ปัจจัยทำนายความสุขสบายของผู้ป่วยโรคมะเร็งลำไส้ใหญ่และทวารหนักที่ได้รับยาเคมีบำบัด
Factors Predicting Comfort of Colorectal Cancer Patients Receiving Chemotherapy

นิพนธ์ต้นฉบับ

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บทคัดย่อ

วัตถุประสงค์: เพื่อประเมินระดับและปัจจัยที่ทำนายความสุขสบายของผู้ป่วยโรคมะเร็งลำไส้ใหญ่และทวารหนักชาวไทยที่ได้รับยาเคมีบำบัด ได้แก่ ความวิตกกังวล ความรู้สึกไม่แน่นอนในความเจ็บป่วย และการสนับสนุนทางสังคม **วิธีการศึกษา:** การศึกษามีกลุ่มตัวอย่างเป็นผู้ป่วยโรคมะเร็งลำไส้ใหญ่และทวารหนักที่รักษาด้วยยาเคมีบำบัดที่แผนกผู้ป่วยในหอผู้ป่วยมะเร็งชายและหอผู้ป่วยมะเร็งหญิง ณ ศูนย์มะเร็ง โรงพยาบาลมหาราชนครราชสีมาระหว่าง 14 ธันวาคม 2563 ถึง 29 มกราคม 2564 และมีคุณสมบัติตามเกณฑ์ที่กำหนดจำนวน 77 ราย ด้วยวิธีสุ่มตัวอย่างแบบง่าย รวบรวมข้อมูลโดยใช้แบบสอบถาม 1) ข้อมูลส่วนบุคคล 2) ความสุขสบายของผู้ป่วย 3) ความวิตกกังวล 4) ความรู้สึกไม่แน่นอนในความเจ็บป่วย และ 5) การสนับสนุนทางสังคม ซึ่งมีค่าสัมประสิทธิ์แอลฟาของครอนบาคของแบบสอบถามที่ 2 – 5 เท่ากับ 0.88, 0.89, 0.82 และ 0.83 ตามลำดับ ทดสอบความสัมพันธ์ด้วยการวิเคราะห์ความถดถอยเชิงเส้น **ผลการศึกษา:** กลุ่มตัวอย่างมีคะแนนความสุขสบายในระดับมาก (mean = 239.6, *SD* = 18.06) และสัมพันธ์ทางลบกับความวิตกกังวลอย่างมีนัยสำคัญทางสถิติ (R^2 = 0.072, β = -0.269, $F_{1,75}$ = 5.859, *P*-value < 0.05) **สรุป:** ความสุขสบายในผู้ป่วยโรคมะเร็งลำไส้ใหญ่และทวารหนักที่ได้รับยาเคมีบำบัดสัมพันธ์ทางลบกับความวิตกกังวล

คำสำคัญ : ความสุขสบาย, ความวิตกกังวล, ความรู้สึกไม่แน่นอนในความเจ็บป่วย, การสนับสนุนทางสังคม, โรคมะเร็งลำไส้ใหญ่และทวารหนัก, การรักษาด้วยยาเคมีบำบัด, ชาวไทย

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Original Article

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Abstract

Objective: To determine level of comfort and its predicting factors including anxiety, uncertainty in illness, and social support in Thai colorectal cancer patients undergoing chemotherapy. **Method:** The sample was 77 patients with colorectal cancer undegoing chemotherapy at the cancer center of Maharat Nakhon Ratchasima Hospital from December 14, 2020, to January 29, 2021 and met the inclusion criteria selected by simple random sampling. Data were cllected using questionnaires of 1) demographic characteristics, 2) comfort, 3) anxiety, 4) uncertainty in illness, and 5) social support. Questionnaires 2 – 5 had Cronbach's alpha coefficients of 0.88, 0.89, 0.82 and 0.83, respectively. The association was tested using linear regression analysis. **Results:** Comfort was at a high level (mean = 239.6, *SD* = 18.06). Comfort was significantly, negatively associated with anxiety (R^2 = 0.072, β = -0.269, $F_{1,75}$ = 5.859, *P*-value < 0.05). **Conclusion:** Comfort in Thai colorectal cancer patients undergoing chemotherapy was negatively associated with anxiety.

