjustment as an adaptation outcome of UIT. The results demonstrated that 62% ($R^2 = .62$) of the total variance in psychosocial adjustment could be explained by family and health authority support, symptom distress, uncertainty, and emotion-focused coping. Moreover, family and health authority support had direct effect (.09, $p < .001$) and indirect effect ($-.15$, $p < .01$; 0.11, $p < .05$, respectively) on psychosocial adjustment through uncertainty and problem-focused coping. Also, symptom distress had direct effect ($-.19$, $p < .01$) and indirect effect (1.54, $p < .001$) on psychosocial adjustment through uncertainty. Uncertainty had direct effect ($-.05$, $p < .05$) and indirect effect ($.14$, $p < .01$) on psychosocial adjustment through emotion-focused coping. Emotion-focused coping had a direct effect ($-.09$, $p < .001$) on psychosocial adjustment. Problem-focused coping had an indirect effect ($-.19$, $p < .001$) on psychosocial adjustment through symptom distress. Also, time since completing radiotherapy had an indirect effect ($-.07$, $p< .05$; $-.23$, $p < .01$; $-.23$, $p < .01$, respectively) on psychosocial adjustment through symptom distress, family and health authority support, and uncertainty. Education had indirect effect (1.16, $p < .001$; $-.04$, $p < .01$, respectively) on psychosocial adjustment through problem-focused coping and emotion-focused coping. Finally, age had an indirect effect ($.26$, $p < .001$) on psychosocial adjustment through problem-focused coping.

In another study, Sammarco and Konecny (2008) investigated the relationship between perceived social support and uncertainty and their individual and combined effects on HRQOL among 89 Latina breast cancer survivors. The results showed that a significant positive correlation was noted between perceived social support and HRQOL ($r = .39$, $p = 0.001$). A significant negative correlation was also found between uncertainty and HRQOL ($r = -.44$, $p = 0.001$). In addition, social support could predict 15.1% of HRQOL variance, and uncertainty could predict 10.4% of HRQOL variance. Together, these two variables could predict 20.5% of HRQOL variance.

Detprapon and colleagues (2009) tested the UIT to determine factors influencing HRQOL in 240 head and neck cancer patients. The selected variables were symptom experience, Buddhist practices, uncertainty, depression, and HRQOL. Their results indicated that the final model could explain 66% of variance in uncertainty, 93% in depression, and 92% in HRQOL. Symptom experience had a positive direct impact (.81, $p < .001$) on uncertainty and indirect impact (.66, $p < .001$; .68, $p < .001$, respectively) on depression and QOL mediated through uncertainty. Furthermore, uncertainty had a negative impact (-.85, $p < .001$) on quality of life, but a positive impact (.82, $p < .001$) on depression. However, Buddhist practices did not have a direct impact on symptom experience, uncertainty, depression, and HRQOL. Additionally, Buddhist practices did not have an indirect effect either on uncertainty through symptom experience or on depression and HRQOL through uncertainty.

Although the findings from previous studies that have been conducted to investigate UIT have asserted part of the relationships between UIT and various types of cancer, few studies have fully explored UIT. In addition, no research has been carried out to test UIT in CCA patients. As a consequence, there is a need to test the UIT in CCA patient so as to expand the existing knowledge in various types of cancer across wider cultural contexts. In the current study, the researcher considered the antecedents of uncertainty to be symptoms (stimuli frame) and social support (structure provider). Uncertainty and coping strategies were the process of appraisal and coping with uncertainty, and HRQOL was regarded as an adaptation outcome.

4. Factors associated with HRQOL in cancer patients

A numbers of studies have indicated that a variety of factors affect HRQOL in cancer patients. These factors can be divided into four groups including demographic factors, physical factors, psychosocial and cognitive factors, and clinical factors.

4.1 Demographic factors

Parker and colleagues (2003) found that demographic variables (age, gender, marital status, and education) were generally associated with adjusted measurement and HRQOL in a large sample of patients with a variety of cancers. Patients, who were older, were married, had more formal education, had less advanced disease, and had better social support reported better HRQOL in the mental health dimension. Women reported significantly more anxiety and depression symptoms and lower HRQOL than did men. These results are consistent with past research findings, where age (Hagelin et al., 2005; Jordhoy et al., 2001; Rutsteon et al., 1999; Suganya Teachachokwiwat, 2001), educational level (Jordhoy et al., 2001; Rutsteon et al., 1999; Suganya Teachachokwiwat, 2001), and marital status (Rutsteon et al., 1999; Schultz and Winstead-Fry, 2001) were found to be positively correlated with HRQOL. However, some studies found that gender was not significantly related to HRQOL (Hagelin et al., 2005; Jordhoy et al., 2001; Rusteon, et al., 1999; Suganya Teachachokwiwat, 2001). Moreover, Schultz and Winstead-Fry (2001) have reported that women had significantly higher HRQOL scores than men. Therefore, there is no consistency on the findings on gender differences and HRQOL.

4.2 Physical factors

Functional status is found to be positively correlated with HRQOL and the strongest predictor of HRQOL in 120 patients with cancer receiving chemotherapy

(Thanasilp and Kongsaktrakul, 2005). Similarly, Herndon and colleagues (1999) studied the correlation between performance status and HRQOL in 266 advanced non-small cell lung cancers. They reported that performance status had a significant relationship with HRQOL. In contrast, change in functional status did not correlate to change in HRQOL when people were near death with advanced cancers (Hagelin et al., 2005; Hwang et al., 2003). Finally, Leidy (1994) has suggested that functional status and HRQOL are related but functional status cannot be a sole determinant of HRQOL. Therefore, it can be concluded that HRQOL can be affected by many physical factors.

4.3 Psychosocial and cognitive factors

Anxiety and/or depression is the most common psychological distress among the whole populations of patients with cancer. Previous studies have reported that anxiety and depression are related to reduced HRQOL (Iconomou et al., 2004; Tsunoda et al., 2005). Similarly, Daputeo and colleagues (2005) conducted a study to investigate determinants of HRQOL in 309 cancer patients. The results revealed that psychological distress exerted a significant negative effect on HRQOL. In addition, depression was found to be a strong predictor of reduced HRQOL (Skarstein et al., 2000; Tsunoda et al., 2005). In general, uncertainty in illness is a crucial experience of cancer patients. Numerous studies have confirmed that uncertainty is negatively related to HRQOL (Detprapon et al., 2007; Padilla et al., 1992; Wonghongkul et al., 2006), whereas coping (Meifen, 1997; Panee Sanee, 1996), hardiness (Chalad Sangatid, 2003), and self-esteem (Pedro, 2001) were positively correlated with HRQOL. Social support is also positively associated with HRQOL (Manning-Walsh, 2005; Masubol Wongpromchai, 2005; Pedro, 2001; Wanida Ratananont and

Sureeporn Thanasilp, 2002). It has been found that uncertainty and social support are important predictors of HRQOL among breast cancer survivors (Sammacro, 2001, 2003; Sammacro and Konecny, 2008).

4.4 Clinical factors

Several studies have reported that symptoms (Manning-Walsh, 2005; Masubol Wongpromchai, 2005), stage of diseases (Dapueto et al., 2005), and recurrence of cancer (Schultz and Winstead- Fry, 2001) are negatively correlated with HRQOL in cancer patients. Additionally, symptom distress is a robust determinant of HRQOL in breast cancer patients (Manning-Walsh, 2005). Nevertheless, a study carried out by Parker and colleagues (2003) showed that clinical factors (time since diagnosis, recurrent status, treatment variables, and stage of disease) were not significantly related to HRQOL. Hence, there is no consistency on the findings of the relationship between clinical factors and HRQOL.

Although these pervious studies have explained the factors influencing and predicting HRQOL in various cancer patients, there is no study conducted with CCA patient. Therefore, the current study selected variables that have a strong correlation with HRQOL and can be modified using a nursing intervention to explain and predict HRQOL in CCA patients.

5. The relationships among symptoms, social support, uncertainty, coping, and HRQOL in cancer patients

Based on the UIT and empirical literature, the selected variables to explain and predict HRQOL among CCA patients were symptoms, social support, uncertainty, and coping. The details of each variable and their relationships are as follows:

5.1 Symptoms

5.1.1 Definition of symptoms

Generally, the definitions of symptoms are related to individual perception of the changes of physical, psychological, and cognitive states (Dodd et al., 2001; Lenz et al., 1997; Rhodes and Watson, 1987). There is a consensus of nature of symptoms that are subjective and experiential (Dodd et al., 2001; Fu, LeMone, and McDaniel, 2004; Lenz et al., 1997; Rhodes and Watson, 1987). Rhodes and Watson (1987) have emphasized that symptoms should be defined in terms of frequency, duration, and severity. Similarly, Fu and colleagues (2004) have pointed out that three major concepts are related to interpreted symptoms dimension including symptom occurrence, symptom distress, and symptoms experience. Symptom occurrence includes frequency and duration components (Lenz et al., 1997; Rhodes, 1997). Symptom distress refers to the degree of physical or mental suffering, discomfort, or bothers as reported by individual patients that result from their perception of the symptoms (McCorkle and Young, 1978). Symptom experience is an individual’s perception and response to symptom occurrence and distress (Rhodes & Watson, 1987). In the current study, symptom is defined as a degree of subjective experience with changes in the biopsychosocial functioning, sensations, or cognition state of CCA patients. It pertains to abdominal pain or dyspepsia, lack of appetite, nausea, vomiting, fatigue, fever, itching, difficulty sleeping, anxiety, and loss of body image from jaundice or biliary drainage. These symptoms were evaluated in terms of frequency, severity, and distress of each symptom.

5.1.2 Measurement of symptoms

Symptom assessment is crucial for cancer patients, but it is complex and there is no universally accepted instrument. Cancer symptom assessment instruments vary in number and type of symptoms and symptom dimension. The selection of instruments is generally based on the purpose of research, clinical practice, or target symptoms. Cleeland and colleagues (2000) have pointed out that symptom severity and distress are important measures of symptom burdens. Similarly, Rhodes and Watson (1987) have recommended that symptoms assessment require a measurement or scale to evaluate frequency, duration, and severity of symptoms. Krikova and colleagues (2006) conducted a systematic review of 21 instruments of cancer symptom assessment. They found that there is no consensus about how each symptom dimension determines symptom burdens, and a summated symptom number duration, severity, and distress score might better reflex symptom burdens. In addition, the comprehensive instrument with good psychometric properties is appropriate for both initial clinical assessment and research. The Memorial Symptoms Assessments Scale (MSAS) is a comprehensive and rigorously validated instrument that can capture symptom prevalence, severity, and distress (Krikova et al., 2006). It was developed for diverse types of cancer patients, and it has been used to assess both physical and psychological symptoms (Portenoy, 1994). In the present study, the researcher modified the MSAS to evaluate frequency, severity, and distress of symptoms in CCA patients.

5.1.3 The relationship between symptoms and HRQOL

Symptoms are a burden of cancer patients that directly affect patient distress, HRQOL, and survival (Kirkova et al., 2006). Furthermore, disturbance in physical status and the occurrence of physical symptoms have a direct impact on all aspects of HRQOL (Ferrell and Grant, 2003). Uncontrolled symptoms decrease functional and social well-being and that have an impact on psychological well-being by creating anxiety, depression, and frustration in the cancer patients (Ferrell and Grant, 2003). Limitation in physical well-being has a direct impact on an increased awareness of personal mortality and often heightens the individual’s spiritual needs (Baldacchino and Draper, 2001).

Although no study has reported relationships between symptoms and HRQOL in CCA patients, there are many studies indicating the relationships between symptoms and HRQOL in various other cancers (Cella, 1998; Chang et al., 2000; Curt, 2000; Hagelin et al., 2005). For example, Chang and colleagues (2000) conducted a study to assess symptom prevalence and symptom intensity and their relation to HRQOL in 240 medical oncology patients at a Veterans Affairs Medical Center. They found that the number of symptoms was inversely related to HRQOL ($r = -.58$, $p < .001$). Likewise, a study carried out by Hagelin and colleagues (2005) indicated that patients with advanced cancer who had high occurrence of symptoms had impaired HRQOL. Some symptoms such as fatigue (Curt, 2000; Thanasilp and Kongsaktrakul, 2005), pain, and insomnia (Sarna, 1993) had a significantly negative effect on HRQOL. Additionally, symptom clusters (pain, insomnia, fatigue, and depression) were significantly negatively related to HRQOL in breast cancer patients receiving chemotherapy (Masubol Wongpromchai, 2005). The cluster of fatigue and depression could explain 29% of the variance in HQOL in the lung cancer survivors (Fox and Lyon, 2006). Also, psychological distress had a significant negative effect on HRQOL (Dapueto et al., 2004; Parker et al., 2003). Northouse and colleagues

(1999) have reported that symptom distress exerted a strong direct effect on HRQOL. Moreover, high symptom distress was related to a more stress appraisals of illness, and was indirectly related to a lower HRQOL. Similarly, Manning-Walsh (2005) found that symptom distress had a negative direct effect on HRQOL ($\beta = -.57$) and explained 39% of the variance in HRQOL in breast cancer patients. Therefore, it can be conclude that symptoms have a negative direct effect on HRQOL.

5.2 Social support

5.2.1 Definition of social support

When defining social support, various conceptualizations have been presented in the literature. According to Cobb (1976), social support is the giving information that leads people to believe they are cared for, loved, esteemed, and valued, and that they belong to a network of communication and mutual obligation. Lugton (1997) also notes that social support is a complex and multidimensional phenomenon including both quantity of social ties and quality of relationships. Another way to define social support is to consider function of an individual's well-being and coping mechanisms enhanced by their involvement with others and perception of the supportive interactions available (Brashers et al, 2004). According to Burelson (2009), social support is defined as verbal and nonverbal behaviors intended to provide assistance to others in need of aid or as functions performed for an individual in distress. In sum, social support is the support systems that provide assistance and encouragement to individuals with physical or emotional disabilities in order that they may better cope.

There are many different components of social support. Cobb (1976) has clarified characters of social support as emotional support, esteem support, and network support. Weiss (1974 cited in Drageset and Lindstrøm, 2005) has identified construct of social support which has multiple functions, including the provision for attachment, social integration, reassurance of worth, opportunity for nurturance, reliable alliance, and guidance. Furthermore, House (1981) has described four main components of social support including emotional, appraisal, informational, and instrumental support. Emotional support generally comes from family and friends and is the most important type of support for improving psychosocial adjustment (House, 1981). It refers to the provision of constructs such as love, respect, sympathy, understanding, and overall empathy that can help with an individual's coping (House, 1981; Schroevers et al., 2003; Thoits, 1986). Emotional support is the most helpful type of support and the most needed type of support by cancer patients (Helgeson and Cohen, 1996). Appraisal support involves transmission of information in the form of affirmation, feedback, and social comparison that is often evaluated from family, friends, colleagues, and community source (House, 1981). Besides this, informational support includes advice, suggestions, or directives that assist the person to respond to personal or situational demands (House, 1981). Informational support can include health information or advice that may help individuals in their day-to-day lives or during stressful experiences (Fridfinnsdottir, 1997). Instrumental support is the most concrete direct form of social support, encompassing tangible aids, goods, or services (House, 1981). These four components include all possible actions of social support (Langford et al., 1997; Schaffer, 2005).

Social support among cancer patients can be gained from a variety of sources including family, friends, members of one's religious group, and healthcare professionals (Palsson and Norberg, 1995; Krishnasamy, 1996). Some studies have divided components of social support into structural and functional components (Stewart, 1993; Sultan et al., 2004; Thoist, 1995). The structural component refers to the provider of supportive actions or social networks such as family, friends, neighbors, and colleagues; the functional component refers to various types of assistance available or actually received such as emotional, appraisal, informational, and instrumental support. Therefore, social support definition and component should include both structural and functional components.

5.2.2 Measurement of social support

There are a large numbers of instruments measuring social support, but there has been little standardization of measures of social support (Bowling, 2005). This problem may be due to a lack of consensus on a conceptual base and definition of social support (Hupcey, 1998; Stewart, 1993; Thoits, 1995). In addition, there is no specific measurement to assess support in cancer patients (Krishnasamy, 1996). Available measurements that are used in oncology research include the Norbeck Social Support Questionnaire, the Perceived Resources Questionnaire, the Inventory of Social Support Behavior, the Social Provision Scale, and the Personal Resource Questionnaire. Most researchers have modified items of these measurements, depending upon their social support perspective.

In the present study, social support is defined based on House’s (1981) conceptualization because this definition covers all the functional component and properties of social support and provides a comprehensive view of the concept. Social support in this study was measured using the Social Support Questionnaire (SSQ) (Nuanchan Thaninsurat et al., 2002), which has been modified from the conceptualization of social support by House (1981). The SSQ assessed emotional, informational, instrumental, and appraisal support that CCA patients received from family, friends, healthcare providers, and others.

5.2.3 The relationship between social support and HRQOL

Social support is viewed as a positive influence on individuals' health and well-being. Support from close relational ties has been seen to moderate the effect of stress and traumatic life events on an individual's overall health and well-being (Vangelisti, 2009). Numerous studies have indicated that social support was significantly positively correlated with HRQOL in cancer patients (Manning-Walsh, 2005; Pedro, 2001; Sammarco, 2001, 2003; Thanasilp and Kongsaktrakul, 2005). For instance, Taechaboonsermsak and colleagues (2005) discovered that social support had a positive direct effect on the HRQOL among cervical cancer patients undergoing radiotherapy. In a longitudinal study (with a one-year follow-up) on HRQOL and social support in 51 newly diagnosed cancer patients, the findings indicated that patients with a deterioration in HRQOL perceived a large decrease in emotional support (Courtens et al., 1996). Their findings support the study by Sultan and colleagues (2004) which reported that availability of emotional support was associated with high mental health status dimension of HRQOL among colorectal cancer patients. Moreover, Mannin-Walsh (2005) has reported that social support from family members and friends was related to improve HRQOL in breast cancer patients. Furthermore, social support was found to be a pivotal predictor of HRQOL in breast cancer patients (Manning-Walsh, 2005), breast cancer survivors (Sammarco, 2001, 2003; Sammarco and Konecny, 2008), and cancer patients receiving chemotherapy (Thanasilp and Kongsaktrakul, 2005). Thus, it is likely that social support has a positive direct effect on HRQOL.

5.3 Uncertainty in illness

5.3.1 Definition of uncertainty in illness

Uncertainty is a crucial component of illness experience and can affect psychosocial adaptation and outcomes of the disease (McComick, 2000). Davis (1960) was a pioneer who studied the differences between clinical and functional uncertainty and tied the experience to the delivery of care and agenda of healthcare providers. Mishel (1988: 225) has developed the uncertainty in illness theory and defined uncertainty as “the inability to determine the meaning of illness-related events.” She has further explained that, “it is a cognitive state created when the person cannot adequately structure or categorize an event because of the lack of sufficient cues.” Uncertainty occurs in a situation in which the decision maker is unable to assign definitive value to objects or events and/or is unable to predict outcome accurately (Mishel, 1998). Hilton (1992: 70) has described uncertainty as “a cognition state created when an event cannot be adequately defined or categorized due to lack of information.” This definition is similar to Mishel’s (1988), but it limits only one cause of uncertainty as situations of lack information.

Later on, Hilton (1994: 18) has depicted uncertainty as a process and defined uncertainty as “a cognitive perceptual state that ranges from a feeling of just less than surety to vagueness; it changes over time and is accompanied by the threatening and/or positive emotion.” This second definition of uncertainty by Hilton (1994) differs from Mishel’s definition in that it describes uncertainty as a feeling, while Mishel (1997a) has regarded uncertainty as a “neutral cognitive state” and then, it should transcend emotions. Hilton’s definition indicates that uncertainty is associated with both positive and threatening outcomes. Mishel’s has also indicated that uncertainty can be either positive or negative but focus on the danger, threat, or opportunity outcomes as a product created by uncertainty.

Nelson (1996) explored the uncertainty experience of women living with breast cancer; it was reported that uncertainty among the women living with breast cancer 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, and feeling of control or lacking control were associated with uncertainty over time.

Penrod (2001) has defined uncertainty as a dynamic state in which there is a perception of being unable to assign probabilities for outcomes that prompts a discomforting, uneasy sensation that may be affected (reduced or escalated) through cognitive, emotive, or behavioral reactions, or by the passage of time and changes in the perception of circumstances. The experience of uncertainty is pervasive in human existence and is mediated by feelings of confidence and control that may be highly specific (event-focused) or more global (a world view).

Fitzsimons and McAloon (2004) have noted that uncertainty is a major component of all experiences and that it affects psychological adaptation and outcomes of disease. It is not the total experience in acute and chronic illness or condition. Uncertainty refers to a lack of predictability or knowledge, because of insufficient evidence.

From above literature, it can be seen that there is a consensus of circumstance of uncertainty in illness related to unpredictability in an illness–related event. Therefore, in the present study, the researcher used the concept of UIT (Mishel, 1988) as a theoretical framework because it clearly depicts a definition and characteristics of uncertainty in illness.

5.3.2 Measurement of uncertainty

In oncology research, most researchers use Mishel's uncertainty in Illness Scale (MUIS) although some studies were reported with no mentioning of a theoretical framework. Mishel's (1981, 1990) developed questionnaires are used to measure uncertainty within situation experience of illness with four key factors: (1) ambiguity concerning the state of the illness, (2) complexity regarding treatment and system of care, (3) lack of information about the diagnosis and seriousness of the disease, and (4) unpredictability of the course of the disease and prognosis. Mishel (1983) has developed uncertainty scales specific to selected populations such as Parents' Perception of Uncertainty in Illness Scale-Family Member, Parents' Perception of Uncertainty in Illness Scale, the Adult Uncertainty in Illness Scale (Community Form), and the Adult Uncertainty in Illness Scale.

Hilton (1994) has measured uncertainty as the outcome of stress or positive feeling. Using Hilton's scale, study participants rated both their uncertainty within illness situations and the stress they believed was caused by each situation. In addition, uncertainty accompanied the emotional outcomes of individual patients.

Morse and Penrod (1999) have addressed the issue of measuring dynamic experiences based on the assumption that a similar type of assessment guide may be applicable to the clinical measurement of uncertainty, as it would provide information on the attributes of uncertainty for that person and at that time, thus indicating well-targeted interventions. The methods for developing assessment guides from qualitative data may be helpful in the uncertainty measurement.

The present study employed the Adult Uncertainty in Illness Scale

(Community Form) to measure uncertainty in illness because it can assess an extensive view of uncertainty and it is specific to the target sample, who were CCA patients attending the surgery out-patient department in this study.

5.3.3 The relationship between uncertainty and HRQOL

Uncertainty in illness is an important journey experience for cancer patients (Klemm, Miller, and Fersler, 2000; Shana et al., 2008). Much evidence has asserted that higher uncertainty experience is linked to a lower HRQOL in cancer patients (Sammarco, 2001; Sammarco and Konecny, 2008; Wallace, 2003; Wonghongkul et al., 2006). Clayton and colleagues (2006) have reported that uncertainty had the strongest influence on well-being in older breast cancer survivors. Additionally, Sammarco (2003) have confirmed that uncertainty was negatively correlated with HRQOL ($r = -.48$, $p < .001$), and that uncertainty could predicted 23.4% of the HRQOL variance in older survivors of breast cancer. Furthermore, Detprapon and colleagues (2009) found that uncertainty had a strong direct negative impact on HRQOL ($\beta = -.85$, $p < .001$) in head and neck cancer patients. Therefore, based on these findings, it can be assumed that uncertainty has a negative direct effect on HRQOL.

5.4 Coping

5.4.1 Definition of coping

There are various definitions and theoretical positions that exist regarding coping and defence. For example, coping is defined as positive response outcome expectancies developed within a cognitive-behavioral tradition (Bolles, 1972 cited in Dragest and Lindstrøm, 2005). Weisman (1979) has defined coping as a process that combines the mixed different types of tactics, depending on the problems and available resources of patients. According to Lazarus and Folkman (1984: 141), coping is defined as “constantly changing cognitive and behavioral efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources of a person.” Based on the cognitive model of stress and coping (Lazarus & Folkman, 1984), Folkman and Greer (2000: 12) have defined coping as “the thoughts and behaviors a person uses to regulate distress (emotion-focused coping), manage the problem causing distress (problem-focused coping), and maintain positive well-being (meaning-based coping).” Similarly, Nail (2003) has defined coping as the thing that people do to influence outcome like mode or emotive, function and social activity, and health. Furthermore, Jalowiec and colleagues (1984) have defined coping especially to health as a process in which the individual attempts to reduce stress. Similar to other studies in health, coping is defined as individuals’ cognitive and behavioral effort to manage stress (Katz et al., 1996; Roesch and Weiner, 2001). Schwarzer and Schwarzer (1996) suggest three important points that should be taken into account in the conceptualization of coping:(a) coping needs not be a completed “successful” act, but an effort has to be made; (b) this effort needs not be expressed in actual behavior, but can be directed to cognitions as well; and (c) a cognitive appraisal of the taxing situation is a prerequisite of initiating coping attempts. Therefore, coping is mainly defined as positive response outcome expectations, or strategies (cognitive and behavior efforts) to deal with a stressor.

The definition of coping depending on the cognitive model of stress and coping of Lazarus and Folkman (1984) has become widely accepted in research and practice (Tennen et al., 2000). Coping is a process that is changeable over time and related to the type of situation in which it occurs. Folkman and Lazarus (1984) make some important distinctions for the understanding of the phenomenon of coping. Firstly, their theory of stress and coping consists of three processes: primary appraisal, secondary appraisal, and coping. Primary appraisal involves the perception of something as a threat. Secondary appraisal involves the process of bringing to mind a potential response to the threat. Coping is the process of executing that response. Moreover, a distinction is made between two functions of coping: problem-focused coping and emotion-focused coping. Problem-focused coping aims at modifying the source of the stress, whereas emotion-focused coping aims at reducing or managing the emotional stress that is associated with the situation. The coping processes lead to an outcome of the event. Short-term effects of the response to the stressor include psychological and physiological changes; long-term effects include psychosocial well-being, social functioning, and somatic health. The overall effectiveness of the stress-coping process places the individual in a position of being relatively resistant or vulnerable to further stress. Therefore, the model of stress and coping of Lazarus and Folkman (1984) has comprehensive details that can explain and lead to better understanding of the process of coping in illness.

The current study used the UIT as a conceptual framework based on the cognitive model of stress and coping of Lazarus and Folkman (1984). Thus, coping was defined as the strategies of CCA patients who used both cognitive and behavioral means to manage uncertainty regarding their illness.

5.4.2 Measurement of coping

The increased interest in a contextual approach to stress and coping had led to the development of new measures to assess coping in specific stressful situations. The first generation of these new coping measures took the form of a checklist of thoughts and behaviors that people used to manage stressful events (Folkman and Moskowitz, 2004). Respondents were usually asked to provide a retrospective report of how they coped with a specific stressful event or they were asked to respond to vignettes that portrayed stressful situations. Answers were scored yes/no or on Likert scales. Examples of instruments of coping that are applicable in general populations include the Coping Orientation to Problems Experienced Scale (Carver, Scheier, and Weintraub, 1989), the Jalowiec Coping Scale (Jalowiec, 1988), the Ways of Coping (Folkman and Lazarus, 1988), the Coping Strategy Indicator (Amirkhan, 1990), the Coping Response's Inventory (Moos, 1993), and the Coping Inventory for Stressful Situations (Schwarzer and Schwarzer, 1996). These instruments are helpful in that they allow multidimensional descriptions of situation-specific coping thoughts and behaviors that people can self-report (Stone et al., 1992). Nevertheless, there is no gold standard for the measurement of coping (Folkman and Moskowitz, 2004).

The Jalowiec Coping Scale (Jalowiec, 1988) was used to assess coping in this study because it can measure cognitive and behavioral strategies. In addition, it captures confrontive, emotive, and palliative dimensions of coping that are mentioned in the coping process of UIT. Lastly, this measurement was translated into the Thai language and has an acceptable psychometric property when used with Thai cancer patients.

5.4.3 The relationship between coping and HRQOL

Coping is an individual response and the use of coping strategies depends on the cultural background of individuals (Black, 2005; Lazarus and Folkman, 1984). Franks and Roesch (2006) conducted a meta-analysis to examine the relationship between primary appraisal dimensions and coping strategies in cancer patients. They reported that cancer patients often used multiple types of coping strategies to manage the stress of cancer. This finding supports the previous study which indicated that different individuals used a variety coping strategies in the process of coping with cancer (Brown et al., 2000).

According to Miller (1992), coping helps people to reduce their stress, resolve their uncomfortable feelings, preserve their ability to function effectively in relationships, and maintain a positive self-concept that promotes HRQOL. Pranee Sanee (1996) examined the relationship between coping behavior (total scores of problem-oriental methods and effective-oriental methods) and HRQOL in 100 women with advanced cancer. She found that there was a significantly positive correlation between coping behavior and HRQOL (r = .27, p < .01), and coping behavior had a direct positive effect (.37, p < .01) on HRQOL. Similarly, Meifen (1997) discovered that there was a positive association between coping styles (total scores of problem-focused coping and emotion-focused coping) and HRQOL in breast cancer patients receiving chemotherapy. In addition, Lutgendorf and colleagues (2000) investigated relationships of coping styles (seeking emotional social support, active coping, avoidance, and intrusion) and HRQOL and mood among advanced gynecologic cancer patients who had received intensive chemotherapy for at least one year. The findings showed that patients using avoidant coping reported poorer physical functional and emotional well-being, along with greater anxiety, depression, fatigue, and total mood disturbance. Thus, avoidant coping may be a particular risk factor for poor QOL and greater distress.

On the contrary, Green and colleagues (2002) conducted a randomized trial of 65 men with non-localized prostate cancer to compare several treatments and to test the association between appraisal, coping (problem-focused coping and emotion-focused coping), and HRQOL before treatment and after six months. The results indicated that low HRQOL was associated with higher threat appraisal and higher use of both problem-focused coping and emotional-focused coping. Greater use of both problem-focused coping and emotion-focused coping was a marker of emotional distress in baseline before treatment and affected HRQOL after treatment. Furthermore, eight coping strategies (confrontive, escape, avoidance, self-controlling, seeking social support, acceptance, distracting, and positive reappraisal) did not predict HRQOL in breast cancer survivors (Wonghongkul et al., 2006).

In sum, the relationship between coping and HRQOL is inconsistent among cancer patients. The variation in the types and numbers of coping strategies and different types of cancer may be related to the inconsistency in the relationship between coping and HRQOL. Thus, in this study, the correlation between coping strategies and HRQOL was examined based on an assumption that coping has a direct effect on HRQOL.

5.5 The relationships among symptoms, uncertainty, and HRQOL

Based on the UIT, symptoms are characteristics of inconsistency in intensity, frequency, number, and location that can generate uncertainty (Mishel, 1988). Mast (1995) critically reviewed nursing research which was related to adult uncertainty in illness and found that illness symptoms appeared to influence uncertainty. Similarly, Gill and colleagues (2004) have noted that new aches and pains and physical symptoms were triggers of uncertainty in older African American and Caucasian breast cancer survivors. Finally, Clayton and colleagues (2006) have reported that symptoms severity and distress either from illness or treatment had a positive direct effect on uncertainty in breast cancer survivors. Thus, it is expected that symptoms has a direct effect on uncertainty.

As regards research that investigated UIT in cancer patients, some researchers propose adaptation outcomes in UIT as psychosocial adjustment and HRQOL. For instance, Santawaja and colleagues (2002) asserted that symptom distress had a positive direct effect on uncertainty ($\beta = 1.54$, $p < .001$) and indirect effect on psychosocial adjustment through uncertainty ($\beta = -1.0$, $p < .01$). In addition, Detprapon and colleagues (2007) reported that symptom experience had a strong direct positive impact on uncertainty ($\beta =.81$, $p < .001$) and an indirect impact on HRQOL through uncertainty ($\beta = .68$, $p < .001$) in head and neck cancer patients. These findings confirm that symptom is an antecedent of uncertainty. Uncertainty will be increased when patterns among symptoms cannot be predicted or controlled. Much evidence has proved that symptoms (Cella, 1998; Chang, et al., 2000; Curt, 2000; Hagelin et al., 2005) and uncertainty (Clayton et al., 2006; Gill et al., 2006; Mast, 1998) have an effect on HRQOL. Therefore, patients who have a high level of symptoms and uncertainty will have a lower level of HRQOL.

5.6 The relationships among symptoms, social support, uncertainty, and HRQOL

Social support is a structure provider that helps individuals' interpretation of the stimuli frame and can decrease uncertainty both directly and indirectly (Mishel, 1988). Social support reduces uncertainty directly when the support assists individuals to make cognitive sense of experience, and thereby to experience less ambiguity at diagnosis, and with complexity during treatment (Mast, 1995). As regards indirectly effects through symptoms, social support affects uncertainty by providing support to control and reduce symptoms. Previous studies have reported that there is an inverse relationship between uncertainty and social support in gynecological cancer patients (Mishel and Braden, 1988) and breast cancer survivors (Sammarco, 2001, 2003; Sammarco and Konecny, 2008). Patients with religious faith and those who receive support from family and friends and who maintain hope can reduce their psychological symptom distress (Ali and Khali, 1991; Krause, 1991). Women newly diagnosed with breast cancer reported that support in the form of sharing experiences and problems with other women with breast cancer gave them the feeling of not being alone and helped with physical adjustment (Palsson and Norberg, 1995). Furthermore, Mishel and colleague (2003) found that a psycho-educational intervention by telephone directed at helping prostate carcinoma patients manage their uncertainties had identifiable benefits, which included learning new cognitive and behavioral skills during the time of highest symptom distress. Therefore, it is concluded that social support has a negative direct effect on uncertainty and an indirect effect on symptoms.

The studies of perceived social support, uncertainty, and HRQOL in younger and older breast cancer survivors (Sammarco, 2001, 2003) and in Latin breast cancer survivors (Sommarco and Konecny, 2008) have reported a significant positive correlation between perceived social support and HRQOL. Additionally, a significant negative correlation between perceived uncertainty and HRQOL has also been documented (Sammarco, 2001; Sammarco and Konecny, 2008; Wallace, 2003; Wonghongkul et al., 2006). Social support and uncertainty together could predict variance of HRQOL (Sammarco, 2001, 2003; Sommarco and Konecny, 2008).

Uncertainty functions as a mediator between social support and HRQOL. However, mediating effects of uncertainty and social support on HRQOL were not examined in these studies. In short, it is expected that social support has a positive direct effect on HRQOL and an indirect effect through uncertainty.

5.7 The relationships among uncertainty, coping, and HRQOL

The UIT concerns how appraisal of uncertainty and the coping process affect adaptation outcomes (Mishel, 1988). Coping strategies or behaviors are what cancer patients do to manage uncertainty (Mast, 1998). Research on the relationship between uncertainty and coping has been done with various cancer patients. For example, Mishel and Sorenson (1991) tested the ability to master and cope with uncertainty in 131 gynecological cancer patients. They found that uncertainty reduced the patients' sense of person resources to manage the situation. High uncertainty was inversely related to the use of problem-focused coping, and positively related to the use of emotion-focused coping. Similarly, Nittaya Rojtinanakorn (1994) has reported that there was a statistically significant negative relationship between uncertainty in illness and problem-focused coping and positively between uncertainty in illness and emotion-focused coping in patients receiving radiotherapy. However, Santawaja and colleagues (2002) have indicated that uncertainty did not have a significant direct effect on problem-focused coping in radiotherapy cervical cancer patients but had a direct effect on emotion-focused coping in radiotherapy cervical cancer patients. Consequently, it seems that women use emotion-focused coping strategies more than problem-focused coping strategies to deal with uncertainty. This is congruent with the report of Ali and Khali (1991) that Egyptian women who had undergone mastectomy frequency used faith or disengagement (emotion-focused coping) when they believed that nothing could be done to decrease uncertainty in their illness.

Wallace (2003) explored uncertainty, anxiety, and primary appraisal to explain HRQOL among 21 older men who underwent watchful waiting for prostate cancer. She found the role of danger appraisal as a mediator between uncertainty and HRQOL. A model was built from uncertainty, anxiety, and danger appraisal to explain 60% of the variance of HRQOL. In another study, Wonghongkul and colleagues (2006) assessed the influence of uncertainty, stress appraisal, and coping on HRQOL in 150 breast cancer survivors at least three year after diagnosis. They reported that year of survival, uncertainty, and harm appraisal explained 21.8% of variance of HRQOL. However, coping strategies (confrontive, escape, avoidance, self-controlling, seeking social support, acceptance, distracting, and positive reappraisal) were not found to be the predictors of HRQOL in their study. This result was congruent with the finding of Padilla and colleagues (1992) who noted that both emotion-focused coping and problem-focused coping did not relate to HRQOL among newly diagnosed cancer patients. They explained that coping strategies may be associated with expected quality of life outcomes rather than current experience. In contrast, Pranee Sanee (1996) found that coping behavior (total scores of problem-focused coping and emotion-focused coping) was a predictor of HRQOL in advanced breast cancer patients.

In sum, there are inconsistencies in the research findings regarding relationships among uncertainty, coping, and HRQOL. This could be explained that the use of coping strategies dealing with uncertainty is dependent on the individual differences and previous experience. The differences in instruments used to assess coping strategies and different groups of population may have resulted in the inconsistencies in the findings regarding the relationships among uncertainty, coping, and HRQOL. The present study aimed at examining such relationships among CCA patients. It was assumed that uncertainty has a direct effect on HRQOL and indirect effect on HRQOL through coping.

Summary

CCA is a major health problem in Northeast Thailand. CCA patients are encountered with many problems that can deteriorate HRQOL. The overall goal of CCA care is to maintain or improve the HRQOL. However, few studies have been conducted to investigate specifically HRQOL in CCA patients. In other words, there is little information regarding factors influencing HRQOL in CCA patients. From the literature review in various types of cancer patients, there are many factors that influence HRQOL. Based on UIT and a significant amount of literature, the current study selected the factors that could be modified by nursing intervention, including symptoms, uncertainty, and coping to describe and predict HRQOL in CCA patients. Although these factors have had a strong correlation with HRQOL in various cancers, no study has investigated completely interrelationships of all of these factors. The interrelationships among these factors that affect HRQOL are complex; thus, the studies have focused on direct effects, hence it is not sufficient enough to explain the reality of the relationships. Most of the previous studies investigated direct effects of these factors on HRQOL, while only a limited number of studies have focused on their indirect effects. Some interrelationships are inconsistency because of the use of different instruments to assess and gather data, or conduct in different settings and population.

Understanding the factors affecting HRQOL in CCA patients is necessary in the development of a nursing intervention to maintain or improve the HRQOL. No study has examined whether the interrelationships among these factor and HRQOL exist in CCA patients. CCA has a unique characteristic; thus, it might be inappropriate to make a generalization based on the exiting knowledge from patients with various cancers into CCA patient's contexts. However, previous studies help to provide a hypothesize model for explaining HRQOL in CCA patients. Therefore, in the present study, a path model was conducted to test and explain the influence of symptoms, social support, uncertainty, and coping on HRQOL in CCA patients.

CHAPTER III

Methodology

This chapter describes the methodology used in the present study. In this chapter, the research design, population and sample, instrumentation, protection of the rights of human subjects, pilot study, data collection, and data analysis are detailed.

Research design

In the present study, a cross-sectional descriptive correlation design was employed to explore the theoretical linkage among potential factors of interest and HRQOL in CCA patients in the northeastern region of Thailand. The potential factors were derived from the UIT (Mishel, 1988) and available relevant research evidence. Generally, a descriptive correlation design facilitates researchers who wish to examine many interrelationships in a situation that has already occurred or in a current situation (Burns and Grove, 2005). According to Polit and Beck (2006), a descriptive cross-sectional research design is limited in its ability to explain the causal relationship between variables due to a lack of manipulation or control of independent variables. However, it has many advantages. First of all, it can explore the relationships among variables in natural occurring situations without any artificial manipulation. Next, it is appropriate when experimental design is not feasible. Finally, it allows the investigator to collect a large amount of data in an economic way. Although a cross-sectional descriptive correlation design does not explain the causal relationships between study variables, the causal relationships in the hypothesized model in the current study are based on the UIT. The UIT demonstrates the causal relationships among antecedents of uncertainty, uncertainty and appraisal, coping with uncertainty, and adaptation outcomes. Thus, a cross-sectional descriptive correlation design was deemed appropriate and therefore used in this study.

Population and sample

Population

The population in this study was CCA patients attending the surgery outpatient department at Srinagarind Hospital and Khon Kaen Hospital. Srinagarind Hospital is a university hospital and Khon Kaen hospital is a regional hospital under the Ministry of Health in the northeastern region of Thailand. These sites were selected because they are tertiary hospitals with a large number of CCA patients. In general, a large number of patients from other hospitals around the northeast are referred to these two hospitals due to the availability of specialists such as surgeons, radiologists, and pathologists required in the diagnosis and treatment of CCA. Thus, Srinagarind Hospital and Khon Kaen Hospital provided samples from a broad geographical region in the northeastern area of the country.

Sample

Patients who had been diagnosed with CCA for at least one month and who had imaging studies or verified histopathology were invited to participate in the study. All potential participants from the two clinical settings who met the inclusion criteria were approached and requested to participate into the study in a consecutive sampling. In addition to the diagnosis of CCA, the inclusion criteria were as follows:

1) They were patients who had perceived their diagnosis;

2) They were 18 years of age or older;

3) They were able to understand and communicate in the Thai language;

4) They had no history of disease which might affect cognitive ability such as dementia, Alzheimer's, and severe psychiatric disorder (detected from patients' medical record);

5) They were willing to participate in this study.

Sample size

Presently, there is no standard rule for calculating the sample size for a path analysis and structural equation modeling (SEM) (Jöreskog & Sörbom, 1996-2001). The common path analysis is maximum likelihood estimation (MLE) of a procedure. Hair and colleagues (2006: 741) have suggested a sample size of 200 to provide a sound basis for MLE. However, a model with more constructs may require more parameters to be estimated. A minimum appropriate ratio is of at least ten respondents for each estimated parameter (Hair et al., 1998). According to Kline (1998), the best sample size should be 20 respondents for each free parameter in the path analysis. In this study, the hypothesized model contained 13 free parameters; thus, a sample size of 130-260 was the requirement to match the complexity of the path model. In addition, 3 % of the total sample was added to take into account missing data. Therefore, a total sample of 270 CCA patients was recruited, 260 of which had usual data while data from 10 were unusual and therefore delete for reason explained in data preparation.

The researcher calculated the estimated sample size from each hospital by analyzing the proportion of CCA patients who attended the OPD in each hospital. In 2007, the numbers of CCA outpatients who were admitted into Srinagarind Hospital (Medical Statistics Unit of Srinagarind Hospital, 2008) and Khon Kaen Hospital

(Information Technology Center, Khon Kaen Hospital, 2008) were 1,287 and 458 cases, respectively. Therefore, 200 cases were selected from Srinagarind Hospital and 70 cases from Khon Kaen Hospital.

Instrumentation

The instruments in this study consisted of: 1) the demographic characteristics questionnaire, 2) the Modified Memorial Symptoms Assessment Scale (MMSAS), 3) Mishel's Uncertainty in Illness Scale: Community Form (MUIS-C), 4) the Social Support Questionnaire (SSQ), 5) the Jalowice Coping Scale (JCS), and 6) the Functional Assessment of Cancer Therapy-General (FACT-G). These instruments used to interview participants because the most of CCA are had elementary education and in middle-age to aging (Chalearmsri Sorasit, 2005; Chusri Kuchaisit et al., 2004; Nuanchan Thaninsurat et al., 2002). Thus, they may be unable to complete these instruments by themselves. A description of each instrument is presented as follows:

1. Demographic characteristics questionnaire (see Appendix B1)

A personal data form was used to collect data regarding the CCA patients' demographic characteristics, their illness data, and data regarding their treatment. In other words, the items elicited data regarding CCA patients' age, gender, marital status, education, occupation, income, sources of payment, duration of illness, treatment, co-morbidity, and performance status rating.

2. Modified Memorial Symptoms Assessment Scale (MMSAS) (see Appendix B2)

The Modified Memorial Symptoms Assessments Scale (MMSAS) was used to assess the frequency, severity, and distress symptoms of CCA patients, focusing on the prior week. The original Memorial Symptoms Assessments Scale (MSAS) was used to measure the frequency, severity, and distress associated with 32 physical and psychological symptoms experienced by cancer patients during the prior week (Portenoy et al., 1994). In the pilot study, a process of translation of MSAS to a Thai version, including a back translation, was completed (Busaba Somjaivong, Sureeporn Thanasilp, and Sunida Preechawong, 2009). From the pilot study, it was revealed that the most common symptoms found in CCA patients were abdominal pain or dyspepsia, lack of appetite, nausea, vomiting, fatigue, fever, itching, difficulty sleeping, loss of positive body image from yellowing of the eye and skin or biliary drainage, and anxiety. Because the MSAS was developed to assess symptoms in general cancer patients, some symptoms were not found in CCA patients. Thus, the researcher modified the MSAS to assess only the symptoms specific to CCA patients. The MMSAS was used to evaluate the ten most common physical and psychological symptoms including abdominal pain or dyspepsia, lack of appetite, nausea, vomiting, fatigue, fever, itching, difficulty sleeping, anxiety, and loss of body image from yellowing of the eyes and skin or having biliary drainage. The MMSAS was used to elicit data that revealed the frequency, severity, and distress of the symptoms of CCA patients focusing on those that had occurred in the prior week.

Scoring

Symptom frequency was rated as occurring 1 (rarely), 2 (occasionally), 3 (frequently), and 4 (almost constantly). Severity was measured as 1 (mild), 2 (moderate), 3 (severe), and 4 (very severe). Distress was rated using a 5-point Likert scale with the scores of 0 (not at all), 1 (a little bit), 2 (somewhat), 3 (quite a bit), and 4 (very much). The total score of each symptom was obtained by summing frequency, severity, and distress dimensions. The total MMSAS (TMMSAS) score was obtained by summing all ten symptoms, with possible scores ranging from 2 to 120 points. A higher TMMSAS score indicated a higher intensity of symptom in each dimension of frequency, severity, and distress, and vice versa. The levels of symptoms were categorized into three levels (low, moderate, and high) by employing the range between minimum and maximum scores of the TMMSAS and dividing it by three.

Total scores of MMSAS	**Interpretation**
2 - 41 points	low
42 - 81 points	moderate
82 - 120 points	high

Validity and Reliability

The MSAS was tested for validity and reliability in a study of 246 inpatients and outpatients with prostate, colon, breast, or ovarian cancer (Portenoy et al., 1994). As regards the convergent and discriminant validity, it was reported that the number of intense symptoms was highly correlated with the decreased Karnofsky performance status and the sum of QOL score. The construct validity was tested by comparing the MSAS scores of inpatients and outpatients with various clinical presentations. Anticipated results were confirmed: inpatients had higher symptom distress than outpatients, and advance-stage cancer patients had more symptoms than early-stage cancer patients.

Besides, the reliability of MSAS was reported with internal consistency in the three major symptom groups including psychological symptoms (PSYC), high prevalence physical symptoms (PHYSH), and low prevalence physical symptoms (PHYSL). The Cronbach’s alpha coefficients for the PSYC, PHYSH, and PHYSL subgroups were equal to .83, .88, and .58, respectively (Portenoy et al., 1994). In Thailand, Suwisith and colleagues (2008) translated the MSAS into a Thai version and tested its reliability with breast cancer patients receiving treatment. Reliability analysis for the back-translated MSAS version was reported with internal consistency of .96. The one-day, test-retest correlation coefficients for the MSAS subscales ranged from .82 to .88 ($p < .05$). Therefore, the MSAS has demonstrated high validity and reliability in various cancer patients.

In the current study, the researcher assess the validity of MMSAS by face validity in pilot study, and then five experts assessed the validity of contents, including two surgeons who provided treatments to CCA patients and three advanced practice nurses (APN) who cared for CCA patients in the northeastern region. Regarding content validity, most experts rated each item of MMSAS as 3 and 4 (from 1 = not relevant to 4 = very relevant), which met the criteria for appropriate content validity (Polit and Hungler, 1999: 419). A content validity index (CVI) score of .80 or more is generally considered to have a good content validity (Polit and Hungler, 1999: 419). In this study, the CVI was .80 (see Appendix D). In addition, Cronbach's alpha correlation coefficient was used for internal consistency of reliability. The reliability of this measurement was .91 in 30 CCA patients and .87 when tested with 260 CCA patients.

3. Mishel's Uncertainty in Illness Scale—Community Form (MUIS-C) (see Appendix B3)

The current study employed the Mishel's Uncertainty in Illness Scale—Community Form (MUIS-C) (Mishel, 1997b) to measure uncertainty in CCA patients. In the original instrument, Mishel (1981) developed the Uncertainty in Illness Scale (MUIS) using a heterogeneous group of hospitalized patients. In order to increase the clinical applicability of MUIS, Mishel (1983) revised the MUIS to be specific to the selected population. The subgroups included patients with cancer, cardiovascular disease, and gastrointestinal condition, lupus, cardiac catheterization, and symptoms receiving primary treatment. The scale of MUIS contained 34 items, and the factor analysis covered four dimensions: 1) ambiguity concerning the state of the illness, 2) complexity regarding treatment and system of care, 3) lack of information about the diagnosis and its seriousness, and 4) unpredictability of the course of the disease and prognosis. In further attempts to replicate a four-factor structure, MUIS was test by factor analysis again. As a result, 6 items were deleted because of inadequate loading. Therefore, the scale of MUIS contained 28 items.

In 1986, the MUIS-C was derived from the MUIS for chronically ill persons who were not hospitalized. The scale contained the same questions as the MUIS, except for the five items which were related to uncertainty during hospitalization and treatment that were omitted. The MUIS-C has been used widely in research with a variety of populations such as colon and gynecological cancer, coronary artery bypass surgery, post-myocardial infarction, irritable bowel disease, epilepsy, multiple sclerosis, and acquired anti-virus syndromes (Mishel, 1997a).

Scoring

The MUIS-C is a 23-item instrument in which respondents rate the items on a 5-point Likert scale as 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). A total score was obtained by summing the responses to the 23 items. All positive items (numbers 6, 8, 19, 20, 22, and 23) had reversed scoring which was conducted before calculating the total score. The possible scores ranged from 23 to 115, with a higher score indicating a higher level of uncertainty**.** The levels of uncertainty were categorized into three levels (low, moderate, and high) by employing the range between the minimum and maximum total scores of MUIS-C and dividing it by three.

Total score of MUIS-C	Interpretation
23 - 53 points	low
54 - 84 points	moderate
85 - 115 points	high

Validity and Reliability

Mishel (1981) assessed content validity of the MUIS by interviewing hospitalized patients informally. Discriminate construct validity was shown by discriminating among patients admitted for a diagnostic, medical, or surgical procedure. Convergent validity was shown by determining the relationship between uncertainty and stress in 100 medical patients. The results demonstrated that patients' levels of uncertainty were strongly related to their rating of hospital stress event.

The internal consistency of MUIS-C showed a moderate to high range of reliability coefficients ranging from .74 to .92 in various populations such as patients with mixed types of cancer, breast cancer, coronary artery bypass, myocardial infarction, cardiac arrest, multiple sclerosis, endometriosis, epilepsy, AIDS, and renal failure (Mishel, 1997b). In Thailand, the Cronbach's alpha coefficient of MUIS-C was reported at .82 in post-radiotherapy cervical cancer patients (Satawaja et al., 2002), .83 in survivors of breast cancer (Wonghongkul et al., 2006), and .90 in head and neck cancer patients (Detprapon et al., 2009). When MUIS-C was translated into the Thai language, it was slightly modified to make it more suitable for each cancer population. In the current study, the processes of cross-cultural adaptation of MUIS-C to the Thai language included translation, back-translation, and pretesting (Carlson, 2000). Two-language experts at the Khon Kaen Language Institute and one language expert working at a private language institute were chosen as translators. After the forward translation, another expert independently performed a back-translation of the instrument into English. A consensus meeting among the advisor, co-advisor, and researcher was held after the translation was completed, during which cultural and linguistic issues were discussed. In the end, a pre-final Thai version of the MUIS-C questionnaire was obtained. In the pretesting process, a pilot study was conduct with 30 CCA patients at an outpatient department of Srinagarind Hospital and Khon Kaen Hospital. The participants were different in terms of age, gender, and treatment. The results were satisfactory because the participants understood the items of the questionnaire. Cronbach’s alpha coefficient in both the pilot study and the main study (n = 260) was equal to .82.

4. Social Support Questionnaire (SSQ) (see Appendix B4)

In the present study, social support was measured by using the Social Support Questionnaire (SSQ) which was constructed based on House’s (1981) conceptualization. Phachoen Shokebumroong (1992) developed a SSQ for chronic renal failure. Furthermore, Nuanchan Thaninsurat and colleagues (2001) modified this instrument for CCA patients after surgery. The SSQ consisted of 25 items, which assessed the individual’s perceived level of emotional support in seven items, appraisal support in five items, information support in four items, and instrumental support in nine items from family, friends, and healthcare providers.

Scoring

Respondents rated each item on a 5-point Likert-type scale as 1 (not at all), 2 (a little bit), 3 (somewhat), 4 (quit a bit), and 5 (very much). All negative items including emotional support (items 1 and 6); information support (item 2); and instrument support (item 9) were reversed scored before calculating the total score. An overall total social support score was calculated by summing the average of the mean score of each subscale, with a higher score indicating a higher level of social support. Possible total scores ranged from 25 to 125, with a higher score indicating a higher level of social support. The levels of social support were categorized into three levels (low, moderate, and high) by employing the range between the minimum and the maximum total scores of SSQ and dividing it by three.

Total scores of SSQ	**Interpretation**
25 – 58 points	low
59 – 92 points	moderate
93 – 125 points	high

Validity and Reliability

The content validity of the modified SSQ (Nuanchan Thaninsurat et al., 2002) was assessed with an agreement of three experts: one psychologist, one behavioral science expert, and one professional nurse who was a bio-psychosocial care expert. Internal consistency reliability (Cronbach’s alpha) in CCA patients was .77 (Nuanchan Thaninsurat et al., 2002).

In the current study, the SSQ was examined to confirm its reliability by measuring Cronbach’s alpha in 30 CCA patients whose demographic characteristics were similar to those of the sample in the main study. Internal consistency reliability

(Cronbach's alpha) for the total score was .83. When tested in 260 CCA patients, the alpha was equal to .80.

5. Jalowiec Coping Scale (JCS) (see Appendix B5)

The Jalowiec Coping Scale (Thai version) (Paiporn Satiea, 2001) was used to measure coping strategies. Jalowiec (1977, cited in Jalowiec, 2003) developed the JCS to provide a means to examine the coping strategies used by hypertensive and emergency room patients. Based on Lazarus and Folkman's theory, this instrument consisted of 40 items and was divided into two subscales: 15 items on problem-focused coping and 25 items on affective-focused coping. Afterward, Jalowiec (1988) revised the scales and divided the scale into three subscales, including confrontive coping, emotive coping, and palliative coping.

Scoring

The JCS was a 36-item, 5-point Likert scale that ranged from 1 (never), 2 (occasionally), 3 (about half the time), 4 (often), to 5 (almost always). This instrument was divided into three subscales which contained 13 items measuring confrontive coping strategy, nine items measuring emotive coping strategy , and 14 items measuring palliative coping strategy. The possible total scores of the scale ranged from 36 to 180 points, with higher score denoting more frequently used coping strategies. The levels of JCS were categorized into three levels (low, moderate, and high) by employing the range between the minimum and maximum total scores of JCS and dividing it by three.

Total scores of JCS	Interpretation
36 – 83 points	low
84 – 131 points	Moderate
132 – 180 points	high

Concerning the dimension of coping, each dimension varies in terms of the number of items. The mean score of each dimension divided by its respective number of items that was done in order to expel biasing resulting from differences in the number of items on each dimension. Vitaliano and colleagues (1987) suggested that the use of a relative score provides true proportion score of each dimension, without interfere by the effect of other coping strategies or being control to a partial correlation. The relative score was calculated by dividing the mean score of each dimension by the sum of total of mean score. Therefore, the possible score of the relative score of each dimension ranged from .00 - 1.00. This study used the relative score to compare the score of each dimension of coping.

Validity and reliability

The content validity of this scale was examined with 20 nursing students and graduates. It was found that 85% of them had consensus in agreeing with the content of Jalowiec and Power (1981). The construct validity of the 40 items in the scale was examined in 141 patients by means of factor analysis. Jalowiec reported two coping strategies including 15 problem-oriented coping strategies and 25 affective-oriented coping strategies (Jalowiec, 1984). A confirmatory factor analysis was performed on coping data from 1,400 persons (790 patients, 353 nurses, 133 family members of patients, and 124 graduate students) (Jalowiec, 1988). From the original 40 items, 36 items were retained and divided into confrontive, emotive, and palliative coping strategies. Reliability of the three factors was a high Cronbach's alpha, equal 0.95 for the total instrument, .85 for confrontive coping, .70 for emotive coping, and .75 for palliative coping.

The Thai version of the JSC was modified and used in studies with various types of cancer such as breast cancer patients after undergoing mastectomy (Bencharat Cheewapoonpol, 2004) and cervical cancer patients post-radiation (Santawaja et al., 2002). Paiporn Satiea (2001) translated the JCS for head and neck cancer patients post-radiation. The validity of the English-Thai language translation was established. The content validity was assessed by nine experts: two oncologists, two nurse instructors who were experts in cancer care, two professional nurses who were specialists in stress and coping, two professional nurses who cared for cancer patients, and one psychologist. The reliability (Cronbach's alpha) was .82. Thus, the JCS which was translated into the Thai language by Paiporn Saetia (2001) was considered to have an acceptable criterion of reliability (more than .80 in standard measurement) (Burn and Grove, 2005).

In the current study, as for the reported reliability of the JCS (Thai version), Cronbach's alpha was equal to .85 when tried out with 30 CCA patients whose demographic characteristics were similar to those of the study sample and .80 when used in the main study with 260 CCA patients.

6. Functional Assessment of Cancer Therapy General (FACT-G) (see Appendix B6)

The Functional Assessment of Cancer Therapy General (version 4) was used to assess the HRQOL among CCA patients. It was translated into a Thai-language version by Ratanatharathorn and colleagues (2001). Cella and colleagues (1993) developed FACT-G to measure HRQOL in cancer patients. FACT-G is a widely used measure of HRQOL in cancer patients (Webster, Cella, and Yost, 2003). This measurement was designed for patient self-administration and self-interview. FACT- G (version 4) consisted of 27 items, which were divided into four subscales: 1) physical well-being (PWB) (7 items), 2) social/family well-being (SWB) (7 items), 3) emotional well-being (EWB) (6 items), and 4) functional well-being (FWB) (7 items).

Scoring

Respondents rated all items using a 5-point rating scale ranging from 0 to 4, with the score of 0 point meaning not at all, 1 meaning a little bit, 2 meaning somewhat, 3 meaning quite a bit, and 4 meaning very much. All negative items were reversed scored before calculating the total score. All subscale items were summed to obtain a total score. Possible scores ranged from 0 point to 108 points, with a higher score indicating better HRQOL. HRQOL was categorized into three levels (low, moderate, and high) by employing the range between the minimum and maximum total scores of HRQOL and dividing it by three.

Total scores of FACT-G	**Interpretation**
0 – 35 points	low
36 – 71 points	moderate
72 – 108 points	high

Validity and reliability

Initially, FACT-G was developed with 135 advanced cancer patients, and then it was validated on a second sample of 630 patients with a variety of cancers at different stages. FACT-G was able to distinguish between stages I, II, III, and IV cancer ($p < .05$). Concurrent validity was supported by strong Pearson’s correlations with the Functional Living Index-Cancer (.79) and the patient-completed version of the Quality of life Index (.74) (Cella et al., 1993). FACT-G was translated into more than 45 languages, and psychometric properties have been reported in numerous studies worldwide (FACIT.org, 2008).

FACT-G (Thai version) was reported reliable with Cronbach's alpha ranging from .75 to .90 (Ratanatharathorn et al., 2001). Many known groups and factor analyses have confirmed the construct validity of the questionnaire (Ratanatharathorn et al., 2001). Furthermore, FACT-G (Thai version) had acceptable psychometric properties in low-literature cancer patients (Pratheepawanit et al., 2005). The instrument could be easily completed in within 15 to 20 minutes, usually without assistance (Ratanatharathorn et al., 2001). FACT-G (Thai version) had been used with a variety of cancer patients who suffered from pain (Thienthong, et al., 2006), breast cancer (Kanyarat Raethai, 2006), lung cancer (Jirawan Santisevee, 2008), and head and neck cancer (Detprapon et al., 2009).

In the current study, Cronbach's alpha showed that the reliability of FACT-G when used with 30 patients with CCA was .90 and when tested in 260 CCA patients was .89.

Protection of the rights of human subjects

Prior to data collection, approval was obtained from the Ethics Committee for Human Research of Khon Kaen University and Khon Kaen Hospital (see Appendix F). The participants were informed of the purpose of the study and their rights to decline participation. The participants were also informed that if they decided to participate in the study, during the participation, they could express doubt about some questions or refuse to answer any of the questions. In addition, the participants were told that they were able to withdraw from the study at any time if they wished and their decision would not affect the treatments or services they would receive from healthcare providers at the hospitals. If the participants felt uncomfortable while filling out the questionnaires, the researcher would stop the interviews immediately and provide psychological support. The participants were assured that their names and addresses would be kept strictly confidential and would not be reported with the study findings. Instead, a code number would be used to ensure confidentiality. The participants were also assured that the study data collected from them would be stored in a secure place and would not be accessible to any other person without their permission. Finally, the researcher explained that there was no harm to the participants in this study and it would take approximate 30 to 45 minutes to complete all the questionnaires, with the researcher being readily available by mobile phone for all participants to reach if they needed to ask any questions about the study.

Pilot study

The purposes of this pilot study were to assess the feasibility of use of the proposed instruments, to assess psychometric properties, and to evaluate the appropriateness of data collection procedures. Additionally, the pilot study helped verify the culturally equivalent translation of the MUIS-C instrument. It was carried out at the surgery outpatient department at Srinagarind Hospital and Khon Kaen Hospital in July 2009.

The pilot study was conducted after permission was granted by the directors of Srinagarind Hospital and Khon Kaen Hospital. The researcher made appointments to meet the nurses and the doctors of each surgery outpatient department. At the meeting, the investigator introduced herself and informed the healthcare professionals of the objective of this study. Then, the researcher asked for their cooperation and collaborated with the nurses to select the study participants.

The participants were CCA patients who met the inclusion criteria. Convenience sampling was employed to recruit a sample of 15 CCA patients from each setting. After the participants were identified, the researcher explained the objective of the study. They were informed of their rights to decide to participate or refuse to participate in the study. If the participants agreed to participate in the pilot study, they would be asked to sign a consent form. Then, the participants were asked to complete the questionnaire and to evaluate the clarity and appropriateness of the questions. The researcher recorded the time spent on completion of the questionnaire, administration issues associated with the questionnaire, and suggested improvements. The participants received a cloth bag as a token of appreciation for their participation.

Besides, the MMSAS, MUIS-C, SSQ, JCS, and FACT-G instruments were examined for internal consistency using the Cronbach's alpha reliability coefficient. The reliability coefficients of all instruments are shown in Table 3.2. Although the Cronbach's alpha coefficient of some subscales were less than .70, the reliability of the overall scales ranged from .82 to .91. The increasing value of alpha was partially dependent upon the number of items in the scale. It should be noted that this has diminishing returns (Gliem and Gliem, 2003). On the overall, the measurements had acceptable psychometric properties. The results of this pilot study showed that the participants understood the items of all the questionnaires. The interview took about

30-45 minutes to complete the all instruments. Thus, these instruments were considered appropriate for CCA patients.

Table 3.1: Summary detail of the instruments used in this study

Variables	Instruments	Type of Instrument		Validity		Reliability (Cronbach' s alpha coefficient)		
		Original	Modified from	Original	This study	Original and previous study	This study	
							Pilot (n=30)	Main (n=260)
Symptoms	Modified Memorial Symptoms Assessment Scale (MMSAS)	-	Memorial Symptoms Assessments Scale (MSAS) (Portenoy,1994) by researcher	Convergent and discriminant construct (Portenoy,1994)	Face validity, and construct validity	.58-.88 (Portenoy,1994) Test-retest .82-.88 (Suwisth et al., 2008)	.91	.87
Uncertainty	Mishel's Uncertainty in Illness Scale: Community Form (MUIS-C)	/	-	Content validity, Convergent and discriminant construct, factor analysis (Mishel, 1997b)	-	.74-.92(Mishel, 1997b), .82 (Satawaja et al., 2002), .90 (Detprapon et al., 2009)	.82	.82
Social support	Social Support Questionnaire (SSQ)	/	SSQ (Phachehoen Shokebunroong, 1992) by Nuanchan Thaninsurat and colleagues (2001)	Content validity, (Nuanchan Thaninsurat et al., 2001)	-	.77 (Nuanchan Thaninsurat et al., 2001)	.83	.80
Coping	Jalowiec coping scale (JCS),Thai version (Paiporn Satiea, 2001)	/	-	Content validity, (Paiporn Satiea, 2001)	-	.95 (Jalowiec, 1988) .82 (Paiporn Satiea, 2001)	.85	.80
HRQOL	Functional Assessment of Cancer Therapy General (FACT-G) Thai version (Ratanatharathorn et al, 2001)	/	-	Concurrent validity, construct validity by factor analysis	-	.75-.90 (Ratanatharathorn et al, 2001)	.90	.89

Table 3.2: Psychometric properties of the instruments used in the pilot study (n = 30) and the main study (n = 260)

Instruments	Items	Cronbach's alpha coefficient	
		Pilot study (n = 30)	Main study (n = 260)
The Modified Memorial Symptoms Assessment (MMSAS)	**30**	**.91**	**.87**
Symptom frequency	10	.68	.62
Symptom severity	10	.73	.62
Symptom distress	10	.75	.64
Mishel's Uncertainty in Illness Scale: Community Form (MUIS-C)	**23**	**.82**	**.82**
Social Support Questionnaire (SSQ)	**25**	**.83**	**.80**
Emotional support	7	.63	.76
Appraisal support	5	.66	.64
Informational support	4	.58	.59
Instrumental support	9	.70	.79
Jalowiec coping scale (JCS)	**36**	**.85**	**.80**
Emotive coping	9	.66	.75
Confrontive coping	13	.82	.91
Palliative coping	14	.53	.72
Functional Assessment of Cancer Therapy General (FACT-G)	**27**	**.90**	**.89**
Physical well-being	7	.88	.82
Social/Family well-being	7	.75	.76
Emotional well-being	6	.76	.83
Functional well-being	7	.78	.82

Data collection

Data collection was conducted after approval was granted by the Ethics Committee for Human Research of Khon Kaen University and Khon Kaen Hospital. It was carried out from August to December 2009. The steps involved in data collection were as follows:

1. A letter asking for permission to collect data from the Faculty of Nursing,

Chulalongkorn University, was sent to the directors of Srinagarind Hospital and Khon Kaen Hospitals.

2. After permission was granted (see Appendix G), the researcher explained and clarified the study objective, data collection procedures, and expected outcomes and benefits of the study to the doctors and nurses of each surgical outpatient department in the selected hospitals.

3. The researcher asked for cooperation from doctors and nurses to select participants who met the inclusion criteria. Nurses introduced the researcher and/or the research assistants to potential participants.

4. Two nurses having experiences in taking care of CCA patients were hired as research assistants. The researcher trained and tested the research assistants to make sure of their understanding in using the questionnaires. Research assistants were trained to interview the participants by reading the questionnaires word by word. During the interviews, the participants received a description of the questionnaires from the interviewers. If the participants did not understand the questions or answer choices, the interviewers repeated those questions as well as the response options until the participants were able to respond to the questionnaire items by themselves. The interviewers were not allowed to help the participants select the answers. If the participants could not answer the questions, those questions must be treated as missing data.

5. The participants who met the inclusion criteria were invited to participate in this study. They were informed of the study objective, the process of data collection, and their rights to decide to participate or refuse to participate in the study. The participants who agreed to take part in this study were asked to sign an informed

consent form.

6. While waiting to see the doctor, the participants were interviewed using the demographic characteristics questionnaire, MMSAS, MUIS-C, SSQ, JCS, and FACT-G in a private place. This interview took approximately 30 to 45 minutes to complete.

7. After finishing each interview, the researcher and research assistants examined the questionnaires to ensure completeness of the data.

Data analysis

As for preparation of the analysis process, the researcher checked and cleaned the data. The Statistical Package for Social Science (SPSS) program version 11.0 was used to analyze data and provide descriptive statistics. Linear Structural Relationship (LISREL) version 8.72 was employed for the path analysis. An alpha level of .05 was set as the accepted level of significance for this study. The steps involved in data analysis were as follows:

1. All data were double-checked to confirm the accuracy of the data file. The researcher used a frequency table to verify incorrectly keyed category variables. In addition, a summary of descriptive statistics was used to help check the range of variables for incorrectly keyed category numeric values, number of sample, mean, median, and maximum and minimum values.

2. Missing data and outlier were investigated. A total of 270 questionnaires were selected for accuracy data check. The researcher found that there were eight questionnaires with missing values (2.96%). Although the SPSS and other programs provided many ways of dealing with missing data such as listwise deletion, pairwise deletion, mean replacement, regression replacement, pattern matching, and maximum

likelihood, it has a separate statistical product with more complicated interpretation. Meyers and colleagues (2006) have suggested that if the remaining sample size is sufficient and so long as the respondents with missing data do not differ in any way from those with complete data, the researcher could exclude the case of missing data from all analyses. Thus, the cases of missing values were removed from the participants in this study.

As for outliers, the data set must be checked for both univariate and multivariate outliers. A box plot was used to detect a univariate outlier. In this current study, no case had a value of outlier in each variable. For multivariate analysis, the outliers were detected by Mahalanobis distance. Mahalanobis distance is distributed as a Chi-square (χ^2) variable with degree of freedom (df) equal to the number of variables (Tabachnick and Fidell, 2007). In the current study, critical χ^2 at alpha level .001 for 4 df was 13.30. Any case with a value greater than 13.30 was then a multivariate outlier. Two cases were detected as multivariate outliers (Mahalanobis distance value = 15.69 and 17.49, respectively) and were therefore excluded from this study. As a result, a total sample of 260 CCA patients remained in the data analysis.

3. Descriptive statistics, including frequencies, means, and standard deviation were used to describe the demographic data and to examine the distribution of demographic and other major variables in the study.

4. The measurement models were tested for construct validity by confirmatory factor analysis.

5. Path analysis was used to analyze the hypothesized model because it can assess the direct effects and indirect effects of some variables that have been theorized to be the causes of other variables (Meyers et al., 2006). The statistical

assumptions underlying path analysis including normality of distribution, linearity of relationships, homoscedasticity, and multicollinearity were examined. Pearson's Product Moment correlations were used to test for bivariate relationships among pairs of variables and to assess multicollinearity among the independent variables. Multiple regression analyses were used to compute a variance inflation factor and tolerance to examine multicollinearity among the major variables.

6. The hypothesized path model was tested and modified for best fit and parsimony. LISREL was used to estimate the parameters of the path model associated with the study's specific aims. The overall model-fit-index was examined to determine how well the hypothesized model fit the existing data. According to Schermelleh-Engel and colleagues (2003), statistical criteria could be utilized to evaluate the overall model-fit-index, so the researcher selected some statistical criteria to evaluate the hypothesize model as follows:

6.1 The first set of goodness of fit statistics was the Chi-square (χ^2) value. The χ^2 test statistics was used in hypothesis testing to evaluate the appropriateness of the hypothesized model. χ^2 is non-significant of a level with a corresponding p value > .05, and preferably a value close to 1.00 is recommended for the hypothesized model that fit the data. However, χ^2 value is dependent on model complexity and sample size. The χ^2 value of a more complex, highly parameterized model tends to be smaller than that of simpler models because of the reduced degree of freedom (df). When the sample size and a constant number of df are larger, the χ^2 value increases. For a good model fit, the ratio χ^2/df should be as small as possible. A ratio between 2 and 3 is indicative of a "good" or "acceptable" data-model fit, respectively. Thus, the first set criteria for testing a goodness of fit statistics is that χ^2 is non-significant ($p > .05$), and χ^2/df should be less than 2.

6.2 The second set of goodness of fit statistics is based on the difference between the sample covariance matrix and the model implied covariance matrix. The following indices are descriptive measures of overall model fit: Root Mean Square Error of Approximation (RMSEA), Root Mean Square Residual (RMR), and Standardized Root Mean Square Residual (SRMR). RMSEA values $\leq .05$ can be considered as a good fit model, while values between .05 and .08 as an adequate fit model. SRMR values should be less than .05 for a good fit model. Additionally, the difference between the sample covariance matrix and the fitted matrix divided by the large-sample error of the residual is called a standardized residual (Jöreskog and Sörbom, 1996). For a good fit model, the absolute value of smallest and largest standardized residual should be no more than 2.

6.3 The last goodness of fit statistics is the comparison between the fit of a model of interest and the fit of some baseline model. The goodness-of-fit index (GFI) is a measure of the proportion of all variances and covariance accounted for by the model and compared the squared residuals from prediction with the actual data. It represents the overall degree of fit ranging from 0 (poor fit) to 1 (perfect fit). GFI $\geq .95$ is indicative of a good fit relative to the baseline model, while values greater than .90 are usually interpreted as indicating an acceptable fit. The adjusted goodness of fit index (AGFI) is an extension of GFI that is adjusted by the degree of freedom for the proposed model to the degree of freedom for the null model. AGFI greater than .90 is indicative of a good fit relative to the baseline model, while values greater than .85 may be considered as an acceptable fit. Thus, the last criteria for testing a goodness of fit statistics are GFI ≥ .95 and AGFI ≥ .90.

7. In the present study, once it was determined that the hypothesized model fit the data, path coefficient and R^2 were estimated and the effects of the independent variables (symptoms, social support, uncertainty, and coping) on the dependent variable (HRQOL) were determined to answer the research questions and test the hypotheses. The goodness-fit-indices were used to determine whether the model adequately fit the data.

CHAPTER IV

RESULTS

This chapter presents the findings of the study. The findings regarding demographic characteristics of the participants and the five major study variables derived from descriptive statistical analysis are presented. The preliminary analysis and analysis of the hypothesized model are also displayed.

Characteristics of the study participants

Demographic characteristics of the participants

A total of 260 participants who were CCA patients were included in this analysis. The findings revealed that the mean age of the participants was 59.58 years old (SD = 9.11, range = 30 - 89). They were predominantly male (70%), married (84.2%), and completed primary/elementary education (73.1%). Moreover, almost two-thirds of the participants (65%) worked in the field of agriculture. In addition, close to half of the participants (46.5%) had a monthly family income of less than 5,000 baht (1 US dollar = 31 baht), but most of the participants (61.9%) had no financial problems. Finally, approximately about three quarters of the participants (70.8%) used universal healthcare coverage. The findings regarding demographic characteristics of the study participants are summarized in Table 4.1 below.

Table 4.1: Demographic characteristics of the study participants (n = 260)

Characteristics	Number	Percentage
Age (years)		
30-44	10	3.8
45-59	122	46.9
60-74	113	43.5
75 and over	15	5.8
Gender		
Male	182	70.0
Female	78	30.0
Marital status		
Marriage	219	84.2
Widowed//separated/divorced	32	12.3
Single	9	3.5
Education		
None	4	1.5
Primary/elementary education	190	73.1
Secondary education	10	3.9
High school	39	15.0
Diploma/certificate	4	1.5
Bachelor’s degree or higher	13	5.0
Occupation		
Agriculturist	169	65.0
Government official	27	10.4
Employee	22	8.5
Unemployed	21	8.1
Pensioned government official	12	4.6
Businessperson	9	3.5
Family income/month (Baht)		
1,000 - 4,999	121	46.5
5,000 - 9,999	64	24.6
10,000 - 14,999	27	10.4
15,000 - 19,999	8	3.1
20,000 or more	40	15.4
Financial problems		
No	161	61.9
Yes	99	38.1
Medical payment		
Universal healthcare coverage	184	70.8
Government reimbursement	67	25.8
Social security service	7	2.7
Self-support	2	0.8

Regarding medical history, close to two-thirds of the participants (64.2 %) had been diagnosed with CCA from one to three months prior and the duration since their cancer diagnosis ranged from one to 72 months. About a quarter (27.7%) had been treated using an operation followed by palliative treatment (23.8%). Almost three-fourths of the participants (73.5%) had no reported co-morbidities, and approximately half of the participants (45.8%) had some symptoms and normal activities but they needed to have a bed rest for less than half of the day (see Table 4.2).

Table 4.2: Medical history of the study participants (n = 260)

Medical history	Number	Percentage
Time after diagnosis with CCA (months) (Mean = 9.01, SD = 9.01, Range = 1-72)		
1-3	167	64.2
4-6	44	16.9
7-12	29	11.2
13-24	12	4.6
More than 24	8	3.1
Type of post-diagnosis treatment		
Surgery	72	27.7
Palliative care	62	23.8
Biliary stent	38	14.6
Chemotherapy	10	3.8
Surgery & chemotherapy	34	13.1
Surgery & chemotherapy & biliary stent	43	16.5
Surgery, Radiation, & chemotherapy	1	0.4
Type of treatment by the time of data collection		
Follow-up before operation	56	21.5
Follow-up after operation	96	36.9
Palliative care	60	23.1
Chemotherapy	29	11.2
Biliary stent	19	7.3
Chronic diseases		
No	191	73.5
Yes	69	26.5
Performance Status Rating		
have some symptoms and normal activities	103	39.6
have some symptoms, normal activities but need bed rest less than half of the day	119	45.8
have some symptoms, normal activities but need bed rest more than half of the day	31	11.9
have some symptoms and must have bed rest all the time	7	2.7

Characteristics of the study variables

The five major variables in the currents study include HRQOL, symptoms, social support, uncertainty, and coping. The detail regarding characteristics of each of the study variable is presented as follows:

HRQOL

The total scores of the HRQOL ranged from 42 to 101 points with a mean of 73.83 (SD = 13.19). The HRQOL scores had a negative skewness value (-.29), thus indicating that most of the participants had scores of HRQOL higher than the mean score. The kurtosis value of HRQOL was also a negative value (-.36), thus suggesting that the HRQOL scores were shaped like a flattened curve. Based on the mean score, skewness, and the kurtosis value, it could be concluded that the participants as a whole had a high HRQOL (see Table 4.3).

Because each dimension of HRQOL varied in terms of the number of items, this study applied the average of the mean scores to compare them. The results revealed that the dimension with the highest well-being score was the emotion well-being dimension (average mean score = 2.94), followed by social/family well-being dimension (average mean score = 2.91), physical well-being dimension (average mean score = 2.73), and functional well-being dimension (average mean score = 2.38), respectively.

Table 4.3: Possible range, actual range, mean, SD, skewness, kurtosis, and the interpretation of HRQOL (n = 260)

Variable	Possible range	Actual range	Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Interpretation
HRQOL	**0-108**	**42-101**	**73.83**	**13.19**	**-.29(-1.90)**	**-.36(-1.34)**	**High**
Physical well-being	0-28	2-28	19.13	5.48	-.55(-3.46)	-.29(-1.00)	
Social/ Family well-being	0-28	7-28	20.38	3.27	-.59(-3.73)	1.53(3.31)	
Emotional Well-being	0-24	5-24	17.65	4.42	-.68(-4.14)	-.18(-.54)	
Functional well-being	0-28	3-28	16.66	4.46	-.50(-3.22)	.25(.90)	

Symptoms

The total scores of symptoms (TSYMS) ranged from 3 to 74 points with a mean of 33.32 (SD = 16.13). The skewness value of TSYMS was moderately positive (.36), thus indicating that most participants had scores of TSYMS lower than the mean score. The kurtosis value of TSYMS was a negative value (-.30), thus suggesting that the TSYMS scores were shaped like a flattened curve. The findings regarding the mean score and skewness value indicated that most participants had a low level of symptoms (see Table 4.4).

Table 4.4: Possible range, actual range, mean, SD, skewness, kurtosis, and the interpretation of symptoms (n = 260)

Variable	**Possible range**	**Actual range**	**Mean**	**SD**	**Skewness (Z value)**	**Kurtosis (Z value)**	**Interpretation**
Symptoms	**2-120**	**3-74**	**33.32**	**16.13**	**.36(2.37)**	**-.30(-1.06)**	**Low**
Frequency	1-40	1-31	12.70	6.06	.30(2.01)	-.15(-.43)	
Severity	1-40	1-25	10.53	5.24	.40(2.61)	-.32(-1.14)	
Distress	0-40	0-25	10.08	5.50	.50(3.21)	-.31(-1.10)	

Regarding the occurring of symptoms, the study participants had reported less than one symptom. Five symptoms that were most frequently reported were fatigue (87.3%), anxiety (87.3%), abdominal pain or dyspepsia (76.9%), lack of appetite (63.1%), and difficulty sleeping (51.2%). When considering the five symptoms that mostly disturbed the participants, it was found that they were abdominal pain or dyspepsia (48.8%), fatigue (15%), lack of appetite (10%), itching (9.6%), and anxiety (6.2%), respectively (see Appendix J).

Social support

The total scores of social support (TOTALS) ranged from 80 to 118 points with a mean of 99.47 (SD = 8.41). The TOTALS scores were negatively skewed (-.08), thus indicating that most participants had scores of TOTALS slightly higher than the mean score. The kurtosis value of TOTALS was a negative value (-.18), thus suggesting that the TOTALS scores were shaped like a slightly flattened curve. Based on the mean score and skewness value, it could be concluded that most participants had a high level of social support (see Table 4.5). Regarding the average of the mean score, the highest support was emotional support (average mean score = 4.41), followed by instrument support (average mean score = 4.15), appraisal support (average mean score = 3.60), and information support (average mean score = 3.29), respectively.

Uncertainty

The score of uncertainty ranged from 36 to 90 points with a mean of 63.39 (SD = 11.34). The skewness value was a slightly negative value (-.15), thus indicating that most participants had scores of uncertainty higher than the mean score. The kurtosis value of uncertainty was a negative value (-.57), thus suggesting that the uncertainty scores were shaped like a slightly flattened curve. The findings from the mean score and skewness value indicated that most participants had a moderate level of uncertainty (see Table 4.5).

Table 4.5: Possible range, actual range, mean, SD, skewness, kurtosis, and the interpretation of social support and uncertainty (n = 260)

Variable	Possible range	Actual range	Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Interpretation
Social S. (TOTALS)	**25-125**	**80-118**	**99.47**	**8.41**	**-.08(-.51)**	**-.18(-.52)**	**High**
Emotional s.	7-35	23-35	30.90	2.56	.09(.63)	-.24(-.79)	
Appraisal s.	5-25	8-25	18.01	3.23	-.58(-3.64)	.51(1.57)	
Information s.	4-20	6-20	13.18	2.61	-.25(-1.69)	.11(.38)	
Instrumental s.	9-45	19-45	37.37	4.23	-.81(-4.88)	2.25(4.13)	
Uncertainty	**23-115**	**36-90**	**65.39**	**11.34**	**-.15(-1.03)**	**-.57(-2.54)**	**Moderate**

Coping

The total scores of coping (TOTALC) ranged from 55 to 118 points with a mean of 87.21 (SD = 13.89). The TOTALC had a slightly positive skewness value (.01), thus indicating that most participants had TOTALC scores lower than the mean score of TOTALC. The kurtosis value of TOTALC was a negative value (-.52), thus suggesting that the TOTALC scores were shaped like a moderately flattened curve. Findings regarding the mean score and skewness value indicated that most participants made moderate use of coping strategies (see Table 4.6). Based on the relative score, the participants used palliative coping (relative score = .38) more than confrontive coping (average mean score = .36) and emotive coping (average mean score = .26). The top five coping strategies which the participants used were not worrying about it (97.7%), settling for the next best thing to what you really want (97.7 %), accepting the situation as it is (96.5%), hoping that things will get better (96.2%), and going to sleep figuring things will look better in the morning (96.2%), (see Appendix K).

Table 4.6: Possible range, actual range, mean, SD, skewness, kurtosis, and the interpretation of coping (n = 260)

Variable	Possible range	Actual range	Mean	SD	Skewness (Z value)	Kurtosis (Z value)	Interpretation
Coping (TOTALC)	**36-180**	**55-118**	**87.21**	**13.89**	**.01(0.07)**	**-.52(-2.23)**	**Moderate**
Emotive c.	9-45	9-36	16.77	5.60	.70(4.29)	.35(1.16)	
Confrontive c.	13-65	13-59	33.10	10.29	.17(1.13)	-.61(-2.80)	
Palliative c.	14-70	15-53	37.34	6.84	-.18(-1.18)	.24(0.88)	

Preliminary Analysis

Before future analysis with path analysis was conducted, normality, linearity, homoscedasticity, and muticollinearity were tested in order to ensure that there was no violation of the underlying assumption. The results of normality, linearity, homoscedasticity, and multicollinearity testing are presented.

Normality testing

In the current study, descriptive statistics including mean, standard deviation, skewness, and kurtosis were used to test normality of variables. The skewness of major five variables ranged from -.29 to .36, and the kurtosis of variables ranged from -.57 to -.18 (see Tables 4.3 - 4.6). In fact, an absolute value of 2.0 for skewness is considered a departure from normality (Li et al., 1998), and a value of univariate skewness greater than ± 3.0 indicates extreme skewness (Kline, 1998). According to Hair and colleagues (2006), the z value of skeweness and kurtosis not exceeding ± 1.96 which corresponds to a .05 level or ± 2.58 at the .01 probability level reflects a normal distribution. As for the five major variables, the z value of skewness ranged from -1.90 to 2.37 and kurtosis ranged from -2.54 to -0.52 (see Tables 4.3 - 4.6) that were within the normal curve. Additionally, the Kolmogorov-Smirnov test and Q-Q plot indicated that the five major variables were normally distributed (see Appendix L1).

Linearity Testing

Multiple regression assumes that there is a linear relationship between the independent variables and the dependent variable. The linearity testing can be checked by the residual plot which is a visual examination of the scatter plot graph between the standardized residual (y-axis) versus the predict values (x-axis). Nonlinearity is indicated when most of the residuals are above the zero line on the plot at some predicted values and below the zero line at other predict values (Tabachnick and Fidell, 2007). In other words, the assumption of linearity is met when the standardized residual values are randomly around the horizontal line. In the current study, the scatter plot between independent and dependent variables showed such a linear relationship (see Appendix L2).

Homoscedasticity testing

Homoscedasticity means that the variance of error is the same across all levels of the independent variables (Osborne and Waters, 2002). This assumption can be tested by a visual examination of the plot of the regression of the standardized predicted dependent variable against the regression standardized residual. Homoscedastisticity is indicated when the residual plots are randomly scattered around zero (in the horizontal line) (Osborne and Waters, 2002). In the current study, the scatter plot of residuals showed the results from homoscedastic data (see Appendix L3).

Multicollinearity testing

Two common criteria can be used to examine multicollinearity: 1) Pearson’s correlation coefficients and 2) tolerance values and variance inflation factor (VIF). The correlation of two variables that does not exceed ± .9 indicates that there is no multicollinearity (Tabachnick and Fidell, 2006). In the current study, the correlation coefficients among the five major variables ranged from -.80 to .53. Thus, these correlation coefficients indicated no multicollimearity (see Table 4.7).

In fact, the tolerance measures of multicollinearity among the independent variables (values ranging from 0 to 1) and the tolerance value that approaches zero indicates multicollinearity (Mertler and Vannatta, 2002). It is worth noting that the values of VIF that are greater than 10 indicate a cause of concern (Mertler and Vannatta, 2002). In the present study, the results of the multiple regression analysis indicated that the tolerance ranged from .66 to .95 (not approaching 0) and VIF ranged from 1.05 to 1.51 (not greater than 10) (see Appendix L4). Thus, these results confirmed no violation for multicollinearity.

Table 4.7: Bivariate relationships among symptoms, social support, uncertainty, coping, and HRQOL

Variables	Symptoms	Social support	Uncertainty	Coping	HRQOL
Symptoms	1.00				
Social support	-.12	1.00			
Uncertainty	.53**	-.27**	1.00		
Coping	-.14*	.16*	-.19**	1.00	
HRQOL	-.80**	.25**	-.59**	.19**	1.00

* p <.05, ** p<.01

Findings of research questions and hypothesis testing

The findings that answered the research questions and the results of the testing of the hypothesized model are described below:

Research question 1: What are the relationships among symptoms, social support, uncertainty, coping, and HRQOL in CCA patients?

The relationships among five major variables (symptoms, social support, uncertainty, coping, and HRQOL)

Bivariate Pearson correlations were used to evaluate relationships among symptoms, social support, uncertainty, coping, and HRQOL (see Table 4.7). The magnitude of relationships was determined by the following criteria: r <.30 = weak or low relationship, .30 ≥ r ≤ .50 = moderate relationship, and r >.50 = strong or high relationship (Burn and Grove, 2005). The results showed that a low positive correlation existed between social support and HRQOL (r = .25, p < .01) and between coping and HRQOL (r = 19, p < .01). In addition, a high negative correlation existed between symptoms and HRQOL (r = -.80, p < .01) and between uncertainty and

HRQOL ($r = -.59$, $p < .01$). Additionally, symptoms had a high positive correlation with uncertainty ($r = 53$, $p < .01$) and a low negative correlation with coping ($r = -.14$, $p < .05$). Furthermore, social support had a low negative correlation with uncertainty ($r = -.27$, $p < .01$) and a low positive correlation with coping ($r = .16$, $p < .05$). Uncertainty had a low negative correlation with coping ($r = -.19$, $p < .01$). However, the results also revealed that there was no significant correlation between social support and symptoms ($r = -.12$, $p > .05$).

Research question 2: Does the hypothesized model explain the HRQOL of CCA patients, including symptoms, social support, uncertainty, and coping, and does it adequately fit the data?

1. Hypothesis testing

1.1 Measurement model testing

Before testing the hypothesized model, a factor analysis was conducted to examine factor loading for each item and the goodness-of-fit indices of the measurement model and the data. In this study, three measure models were tested including social support, coping, and HRQOL (see Appendix N). The measure model of symptoms was omitted in the testing because each of the dimensions had a high mutually correlation ($r = .87$-$.89$) (see Appendix M).

The results of confirmatory factor analysis (CFA) revealed that the three measurement models had good overall model fit. The second-order CFA showed that all measurements had low Chi-square values resulting in a non-significant difference level of 0.05. The χ^2/df ratio was less than 3.00, with both GFI and AGFI values close to 1.00. The RMSEA values ranged from .00 to .02, indicating a validity of measurement constructs (See Table 4.8).

Table 4.8: Goodness of fit statistics of the measurement models

Measurement	χ^2	**df**	χ^2**/df**	**p-value**	**GFI**	**AGFI**	**RMSEA**
Social support	250.66	235	1.07	.23	.93	.90	.02
Coping	318.59	428	0.74	.99	.94	.90	.00
HRQOL	224.18	253	0.89	.90	.94	.91	.00

Abbreviations: χ^2, Chi-square; df, degree of freedom; RMSEA, Root Mean Square Error of Approximation; GFI, Goodness of Fit Index; AGFI, Adjust Goodness of Fit Index

After the overall measurement model had been accepted, the results of the loading with t-values and construct validity were examined. In general, based on an accepted level of .05, t-value test statistics needs to be more than ± 1.96 before the hypothesis could be rejected. In this study, the results revealed that most of the dimensions of the measurement had significantly low to high parameter estimates, which were related to their specific constructs and which validated the relationships among the observed variables and their constructs. However, there was only one parameter estimate (social/family well-being) that did not have a valid relationship with the observed variables and their constructs. Furthermore, the squared multiple correlations (R^2) for the observed variables ranged from .02 to .68. Besides, the R^2 of social well-being (.02) and instrument social support (.09) were rather low, thus indicating that reliability based on a confirmatory factor analysis did not yield support for the measure (see Table 4.9).

Table 4.9: Factor loading and reliability of measurement models

Measurement	Standardized Factor Loading	t-value	SE	Factor Score	R^2
Social support					
- Emotional s.	.32	2.63	.12	.32	.10
7 indicators	.16-.83	2.15-3.66	.02-.14	-.06-.70	.17-.59
- Appraisal s.	.81	5.93	.14	.81	.66
5 indicators	.27-.77	3.57-8.36	.07-.08	.03-.44	.07-.59
- Information s.	.70	3.90	.18	.70	.48
4 indicators	.21-.83	2.86-7.91	.05-.17	.05-.75	.04-.69
- Instrument s.	.31	3.33	.09	.31	.09
9 indicators	.31-.92	4.16-6.14	.02-.10	-.04-.90	.11-.85
Coping					
- Confrontive c.	.62	2.95	.21	.62	.38
13 indicators	.25-.92	3.86-4.82	.08-.24	-.06-.46	.06-.85
- Emotive c.	-.41	-3.36	.12	-.41	.16
9 indicators	.19-.73	2.51-10.84	.03-.13	-.04-.50	.06-.54
- Palliative c.	.38	3.49	.11	.38	.15
14 indicators	-.04-.82	-0.68-14.67	.05-.08	-.20-.23	.00-.67
HRQOL					
- Physical w.	.82	9.82	.08	.82	.68
7 indicators	.36-.85	6.62-11.04	.06-.08	.06-.29	.17-.60
- Soc/Family w.	.15	1.84	.08	.15	.02
7 indicators	.27-.52	3.89-6.33	.05-.11	-.14-.81	.10-.69
- Emotional w.	.78	9.13	.08	.78	.60
6 indicators	.33-.81	5.96-11.31	.06-.08	.04-.34	.15-.59
- Functional w.	.81	6.74	.12	.81	.61
7 indicators	.37-.80	5.68-16.24	.02-.10	-.10-.89	.17-.94

1.2 Model testing and modification

Although reliability and validity based on the confirmatory factor analysis did not yield support for most of the measurement, the classical approach testing of the reliable and validity provided adequate support for all measurements (see Table 3.2). Path analysis was conducted to test the proposed model of HRQOL.

1.2.1 Model identification

The hypothesized path model was drawn from UIT and empirical literature. LISREL statistics was used to test this path model. Identification path model is a crucial process before testing a model (Norris, 2005) because the computer program will run when the model is only over-identification. According to

Tabachnick and Fidell’s (2007), over-identification is one with more data points than free parameters. The number of data points is {p (p+1)}/2, where p equals the number of observed variables (Tabachnick and Fidell, 2007: 695). In the hypothesized model, there were five variables and 13 free parameters. The number of data points was 15 = {5(5+1)}/2. The hypothesized model had two fewer free parameters than data points. Thus, this model was over-identification which meant that it could be identified.

1.2.2 Model testing

From the hypothesized model, the exogenous variable was social support, while symptoms, uncertainty, coping, and HRQOL served as endogenous variables. The process of model testing is presented as follows:

In the initially hypothesized model (see Figure 4.1), the researcher did not constrain or fix any parameter. The results showed that the fit index statistics were within an acceptable range (see Table 4.10). Additionally, the largest (1.78) and smallest (-.83) standardized residuals were less than ± 3. The initially hypothesized model explained 69.4% (R^2 = .694) of the variance of HRQOL. However, this model indicated that social support had a non-significant direct effect (-0.12, p > .05) on symptoms and that coping had a non-significant direct effect (0. 04, p > .05) on HRQOL.

As regards model modification, the researcher divided the coping variable into three dimensions including emotional, confrontive, and palliative coping. This is because each dimension impacted HRQOL differently. HRQOL had a moderate negative relationship with emotive coping strategies (r = -.48, p < .01) and a moderate positive relationship with confrontive coping strategies (r = .44, p < .01) (see Appendix M). Nevertheless, palliative coping did not have a significant correlation with HRQOL (r = .11, p >.05) (see Appendix M). Thus, only emotive and confrontive coping were replaced in the modified model (see Figure 4.2). The modified modification did not achieve adequate fit (see Table 4.10). Based on theoretical rationale and feedback from modification indices, confrontive coping was removed from the model. This was because confrontive coping did not have an influence on HRQOL in the modified model. In addition, the modification index of path between symptoms and emotional coping was 34.42. The large modification index (more than 3.84) generally suggests a large improvement in model fit (Lei and Wu, 2007). For this reason, the researcher added the path from symptoms to emotive coping in the final model (see Figure 4.3). The decision to create the path from symptoms to emotive coping was supported by strong previous empirical evidence that cancer patients with higher symptom distress had higher frequency of use of emotive coping strategies (Ali and Khali, 1991; Kuo and Ma, 2002).

The final model explained 70% (R^2 = .70) of the variance of HRQOL. The fit index statistics were in the acceptable range more than the initially hypothesized model (see Table 4.10), and the largest (0.32) and smallest standardized residuals (-0.32) were less than ± 2. Although the path from social support to symptoms had a non-significant statistics, it had the right direction following the UIT. Byrne (1998) has noted that the substantive theoretical interest must be considered even though the statistics demonstrates a non-significant parameter. Therefore, the path from social support to symptoms was retained in the final model in this study. All of path coefficients are displayed in Table 4.11.

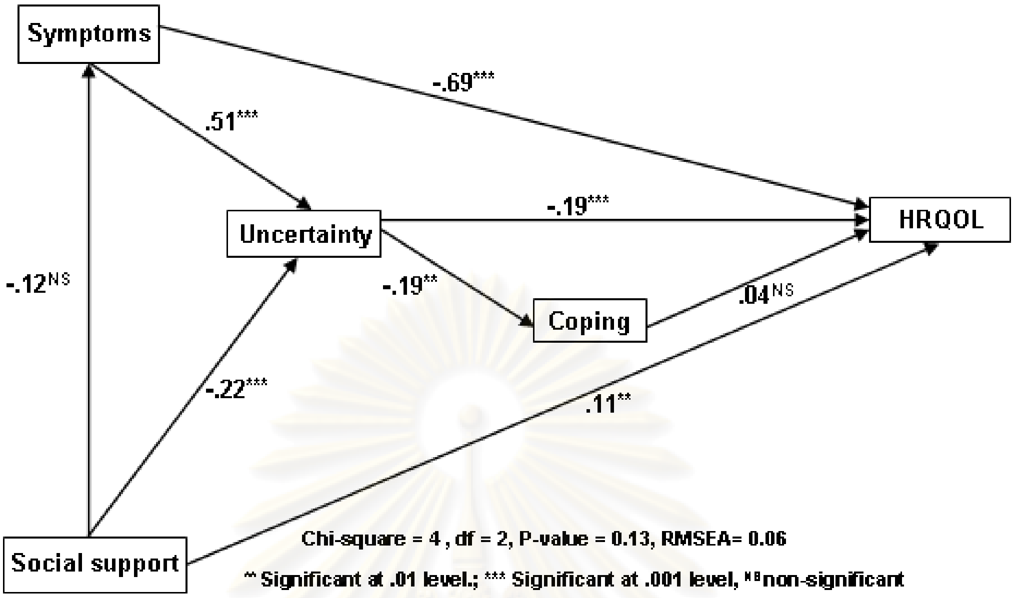


Figure 4.1: The initially hypothesized model of HRQOL in CCA patients

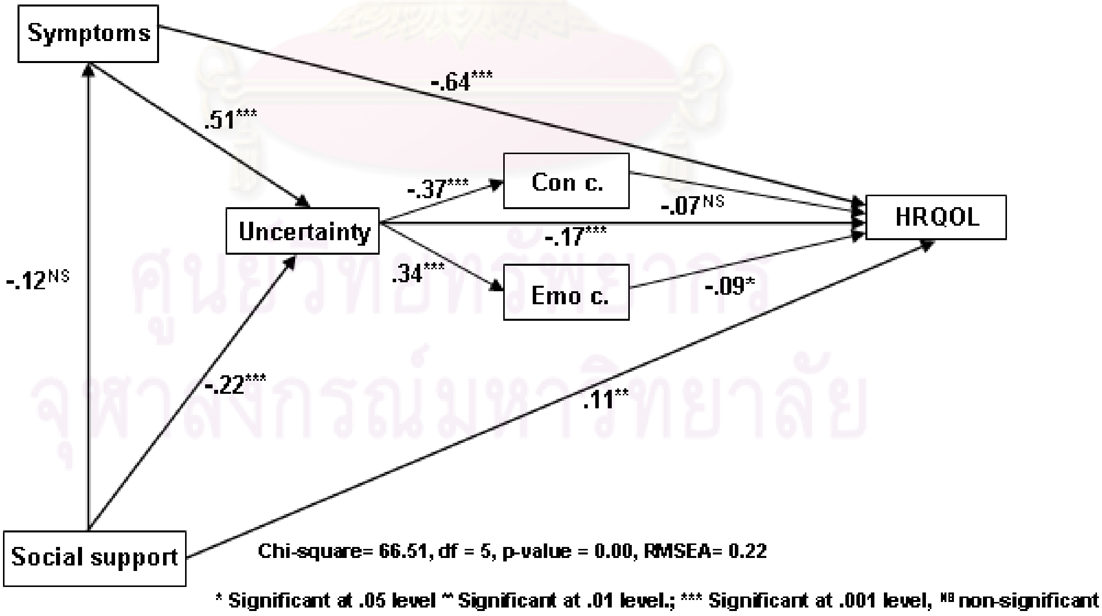
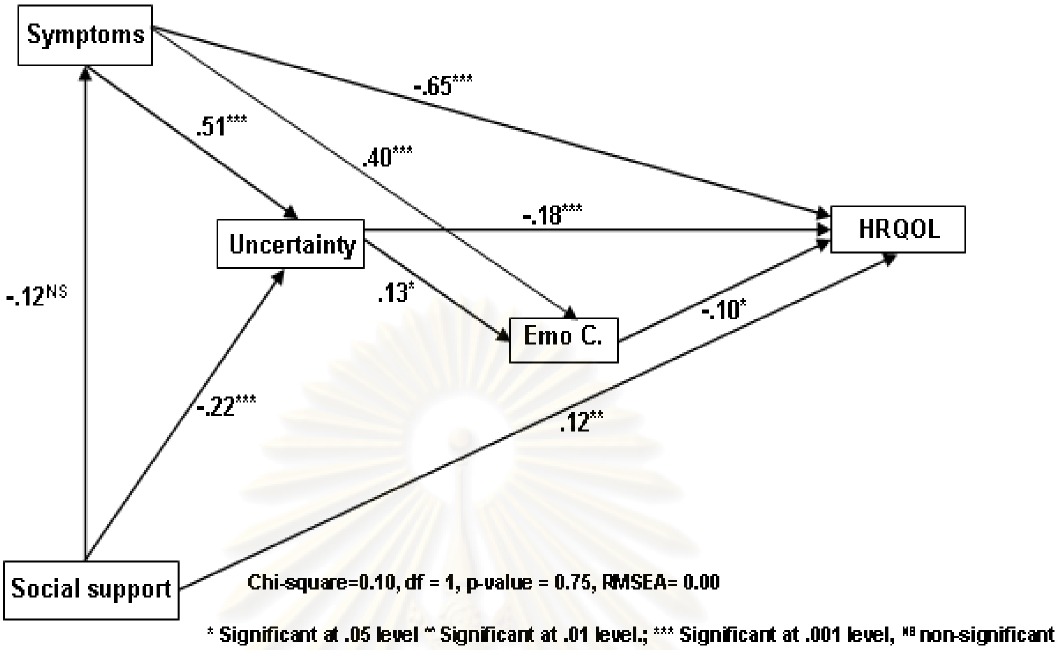


Figure 4.2: The modified model of HRQOL in CCA patients



Chi-square=0.10, df = 1, p-value = 0.75, RMSEA= 0.00

* Significant at .05 level ** Significant at .01 level.; *** Significant at .001 level, NS non-significant

Figure 4.3: The final model of HRQOL in CCA patients

Table 4.10: Comparison of the goodness of fit statistics among the initially hypothesized model, the modified model, and the final model of HRQOL in CCA patients

	Initial model	**Modified model**	**Final model**	**Goodness of Fit Statistics**
χ^2	4	66.51	0.10	non significant
p-value	.13	.00	.75	p >.05
χ^2/df	4/2=2	66.51/5=13.30	0.10/1=0.10	less than 2
RMSEA	.06	.22	.00	less than .08
GFI	.99	.92	1.00	more than .90
AGFI	.95	.70	1.00	more than .90
Smallest s.	-0.83	-7.28	-0.32	less than ± 2
Largest s.	1.78	7.70	0.32	
R^2	.694	.687	.701	

Abbreviations: χ^2, Chi-square; df, degree of freedom; RMSEA, Root Mean Square Error of Approximation; GFI, Goodness of Fit Index; AGFI, Adjust Goodness of Fit Index; Smallest s, Smallest standardized residual; Largest s, Largest standardized residual

Table 4.11: Standardized path coefficients, standard error (SE), and T-value of parameters of the final model of HRQOL in CCA patients (n = 260)

Path diagram	Standardized path coefficients	SE	T- value
Beta			
Symptoms → Uncertainty	.51	.04	9.90
Symptoms → Emo c.	.40	.02	6.30
Symptoms → HRQOL	-.65	.03	-15.02
Uncertainty → Emo c.	.13	.03	2.01
Uncertaint → HRQOL	-.18	.05	-4.20
Emo c. → HRQOL	-.10	.09	-2.48
Gamma			
Social → Symptoms	-.12	.12	-1.88
Social → Uncertainty	-.22	.07	-4.21
Social → HRQOL	.12	.06	3.22

The results of final model testing are summarized in accordance with the hypothesized model as follows (see Table 4.12):

1. Symptoms had a negative direct effect (-.65, p < .001) on HRQOL and an indirect effect (-.13, p < .001) on HRQOL through uncertainty and emotive coping. Therefore, this result supported the hypothesis model. A new path from symptoms to emotive coping was also found.

2. Social support had a positive direct effect (.12, p < .01) on HRQOL and an indirect effect (.13, p < .01) on HRQOL through uncertainty. Thus, this result supported the hypothesized model. However, social support had a non-significant direct effect (-.12, p > .05) on symptoms. Therefore, this result did not support the

hypothesized model, which indicated that social support should have an indirect effect on HRQOL through symptoms.

3. Uncertainty had a negative direct effect (-.18, p < .001) on HRQOL and non-significant indirect effect (-.01, p >.05) on HRQOL through emotive coping. The result did not support the hypothesized model, which indicated that uncertainty should have an indirect effect on HRQOL through coping.

4. Emotive coping had a significant negative direct effect (-.10, p < .05) on HRQOL. This result did not support the hypothesized model, which proposed that the total score of coping (emotive, confrontive, and palliative coping) should have a positive direct effect on HRQOL.

Summary

The descriptive statistic characteristics of the variables investigated in the current study have been explained. The preliminary analysis reported did not violate the assumption for the path analysis. The hypothesized path model of HRQOL in CCA patients was tested. It is noteworthy that the hypothesized model fit the empirical data of HRQOL in CCA patients. Although some research hypotheses were only partially supported, the model is still meaningful and useful for explaining factors affecting HRQOL in CCA patients. Finally, all the variables in the model explained approximately 70% of the variance in HRQOL.

Table 4.12: Summary the total, direct, and indirect effects of causal variables on affected variables (n=260)

	Affected Variables											
	Symptoms			Uncertainty			Emotive C.			HRQOL		
Causal Variables	TE (SD)	DE (SD)	IE (SD)	TE (SD)	DE (SD)	IE (SD)	TE (SD)	DE (SD)	IE (SD)	TE (SD)	DE (SD)	IE (SD)
Social Support	-.12 ^{NS} (.12)	-.12 ^{NS} (.12)	-	-.27*** (.08)	-.22*** (.07)	-.06 ^{NS} (.04)	-.08* (.02)	-	-.08* (.02)	.25*** (.09)	.12** (.06)	.13** (.08)
Symptoms	-	-	-	.51*** (.04)	.51*** (.04)	-	.47** (.02)	.40*** (.02)	.07* (.01)	-.78*** (.03)	-.65*** (.03)	-.13*** (.02)
Uncertainty	-	-	-	-	-	-	.13* (.03)	.13* (.03)	-	-.19*** (.05)	-.18*** (.05)	-.01 (.01)
Emotive c.	-	-	-	-	-	-	-	-	-	-.10* (.09)	-.10* (.09)	-
		R^2 = .01			R^2 = .33			R^2 = .24			R^2 = .70	

* Significant at .05 level; ** Significant at .01 level; *** Significant at .001 level, ^{NS} non-significant, TE = total effects, DE = direct effects, IE = indirect effects

CHAPTER V

DISCUSSION, IMPLICATIONS, AND RECOMMENDATIONS

This chapter provides the discussion of the study findings. It includes conclusion, discussion of the characteristics of the participants and study variables, hypothesis testing, limitations, implications for nursing, and recommendations for future research.

Conclusion

The purpose of this cross-sectional descriptive correlation study was to develop and test a model that explains the influence of symptoms, social support, uncertainty, and coping on the HRQOL in CCA patients. The conceptual framework used in this study was the uncertainty in illness theory. A consecutive sample of 260 CCA patients were recruited from the outpatient surgery department at a regional hospital and a university hospital in the northeast of Thailand. Data collection was carried out from August to December 2009.

The instruments used in this study included the demographic characteristics questionnaire, the Modified Memorial Symptoms Assessment, the Social Support Questionnaire, Mishel’s Uncertainty in Illness Scale: Community Form, the Jalowiec Coping Scale, and the Functional Assessment of Cancer Therapy General Scale. All participants responded to a set of six questionnaires in a structured interview format. The validity and reliability of the instruments were examined. A LISREL version 8.72 was used to test the hypothesized path model.

According to the study findings, the participants ranged in age from 30 to 89 years old, with the mean age of 59.58 years (SD = 9.11). The participants were predominantly male (70%), married (84.2%), and had primary/elementary education (73.1%). More than half of the participants (65%) were agriculturists. In addition, approximately half of the participant (46.5%) had a monthly household income of less than 5,000 baht but close to two-thirds of them (61.9%) had no financial problems. Moreover, nearly two-thirds of the participants (64.2%) had been diagnosed with CCA from one to three months prior to their participation in the study and the time elapsed since cancer diagnosis ranged from one to 72 months. In terms of treatment, a little more than a quarter (27.7%) had received surgical treatment, and this was followed by palliative treatment (23.8). Finally, close to three quarters of the participants (73.5%) had no reported co-morbidity and close to half (46.5%) had some symptoms but did not require extra rest during the day.

Furthermore, the findings revealed that the hypothesized model fit the empirical data and could explain 70% of the variance of HRQOL ($\chi^2 = 0.10$, df = 1, p = 0.75, χ^2/df = 0.10, RMSEA = 0.00, GFI = 1.00, AGFI = 1.00). The results of the final model testing are summarized according to the research hypotheses as follows:

1. Symptoms had a negative direct effect (-.65, $p < .001$) on HRQOL and an indirect effect (-.13, $p < .01$) on HRQOL through uncertainty and emotive coping. Therefore, such findings supported the hypothesized model and resulted in a new path from symptoms to emotive coping.

2. Social support had a positive direct effect (.12, $p < .01$) on HRQOL and an indirect effect (.13, $p < .01$) on HRQOL through uncertainty. Thus, such findings supported the hypothesized model. However, social support had a non-significant

direct effect (-.12, $p > .05$) on symptoms. Therefore, this finding did not support the hypothesized model, which indicated that social support should have an indirect effect on HRQOL through symptoms.

3. Uncertainty had a negative direct effect (-.18, $p < .01$) on HRQOL and a non-significant indirect effect (-.01, $p > .05$) on HRQOL through emotive coping. Such findings did not support the hypothesized model, which indicated that uncertainty had an indirect effect on HRQOL through coping.

4. Emotive coping had a significant negative direct effect (-.10, $p < .05$) on HRQOL. This finding did not support the hypothesized model, which proposed that the total score of coping (emotive, confrontive, and palliative coping) should have a positive direct effect on HRQOL.

Characteristics of the study participants

The participants in this study were both males and females who were diagnosed with CCA. Close to three quarters of the participants (70%) were male, and most (84.2%) were married. Approximately half of participant (50.7%) are middle age (range = 30-89, mean = 59.58, SD = 9.11). These findings are consistent with the incidence of CCA in the northeastern region of Thailand which reported that CCA is more prevalent in men than in women and that most participants are middle-age patients (Chalearmsri Sorasit, 2005; Chusri Kuchaisit et al., 2004; Nuanchan Thaninsurat et al., 2002). However, these findings differ from the findings reported in the studies carried out in western countries, which revealed that the majority of CCA patients are older than 65 year of age (Anderson et al., 2002; Khan et al., 2002) and the sex incidence shows a slightly more male predominance (Khan et al., 2005;

Lazaridis and Gores, 2005; Shaib and El-Serag, 2004). It is possible that the risk factors of CCA in terms of age and gender of Thai and western people are different.

In addition, nearly three-fourth (73.1%) of the participants completed elementary education, and almost two-thirds (65%) worked in the field of agriculture. Such findings were in congruent with the findings of previous studies (Chalearmsri Sorasit, 2005; Chusri Kuchaisit et al., 2004; Nuanchan Thaninsurat et al., 2002). Due to most participants graduated with lower than the standard compulsory education in Thailand (9 years) (Bureau of International Cooperation, 2008), they may have little chance for competition in the labor market and business which affect their income. Although approximately half of them (46.5%) had a monthly family income of less than 5,000 baht (an average monthly income in the northeast is 12,051 baht, Statistical Forecasting Bureau, National Statistical Office, 2010), close to two-thirds of the participants (61.9%) had no financial problems. These findings differ from the finding of the study conducted by Chalearmsri Sorasit (2005), which reported that more than half of participants had a monthly family income of less than 5,000 baht (61.5%) and had financial problems (62.3%). This may have been due to the fact that about three quarters of the present participants (70.8%) used universal healthcare coverage. A policy of the universal healthcare coverage may have helped the participants reduce financial problems related to the cost of medical care.

In regard to the participants’ medical history, almost two-thirds of the participants (64.2%) had been diagnosed with CCA from one to three months prior, while the duration since the cancer diagnosis ranged from one to 72 months. Only 3.1% of the participants had been diagnosed with cancer for more than 24 months. Unfortunately, it can be assumed that most of the CCA patients will die within two years after being diagnosed (Forsmo et al., 2008) since the overall five-year survival rate is less than 5% (Khan et al., 2005).

Surgery is the only curative option for CCA patients; nevertheless it is not effective in CCA patients in advanced stages (Khan et al., 2005; Patel and Singh, 2007). In the present study, only a little more than a quarter of the participant (27.7%) can be treated using surgery treatment, while a little less than a quarter (23.8%) received palliative treatment, and 14.6% received biliary stent drainage. It seems that most of them were in advanced stages of CCA. These results seem to reflect the fact that the majority of CCA patients generally do not seek services from the healthcare system until the disease is in advanced stages (Anderson et al., 2004; Narong Khuntikao, 2005). Furthermore, most of the participants (73.5%) had no reported co-morbidities. This may be explained that more than half of them (50.7%) were younger than 60 years old. This finding confirms the finding of Thai National Survey conducted in 2006 which noted that senior Thai citizens that are over 60 years have higher rated health problems than younger people (The National Statistical Office, 2007).

Characteristics of the study variables

The five major variables in the current study include HRQOL, symptoms, social support, uncertainty, and coping. The discussions of these variables are presented as follows:

HRQOL

According to the study findings, the participants had a high level of perception of HRQOL (mean = 73.83, SD = 13.19). In the current study, HRQOL is proposed as adaptation outcome in UIT. This could be explained with the fact that most of the participants were middle-age men. The middle-age men tend to have characteristics of hardiness (Chalearmsri Sorasit, 2003). Hardiness help patients to cope with their illness by view their illness as a challenge and commitment to control stress from their illness and consequently may have adaptive experience (Berk, 2001; Kobasa, 1982). In addition, most participants were still having a strong physical body and still able to carry out normal activities despite having some symptoms. Moreover, these participants had no stressors from financial problems because of the healthcare coverage policy of the Thai government which helped them not to worry about the cost of medical care. Furthermore, most of the study participants (84.2%) were married. Chalearmsri Sorasit (2003) reported that marital status was positively correlated with coping outcomes in CCA patients. Generally, a spouse is an important source of support for cancer patients that enables them to cope with the sickness and adjust their lives (Manne et al., 1997). Previous studies have illustrated that marital status was positively correlated with HRQOL (Rutsteon et al., 1999; Schultz and Winstead-Fry, 2001). Therefore, as most of the participants in the present study were married, they should have a high level of perception of HRQOL.

Concerning the dimensions of HRQOL, the findings of the current study have demonstrated that CCA participants had the highest scores in emotional well-being and lowest in functional well-being. In the northeastern culture, it is the obligation of family members to take care for an ill family member (Jintana Thangvoraphonkchai, 2005). Thus, these participants had good emotional support from their families, resulting in a high level of feeling of emotional well-being. As regards the functional dimension, fatigue and abdominal pain were common symptoms that participants reported, which decreased their sense of functional well-being. Most of them required extra rest during the day although they had normal activity levels. This is consistent with the findings reported in previous studies in that fatigue and pain could decrease the ability to work and interfere with day-to-day living for CCA patients (Nauchan Thaninsurat et al., 2002; Ubol Juangpanich et al., 2003). However, HRQOL scores in the current study were lower in all dimensions than the scores reported in the previous studies conducted with breast cancer patients (Ratanatharathorn et al., 2001) and head and neck cancer patients (Detprapon et al., 2009). One possible reason is that CCA pathology involves the liver and digestion functions, which are vital organ and function for human (Patel and Singh, 2007). In fact, the acceptable survival rate of CCA patients is less than those of breast cancer patients and head and neck cancer patients. For this reason, CCA patients may feel that cancer has threatened their life more than breast cancer patients and head and neck cancer patients. Therefore, the HRQOL in CCA patients tend more adversely affected than that in patients with breast cancer and head and neck cancer.

Symptoms

The study findings showed that the participants had at least one prevalent symptom. Although the participants in the current study had a low level of symptoms (mean = 33.32, SD = 16.13), almost all of them (98.7%) reported that they felt distressed from at least one of these symptoms. The first five symptoms that caused distress among the participants were abdominal pain or dyspepsia (48.3%), fatigue (15%), lack of appetite (10%), itching (9.6%), and anxiety (6.2%). It is possible that their symptoms were the results of both pathology and the side effects of the treatments since most participants had been recently diagnosed (ranging from one to three months) and they were undergoing active cancer treatments. In addition, the majority of these participants had unresectable lesions; thus, many symptoms could exacerbate throughout the trajectory of the illness. Such findings are in accordance with the findings of Chalearmsri Sorasit (2005) who has reported that most CCA patients suffered from at least one symptom after diagnosis (one to 52 months). In regard to the frequency of symptoms, it was found that the five most frequently reported symptoms were fatigue (87.3%), anxiety (87.3%), abdominal pain or dyspepsia (76.9%), lack of appetite (63.1%) and difficulty sleeping (51.2%). The findings differ from those of the study conducted by Nagorney and colleagues (1993) which reported that the common symptoms in order of frequency included itching (66%), abdominal pain (30-50%), weight loss (30-50%), and fever (20%). This may be because the symptoms of CCA depend on the location of the tumor (Khan et al., 2005; Mosconi, 2009). Similarly, Chusri Kuchiaisit and colleagues (2004) found that the symptoms leading to the need for treatment were dyspepsia, fever, jaundice, and itching. Moreover CCA patients felt anxiety, fear of death, and uncertainty after receiving diagnosis (Chusri Kuchiaisit et al., 2005). Therefore, both the current study and the previous studies supported the conclusion that CCA patients encountered both physical and psychological symptoms.

Social support

The findings showed that participants perceived high levels of social support (mean = 99.47, SD = 8.41), and the highest support was emotional support (average mean score = 4.41). These findings may be related to the fact that most of the participants were married (84.20%). According to Supatra Sooparb (2000), in Thai cultures, family members share a close bonding and attachment and have a close relationship with one another. It is also common that several generations live together in the same household. Thus, most of CCA patients in this study had emotional support from their spouse and family members. Such finding is consistent with the study of Nuanchan Thaninsurat and colleagues (2002) which found that emotional support was the highest support received by postoperative CCA patients (average mean score = 4.41). However, even though these results reflect the fact that a spouse and family members are a good source of emotional support for CCA patients, it was discovered in the present study that most of the participants had a low level of information support (average mean score = 3.29), which was also lower than that reported in a previous study conducted with postoperative CCA patients (average mean score = 3.60) (Nuanchan Thaninsurat et al., 2002). One plausible explanation is that more than half of the participants were newly diagnosed with CCA and some participants had met healthcare providers for only one to two times. Generally, healthcare providers are a good source of information support (Mishel, 1988). Therefore, it may explain why the participants in the present study had a low level of information support.

Uncertainty

In the current study, participants had a moderate level of uncertainty (mean = 65.39, SD = 11.34). Uncertainty in CCA patients may be triggered by unclear information about their disease and its required treatment (Chusri Kuchaisit et al., 2004; Sumon Pincharoen and Orasa Kongtaln, 2005; Ubol Juangpanich et al., 2003). In addition, symptoms in CCA patients can recur throughout the disease trajectory because treatments are generally not effective in advanced stages (Khan et al., 2005; Narong Khuntikao, 2005). Thus, CCA patients still have questions about their treatment regime when symptoms are recurring. These unpredictable and uncontrollable circumstances can increase uncertainty in CCA patients. Therefore, the participants in the present study perceived a moderate level of uncertainty. This result helps confirm the assumption that uncertainty in illness is an important journey experience for cancer patients (Klemm et al., 2000; Shana et al., 2008). However, it is worth noting that the uncertainty score in the current study was higher than those reported in breast cancer survivors (mean = 57.08, SD = 10.14) (Wonghongkul et al., 2006), head and neck cancer patients (mean = 53.90, SD = 13.05) (Detprapon et al., 2009), and cervical cancer patients (mean = 47.17 SD = 11.71) (Santawaja et al., 2002). This result may be explained by the fact that the survival rate for CCA is lower than that in breast cancer, head and neck cancer, and cervical cancer; thus, CCA patients tend to experience more uncertainty about their future and long-term survival than breast cancer patients and head and neck cancer patients.

Coping

According to the study findings, most of the participants made moderate use of coping strategies to manage uncertainty (mean = 87.21, SD = 13.88). Coping is an individual response and while different persons may have a different innate ability to cope, the use of coping strategies depends on the cultural background of the individuals (Black, 2005; Lazarus and Folkman, 1984). Nearly half of these participants (49.3%) were older adults. According to Schultz and colleagues (1996), older adults increase reliance on more passive and introverted cognitive coping styles as opposed to active, primary control strategies directed at the external environment. Older adults were less likely to use emotional expression, self blame, and information seeking than were middle-aged adults in their efforts to cope with the illness (Felton and Revenson, 1987). This might reflect limited resources among older adults for changing the stressors in their lives. Another possibility is that as older adults simply use fewer coping strategies more efficiently (Patterson et al., 1990). Thus, these participants were older adults tend to use coping strategies to manage uncertainty less than middle age.

In the current study, the participants used more palliative coping (relative score = .38) than confrontive coping (relative score = .36) and emotive coping (relative score = .26). According to Jalowiec (1988), palliative coping includes buffering strategies, which are used to avoid directly confronting stress by changing the perception while maintaining the status quo. This may be because CCA patients in the present study appraised uncertainty more as an opportunity than a danger. As a result, they chose buffer strategies to manage uncertainty. These results are similar to the results of Paiporn Saetia (2001) who has reported that most frequently used coping strategies to manage stress of post-radiation head and neck cancer patients was palliative coping, followed by confrontive coping and emotive coping, respectively. In contrast, Santawaja and colleagues (2002) have indicated that cervical cancer patients opted to use much more emotive coping than confrontive coping when having to deal with uncertainty. However, it is difficult to compare these findings because of the difference in the types of population under study and instruments used to assess coping strategies.

Hypothesis testing in overall model and relationships

The study findings revealed that the hypothesized model fit the empirical data and could explain 70% of the variance of HRQOL by social support, symptom, uncertainty, and emotive coping. Thirty-three percent ($R^2 = .33$) of the total variance in uncertainty were explain by social support and symptoms. Twenty-four percent ($R^2 = .24$) of the total variance in emotive coping were explain by symptoms, and uncertainty. The study finding also showed that one of the four hypotheses was fully supported by the empirical data obtained in the study, whereas two hypotheses were only partially supported, and one hypothesis was rejected. The discussions of the hypothesis testing are presented as follows:

1. Symptoms have a negative direct effect on HRQOL and an indirect effect on HRQOL through uncertainty in CCA patients

1.1 Symptoms have a negative direct effect on HRQOL

The findings support the hypothesis that symptoms had a significant negative direct effect on HRQOL, indicating that CCA patients with a higher level of symptoms had a low level of HRQOL. A possible explanation is that physical and psychological symptoms among CCA patients can recur and exacerbate throughout the diseases trajectory because the majority of the tumor cannot complete removed (Khan et al., 2005; Patel and Sigh, 2007). Physical symptoms such as abdominal pain, fatigue, loss of appetite, nausea, vomiting, and itching may impair all of dimensions of HRQOL. CCA patients who do not or cannot manage or control these symptoms are likely to have decreased social and functional well-being that causes a domino effect on emotional well-being (Chusri Kruchaisit, 2005). Furthermore, psychological symptoms such as anxiety and loss of body image impair emotional well-being (Ubol Juangpanich, 2003). Therefore, symptoms have a direct affect on HRQOL among CCA patients.

The study findings are consistent with the findings of previous studies conducted with breast cancer patients (Manning-Walsh, 2005; Northouse et al., 1999) which indicated that symptom distress had a strong direct effect on HRQOL. Some symptoms such as fatigue (Curt, 2000; Thanasilp and Kongsaktrakul, 2005), pain, and insomnia (Sarna, 1993) had a significantly negative effect on HRQOL. In addition, symptom clusters (pain, insomnia, fatigue, and depression) were significantly negatively related to HRQOL in breast cancer patients receiving chemotherapy (Masubol Wongpromchai, 2005). Moreover, the cluster of fatigue and depression explained 29% of the variance in HRQOL in lung cancer survivors (Fox and Lyon, 2006). Psychological distress has been reported to have a significant negative effect on HRQOL in other studies as well (Dapueto et al., 2004; Parker et al., 2003).

1.2 Symptoms have an indirect effect on HRQOL through uncertainty

The findings of the present study also showed that symptoms had a significant indirect effect on HRQOL through uncertainty. In other words, symptoms had a positive direct effect on uncertainty. This means that CCA patients who had a higher level of symptoms were more likely to have a higher level of uncertainty and a lower level of HRQOL. This result supports the UIT and prior studies, which have indicated that symptoms are the antecedent of uncertainty and uncertainty will increase when the pattern of symptoms cannot be detected or predicted (Clayton et al., 2006; Detprapon et al., 2009; Santawaja et al., 2002). It may be explained that symptoms among CCA patients are associated with the unpredictability of the illness trajectory (Khan et al., 2005, Mosconi, 2009). Symptoms are typically exacerbated as the disease progresses (Khan et al., 2002; Narong Khuntikao, 2005). These symptoms can generate uncertainty about the future and cancer recurrent among CCA patients.

Interestingly, the new path from symptoms to emotive coping showed that symptoms had a positive direct effect on emotive coping. It seemed that symptoms had an indirect effect on HRQOL through emotive coping. One possible reason to explain such finding may be the fact that CCA patients generally encounter a higher level of symptoms from the pathology of the disease and the side effects of the treatment. Lazarus and Folkman (1984) have proposed that individuals have been reported using emotional-focused coping when there are few modifiable personal factors to change the situation. If CCA patients believe that they are powerless to do anything to face these symptoms, they tend to use emotive coping to manage the stressor from these symptoms. Although this relationship between symptoms and emotive coping is not noted in UIT, such relationship is consistent with the finding reported in previous studies carried out with lung cancer patients (Kuo and Ma, 2002) and breast cancer patients (Ali and Khali, 1991).

In summary, these findings have yielded support to the conclusion that a high level of symptoms can predict a high level of uncertainty, more frequently use of emotive coping, and a low level of HRQOL among CCA patients.

2. Social support has a positive direct effect on HRQOL and an indirect effect on HRQOL through symptoms and uncertainty in CCA patients

2.1 Social support has a positive direct effect on HRQOL

The results of the current study showed that social support had a significant positive direct effect on HRQOL. As expected, those CCA patients who had greater social support also had a higher level of HRQOL. It could be explained that social support is a resource which provides assistance and encourages CCA patients to deal with the traumatic life events from the disease and its treatment

(Nuanchan Thaninsurat et al., 2002). This is consistent with the finding of a previous study which found that social support had a positive direct effect on the HRQOL among cervical cancer patients undergoing radiotherapy (Taechaboonsermsak et al., 2005). Moreover, Manning-Walsh (2005) has reported that social support from family members and friends was positively related to improve HRQOL in breast cancer patients. Furthermore, social support played a pivotal role as a predictor of HRQOL in breast cancer patients (Mannin-Walsh, 2005), breast cancer survivors (Sammarco, 2001, 2003; Sammarco and Konecny, 2008), and cancer patients receiving chemotherapy (Thanasilp and Kongsaktrakul, 2005).

2.2 Social support had an indirect effect on HRQOL through symptoms and uncertainty in CCA patients

In the current study, the results revealed that social support had a non-significant indirect effect on HRQOL through symptoms. Put another way, social support did not have a direct effect on symptoms. Surprisingly, this finding is inconsistent with Mishel's UIT (1988) and previous studies which have pointed out that social support helps to reduce and control symptom experience (Manning-Walsh, 2005; Mishel and Braden, 1988; Santawaja et al., 2002). In the present study, it was found that there was only a low negative relationship between symptoms and information support ($r = -.13, p < .05$) (see Appendix M). One possible explanation may be that CCA patients generally experience both physical and psychological symptoms (Chusri Kuchaisit et al., 2005; Khan et al., 2005; Vajarabhongsa Bhudhisawasdi et al., 2002). Information support may help CCA patients manage their physical symptoms more effectively than emotional support. Nevertheless, these participants received more emotional support (mostly from their family) than information support (mostly from healthcare providers). Therefore, the results of the current study did not confirm the significance of social support on symptoms.

In addition, social support had an indirect effect on HRQOL through uncertainty. On the other hand, social support had a direct effect on uncertainty. This result was congruent with Mishel's UIT (1988) and previous studies of cancer patients that indicated that social support decreases uncertainty by providing information to help patients understand their symptoms, the illness, and event congruence (Mishel and Braden, 1988; Sommacro and Konecny, 2008). In the current study, there was a negative correlation between uncertainty and appraisal support (r = -.26, p < .05) and uncertainty and information support (r = -.34, p < .05) (see Appendix M). Therefore, CCA patients with good appraisal and information support had a low level of uncertainty. This may be because appraisal and information supports help CCA patients understand the trajectory of the disease and its treatment and such understanding leads them to form a familiar cognitive pattern for interpretation of the congruence event between the expected and the experienced events.

In summary, these findings have yielded support to the conclusion that CCA patients with good social support can predict a high level of HRQOL, whereas a high level of appraisal and information support can predict a low level of uncertainty among CCA patients.

3. Uncertainty has a negative direct effect on HRQOL and an indirect effect on HRQOL through emotive coping in CCA patients

3.1 Uncertainty has a negative direct effect on HRQOL

According to the study findings, uncertainty had a significant negative direct effect on HRQOL, thus indicating that CCA patients with a higher level of uncertainty had a lower level of HRQOL. This result may be explained by the fact that CCA patients have experienced unpredictability of their future, so they feel that they are not able to control anything. According to Mishel and Sorenson (1991), uncertainty reduces the patients' optimism, sense of coherence, and levels of resourcefulness. Therefore, CCA patients who perceive high uncertainty may have less resourcefulness to manage stress situations that may interfere with physical, emotional, social/family, and functional well-being. This finding is consistent with the study of Detprapon and colleagues (2009) which has reported that uncertainty had a negative impact on HRQOL in head and neck cancer patients, as well as the study of Wonghongkul and colleagues (2006) which found that uncertainty and harm appraisal influenced HRQOL in breast cancer survivors. Therefore, CCA patients who perceive high uncertainty tend to have a low level of HRQOL.

3.2 Uncertainty had an indirect effect on HRQOL through emotive coping

The findings of the present study revealed that uncertainty did not have a significant indirect effect on HRQOL through emotive coping. However, the current results showed that uncertainty had a significant positive correlation with emotive coping ($r = .34$, $p < .01$), negative correlation with confrontive coping ($r = -.37$, $p < .01$), and no significant correlation with palliative coping ($r = -.11$, $p > .05$) (see Appendix M). In other words, it seems that CCA patients used both emotive coping and confrontive coping to deal with uncertainty. This may be due to the fact that HRQOL is postulated as an adaptation outcome of the coping process. Generally, emotive coping and confrontive coping can both facilitate and impede each other in the coping process (Lazarus and Folkman, 1984). Thus, alone, emotive coping might not be a mediating variable between uncertainty and HRQOL among CCA patients.

4. Emotive coping has a positive direct effect on HRQOL in CCA patients

Interestingly, the findings of this study indicated that the total coping score had a significant correlation with HRQOL but a non-significant direct effect on HRQOL. This may be because this study calculated the total coping score by summing three subscales, including emotive strategies, confrontive strategies, and palliative strategies. Each subscale of coping strategies impacted HRQOL differently (see Appendix M). Emotive strategies had a negative correlation with the HRQOL (r = -.48, p <. 01), while confrontive strategies had a positive correlation with the HRQOL (r = .44, p <. 01), and palliative strategies had no statistically significant correlation with HRQOL (r = .11, p > .05). Therefore, the total score of coping strategies may not represent the real effect on the HRQOL in this study.

However, previous studies have reported that there are inconsistencies in the relationship between coping strategies and HRQOL. Green and colleagues (2002), for example, found that higher use of either emotion-focused or problem-focused coping strategies was associated with lower HRQOL. On the contrary, there was a positive association between total coping strategies (emotion-focused and problem-focused coping) and HRQOL in breast cancer patients (Meifen, 1997; Pranee Sanee, 1996). However, coping strategies (confrontive, escape avoidance, self-controlling, seeking social support, acceptance, distracting, and positive reappraisal) did not predict HRQOL in breast cancer survivors (Wonghongkul et al., 2006). Besides this, gender may be related to the use of coping strategies. For instance, Kim and colleague

(2002) have reported that men used both problem-focused coping and emotion-focused coping more than women with cancer did. In adolescents with cancer, boys with higher use of either emotion-focused or problem-focused coping had lower HRQOL, whereas HRQOL of girls had a positive association with only problem-focused coping (Burgess and Haaga, 1998). However, the differences in the instruments used to assess coping strategies as well as the differences in the groups of population may have resulted in the inconsistencies in the relationship between coping and HRQOL previously reported.

In the present study, the results from the final path model showed that only emotive coping had a negative direct effect on HRQOL. This indicated that CCA patients who had greater use of emotive coping had a lower level of HRQOL. In addition, emotive coping had a negative correlation with physical, emotional, and functional well-being (see Appendix M). According to Kuo and Ma (2002), coping can have both short-term and long-term effects. As regards short-term effects, coping helps individuals alleviate the demands of a particular stressful situation and allowing them to adjust their own emotional reactions to the stress felt. As for long-term effects, individuals might maintain and improve their personal health and social function. In the present study, some emotive coping strategies were labeled as maladaptive such as worry, day dreaming, getting nervous, avoidance, blaming someone else for problems, expressing anger, and turning away from the family. The short-term effect of emotive coping strategies may help CCA patients face a life-threatening illness. However, in terms of long-term effects, emotive coping strategies are deleterious because it may increase emotional distress and decrease the patients' ability to maintain or improve personal health and social function. Such findings are similar to the findings reported in the study carried out by Lutgendrof and colleagues (2000) which found that patients with advanced gynecologic cancer who used avoidant coping (emotive coping) reported poorer physical and emotional well-being, along with greater anxiety, depression, fatigue, and total mood disturbance. In addition, Santawaja and colleagues (2002) have reported that cervical cancer patients who used more emotion-focused coping had a poorer psychological adjustment. Therefore, a higher use of emotive coping can predict a lower level of HRQOL in CCA patients.

In summary, the path model predicting HRQOL among CCA demonstrated that symptoms were found to have the strongest effect on HRQOL in CCA patients. The results indicated that a higher level of symptoms could generate uncertainty, increase frequency in use of emotion-focused coping, and decrease HRQOL. Social support was found to be a resource to reduce symptoms and uncertainty and increase HRQOL in CCA patients in the current study. Therefore, this model supports the UIT and empirical literature in various cancers. In addition, the new path from symptom to emotive coping was found.

Methodological limitation

On the overall, the present study involved a rigorous methodology and had adequate power of sample to detect a significant difference of the findings. However, there were several issues to concern. The discussion of limitations issues relate to these findings emphasized instruments issues, and data collection. The information on each issue is presents as follows.

Instruments issues

1. The MMSAS was modified and used for the first time with CCA patients in this study, the construct validity did not confirm. Therefore, this instrument cannot claim to represent the total symptoms among CCA patients. The further study should examine construct validity in this instrument. In addition, the study combined both physical and psychological symptoms in the analysis. Findings implied that social support affected physical and psychological symptoms in different ways. As a result, further studies should test the model using the physical and psychological symptoms components separately, especially using the UIT as a framework.

2. FACT-G is a measurement of HRQOL whose validity and reliability have been reported and accepted worldwide (FACIT.org, 2008). It has also been cross-cultural construct-validated in Thai cancer patients (Ratanatharathon et al., 2001). In the current study, the Cronbach's alpha coefficient indicated that the overall internal consistency of HRQOL dimensions was at an acceptable level, but the items on social/family well-being were not a significantly representative construct of HRQOL. This may be because the content of social/family well-being dimension is diverse including maintenance of relationships with friends, family functioning, intimacy, and sexuality (Cella, 1994). Due to the diversity of this dimension, it is difficult to clarify this construct. It is noteworthy that there were different answers to the sexuality item "I am satisfied with my sex life" between male and female participants. The majority of the responses of the male participants ranged from 3 to 4, whereas those of all female participants ranged from 0 to 2. The differences in gender of the participants and interview techniques may have affected the answer on sexuality. Sexuality is a sensitive issue in Thai people who tend to hesitate to discuss this issue in public,

especially in Thai women. The interview of sexuality may not elicit accurate answers from the participants. Therefore, FACT-G should be tested by factor analysis in a larger group CCA patient with different demographic characteristics such as gender, marital status, and education to confirm construct validity of the instrument.

Furthermore, the assessment of HRQOL is important to assess symptoms that represent to physical well-being (Cella, 1994). In this study, symptoms are proposed as the predictor of HRQOL. Thus, this may be redundant of items of symptoms and items of physical well-being that effect on the findings.

3. According to the UIT, if patients use effective coping strategies to control or eliminate uncertainty, adaption will occur (Mishel, 1988). In the present study, effectiveness of the coping strategies that CCA patients used to reduce uncertainty and help them go through an adaptation process was not assessed. The researcher considered the perceived effectiveness of coping strategies as a very subjective process, and no study has reported on the effectiveness of coping in Thai cancer patients. The present study evaluated only the use of coping strategies that CCA patients used to reduce their uncertainty. Thus, interpretations of the coping strategies that help CCA patients reduce uncertainty and maintain or improve HRQOL may be inadequate to confirm the process of coping and adaptation proposed in the UIT.

Data collection procedure

1. Generalizability of the findings is limited. The setting of the current study was the northeastern region of Thailand, so the findings may not be generalized to other groups of CCA patients living in other regions in the country because they might have different beliefs and cultural attitudes that affect their HRQOL. Furthermore, the participants of this study were recruited by means of a consecutive

sampling. A random sampling was not feasible for this study because the number of CCA patients who met the study criteria was small. This is because the period of data collection was the rice harvest time. Some CCA patients did not come to see the doctor on the day of the appointment because they or their caregivers were busy working in the rice paddy fields. Additionally, some patients concealed their cancer diagnosis from family members. These limitations restrict the generalizability of the study findings to other groups of CCA patient population.

2. Due to nearly half of participant were the older and the each questionnaire need to recall answers. Thus, this may interfere to the correct answer.

Implications for nursing

The implications of this study focus on the implications for nursing science, nursing practice, nursing education, and nursing research as follows:

Implications for nursing science

The present study was conducted based on the UIT which was used as a theoretical framework to gather empirical data to conduct a path model for testing the effects of symptoms, social support, uncertainty, and coping on HRQOL. The UIT is a middle range theory that provides the specificity needed for usefulness in research and practice. The current study can be considered as a UIT testing among CCA patients that contributes to knowledge development for strengthening of nursing science. The findings support the UIT and empirical literature that symptoms, uncertainty, and emotive coping strategies result in an impaired HRQOL for CCA patients. Although the effect of social support on symptoms was not proved to be statistically significant, the data showed that social support from healthcare providers was needed by CCA patients. There was no prior study that examined support for relationships between the proportion of UIT and HRQOL in CCA patients. Thus, this study has contributed the new knowledge that can explain the influence of each variable in the whole model on HRQOL in CCA patients. Furthermore, the findings provide knowledge that offers directions for development of interventions to maintain and promote HRQOL in CCA patients.

Implications for nursing practice

The current study sheds light on the knowledge regarding the influence of symptoms, social support, uncertainty, and coping on the HRQOL among CCA patients. Based on the findings, several significant implications for nursing practice can be proposed as follows:

First, understanding the predictors of HRQOL in CCA patients provides valuable information which enables nurses and associated healthcare professionals to plan for effective intervention to maintain or improve HRQOL in CCA patients.

Second, symptoms were found to have the strongest effect on HRQOL in CCA patients. The results indicated that a higher level of symptoms could generate uncertainty, increase frequency in use of emotion-focused coping, and decrease HRQOL. The five common symptoms most frequently reported by CCA patients in this study were fatigue, anxiety, abdominal pain, lack of appetite, and difficulty sleeping, respectively. The five symptoms which mostly disturbed CCA patients were abdominal pain, fatigue, lack of appetite, itching, and anxiety, respectively. Although the frequency, severity, and distress dimensions of symptoms were highly inter-correlated in the current study, the combination of frequency, severity, and distress measure provided significantly more information than only one dimension.

Therefore, in caring for CCA patients, nurses should assess symptoms in these three dimensions and develop appropriate interventions to manage the patients’ physical and psychological symptoms as demonstrated in the findings of this study. Symptom management is a method to relieve the symptoms or prevent the symptoms from reducing patients’ uncertainty while enhancing patients’ HRQOL.

Third, social support was found to be a resource to reduce symptoms and uncertainty and increase HRQOL in CCA patients in the current study. In addition, information support was found to be important to help CCA patients understand the progress of the disease, their symptoms, and plans of treatment. Additionally, increasing information support seemed to establish confrontive coping strategies for patients. Emotional support decreased psychological symptoms and increased emotional well-being as well. As a consequence, nurses and healthcare providers are key persons who should provide information support to CCA patients and their family. Nurses should emphasize effective counseling programs to newly diagnosed CCA patients and their family. The intervention should include using effective communication when educating CCA patients and their family; providing opportunity for CCA patients and their family to express their feelings about the diagnosis, its prognosis, and treatments; assessing the coping strategies that CCA patients and their family use to deal with diagnosis, treatment, and possible role changes; and suggesting confrontive coping strategies to deal with uncertainty in illness. Furthermore, nurses should promote a social support system including enhancing existing support of the patients’ family, friends, and community, as well as organizing a self-help group and establishing a social network. Telephone counseling from nurses or healthcare providers is also considered a resource of information support to help patients who have health problems at home.

Implications for nursing education

Presently, healthcare providers are certain that HRQOL is an important outcome to guarantee quality of care among CCA patients. Maintaining and promoting HRQOL among CCA patients can be seen as a challenge for nurses. This study has provided a comprehensive understanding of the predictors of HRQOL among CCA patients that can help nurses improve ways to maintain or promote HRQOL in these patients. Nurse educators can use these findings to generate new perspectives and new options in teaching and learning about promoting HRQOL among CCA patients. Nursing students should also have the opportunity to investigate and critique all the issues that are relevant to HRQOL in CCA patients.

Implications for nursing research

The current study is the first study of its kind to explore the influence of symptoms, social support, uncertainty, and coping on HRQOL in CCA patients. The findings of this study will serve as a reference point for interventions to further explore and promote HRQOL in this specific group of population. Since this study was conducted in the northeastern region of Thailand, significant associations among the major concepts proposed in the model indicate that further investigations carried out in other regions are warranted.

Implications for healthcare policy

CCA patients need continuous care for all trajectory of the disease because they have to encounter many symptoms and uncertainty that can affect their HRQOL. The effective referral system for CCA patients is necessary to be established in the healthcare system and propose to health care policy. Health care provider should urge policy makers to devise an action plan to support the continuing care from the tertiary care system to homecare among CCA patients. Moreover, healthcare providers in the primary care system and tertiary care system should coordinate in caring for CCA patients. The findings from the current study have suggested that symptoms, social support, uncertainty and emotive coping affect HRQOL. CCA is an important health problem in Thailand. The main outcome of care in CCA patients is to maintain or improve HRQOL. Thus, policy makers must take different variables that influence HRQOL into careful consideration when devising an action plan to promote HRQOL among CCA patients.

Recommendations for future research

Based on the findings of the present study, the following recommendations for future research can be made as follows:

1. A longitudinal study should be conducted to assess the change of symptoms, social support, uncertainty, coping, and HRQOL in CCA patients overtime so as to provide a more causal explanation regarding HRQOL in CCA patients and its predictors.

2. Studies should be conducted to replicate the present study in diverse settings and with a larger sample size recruited by means of random sampling to increase generalizability of the findings. Model testing in subgroups of CCA patients should involve comparisons between men and women, outpatients and inpatients, and curative treatment and palliative treatments, for instance, to increase trustworthiness of the tested model.

3. CCA patients in the present study used emotive coping, confrontive coping, and palliative coping to deal with uncertainty. The relationship between uncertainty and each of the coping strategies was different. Moreover, each coping strategy affected HRQOL in a different way. Therefore, future studies should be carried out to test the effects of coping on the HRQOL in each subscale separately. Furthermore, the instrument to measure coping should elicit data regarding how often CCA patients use each of the coping strategies and how helpful each of the strategies is in addressing their uncertainty.

4. In the future, qualitative research should be carried out to explore concepts of coping in Thai CCA patients. The definition of effectiveness of coping strategies should be more clearly defined. The instruments to assess coping in Thai CCA patients in particular should also be developed.

5. An intervention study to promote HRQOL in CCA patients should be developed and tested as well. It should incorporate symptom management, promotion of education and family support, and selection of appropriate coping strategies to deal with uncertainty in illness in CCA patients.

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APPENDICES

APPENDIX A

APPROVAL OF DISSERTATION PROPOSAL

ประกาศ คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
เรื่อง การอนุมัติหัวข้อดุษฎีนิพนธ์ ครั้งที่ 1/2552 ประจำปีการศึกษา 2552

ตามที่คณะพยาบาลศาสตร์ ได้มีประกาศ เรื่อง การอนุมัติหัวข้อดุษฎีนิพนธ์ ครั้งที่ 2/2551 ประจำปีการศึกษา 2551 ประกาศ ณ วันที่ 12 พฤษภาคม 2552 แล้วนั้น เนื่องจากมีการเปลี่ยนแปลงคณะกรรมการสอบฯ **จึงขอยกเลิกประกาศ เรื่อง การอนุมัติหัวข้อดุษฎีนิพนธ์ ครั้งที่ 2/2551 ประจำปีการศึกษา 2551 และใช้ประกาศฉบับนี้แทนดังนี้**

นิสิตผู้ทำวิจัยและอาจารย์ที่ปรึกษาดุษฎีนิพนธ์

รหัสนิสิต	4977972736
ชื่อ-นามสกุล	นางสาวบุษบา สมใจวงษ์
สาขาวิชา	พยาบาลศาสตร์ (นานาชาติ)
อาจารย์ที่ปรึกษา	รองศาสตราจารย์ ดร. สุรีพร ธนศิลป์
อาจารย์ที่ปรึกษาร่วม	ผู้ช่วยศาสตราจารย์ ดร. สุนิดา ปรีชาวงษ์
ประธานกรรมการสอบฯ	**รองศาสตราจารย์ ดร. จินตนา ยูนิพันธุ์**
กรรมการสอบฯ	รองศาตราจารย์ ดร. วราภรณ์ ชัยวัฒน์
กรรมการสอบฯ	**รองศาสตราจารย์ ดร. ยุพาพิน ศิรโพธิ์งาม**
กรรมการสอบฯ	**รองศาสตราจารย์ ดร. ศิริพรรณ สุวรรณมรรคา**
ชื่อหัวข้อดุษฎีนิพนธ์	อิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิต ในผู้ป่วยมะเร็งท่อทางเดินน้ำดี THE INFLUENCE OF SYMPTOMPS, SOCIAL SUPPORT, UNCERTAINTY, AND COPING ON HEALTH-RELATED QUALITY OF LIFE AMONG CHOLANGIOCARCINOMA PATIENTS
ครั้งที่อนุมัติ	1/2552
ระดับ	ปริญญาเอก

๒4 พค 2553

APPENDIX B

INSTRUMENTS

APPENDIX B 1

แบบสอบถามข้อมูลทั่วไปของผู้ป่วยมะเร็งท่อน้ำดี

คำชี้แจง โปรดทำเครื่องหมาย ✓ ลงใน ☐ หน้าข้อความที่เป็นคำตอบ หรือเติมข้อความลงในช่องว่างที่ได้จากการสัมภาษณ์ในคำตอบแต่ละข้อ

ข้อมูลส่วนบุคคล

1. อายุ…………………… ปี

2. เพศ ☐ 1. ชาย ☐ 2. หญิง

3. สถานภาพสมรส ☐ 1. โสด ☐ 2. สมรส
☐ 3. หม้าย/หย่า/แยก

4. ระดับการศึกษา ☐ 1. ไม่ได้เรียน ☐ 2. ระดับประถมศึกษาปีที่1- 4
☐ 3. ระดับประถมศึกษาปีที่ 5-7 ☐ 4. ระดับมัธยมศึกษาปีที่ 1-3
☐ 5. ระดับมัธยมศึกษาปีที่ 4-6 หรือปวช. ☐ 6. อนุปริญญา หรือปวส.
☐ 7. ระดับปริญญาตรี หรือสูงกว่า

5. อาชีพ ☐ 1. รับราชการหรือพนักงานรัฐวิสาหกิจ ☐ 2. รับจ้าง
☐ 3. ค้าขายหรือประกอบธุรกิจส่วนตัว ☐ 4. เกษตรกรรม
☐ 5. ไม่ได้ประกอบอาชีพ ☐ 6. อื่นๆ โปรดระบุ…...............

6. รายได้ของครอบครัว………………………………บาท ต่อเดือน (โดยประมาณ)
☐ 1. พอใช้ ☐ 2. ไม่พอใช้

7. สิทธิในการรักษา ☐ 1. บัตรทอง ☐ 2. บัตรประกันสังคม
☐ 3. ข้าราชการหรือรัฐวิสาหกิจ ☐ 4. เสียเงินเอง

ข้อมูลเกี่ยวกับโรคและการรักษาพยาบาล

1. ระยะเวลาที่เจ็บป่วย……………………………………………………....(นับจากวันที่วินิจฉัยโรค)

2. ระยะของโรค…………………………………………………………………………………….

3. การรักษาที่เคยได้รับ (ตอบได้มากกว่า 1 ข้อ)
☐ 1. ผ่าตัด……………………………….. ☐ 2. ทำทางเดินท่อระบายน้ำดีภายนอก
☐ 3. เคมีบำบัด.. ☐ 4. รังสีรักษา
☐ 5. ประคับประคอง ☐ 6. อื่นๆ……………………..................................

4. การรักษาที่ได้รับในปัจจุบัน (ในวันที่สัมภาษณ์) (ตอบได้มากกว่า 1 ข้อ)
☐ 1. ติดตามผลการรักษาก่อนผ่าตัด ☐ 2. ติดตามผลการรักษาหลังผ่าตัด
☐ 3. เคมีบำบัด.. ☐ 4. รังสีรักษา
☐ 5. ประคับประคอง ☐ 6. ทำทางเดินท่อระบายน้ำดีภายนอก
☐ 7. อื่นๆ……………………………

5. โรคประจำตัวอื่นๆ ☐ 1. ไม่มี ☐ 2. มี (ระบุโรคที่เป็น)…………………...............

6. ความสามารถในการปฏิบัติกิจวัตรประจำวัน (Performance Status Rating: PSR)……………………………

0 = ไม่มีอาการของโรคและสามารถปฏิบัติกิจวัตรประจำวันได้ตามปกติ

1 = มีอาการบางอาการแต่สามารถปฏิบัติกิจวัตรประจำวันได้ตามปกติโดยไม่ต้องนอนพักระหว่างวัน

2 = มีอาการบางอาการแต่สามารถปฏิบัติกิจวัตรประจำวันได้แต่ต้องนอนพักน้อยกว่าครึ่งวัน

3 = มีอาการบางอาการแต่สามารถปฏิบัติกิจวัตรประจำวันได้บ้างแต่ต้องนอนพักมากกว่าครึ่งวัน

4 = มีอาการบางอาการและต้องนอนพักบนเตียงตลอดเวลา

APPENDIX B 2

แบบสอบถามอาการของผู้ป่วยมะเร็งท่อน้ำดี

คำชี้แจง ในการตอบแบบสอบถามนี้ต้องการทราบว่า**ในระยะ 7 วันที่ผ่านมา** ท่านมีอาการดังกล่าวข้างล่างต่อไปนี้หรือไม่

ถ้าไม่มีอาการให้กาเครื่องหมาย ✓ ลงในช่องไม่มีอาการ และไม่ต้องประเมินระดับความถี่ ความรุนแรง และความทุกข์ทรมานของอาการ

แต่ถ้ามีอาการให้กาเครื่องหมาย ✓ ลงในช่องมีอาการ และขอให้ท่านประเมินระดับความถี่ ความรุนแรง และความทุกข์ทรมานของอาการนั้นๆ ตามความรู้สึกของท่าน

เกณฑ์ในการเลือกตอบมีดังนี้

ความถี่ของอาการนานๆ ครั้ง	หมายถึงอาการนั้นเกิดขึ้นเพียงประมาณสัปดาห์ละครั้ง
ความถี่ของอาการบางครั้ง	หมายถึงอาการนั้นเกิดขึ้นเพียงประมาณสัปดาห์ละ 2-3 ครั้ง
ความถี่ของอาการบ่อยครั้ง	หมายถึงอาการนั้นเกิดขึ้นมากกว่า 3 ครั้งต่อสัปดาห์แต่ไม่มีอาการทุกวัน
ความถี่ของอาการเกือบตลอด	หมายถึงอาการนั้นเกิดขึ้นทุกวัน หรือมีอาการตลอดเวลา

อาการ	ไม่มีอาการ	มีอาการ	ความถี่ของอาการ				ความรุนแรงของอาการ				ความทุกข์ทรมานจากอาการ				
			นานๆ ครั้ง	บางครั้ง	บ่อยครั้ง	เกือบตลอด	น้อย	ปานกลาง	มาก	มากที่สุด	ไม่มี	เล็กน้อย	ปานกลาง	มาก	มากที่สุด
ปวดท้องหรือแน่นท้อง															
เบื่ออาหาร															
คลื่นไส้															
อาเจียน															
เหนื่อย อ่อนเพลีย ไม่มีแรง															
ไข้															
คันตามตัว															
นอนไม่หลับ															
วิตกกังวล															
สูญเสียภาพลักษณ์จากตัวเหลือง ตาเหลือง และ/หรือการใส่ท่อระบายน้ำดี															

อาการที่ทำให้ท่านรู้สึกทุกข์ทรมานหรือรบกวนชีวิตประจำวันของท่านมากที่สุดคือ…………………………..

อาการอื่นๆ…………………………………………………………………………………………

APPENDIX B 3

ชุดที่ 3 แบบสอบถามความรู้สึกไม่แน่นอนในความเจ็บป่วยของผู้ป่วยมะเร็งท่อน้ำดี

คำชี้แจง: ข้อความต่อไปนี้ เป็นแบบสอบถามเกี่ยวกับความรู้สึกของท่าน โปรดพิจารณาข้อความแต่ละข้อ แล้วใส่เครื่องหมาย ✓ ลงในช่องที่ตรงกับความรู้สึกของท่านมากที่สุด**ในระยะ 7 วันที่ผ่านมา** ถ้าเห็นด้วยกับประโยค ก็ทำเครื่องหมายที่ **เห็นด้วยมาก** หรือ **เห็นด้วย** ถ้าไม่เห็นด้วยก็ทำเครื่องหมาย **ไม่เห็นด้วยเลย** หรือ **ไม่เห็นด้วย** ถ้าตัดสินใจไม่ได้ว่ารู้สึกอย่างไรให้ทำเครื่องหมาย **ไม่ตัดสินใจ** ในประโยคนั้นๆ กรุณาตอบทุกข้อ

ข้อความ	เห็นด้วยมาก	เห็นด้วย	ไม่ตัดสินใจ	ไม่เห็นด้วย	ไม่เห็นด้วยเลย
1. ข้าพเจ้าไม่รู้ว่าข้าพเจ้ามีความผิดปกติอะไร					
2. ข้าพเจ้ามีคำถามมากมายแต่หาคำตอบไม่ได้					
3. ข้าพเจ้าไม่แน่ใจว่า ความเจ็บป่วยของข้าพเจ้า จะดีขึ้นหรือแย่ลง					
4. ข้าพเจ้าไม่รู้ว่าจะเจ็บปวดมากแค่ไหน					
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23. หมอและพยาบาล ใช้ภาษาง่ายๆ กับข้าพเจ้า ดังนั้นข้าพเจ้าจึงสามารถเข้าใจในสิ่งที่พวกเขาพูด					

APPENDIX B 4

แบบสอบถามแรงสนับสนุนทางสังคมของผู้ป่วยมะเร็งท่อน้ำดี

<u>คำชี้แจง</u> แบบสอบถามชุดนี้ต้องการทราบถึงความช่วยเหลือที่ท่านได้รับจาก สมาชิกในครอบครัว เครือญาติ เพื่อนบ้าน เพื่อนร่วมงาน แพทย์และพยาบาล โดยขอให้ท่านทำเครื่องหมาย ✓ ลงในช่องที่ตรงกับความรู้สึกหรือความเป็นจริงของท่านมากที่สุดเพียงคำตอบเดียวในแต่ละข้อ และมีเกณฑ์ในการตอบดังนี้

ไม่มี	หมายถึงข้อความนั้นไม่ตรงกับความรู้สึกหรือความเป็นจริงที่เกิดขึ้นกับท่าน
เล็กน้อย	หมายถึงข้อความนั้นตรงกับความรู้สึกหรือความเป็นจริงที่เกิดขึ้นกับท่านเล็กน้อย
ปานกลาง	หมายถึงข้อความนั้นตรงกับความรู้สึกหรือความเป็นจริงที่เกิดขึ้นกับท่านปากลาง
มาก	หมายถึงข้อความนั้นตรงกับความรู้สึกหรือความเป็นจริงที่เกิดขึ้นกับมาก
มากที่สุด	หมายถึงข้อความนั้นตรงกับความรู้สึกหรือความเป็นจริงที่เกิดขึ้นกับมาก

ข้อความ	ไม่มี	เล็กน้อย	ปานกลาง	มาก	มากที่สุด
การสนับสนุนด้านอารมณ์					
1. สมาชิกในครอบครัวเบื่อหน่ายต่อการเจ็บป่วยที่เรื้อรังของท่าน					
2. ขณะที่ท่านเจ็บป่วย ท่านได้รับความรักและการเอาใจใส่จาก สมาชิกในครอบครัวเช่นเดิมหรือมากกว่าเดิม					
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การสนับสนุนด้านการประเมิน					
1. ท่านได้รับการเตือนถึงการปฏิบัติตนเกี่ยวกับโรคและการรักษา จากสมาชิกในครอบครัว					
2. ท่านทราบถึงความคืบหน้าของโรคและการรักษาจากแพทย์ หรือพยาบาลเป็นระยะๆ					
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การสนับสนุนด้านข้อมูลข่าวสาร					
1. ท่านได้รับคำแนะนำเกี่ยวกับโรคและการรักษาจากแพทย์และ พยาบาล					
2. ท่านต้องแสวงหา/ค้นหาและอ่านหนังสือเกี่ยวกับโรคและการ ปฏิบัติตนเกี่ยวกับโรคและการปฏิบัติตัวด้วยตัวของท่านเอง					
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การสนับสนุนด้านวัตถุสิ่งของ การเงินและการงาน					
1. ท่านได้รับการช่วยเหลือเรื่องค่าใช้จ่ายในการรักษาพยาบาล					
2. สมาชิกในครอบครัวพาท่านมาพบแพทย์ตามนัด					
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APPENDIX B 5

แบบสอบถามการเผชิญความเครียดของผู้ป่วยมะเร็งท่อน้ำดี

<u>คำชี้แจง</u> แบบสอบถามนี้ต้องการทราบว่าหลังจากท่านรู้สึกไม่แน่นอนในความเจ็บป่วย **ภายในระยะเวลา 7 วันที่ผ่านมา** ท่านได้ใช้วิธีการเผชิญความเครียด ในแต่ละข้อด้านล่างนี้หรือไม่ และใช้มากน้อยเพียงใด โปรดทำเครื่องหมาย ✓ลงในช่องที่ตรงกับความรู้สึกหรือความเป็นจริงของท่านมากที่สุดเพียงคำตอบเดียวในแต่ละข้อ และมีเกณฑ์ในการตอบดังนี้

ไม่เคยใช้	หมายถึงท่านไม่เคยใช้วิธีนั้นในการเผชิญความเครียด
ใช้นานๆ ครั้ง	หมายถึงท่านใช้วิธีนั้นนานๆ ครั้งในการเผชิญกับความเครียด
ใช้เป็นบางครั้ง	หมายถึงท่านใช้วิธีนั้นเป็นบางครั้งในการเผชิญกับความเครียด
ใช้บ่อยๆ	หมายถึงท่านใช้วิธีนั้นบ่อยๆในการเผชิญกับความเครียด
ใช้เกือบทุกครั้ง	หมายถึงท่านใช้วิธีนั้นเกือบทุกครั้งในการเผชิญกับความเครียด

วิธีการเผชิญความเครียด	ไม่เคยใช้	ใช้นานๆครั้ง	ใช้เป็นบางครั้ง	ใช้บ่อยๆ	ใช้เกือบทุกครั้ง
1. กังวลใจ, กลุ้มใจ					
2. หากิจกรรมทำหรือออกกำลังกายที่สามารถทำได้เพื่อระบายความเครียด					
3. มีความหวังว่าทุกสิ่งทุกอย่างจะดีขึ้น					
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36. ยอมรับแม้ไม่ใช่สิ่งที่ดีที่สุดตามคาดหวัง					

APPENDIX B 6

คำชี้แจง ข้อความข้างล่างนี้เป็นข้อความที่ผู้ป่วยโรคเดียวกับท่านกล่าวว่ามีความสำคัญ ขอให้ท่านอ่านแล้วเลือกวงกลมเพียงหนึ่งหมายเลขในแต่ละหัวข้อ ตามความรู้สึกที่แท้จริงของท่าน **ในระยะ 7 วันที่ผ่านมาท่านรู้สึกว่าเป็นอย่างไรบ้าง**

	ความผาสุกด้านร่างกาย	**ไม่เลย**	**เล็กน้อย**	**ปานกลาง**	**ค่อนข้างมาก**	**มากที่สุด**
GP1	ข้าพเจ้ารู้สึกหมดเรี่ยวแรง	0	1	2	3	4
GP2	ข้าพเจ้ามีอาการคลื่นไส้	0	1	2	3	4
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	ความผาสุกด้านสังคม/ครอบครัว	**ไม่เลย**	**เล็กน้อย**	**ปานกลาง**	**ค่อนข้างมาก**	**มากที่สุด**
GS1	ข้าพเจ้ารู้สึกใกล้ชิดสนิทสนมกับเพื่อนๆ	0	1	2	3	4
GS2	ข้าพเจ้าได้รับกำลังใจจากครอบครัว	0	1	2	3	4
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	ความผาสุกด้านอารมณ์ จิตใจ	**ไม่เลย**	**เล็กน้อย**	**ปานกลาง**	**ค่อนข้างมาก**	**มากที่สุด**
GE1	ข้าพเจ้ารู้สึกเศร้าใจ	0	1	2	3	4
GE2	ข้าพเจ้ารู้สึกพอใจกับวิธีที่ข้าพเจ้าปรับตัวกับการเจ็บป่วยของตนเอง	0	1	2	3	4
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	ความผาสุกด้านการปฏิบัติกิจกรรม	**ไม่เลย**	**เล็กน้อย**	**ปานกลาง**	**ค่อนข้างมาก**	**มากที่สุด**
GF1	ข้าพเจ้าสามารถทำงานทั่วไปได้ (รวมถึงงานบ้าน)	0	1	2	3	4
GF2	ข้าพเจ้าพึงพอใจในผลสำเร็จของงาน (รวมถึงงานบ้าน)	0	1	2	3	4
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APPENDIX C

PERMISSION DOCUMENT FOR USING THE INSTRUMENTS

FUNCTIONAL ASSESSMENT OF CHRONIC ILLNESS THERAPY (FACIT) LICENSING AGREEMENT
from FACIT.org

May 11, 2009

The Functional Assessment of Chronic Illness Therapy system of Quality of Life questionnaires and all related subscales, translations, and adaptations ("FACIT System") are owned and copyrighted by David Cella, Ph.D. The ownership and copyright of the FACIT System - resides strictly with Dr. Cella. Dr. Cella has granted FACIT.org (Licensor) the right to license usage of the FACIT System to other parties. Licensor represents and warrants that it has the right to grant the License contemplated by this agreement. Licensor provides to **Busaba Somjaivong** *the licensing agreement outlined below.*

This letter serves notice that **Busaba Somjaivong** and all its affiliates (as defined below) ("COMPANY") are granted license to use the **Thai** version of the **FACT-G** in one study.

"Affiliate" of (COMPANY) shall mean any corporation or other business entity controlled by, controlling or under common control with (COMPANY). For this purpose, "control" shall mean direct or indirect beneficial ownership of fifty percent (50%) or more of the voting or income interest in such corporation or other business entity.

This current license extends to (COMPANY) subject to the following terms:

1) (COMPANY) agrees to complete a FACIT collaborator's form on our website, www.FACIT.org. (COMPANY) is not required to provide any proprietary or confidential information on the website. Licensor agrees to use the information in the website database for internal tracking purposes only.

2) (COMPANY) agrees to provide Licensor with copies of any publications which come about as the result of collecting data with any FACIT questionnaire.

3) Due to the ongoing nature of cross-cultural linguistic research, Licensor reserves the right to make adaptations or revisions to wording in the FACIT, and/or related translations as necessary. If such changes occur, (COMPANY) will have the option of using either previous or updated versions according to its own research objectives.

4) (COMPANY) and associated vendors may not change the wording or phrasing of any FACIT document without previous permission from Licensor. If any changes are made to the wording or phrasing of any FACIT item without permission, the document cannot be considered the FACIT, and subsequent analyses and/or comparisons to other FACIT data will not be considered appropriate. Permission

to use the name “FACIT” will not be granted for any unauthorized translations of the FACIT items. Any analyses or publications of unauthorized changes or translated versions may not use the FACIT name. Any unauthorized translation will be considered a violation of copyright protection.

5) In all publications and on every page of the FACIT used in data collection, Licensor requires the copyright information be listed precisely as it is listed on the questionnaire itself.

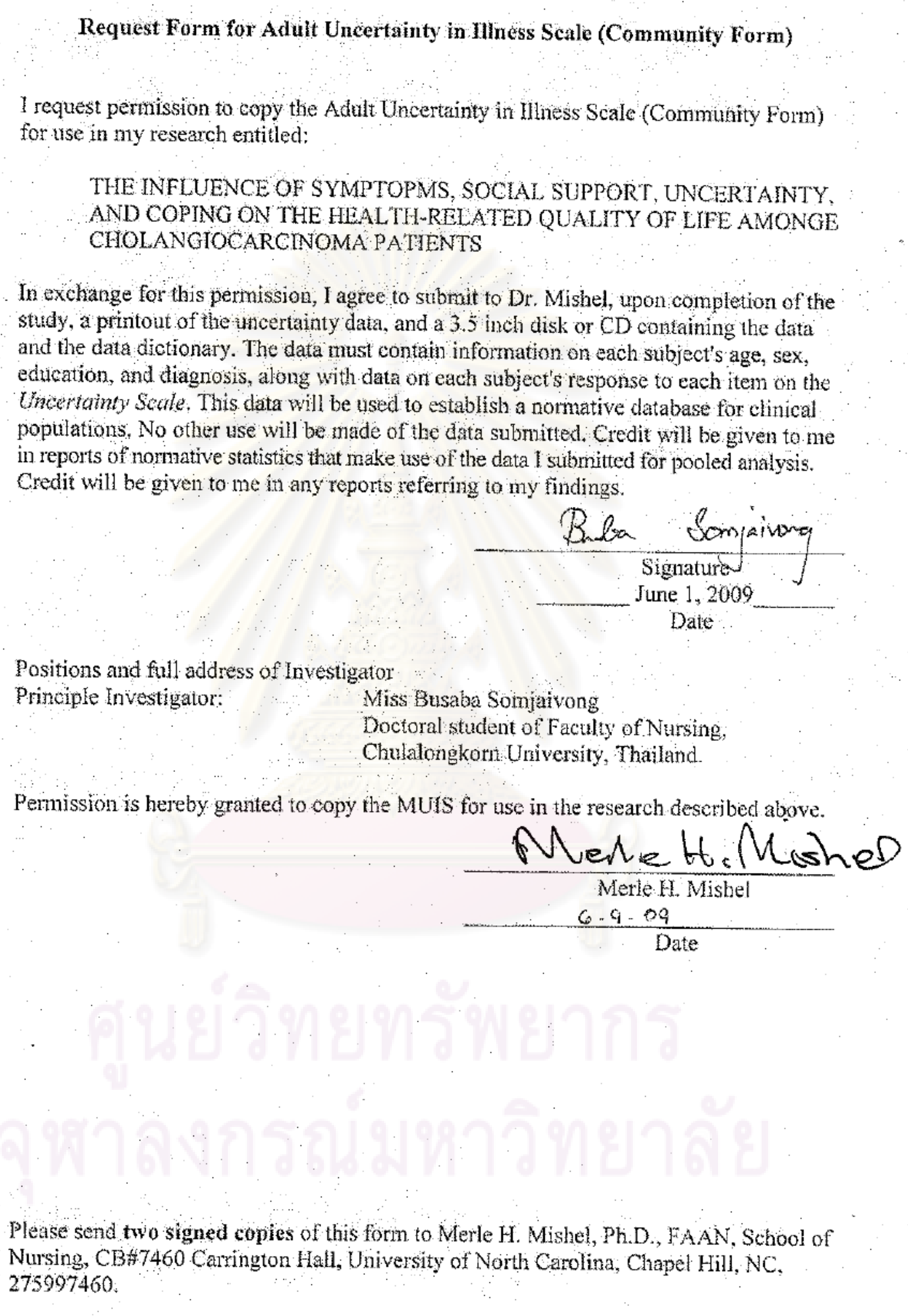
6) This license is not extended to electronic data capture vendors of (COMPANY). Electronic versions of the FACIT questionnaires are considered derivative works and are not covered under this license. Permission for use of an electronic version of the FACIT must be covered under separate agreement between the electronic data capture vendor and FACIT.org

7) This license is only extended for use on the internet on servers internal to (COMPANY). This FACIT license may not be used with online data capture unless specifically agreed to by Licensor in writing. Such agreement will only be provided in cases where access is password protected.

8) Licensor reserves the right to withdraw this license if (COMPANY) engages in scientific or copyright misuse of the FACIT system of questionnaires.

9) In exchange for this license, (COMPANY) agrees to pay a fee of $1,500 per language, per subscale, per trial for Roman-font languages (e.g. Spanish, French, German) and $2,000 per language, per subscale, per trial for non-Roman-font languages (e.g. Japanese, Russian, Arabic). #9 IS NOT APPLICABLE AS THE FEE HAS BEEN WAIVED FOR THIS STUDY ONLY.

FACIT.org
381 S. Cottage Hill Avenue
Elmhurst, IL 60126
USA
www.FACIT.org



Request Form for Adult Uncertainty in Illness Scale (Community Form)

I request permission to copy the Adult Uncertainty in Illness Scale (Community Form) for use in my research entitled:

> THE INFLUENCE OF SYMPTOPMS, SOCIAL SUPPORT, UNCERTAINTY, AND COPING ON THE HEALTH-RELATED QUALITY OF LIFE AMONGE CHOLANGIOCARCINOMA PATIENTS

In exchange for this permission, I agree to submit to Dr. Mishel, upon completion of the study, a printout of the uncertainty data, and a 3.5 inch disk or CD containing the data and the data dictionary. The data must contain information on each subject's age, sex, education, and diagnosis, along with data on each subject's response to each item on the *Uncertainty Scale*. This data will be used to establish a normative database for clinical populations. No other use will be made of the data submitted. Credit will be given to me in reports of normative statistics that make use of the data I submitted for pooled analysis. Credit will be given to me in any reports referring to my findings.

Bsba Somjaivong
Signature
June 1, 2009
Date

Positions and full address of Investigator
Principle Investigator: Miss Busaba Somjaivong
Doctoral student of Faculty of Nursing,
Chulalongkorn University, Thailand.

Permission is hereby granted to copy the MUIS for use in the research described above.

Merle H. Mishel
Merle H. Mishel
6-9-09
Date

Please send **two signed copies** of this form to Merle H. Mishel, Ph.D., FAAN, School of Nursing, CB#7460 Carrington Hall, University of North Carolina, Chapel Hill, NC, 275997460.

4-12-2010

Busaba Somjaivong, doctoral student at Chulalongkorn University in Thailand (and visiting doctoral student at Indiana University in USA) has permission to use the Jalowiec Coping Scale in her study on cholangiocarcinoma patients.

Dr Anne Jalowiec, RN, PhD
Professor Emeritus, Loyola University of Chicago
Email: ajalowiec@yahoo.com

ที่ ศธ 0514.10/ 1766

บัณฑิตวิทยาลัย มหาวิทยาลัยขอนแก่น
อำเภอเมือง จังหวัดขอนแก่น 40002

2 กรกฎาคม 2552

เรื่อง อนุญาตให้ใช้เครื่องมือในการทำวิทยานิพนธ์

เรียน คณบดีคณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

อ้างถึง หนังสือที่ ศธ 0512.11/1285 ลว. 25 มิ.ย. 52

ตามหนังสือที่อ้างถึง โดยนางสาวบุษบา สมใจวงษ์ นิสิตขั้นปริญญาดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (นานาชาติ) คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ได้ขออนุญาตใช้เครื่องมือในการทำวิทยานิพนธ์ของมหาบัณฑิตหลักสูตรพยาบาลศาสตรมหาบัณฑิต สาขาวิชาการพยาบาลผู้ใหญ่ มหาวิทยาลัยขอนแก่น ดังนี้

1. แบบสัมภาษณ์จากวิทยานิพนธ์เรื่อง "ปัจจัยที่มีอิทธิพลต่อการปรับตัวของผู้ป่วยมะเร็งท่อน้ำดีหลังผ่าตัด" ของนางนวลจันทร์ ธานินทร์สุรัตน์ ซึ่งมีผู้ช่วยศาสตราจารย์พรรณงาม พรรณเชษฐ์ เป็นอาจารย์ที่ปรึกษา

2. แบบสอบถามจากวิทยานิพนธ์เรื่อง "สิ่งที่ก่อให้เกิดความเครียดและวิธีการเผชิญความเครียดในผู้ป่วยมะเร็งศีรษะและคอภายหลังได้รับการฉายรังสี" ของนางสาวไพพร แซ่เตีย ซึ่งมี รศ.สุจิตรา ลิ้มอำนวยลาภ เป็นอาจารย์ที่ปรึกษา ความละเอียดแจ้งแล้ว นั้น

บัณฑิตวิทยาลัย มหาวิทยาลัยขอนแก่น พิจารณาแล้ว ยินดีให้นางสาวบุษบา สมใจวงษ์ ใช้เครื่องมือวิจัยดังกล่าวได้ แต่ทั้งนี้ ต้องมีการอ้างอิงที่มาของเครื่องมืออย่างถูกต้อง

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(ผู้ช่วยศาสตราจารย์อัญชลี ตัตตะวะศาสตร์)
รองคณบดีฝ่ายวิชาการ
ปฏิบัติราชการแทนคณบดีบัณฑิตวิทยาลัย

โทรศัพท์ 0-4320-2420
โทรสาร 0-4320-2421

APPENDIX D

CONTENT VALID INDEX

The Contend Validity of the MMSAS

The detail of all experts; opinion are as follows:

Symptoms	Not at all agreement	A little bit agreement	Quit a bit agreement	Very much agreement
1. abdomen pain or dyspepsia			1	4
2. lack of appetite			2	3
3. nausea		2	1	2
4. vomiting		2	1	2
5. fatigue			2	3
6. Fever			3	2
7. itching			3	2
8. difficult sleeping			3	2
9. anxiety			2	3
10. loss of body image from yellow skin or/and having a biliary stent			3	2

CVI = number of items that more than one experts rated quit a bit agreement or very much agreement / number of total items

= 8/10

= .80

APPENDIX E

LIST OF THE EXPERTS

List of Expert for Content Validity of the MMSES

1. Associate Professor Suchitra Limumnoilap, MSN, APN, RN

   Adult Nursing Department, Faculty of Nursing, Khon Kaen University

2. Assistant Professor Dr. Siri Cheain, MD

   Surgery Department, Faculty of Medicine, Khon Kaen University

3. Assistant Professor Dr. Narong Khuntikao, MD

   Surgery Department Faculty of Medicine, Khon Kaen University

4. Mrs. Ubol Juangpanich, MSN, APN, RN

   Nursing Department, Faculty of Medicine, Khon Kaen University

5. Mrs. Pathranit Jirawatchotikan, MSN, APN, RN

   Nursing Department, Faculty of Medicine, Khon Kaen University

List of Expert for Linguistic of the MUIS-C

1. Assistant Professor Woralap Sangvatanachai

   Language Institute, Khon Kaen University

2. Ajan Pronchompoo Ratchatha

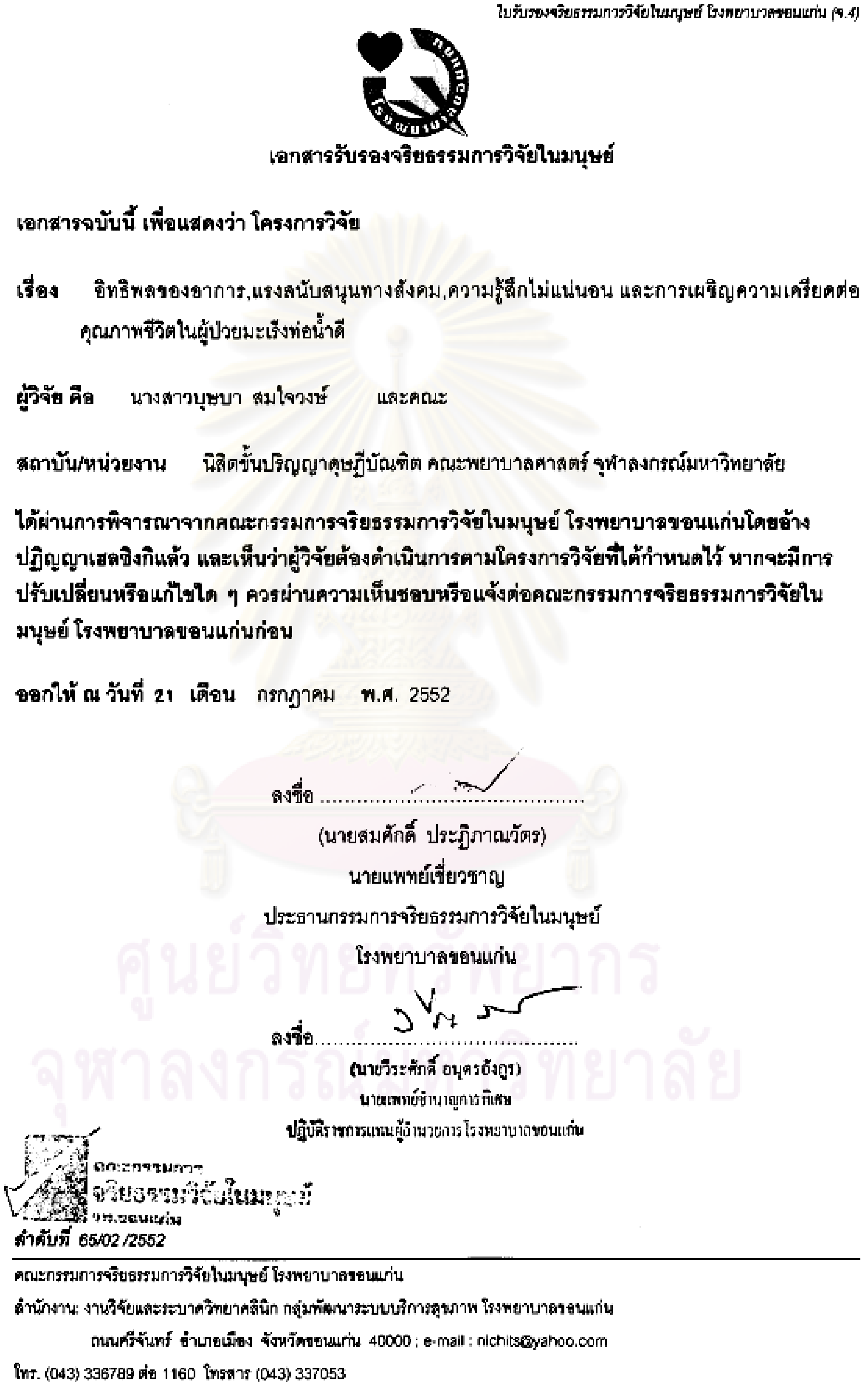
   Language Institute, Khon Kaen University

3. Assistant Professor Dr. Sonjai Chaiburang

   Private language institute, Khon Kaen

APPENDIX F

DOCUMRNTARY PROOF OF ETHICAL CLEARANCE



ใบรับรองจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลขอนแก่น (จ.4)

เอกสารรับรองจริยธรรมการวิจัยในมนุษย์

เอกสารฉบับนี้ เพื่อแสดงว่า โครงการวิจัย

เรื่อง อิทธิพลของอาการ,แรงสนับสนุนทางสังคม,ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อน้ำดี

ผู้วิจัย คือ นางสาวบุษบา สมใจวงษ์ และคณะ

สถาบัน/หน่วยงาน นิสิตขั้นปริญญาดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

ได้ผ่านการพิจารณาจากคณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลขอนแก่นโดยอ้างปฏิญญาเฮลซิงกิแล้ว และเห็นว่าผู้วิจัยต้องดำเนินการตามโครงการวิจัยที่ได้กำหนดไว้ หากจะมีการปรับเปลี่ยนหรือแก้ไขใด ๆ ควรผ่านความเห็นชอบหรือแจ้งต่อคณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลขอนแก่นก่อน

ออกให้ ณ วันที่ 21 **เดือน** กรกฎาคม **พ.ศ.** 2552

ลงชื่อ ....

(นายสมศักดิ์ ประฏิภาณวัตร)
นายแพทย์เชี่ยวชาญ
ประธานกรรมการจริยธรรมการวิจัยในมนุษย์
โรงพยาบาลขอนแก่น

ลงชื่อ..

(นายวีระศักดิ์ อนุตรอังกูร)
นายแพทย์ชำนาญการพิเศษ
ปฏิบัติราชการแทนผู้อำนวยการโรงพยาบาลขอนแก่น

คณะกรรมการ
จริยธรรมวิจัยในมนุษย์
รพ.ขอนแก่น

***ลำดับที่** 65/02 /2552*

คณะกรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลขอนแก่น
สำนักงาน: งานวิจัยและระบาดวิทยาคลินิก กลุ่มพัฒนาระบบบริการสุขภาพ โรงพยาบาลขอนแก่น
ถนนศรีจันทร์ อำเภอเมือง จังหวัดขอนแก่น 40000 ; e-mail : nichits@yahoo.com
โทร. (043) 336789 ต่อ 1160 โทรสาร (043) 337053

มหาวิทยาลัยขอนแก่น
หนังสือฉบับนี้ให้ไว้เพื่อแสดงว่า

โครงการวิจัยเรื่อง อิทธิพลของอาการ, แรงสนับสนุนทางสังคม, ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อน้ำดี (THE INFLUENCE OF SYMPTOPMS, SOCIAL SUPPORT, UNCERTAINTY, AND COPING ON THE HEALTH-RELATED QUALITY OF LIFE AMONG CHOLANGIOCARCINOMA PATIENTS)

ผู้วิจัย: นางสาวบุษบา สมใจวงษ์

หน่วยงานที่สังกัด: นิสิตหลักสูตรพยาบาลศาสตรดุษฎีบัณฑิต
คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

สำหรับเอกสาร:

1. แบบเสนอเพื่อขอรับการพิจารณาจริยธรรมการวิจัยในมนุษย์ Version 1.1 ฉบับลงวันที่ 25 สิงหาคม พ.ศ. 2552
2. โครงการวิจัยฉบับสมบูรณ์ Version 1.1 ฉบับลงวันที่ 25 สิงหาคม พ.ศ. 2552
3. แบบคำชี้แจงสำหรับอาสาสมัคร Version 1.0 ฉบับลงวันที่ 10 กรกฎาคม พ.ศ. 2552
4. แบบใบยินยอมให้ทำการวิจัยจากผู้ถูกวิจัย Version 1.0 ฉบับลงวันที่ 10 กรกฎาคม พ.ศ. 2552
5. แบบบันทึกข้อมูล Version 1.0 ฉบับลงวันที่ 10 กรกฎาคม พ.ศ. 2552

ได้ผ่านการรับรองจากคณะกรรมการจริยธรรมการวิจัยในมนุษย์มหาวิทยาลัยขอนแก่น โดยยึดหลักเกณฑ์ตาม คำประกาศเฮลซิงกิ (Declaration of Helsinki) และแนวทางการปฏิบัติการวิจัยทางคลินิกที่ดี (ICH GCP)

ให้ไว้ ณ วันที่ 31 สิงหาคม พ.ศ. 2552

(รองศาสตราจารย์จิราภรณ์ ศรีนัครินทร์)
ประธานคณะกรรมการจริยธรรมการวิจัยประจำสาขา วิชาทางชีววเวชศาสตร์และการวิจัยทางการแพทย์ มหาวิทยาลัยขอนแก่น

ลำดับที่ 4.3.01: 14/2552
***เลขที่:* HE521166** วันหมดอายุ : 30 สิงหาคม พ.ศ. 2553

คณะกรรมการจริยธรรมการวิจัยในมนุษย์มหาวิทยาลัยขอนแก่น Institutional Review Board Number: IRB00001189
สำนักงาน: 123 ถนนมิตรภาพ อ.เมือง จ.ขอนแก่น 40002 Federal Wide Assurance: FWA00003418
โทร. (043) 366616, (043) 366617 โทรสาร (043) 366617

APPENDIX G

DOCUMRNTARY PERMISSION FOR COLLECING DATA

ที่ ขก 0027.1/ [illegible]

โรงพยาบาลขอนแก่น
ถนนศรีจันทร์ ขก 40000

17 กรกฎาคม 2552

เรื่อง ตอบรับการเก็บรวบรวมข้อมูลในการทำวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

อ้างถึง หนังสือคณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ที่ ศธ 0512.11/1311 ลงวันที่ 25 มิถุนายน 2552

ตามหนังสือที่อ้างถึง โดยนางสาวบุษบา สมใจวงษ์ นิสิตขั้นปริญญาดุษฎีบัณฑิต คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย หลักสูตรพยาบาลศาสตรดุษฎีบัณฑิต สาขาวิชาพยาบาลศาสตร์ (นานาชาติ) ได้ดำเนินการวิจัยเพื่อเสนอเป็นดุษฎีนิพนธ์ เรื่อง “อิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อน้ำดี” ซึ่งขอความอนุเคราะห์จากโรงพยาบาลขอนแก่น ในการเป็นสถานที่ศึกษาวิจัย ความละเอียดแจ้งแล้ว นั้น

ในการนี้ กรรมการจริยธรรมการวิจัยในมนุษย์ โรงพยาบาลขอนแก่น พิจารณาแล้วเห็นควรอนุมัติให้ดำเนินการวิจัยตามวัตถุประสงค์ได้ โดยให้ผู้วิจัยประสานงานกับหน่วยงานที่ต้องการเก็บข้อมูลโดยตรง และกรรมการจริยธรรมการวิจัยในมนุษย์ ได้ออกเอกสารรับรองจริยธรรมการวิจัยในมนุษย์ให้ แล้ว นั้น

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(นายวีระศักดิ์ อนุตรอังกูร)
นายแพทย์ชำนาญการพิเศษ
ปฏิบัติราชการแทนผู้อำนวยการโรงพยาบาลขอนแก่น

กลุ่มพัฒนาระบบบริการสุขภาพ
โทร. 04333 6789 ต่อ 1160 , 1116
โทรสาร 04333 7053

ที่ ศธ 0514.7.1.5.2/ 141/52

คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น
อำเภอเมือง จังหวัดขอนแก่น 40002

14 กันยายน 2552

เรื่อง อนุญาตให้นิสิตเก็บรวบรวมข้อมูลการวิจัย

เรียน คณบดีคณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย

อ้างถึง หนังสือที่ ศธ 0512.11/1563 ลงวันที่ 3 สิงหาคม 2552

ตามหนังสือที่อ้างถึง คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ขอความอนุเคราะห์ให้นางสาวบุษบา สมใจวงษ์ นิสิตขั้นปริญญาดุษฎีบัณฑิต ดำเนินการเก็บรวบรวมข้อมูลการวิจัยจากกลุ่มตัวอย่างผู้ป่วยมะเร็งท่อน้ำดี จำนวน 192 คน ณ ห้องตรวจผู้ป่วยนอก แผนกศัลยกรรม คณะแพทยศาสตร์ มหาวิทยาลัยขอนแก่น ความละเอียดแจ้งแล้วนั้น คณะฯ พิจารณาแล้วไม่ขัดข้องอนุญาตตามนัยดังกล่าว

จึงเรียนมาเพื่อโปรดทราบ

ขอแสดงความนับถือ

(รองศาสตราจารย์บุญส่ง พัจนสุนทร)
รองคณบดีฝ่ายวิชาการ
ปฏิบัติราชการแทนคณบดีคณะแพทยศาสตร์

APPENDIX H

INFORMED CONSENT

แบบยินยอมอาสาสมัคร

ข้าพเจ้า (นาย, นาง, นางสาว)……………………………………นามสกุล…………………………………..
อายุ………ปี อยู่บ้านเลขที่………..หมู่ที่…...ตำบล…………………….........อำเภอ……………………………
จังหวัด………………………………………………………รหัสไปรษณีย์………………………………..
ได้รับฟังคำอธิบายจาก……………………………… ………………………………………เกี่ยวกับการเป็นอาสาสมัครในโครงการวิจัย เรื่องอิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อน้ำดี ได้รับทราบถึงรายละเอียดของโครงการวิจัยเกี่ยวกับ

- วัตถุประสงค์และระยะเวลาที่ทำการวิจัย
- ขั้นตอนและวิธีการปฏิบัติตัวที่ข้าพเจ้าต้องปฏิบัติ

ข้าพเจ้าสามารถถอนตัวจากการศึกษานี้เมื่อใดก็ได้ถ้าข้าพเจ้าปรารถนา โดยไม่เสียสิทธิ์ใดๆ ในการรับการรักษาพยาบาลที่จะเกิดขึ้นตามมาในโอกาสต่อไปทั้งในปัจจุบันและอนาคต ณ สถานพยาบาลแห่งนี้หรือสถานพยาบาลอื่น

ข้าพเจ้าได้อ่านและเข้าใจคำอธิบายข้างต้นแล้ว จึงได้ลงนามยินยอมเป็นอาสาสมัครของโครงการวิจัยดังกล่าว

ลายมือชื่ออาสาสมัคร……………………..........……………………
(…………………..……………………………)
ลายมือชื่อผู้ให้ข้อมูล……………………..........………………........
(………………….…………………………………)
พยาน...(ไม่ใช่ผู้อธิบาย)
(..………………………………......................)
วันที่………เดือน……….…..พ.ศ…..……

ในกรณีที่อาสาสมัครไม่สามารถ อ่านหนังสือ/ลงลายมือชื่อ ได้ให้ใช้การประทับลายมือแทนดังนี้:

ข้าพเจ้าไม่สามารถอ่านหนังสือได้ แต่ผู้วิจัยได้อ่านข้อความในแบบยินยอมนี้ให้แก่ข้าพเจ้าฟังจนเข้าใจดี ข้าพเจ้าจึงประทับตราลายนิ้วมือขวาของข้าพเจ้าในแบบยินยอมนี้ด้วยความเต็มใจ

ลายมือชื่อผู้อธิบาย...
(…..)
พยาน…………………….........…(ไม่ใช่ผู้อธิบาย)
(…..………………………………………....)

ประทับลายนิ้วมือขวา วันที่.........เดือน.........…..........พ.ศ..............

APPENDIX I

PARTICIPANT INFORMATION SHEET

คำชี้แจงเพื่ออธิบายแก่อาสาสมัคร
เรื่อง อิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียด ต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อทางเดินน้ำดี

ดิฉันนางสาว บุษบา สมใจวงษ์ นิสิตปริญญาเอกคณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ใคร่ขอเชิญท่านเข้าร่วมการศึกษาเรื่อง "อิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อน้ำดี" เนื่องจากมะเร็งท่อน้ำดีเป็นมะเร็งที่พบได้บ่อยในภาคตะวันออกเฉียงเหนือ ผู้ป่วยส่วนใหญ่จะได้การรักษาเพื่อช่วยบรรเทาอาการและทำให้มีชีวิตที่ยืนยาวขึ้น เช่น การผ่าตัดเอาเนื้องอกออก การใส่สายท่อระบายทางเดินน้ำดี และการให้เคมีบำบัด เป็นต้น อย่างไรก็ตามผู้ป่วยมะเร็งท่อน้ำดีต้องเผชิญหน้ากับความทุกข์ทรมานต่างๆจากอาการของโรคและผลข้างเคียงจากการรักษา รวมทั้งความรู้สึกไม่แน่นอนในความเจ็บป่วยซึ่งสามารถส่งผลต่อคุณภาพชีวิตทั้งด้านร่างกาย จิตใจ สังคมครอบครัว และการปฏิบัติกิจกรรมต่างๆ ดังนั้นการศึกษาครั้งนี้ต้องการศึกษาถึงอิทธิพลของอาการ แรงสนับสนุนทางสังคม ความรู้สึกไม่แน่นอน และการเผชิญความเครียดต่อคุณภาพชีวิตในผู้ป่วยมะเร็งท่อทางเดินน้ำดี ข้อมูลที่ได้จะช่วยให้บุคลากรทางการแพทย์มีความรู้ความเข้าใจเกี่ยวกับปัจจัยที่มีผลต่อคุณภาพชีวิตผู้ป่วยมะเร็งท่อทางเดินน้ำดีมากขึ้น ซึ่งจะเป็นประโยชน์ในการกำหนดแนวทางการดูแลรักษาผู้ป่วยมะเร็งท่อน้ำดีอย่างเหมาะสม และช่วยเพิ่มคุณภาพชีวิตให้ดีขึ้นต่อไป

สำหรับท่านที่ยินดีเข้าร่วมโครงการ ดิฉันจะขออนุญาตในการเก็บข้อมูลเรื่องโรคและประวัติการรักษาจากเวชระเบียนของท่าน และสัมภาษณ์ข้อมูลส่วนตัว ข้อมูลของอาการต่างๆ ข้อมูลด้านความรู้สึกไม่แน่นอนในความเจ็บป่วย การรับรู้แรงสนับสนุนทางสังคม การเผชิญความเครียดและข้อมูลด้านคุณภาพชีวิต โดยจะสัมภาษณ์ท่านในฐานะที่ท่านเป็นผู้ป่วยมะเร็งท่อทางเดินน้ำดีมาอย่างน้อยหนึ่งเดือน และมารับบริการที่แผนกผู้ป่วยนอกโรงพยาบาลศรีนครินทร์ หรือโรงพยาบาลขอนแก่น การสัมภาษณ์แต่ละครั้งใช้เวลาประมาณ 30-45 นาที และการสัมภาษณ์จะไม่มีผลกระทบต่อการรักษาพยาบาลของท่าน ท่านสามารถขอยุติการเข้าร่วมการศึกษานี้เมื่อใดก็ได้ที่ท่านต้องการ โดยไม่ต้องแจ้งเหตุผล

ท่านสามารถที่จะไม่ตอบคำถามที่ท่านไม่ต้องการตอบ ข้อมูลที่ได้จากคำตอบและการตรวจร่างกายของท่านจะถูกนำไปร่วมกับข้อมูลของผู้เข้าร่วมในโครงการวิจัยคนอื่นๆ โดยข้อมูลของท่านจะถูกเก็บเป็นความลับและจะใช้รหัสแทนชื่อ นามสกุล ของท่านในแบบบันทึกข้อมูลและในการสืบค้นชื่อและรหัสประจำตัวของท่าน หากดิฉันตีพิมพ์ผลการศึกษาในวารสารทางวิชาการ จะไม่มีการระบุชื่อของท่านไม่ว่ากรณีใดๆ หากท่านตกลงที่จะเข้าร่วมในการศึกษานี้ นั่นคือท่านอนุญาตให้ดิฉันทำการสัมภาษณ์ท่านเพื่อการศึกษาวิจัยโดยเป็นการสมัครใจเท่านั้น ท่านมีสิทธิ์ที่จะไม่เข้าร่วมในโครงการวิจัยนี้ โดยไม่เสียสิทธ์ในการรักษาพยาบาลใดๆ ทั้งสิ้น

หากท่านมีข้อสงสัยโปรดซักถามดิฉันได้ทันที หากท่านมีปัญหาข้อสงสัยในภายหลังเกี่ยวกับการวิจัยครั้งนี้ ท่านสามารถติดต่อ นางสาวบุษบา สมใจวงษ์ นิสิตปริญญาเอก คณะพยาบาลศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย โทรศัพท์ติดต่อ 0-2218-9825 โทรศัพท์มือถือ 0-818-872-2438 หากท่านมีปัญหาสงสัยเกี่ยวกับสิทธิของท่านขณะเข้าร่วมการศึกษานี้ โปรดสอบถามที่สำนักงานคณะกรรมการจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยขอนแก่น ชั้น 17 อาคารสมเด็จพระศรีนครินทราบรมราชชนนี คณะแพทยศาสตร์ โทรศัพท์ติดต่อ 043-366616, 043-366617 เบอร์ภายใน 66616, 66617

APPENDIX J

SYMPTOMS PREVALENCE AND SYMPTOMS DISTRESS

Table J. Symptoms prevalence and symptoms distress

Symptoms	**Symptoms prevalence**		**Symptoms distress**[a]	
	Number	**Percentage**	**Number**	**Percentage**
Fatigue	227	87.3	39	15
Anxiety	227	87.3	16	6.2
Abdominal pain or dyspepsia	200	76.9	127	48.8
Lack of appetite	164	63.1	26	10
Difficulty sleeping	133	51.2	6	2.3
Fever	92	35.4	12	4.6
Itching	57	21.9	25	9.6
Nausea	49	18.8	0	0
Loss of body image	46	17.7	3	1.2
Vomiting	21	8.1	0	0

[a] Symptom distress was reported from the open question, “What is the symptom you have that is most distressing to you?”

APPENDIX K

THE MOST TOP TEN OF COPING STRATEGIES

The most top ten coping strategies that participants used

Coping strategies	**Percentages**
Don’t worry about it	97.7
Settle for the next best thing to what you really want	97.7
Accept the situation as it is	96.5
Hope that things will get better	96.2
Go to sleep, figuring things will look better in the morning	96.2
Pray, put your trust in the God	95%
Try to maintain some control over the situation	85%
Talk the problem over with someone who has been in the same disease	84.2%
Try to look at the problem objectively and see all sides	84.2%
Seek help from family or friends	81.2%

APPENDIX L

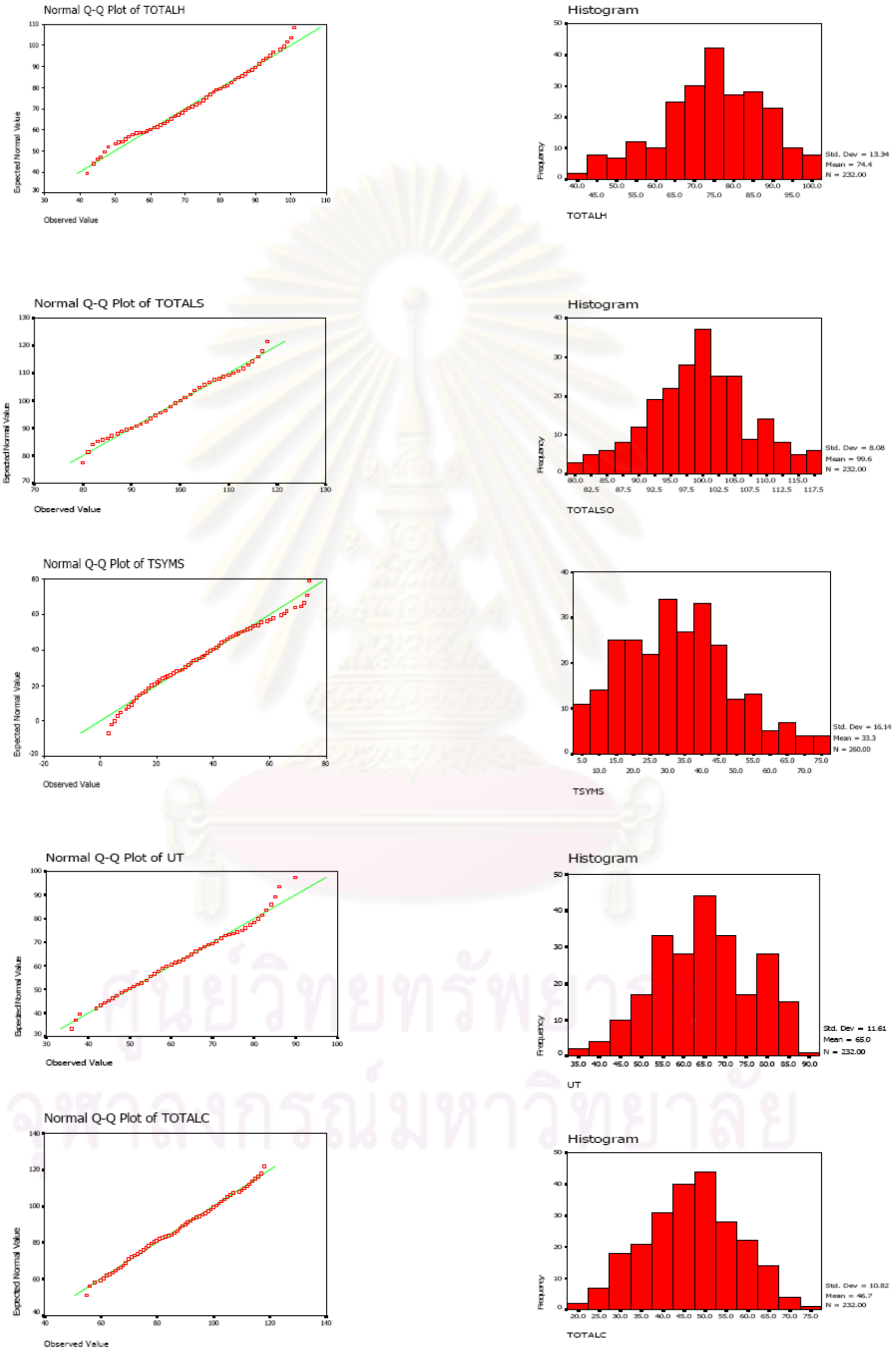
TESTING MULTIPLE REGRESSION ASSUMPTIONS

APPENDIX L1: NORMALITY TESTING

Kolmogorov-Smirnov test

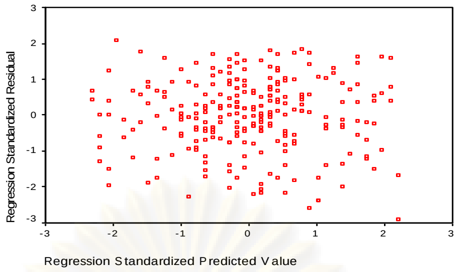
Variables	Kolmogorov-Smirnov test		
	Statistic	**df**	**Sig.**
Symptoms	.051	260	.200
Uncertainty	.055	260	.052
Coping	.054	260	.062
HRQOL	.051	260	.093
Social support	.054	260	.066

Q-Q plot Test



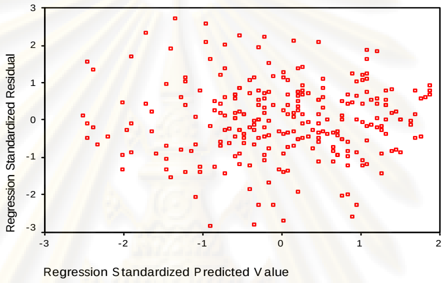
Normal distributions of symptoms, social support, uncertainty, coping, and HRQOL

APPENDIX L2: LINEARITY TESTING



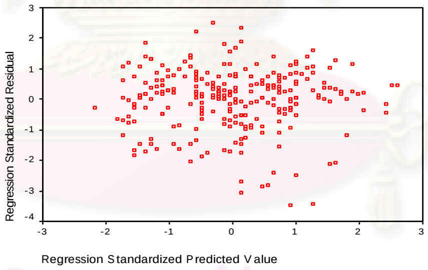
Independent Variable: Social support

Dependent Variable: HRQOL



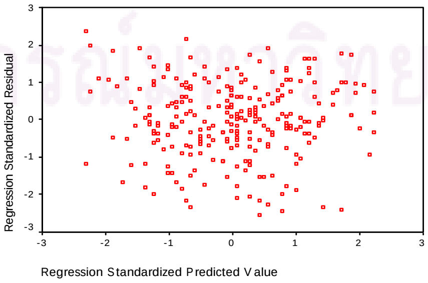
Independent Variable: Symptom

Dependent Variable: HRQOL



Independent variable: Uncertainty

Dependent Variable: HRQOL



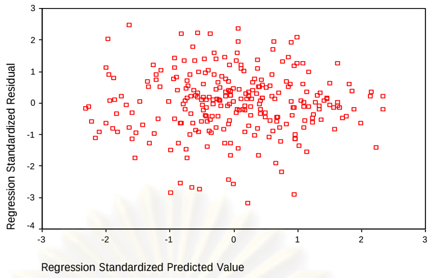
Independent Variable: Coping

Dependent Variable: HRQOL

APPENDIX L3: HOMOSCEDASTICITY TESTING

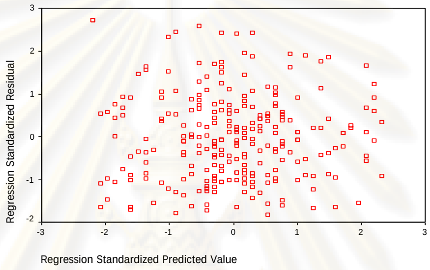
Independent variables: Symptoms, Uncertainty, Coping, Social support

Dependent variable: HRQOL



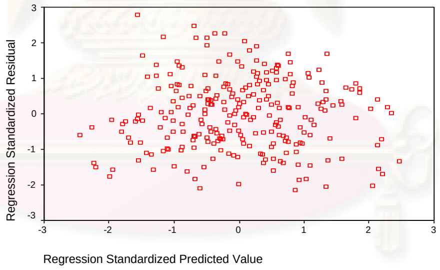
Indepentdent variable: Social support

Dependent variable: symptoms



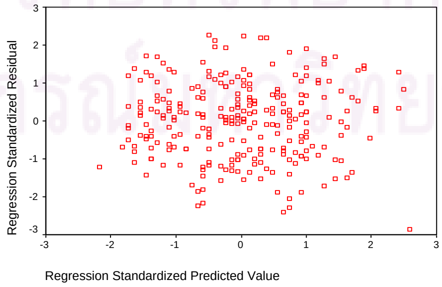
Independent variables: Symptoms, Social support

Dependent variable: UT



Independent variable: Uncertainty

Dependent variable: Coping



APPENDIX L4: MULTICOLLINEARITY TESTING

Variables	**Collinearity Statistics**	
	Tolerance	**VIF**
Social support	.911	1.098
Symptom	.713	1.403
Uncertainty	.663	1.508
Coping	.951	1.052

APPENDIX M

THE RELATIONSHIPS AMONG ALL VARIABLES

The relationships among dimensions of HRQOL and symptom, uncertainty, coping, and social support

The finding reported that physical well-being had a high negative relationship with symptoms (r = -.78, p < .01) and uncertainty (r = -.56, p < .01) (see Table M). Low positive relationships between physical well-being and coping (r = .17, p < .01). There was no significant correlation between physical well-being and social support (r = .08, p > .05) (see Table M).

Social/Family well-being had a low negative relationship with uncertainty (r = -.17, p <.01) and a moderate positive relationship with social support (r = 42, p < .01) (see Table M). There was no significant correlation between social/family well-being and symptom (r = -.09, p > .05), and coping (r = .10, p > .05).

Emotional well-being had a high negative relationship with symptoms (r = -.63, p < .01), and uncertainty (r = -.51, p < .01) and had a low positive relationship with social support (r = .19, p < .01), and coping (r = .14, p < .05) (see Table M).

Functional well-being had a high negative relationship with symptoms (r = -.73, p <.01), and uncertainty (r = -.42, p < .01) and had a low positive relationship with social support (r = .15, p < .05), and coping (r = .14, p <.05) (see Table M).

The relationships between HRQOL and dimensions of symptoms

The finding showed that HRQOL had a high negative relationships with frequency of symptoms (r = -.76, p <.01), severity of symptoms (ST) (r = -.79, p <.01), and distress of symptoms (r = .77, p <.01) (see Table M).

The relationships between uncertainty and dimensions of symptoms

The finding showed that there was a positive relationships between uncertainty and frequency of symptoms (r = .53, p < .01), severity of symptoms (r = .50, p < .01), and distress of symptoms (r = .50, p < .01) (see Table M).

The relationships between symptoms and dimensions of social support

Results indicated that there was a low negative relationship between symptoms and information support (r = -.13, p < .05) (see Table M). There was no significant relationship between symptom and emotional support (r = -.06, p > .05), appraisal support (r = -.03, p > .05), and instrument support (r = -.09, p > .05) (see Table M).

The relationships between uncertainty and dimensions of social support

There was a low negative relationship between uncertainty and appraisal support (r = -.26, p < .01), and a moderate negative relationship between uncertainty and informational support (r = -.34, p < .01) (see Table M). Uncertain did not have a significant relationship with emotional support (r = -.10, p > .05), and instrumental support (r = -.08, p > .05) (see Table M).

The relationships between uncertainty and dimensions of coping

Uncertainty had a moderate positive relationship with emotive coping strategies (r = .34, p < .01), and a moderate negative relationship with confrontive coping strategies (r = -.37, p < .01) (see Table M). Uncertain did not have a significant relationship with palliative coping strategies (r = -.11, p > .05) (see Table M).

The relationships between HRQOL and dimensions of coping

HRQOL had a moderate negative relationship with emotive coping strategies (r = -.48, p < .01), and a moderate positive relationship with confrontive coping strategies (r = .44, p < .01) (see Table M). HRQOL did not have a significant relationship with palliative coping strategies (r = .11, p > .05) (see Table M).

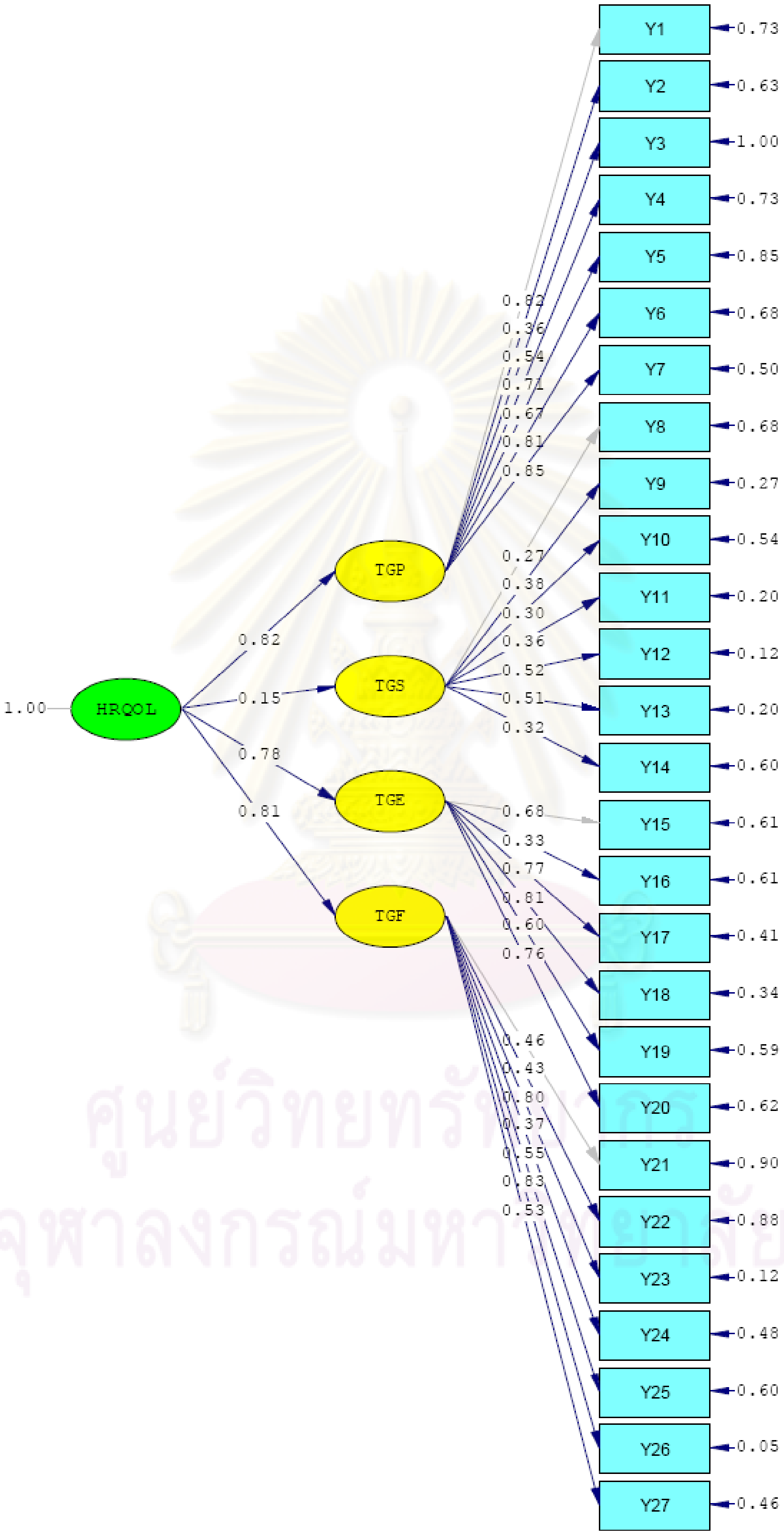
Table M Correlation matrix of all variables

	TSYMS	UT	TOTALS	TOTALC	TOTALH	FT	ST	DT	ET	AT	IT	IN	TE	TC	TP	TGP	TGS	TGE	TGF
TSYMS	1																		
UT	.533**	1																	
TOTALS	-.116	-.275**	1																
TOTALC	-.142*	-.186**	.156*	1															
TOTALH	-.803**	-.588**	.251**	.187**	1														
FT	.961**	.532**	-.140*	-.102	-.760**	1													
ST	.957**	.501**	-.101	-.178**	-.787**	.873**	1												
DT	.963**	.500**	-.089	-.136*	-.767**	.884**	.891**	1											
ET	-.058	-.101	.607**	-.010	.132*	-.076	-.049	-.040	1										
AT	-.030	-.264**	.695**	.075	.102	-.067	-.014	-.002	.205**	1									
IT	-.129*	-.336**	.554**	.217**	.179**	-.112	-.121	-.140*	.114	.394**	1								
IN	-.092	-.077	.748**	.124*	.230**	-.112	-.086	-.065	.375**	.250**	.113	1							
TE	.474**	.345**	-.099	.186**	-.477**	.450**	.458**	.457**	-.073	-.041	-.104	-.057	1						
TC	-.408**	-.369**	.232**	.781*	.438**	-.366**	-.425**	-.389**	.052	.123*	.242**	.187**	-.269**	1					
TP	-.063	-.106	.048	.702**	.112	-.025	-.097	-.064	-.039	.000	.161**	.019	-.037**	.302**	1				
TGP	-.775**	-.562**	.077	.165**	.853**	-.729**	-.760**	-.746**	-.012	.034	.160**	.035	-.379**	.352**	.116	1			
TGS	-.092	-.168**	.418**	.105	.348**	-.103	-.091	-.070	.236**	.250**	.085	.445**	-.070	.153*	.041	.049	1		
TGE	-.629**	-.510**	.190**	.139*	.810**	-.597**	-.615**	-.600**	.096	.047	.180**	.173**	-.450**	.395**	.055	.586**	.115	1	
TGF	-.731**	-.420**	.153*	.137*	.851**	-.685**	-.717**	-.705**	.137**	.030	.094	.140*	-.449**	.360**	.104	.679**	.122*	.599**	1

* Correlation is significant at 0.05 (2-tailed), ** Correlation is significant at 0.01 (2-tailed)
Abbreviations: Symptoms (TSYMS), Symptom frequency (FT), Symptom severity (ST), Symptom distress (DT), Uncertainty (UT), Social Support (TOTALS), Emotional support (ET), Appraisal support (AT), Information support (IT), Instrument support (IN), Coping (TOTALC), Emotive coping (TE), Confrontive coping (TC), Palliative coping (TP), HRQOL (TOTALH), Physical well-being (TGP), Social/family well-being (TGS), Emotional well-being (TGE), Functional well-being (TGF)

APPENDIX N

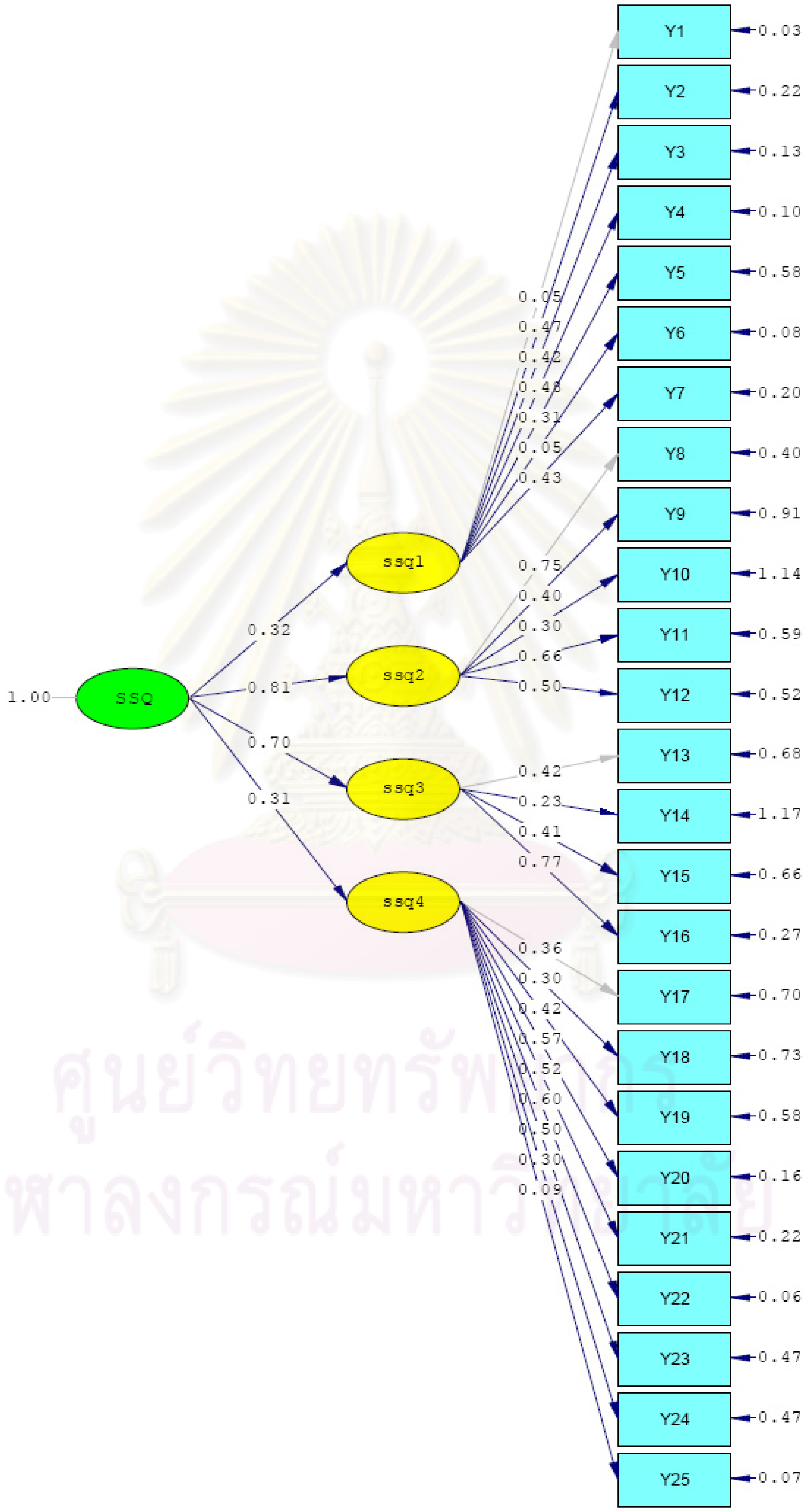
MEASUREMENT MODEL TESTING



Chi square = 224.18, df = 253, P-value = 0.904, RMSEA = 0.000

Fit Indices of HRQOL

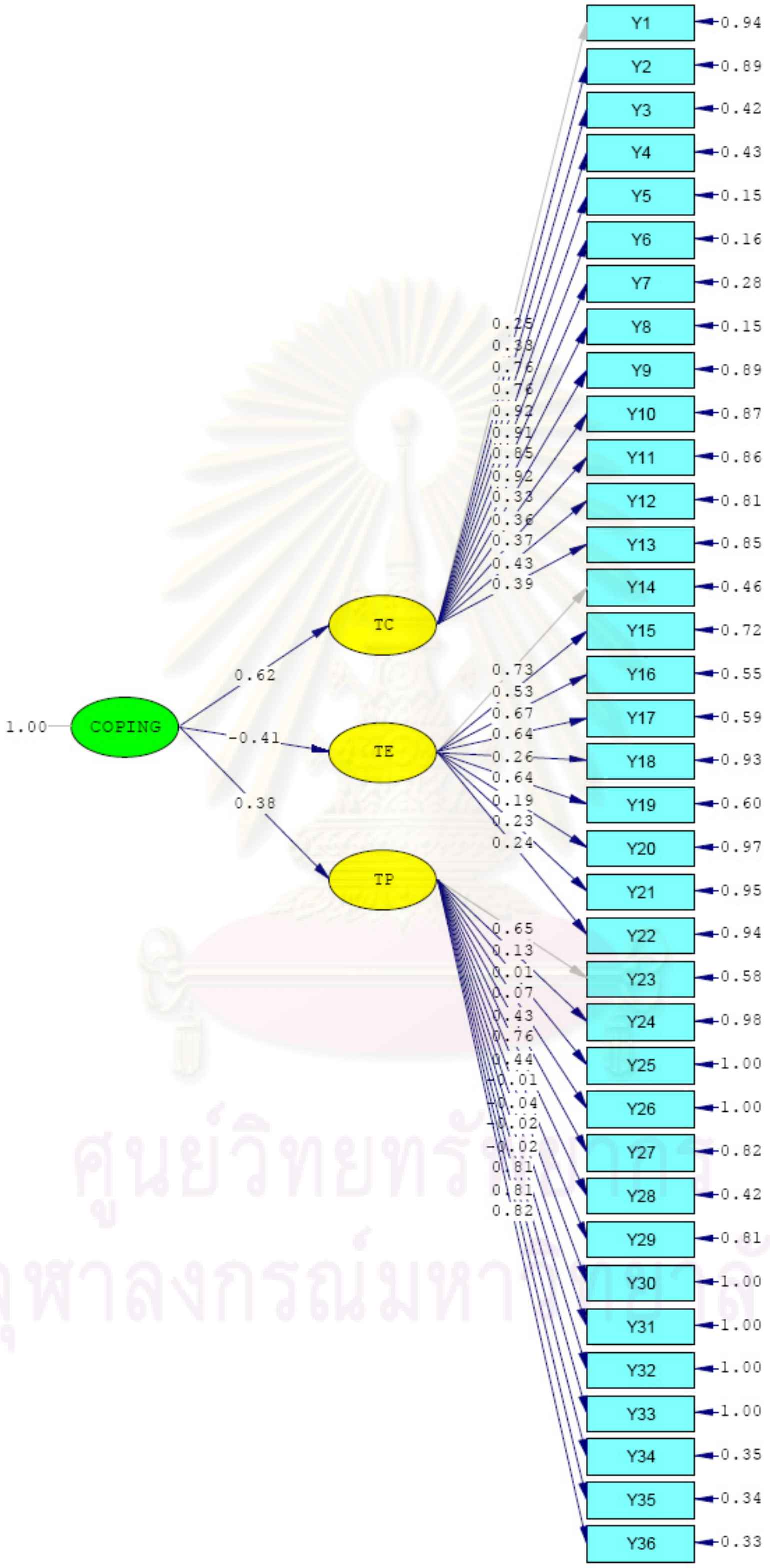
Degrees of Freedom = 253
Minimum Fit Function Chi-Square = 228.430 (P = 0.864)
Normal Theory Weighted Least Squares Chi-Square = 224.180 (P = 0.904)
Estimated Non-centrality Parameter (NCP) = 0.0
90 Percent Confidence Interval for NCP = (0.0 ; 8.145)
Minimum Fit Function Value = 0.882
Population Discrepancy Function Value (F0) = 0.0
90 Percent Confidence Interval for F0 = (0.0 ; 0.0314)
Root Mean Square Error of Approximation (RMSEA) = 0.0
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.0111)
P-Value for Test of Close Fit (RMSEA < 0.05) = 1.00
Expected Cross-Validation Index (ECVI) = 1.942
90 Percent Confidence Interval for ECVI = (1.942 ; 1.974)
ECVI for Saturated Model = 2.919
ECVI for Independence Model = 28.991
Chi-Square for Independence Model with 351 Degrees of Freedom = 7454.738
Independence AIC = 7508.738
Model AIC = 474.180
Saturated AIC = 756.000
Independence CAIC = 7631.876
Model CAIC = 1044.265
Saturated CAIC = 2479.938
Normed Fit Index (NFI) = 0.969
Non-Normed Fit Index (NNFI) = 1.005
Parsimony Normed Fit Index (PNFI) = 0.699
Comparative Fit Index (CFI) = 1.000
Incremental Fit Index (IFI) = 1.003
Relative Fit Index (RFI) = 0.957
Critical N (CN) = 350.503
Root Mean Square Residual (RMR) = 0.0581
Standardized RMR = 0.0613
Goodness of Fit Index (GFI) = 0.940
Adjusted Goodness of Fit Index (AGFI) = 0.910
Parsimony Goodness of Fit Index (PGFI) = 0.629



Chi square = 250.66, df = 235, P-value = 0.230, RMSEA = 0.016

Fit Indices of SSQ

Degrees of Freedom = 235
Minimum Fit Function Chi-Square = 248.628 (P = 0.259)
Normal Theory Weighted Least Squares Chi-Square = 250.657 (P = 0.230)
Estimated Non-centrality Parameter (NCP) = 15.657
90 Percent Confidence Interval for NCP = (0.0 ; 57.855)
Minimum Fit Function Value = 0.960
Population Discrepancy Function Value (F0) = 0.0605
90 Percent Confidence Interval for F0 = (0.0 ; 0.223)
Root Mean Square Error of Approximation (RMSEA) = 0.0160
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.0308)
P-Value for Test of Close Fit (RMSEA < 0.05) = 1.00
Expected Cross-Validation Index (ECVI) = 1.663
90 Percent Confidence Interval for ECVI = (1.602 ; 1.826)
ECVI for Saturated Model = 2.510
ECVI for Independence Model = 14.322
Chi-Square for Independence Model with 300 Degrees of Freedom = 3659.314
Independence AIC = 3709.314
Model AIC = 430.657
Saturated AIC = 650.000
Independence CAIC = 3823.331
Model CAIC = 841.118
Saturated CAIC = 2132.222
Normed Fit Index (NFI) = 0.932
Non-Normed Fit Index (NNFI) = 0.995
Parsimony Normed Fit Index (PNFI) = 0.730
Comparative Fit Index (CFI) = 0.996
Incremental Fit Index (IFI) = 0.996
Relative Fit Index (RFI) = 0.913
Critical N (CN) = 301.385
Root Mean Square Residual (RMR) = 0.0427
Standardized RMR = 0.0606
Goodness of Fit Index (GFI) = 0.928
Adjusted Goodness of Fit Index (AGFI) = 0.901
Parsimony Goodness of Fit Index (PGFI) = 0.671



Chi square = 318.589 df = 428, P-value = 0.999, RMSEA = 0.000

Fit Indices of Coping

Degrees of Freedom = 428
Minimum Fit Function Chi-Square = 326.086 (P = 1.00)
Normal Theory Weighted Least Squares Chi-Square = 318.586 (P = 1.00)
Estimated Non-centrality Parameter (NCP) = 0.0
90 Percent Confidence Interval for NCP = (0.0 ; 0.0)
Minimum Fit Function Value = 1.259
Population Discrepancy Function Value (F0) = 0.0
90 Percent Confidence Interval for F0 = (0.0 ; 0.0)
Root Mean Square Error of Approximation (RMSEA) = 0.0
90 Percent Confidence Interval for RMSEA = (0.0 ; 0.0)
P-Value for Test of Close Fit (RMSEA < 0.05) = 1.000
Expected Cross-Validation Index (ECVI) = 3.490
90 Percent Confidence Interval for ECVI = (3.490 ; 3.490)
ECVI for Saturated Model = 5.143
ECVI for Independence Model = 38.407
Chi-Square for Independence Model with 630 Degrees of Freedom = 9875.442
Independence AIC = 9947.442
Model AIC = 794.586
Saturated AIC = 1332.000
Independence CAIC = 10111.626
Model CAIC = 1880.028
Saturated CAIC = 4369.414
Normed Fit Index (NFI) = 0.967
Non-Normed Fit Index (NNFI) = 1.016
Parsimony Normed Fit Index (PNFI) = 0.657
Comparative Fit Index (CFI) = 1.000
Incremental Fit Index (IFI) = 1.011
Relative Fit Index (RFI) = 0.951
Critical N (CN) = 397.334
Root Mean Square Residual (RMR) = 0.0781
Standardized RMR = 0.0642
Goodness of Fit Index (GFI) = 0.936
Adjusted Goodness of Fit Index (AGFI) = 0.900
Parsimony Goodness of Fit Index (PGFI) = 0.602

APPENDIX O

LISREL PRINTOUT OF FINAL MODEL TESTING

```
                              DATE:  3/13/2011
                               TIME: 15:37


                              L I S R E L  8.72

                                     BY

                         Karl G. J”reskog & Dag S”rbom



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 The following lines were read from file D:\Data dissertation\Path (Dec)\syntax (TE) add.LS8:

 PATH ANALYSIS FOR HRQOL
 DA NI=5 NO=260 MA=CM
 LA
 'Sympt' 'Uncertainty' 'Eom c' 'HRQOL' 'Social'
 KM
 1.000
 .533 1.000
 .474 .345 1.000
 -.803 -.588 -.477 1.000
 -.116 -.275 -.099 .251 1.000
 SD
 16.137 11.340 5.603 13.189 8.410
 MO NY=4 NX=1 C
 BE=FU, FI, GA=FU,FR PS=DI,FR
 FR BE(2,1) BE(4,1) BE(3,2) BE(4,2) BE(4,3) BE(3,1)
 FI GA(3,1)
 PATH DIAGRAM
 OU ML SE TV EF SS RS FS MR MI ND=3 ADD=OFF

 PATH ANALYSIS FOR HRQOL

                    Number of Input Variables  5
                    Number of Y - Variables    4
                    Number of X - Variables    1
                    Number of ETA - Variables  4
                    Number of KSI - Variables  1
                    Number of Observations   260

 PATH ANALYSIS FOR HRQOL

         Covariance Matrix

               Sympt   Uncertai      Eom c      HRQOL     Social
            --------   --------   --------   --------   --------
    Sympt    260.403
 Uncertai     97.536    128.596
    Eom c     42.857     21.921     31.394
    HRQOL   -170.903    -87.943    -35.249    173.950
   Social    -15.743    -26.227     -4.665     27.841     70.728
```

```
PATH ANALYSIS FOR HRQOL

Parameter Specifications

     BETA

         Sympt   Uncertai    Eom c     HRQOL
       --------  --------  --------  --------
  Sympt       0        0        0        0
Uncertai      1        0        0        0
  Eom c       2        3        0        0
  HRQOL       4        5        6        0

     GAMMA

          Social
       --------
  Sympt       7
Uncertai      8
  Eom c       0
  HRQOL       9

     PHI

          Social
       --------
             10

     PSI

         Sympt   Uncertai    Eom c     HRQOL
       --------  --------  --------  --------
             11       12       13       14


PATH ANALYSIS FOR HRQOL

Number of Iterations =  0

LISREL Estimates (Maximum Likelihood)

     BETA

         Sympt   Uncertai    Eom c     HRQOL
       --------  --------  --------  --------
  Sympt     - -      - -      - -      - -

Uncertai  0.357      - -      - -      - -
        (0.036)
          9.901

  Eom c   0.141    0.064      - -      - -
        (0.022)  (0.032)
          6.303    2.007

  HRQOL  -0.531   -0.205   -0.228      - -
        (0.035)  (0.049)  (0.092)
        -15.020   -4.199   -2.480
```

```
         GAMMA

           Social
         --------
   Sympt     -0.223
           (0.119)
            -1.876

Uncertai     -0.291
           (0.069)
            -4.212

   Eom c       - -

   HRQOL      0.185
           (0.056)
             3.320


      Covariance Matrix of Y and X

            Sympt   Uncertai      Eom c      HRQOL     Social
         --------   --------   --------   --------   --------
   Sympt    260.403
Uncertai     97.536    128.596
   Eom c     42.857     21.921     31.394
   HRQOL   -170.903    -87.943    -35.106    173.884
  Social    -15.743    -26.227     -3.887     27.664     70.728

      PHI

           Social
         --------
           70.728
          (6.227)
           11.358


      PSI
      Note: This matrix is diagonal.

            Sympt   Uncertai      Eom c      HRQOL
         --------   --------   --------   --------
          256.899     86.140     23.966     52.036
         (22.619)    (7.584)    (2.110)    (4.582)
           11.358     11.358     11.358     11.358


      Squared Multiple Correlations for Structural Equations

            Sympt   Uncertai      Eom c      HRQOL
         --------   --------   --------   --------
            0.013      0.330      0.237      0.701

      Squared Multiple Correlations for Reduced Form

            Sympt   Uncertai      Eom c      HRQOL
         --------   --------   --------   --------
            0.013      0.076      0.007      0.062
```

```
         Reduced Form

            Social
          --------
   Sympt     -0.223
            (0.119)
             -1.876

 Uncertai     -0.371
            (0.081)
             -4.594

   Eom c     -0.055
            (0.022)
             -2.467

   HRQOL      0.391
            (0.094)
              4.152


                              Goodness of Fit Statistics

                                Degrees of Freedom = 1
                 Minimum Fit Function Chi-Square = 0.100 (P = 0.752)
          Normal Theory Weighted Least Squares Chi-Square = 0.100 (P = 0.752)
                 Estimated Non-centrality Parameter (NCP) = 0.0
                 90 Percent Confidence Interval for NCP = (0.0 ; 3.315)

                     Minimum Fit Function Value = 0.000387
                 Population Discrepancy Function Value (F0) = 0.0
                 90 Percent Confidence Interval for F0 = (0.0 ; 0.0128)
               Root Mean Square Error of Approximation (RMSEA) = 0.0
                 90 Percent Confidence Interval for RMSEA = (0.0 ; 0.113)
                 P-Value for Test of Close Fit (RMSEA < 0.05) = 0.818

                 Expected Cross-Validation Index (ECVI) = 0.112
                 90 Percent Confidence Interval for ECVI = (0.112 ; 0.125)
                      ECVI for Saturated Model = 0.116
                      ECVI for Independence Model = 2.054

       Chi-Square for Independence Model with 10 Degrees of Freedom = 520.009
                          Independence AIC = 530.009
                              Model AIC = 28.100
                            Saturated AIC = 30.000
                          Independence CAIC = 552.812
                              Model CAIC = 91.950
                            Saturated CAIC = 98.410

                          Normed Fit Index (NFI) = 1.00
                       Non-Normed Fit Index (NNFI) = 1.018
                   Parsimony Normed Fit Index (PNFI) = 0.1000
                        Comparative Fit Index (CFI) = 1.000
                        Incremental Fit Index (IFI) = 1.002
                         Relative Fit Index (RFI) = 0.998

                          Critical N (CN) = 17139.902


                    Root Mean Square Residual (RMR) = 0.210
                           Standardized RMR = 0.00431
                        Goodness of Fit Index (GFI) = 1.00
                   Adjusted Goodness of Fit Index (AGFI) = 0.998
                  Parsimony Goodness of Fit Index (PGFI) = 0.0667
```

```
PATH ANALYSIS FOR HRQOL

        Fitted Covariance Matrix

             Sympt   Uncertai    Eom c     HRQOL    Social
          --------  --------  --------  --------  --------
   Sympt   260.403
Uncertai    97.536   128.596
   Eom c    42.857    21.921    31.394
   HRQOL  -170.903   -87.943   -35.106   173.884
  Social   -15.743   -26.227    -3.887    27.664    70.728

        Fitted Residuals

             Sympt   Uncertai    Eom c     HRQOL    Social
          --------  --------  --------  --------  --------
   Sympt      - -
Uncertai      - -       - -
   Eom c     0.000     0.000      - -
   HRQOL     0.000     0.000    -0.144     0.065
  Social      - -      0.000    -0.778     0.177      - -

 Summary Statistics for Fitted Residuals

 Smallest Fitted Residual =   -0.778
   Median Fitted Residual =    0.000
  Largest Fitted Residual =    0.177

 Stemleaf Plot

 - 6|8
 - 4|
 - 2|
 - 0|400000000000
   0|78

        Standardized Residuals

             Sympt   Uncertai    Eom c     HRQOL    Social
          --------  --------  --------  --------  --------
   Sympt      - -
Uncertai      - -       - -
   Eom c      - -       - -       - -
   HRQOL      - -       - -     -0.316     0.316
  Social      - -       - -     -0.316     0.316      - -

 Summary Statistics for Standardized Residuals

 Smallest Standardized Residual =   -0.316
   Median Standardized Residual =    0.000
  Largest Standardized Residual =    0.316

 Stemleaf Plot

 - 2|22
 - 0|00000000000
   0|
   2|22


 PATH ANALYSIS FOR HRQOL
```

```
                    Qplot of Standardized Residuals

 3.5................................................................
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  -3.5                                                              3.5
                         Standardized Residuals

PATH ANALYSIS FOR HRQOL

Modification Indices and Expected Change

       Modification Indices for BETA

            Sympt   Uncertai      Eom c      HRQOL
         --------   --------   --------   --------
   Sympt       - -        - -      0.100      0.100
Uncertai       - -        - -      0.100      0.100
   Eom c       - -        - -        - -      0.100
   HRQOL       - -        - -        - -        - -
```

```
         Expected Change for BETA

            Sympt   Uncertai    Eom c      HRQOL
         --------   --------  --------   --------
   Sympt      - -       - -     -0.574     2.523
Uncertai      - -       - -     -0.147     0.646
   Eom c      - -       - -       - -     -0.065
   HRQOL      - -       - -       - -       - -

         Standardized Expected Change for BETA

            Sympt   Uncertai    Eom c      HRQOL
         --------   --------  --------   --------
   Sympt      - -       - -     -0.006     0.012
Uncertai      - -       - -     -0.002     0.004
   Eom c      - -       - -       - -     -0.001
   HRQOL      - -       - -       - -       - -

         Modification Indices for GAMMA

           Social
         --------
   Sympt      - -
Uncertai      - -
   Eom c    0.100
   HRQOL      - -

         Expected Change for GAMMA

           Social
         --------
   Sympt      - -
Uncertai      - -
   Eom c   -0.012
   HRQOL      - -

         Standardized Expected Change for GAMMA

           Social
         --------
   Sympt      - -
Uncertai      - -
   Eom c   -0.018
   HRQOL      - -

No Non-Zero Modification Indices for PHI

         Modification Indices for PSI

            Sympt   Uncertai    Eom c      HRQOL
         --------   --------  --------   --------
   Sympt      - -
Uncertai      - -       - -
   Eom c    0.100     0.100       - -
   HRQOL      - -       - -       - -       - -

         Expected Change for PSI
            Sympt   Uncertai    Eom c      HRQOL
         --------   --------  --------   --------
   Sympt      - -
Uncertai      - -       - -
   Eom c  -13.758    -3.524       - -
   HRQOL      - -       - -       - -       - -
```

```
     Standardized Expected Change for PSI

         Sympt   Uncertai     Eom c     HRQOL
       --------  --------  --------  --------
   Sympt      - -
Uncertai      - -       - -
   Eom c    -0.152     -0.055      - -
   HRQOL      - -       - -       - -       - -

     Modification Indices for THETA-EPS

         Sympt   Uncertai     Eom c     HRQOL
       --------  --------  --------  --------
   Sympt      - -
Uncertai      - -       - -
   Eom c      - -      0.100      - -
   HRQOL      - -       - -       - -       - -

     Expected Change for THETA-EPS

         Sympt   Uncertai     Eom c     HRQOL
       --------  --------  --------  --------
   Sympt      - -
Uncertai      - -       - -
   Eom c      - -     -3.524      - -
   HRQOL      - -       - -       - -       - -

     Modification Indices for THETA-DELTA-EPS

         Sympt   Uncertai     Eom c     HRQOL
       --------  --------  --------  --------
  Social     0.100     0.100     0.100      - -

     Expected Change for THETA-DELTA-EPS

         Sympt   Uncertai     Eom c     HRQOL
       --------  --------  --------  --------
  Social     5.531    12.209    -0.778      - -

Maximum Modification Index is    0.10 for Element ( 2, 4) of BETA

PATH ANALYSIS FOR HRQOL

Covariances

PATH ANALYSIS FOR HRQOL

Factor Scores Regressions

     Y

         Sympt   Uncertai     Eom c     HRQOL    Social
       --------  --------  --------  --------  --------
   Sympt     1.000     0.000     0.000     0.000     0.000
Uncertai     0.000     1.000     0.000     0.000      - -
   Eom c     0.000     0.000     1.000     0.000     0.000
   HRQOL     0.000      - -      0.000     1.000      - -

     X

         Sympt   Uncertai     Eom c     HRQOL    Social
       --------  --------  --------  --------  --------
  Social      - -      0.000     0.000     0.000     1.000
```

```
PATH ANALYSIS FOR HRQOL

Standardized Solution

        BETA

              Sympt   Uncertai     Eom c      HRQOL
           --------   --------   --------   --------
   Sympt       - -        - -        - -        - -
Uncertai      0.508       - -        - -        - -
   Eom c      0.405      0.129       - -        - -
   HRQOL     -0.650     -0.176     -0.097       - -

        GAMMA

             Social
           --------
   Sympt     -0.116
Uncertai     -0.216
   Eom c       - -
   HRQOL      0.118

        Correlation Matrix of Y and X

              Sympt   Uncertai     Eom c      HRQOL     Social
           --------   --------   --------   --------   --------
   Sympt      1.000
Uncertai      0.533      1.000
   Eom c      0.474      0.345      1.000
   HRQOL     -0.803     -0.588     -0.475      1.000
  Social     -0.116     -0.275     -0.082      0.249      1.000

        PSI
        Note: This matrix is diagonal.

              Sympt   Uncertai     Eom c      HRQOL
           --------   --------   --------   --------
              0.987      0.670      0.763      0.299

        Regression Matrix Y on X (Standardized)

             Social
           --------
   Sympt     -0.116
Uncertai     -0.275
   Eom c     -0.082
   HRQOL      0.249

PATH ANALYSIS FOR HRQOL

Total and Indirect Effects

        Total Effects of X on Y

             Social
           --------
   Sympt     -0.223
            (0.119)
             -1.876
```

```
Uncertai     -0.371
            (0.081)
             -4.594
   Eom c     -0.055
            (0.022)
             -2.467

   HRQOL      0.391
            (0.094)
              4.152


      Indirect Effects of X on Y

             Social
           --------
   Sympt       - -

Uncertai     -0.079
            (0.043)
             -1.843

   Eom c     -0.055
            (0.022)
             -2.467

   HRQOL      0.207
            (0.079)
              2.611


      Total Effects of Y on Y

              Sympt   Uncertai     Eom c      HRQOL
           --------   --------   --------   --------
   Sympt       - -        - -        - -        - -

Uncertai      0.357       - -        - -        - -
            (0.036)
              9.901

   Eom c      0.163      0.064       - -        - -
            (0.019)    (0.032)
              8.587      2.007

   HRQOL     -0.641     -0.219     -0.228       - -
            (0.029)    (0.049)    (0.092)
            -21.792     -4.480     -2.480


   Largest Eigenvalue of B*B' (Stability Index) is   0.500
```

```
        Indirect Effects of Y on Y

            Sympt   Uncertai    Eom c     HRQOL
          --------  --------  --------  --------
   Sympt      - -       - -       - -       - -

Uncertai      - -       - -       - -       - -

   Eom c    0.023       - -       - -       - -
          (0.012)
            1.967
   HRQOL   -0.110    -0.015       - -       - -
          (0.023)   (0.009)
           -4.719    -1.560


PATH ANALYSIS FOR HRQOL

Standardized Total and Indirect Effects

        Standardized Total Effects of X on Y

           Social
          --------
   Sympt   -0.116
Uncertai   -0.275
   Eom c   -0.082
   HRQOL    0.249

        Standardized Indirect Effects of X on Y

           Social
          --------
   Sympt      - -
Uncertai   -0.059
   Eom c   -0.082
   HRQOL    0.132

        Standardized Total Effects of Y on Y

            Sympt   Uncertai    Eom c     HRQOL
          --------  --------  --------  --------
   Sympt      - -       - -       - -       - -
Uncertai    0.508       - -       - -       - -
   Eom c    0.471     0.129       - -       - -
   HRQOL   -0.785    -0.188    -0.097       - -

        Standardized Indirect Effects of Y on Y

            Sympt   Uncertai    Eom c     HRQOL
          --------  --------  --------  --------
   Sympt      - -       - -       - -       - -
Uncertai      - -       - -       - -       - -
   Eom c    0.066       - -       - -       - -
   HRQOL   -0.135    -0.012       - -       - -

                          Time used:    0.031 Seconds
```

BIOGRAPHY

Name	Miss Busaba Somjaivong
Date of birth	September 15, 1965
Place of birth	Suphanburi, Thailand
Institutions attended	Thai Red Cross College of Nursing, Thailand; 1983-1987, Bachelor of Nursing Science Chiang Mai University, Thailand; 1999-2001, Master of Nursing Science (Medical and Surgical Nursing) Chulalongkorn University, Thailand; 2006-2010, Doctoral of Nursing Science
Position & Experience	1987-1990, Staff nurse at surgery department, King Chulalongkorn Hospital, Bangkok, Thailand 1991-1997, Staff nurse at ophthalmology department, Srinagarind Hospital, Khon Kaen, Thailand 1998-present, Instructor in the field of Adult nursing, Faculty of Nursing, Khon Kaen University, Thailand