Keywords: comfort, anxiety, uncertainty in illness, social support, colorectal cancer, chemotherapy, Thais

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Introduction

Colorectal cancer has become a great health concern worldwide. The Global Cancer Observatory of World Health Organization (WHO) revealed 19 million cancer cases worldwide based on the 2020 data of the International Agency for Research on Cancer (IARC).[1] Of these cases, colorectal cancer was the third most kind, i.e., 1,931,590 cases or 10% of all kinds of cancer. In Asia, colorectal cancer was found to be 52.3% of all cancers (i.e., 1,009,400 cases). In Thailand, 11.1% of all cancer cases were colorectal cancers (i.e., 21,103 cases).[2] Most importantly, 54 – 83% of colorectal cases were in their stage 3 and 4[3, 4] which are the stage with metastasis and symptomatic that requires treatment.

Treatment modalities for colorectal cancer include surgery, radiation therapy, chemotherapy, the combination of these modalities. Chemotherapy is the common treatment since it could directly damage the cancer cells and inhibit metastasis to other organs.[5] Chemotherapy is hence suitable for late stages of colorectal cancer. However, chemotherapy could also be damaging to normal fast-growing cells. The normal organs affected by chemotherapy could then be dysfunctional and symptomatic with adverse effects.[6] The inevitable adverse

symptoms when on and off is called discomfort by Kolcaba.[7] This stressful situation negatively affects physical, psychological, social and spiritual health.[8,9]

Discomfort in colorectal cancer patients undergoing chemotherapy is rooted from disease with the increasing severity and complications associated with the treatment. The most found discomfort is pain (56.6%), followed by fatigue (47.4%), nausea (44.5%), vomiting (23.5%), numbness in the extremities (20.6%).[3] These symptoms cause anxiety and worry[10] which could lead to depression, desperation, hopelessness,[11] lack of well-being.[12] These detrimentally affect psychological and spiritual well-being.

Chemotherapy also causes periodical hospitalization which does not allow the patient to live their normal daily life. The disrupted circumstances include work absence, increased expense, or a need to depend on others which could negatively affect the patient economically and socially.[13] The patient also faces discomfort from hospital environment and in-patient ward such as temperature, crowdedness in the ward room/hall, noise from conversation and medical equipment, unpleasant or foreign smell.[14,15]

Previous studies suggested promoting and inhibiting various factors potentially predicting comfort among colorectal cancer patients undergoing chemotherapy. Anxiety is found in 47 – 52% of the patients[3,16] and uncertainty in the illness in 24 – 75%.[17,18] Social support, a promoting factor, enhances the potential in facing illness effectively.[19] Social support also alleviates stressors[20] and suffering[21] and enhances well-being and quality of life of the patients.[19, 21, 22] Studies in other countries about comfort in colorectal cancer patients undergoing chemotherapy have been limited; while none has been done in Thailand. The understanding on the comfort and its related factors among colorectal cancer patients undergoing chemotherapy could be helpful in improving the patient's quality of life and well-being. Thus, a study on the comfort and its predicting factors in colorectal cancer patients undergoing chemotherapy was needed.

Regarding **objectives**, this study aimed to determine level of comfort and factors predicting the comfort among Thai colorectal cancer undergoing chemotherapy. It was hypothesized that anxiety, uncertainty in illness, and social support were able to predict comfort among colorectal cancer patients undergoing chemotherapy.

This study was framed with the concept of comfort Kolcaba.[7] Stressful situation such as illness causes discomfort and comfort needs. Such discomfort and its needs are different person by person depending on either obstructing/inhibiting or facilitating forces. Nurses could put facilitating forces for comfort and manage obstructing/inhibiting ones to enhance the patient's comfort at the level that the patient is satisfied with the nursing care provided. Based on previous research, anxiety and uncertainty in illness are obstructing/inhibiting forces for comfort; while social support as a facilitating one in Thai colorectal cancer patients undergoing chemotherapy.

Methods

In this predictive correlational research, study population was stage 3 and 4 colorectal cancer patients undergoing one of the 5 chemotherapy regimens (i.e., Mayo, de Gramont, FOLFOX 4, FOLFOX 6 or FOLFILI) in the in-patient department and/or cancer wards of Cancer Center of Nakhonratchasima Hospital.

The sample size was based on an effect size of 0.15 from a previous research[18] relatively comparable to the present study which was considered a medium effect size for health science.[23] With a type I error of 5% (P-value < 0.05), and a power of 80%, a sample size of 77 participants was needed. Participants were recruited by simple random sampling. To be eligible, they had to be at least 20 years of age, undergoing cycle 2 of chemotherapy or higher, able to communicate in Thai language, and willing to participate in the study.

Research instruments

The research used a 5-part self-administered questionnaire. The first part collected demographic characteristics (i.e., gender, age, education, marital status, and income) and clinical status (i.e., cancer diagnosis, cancer stage, chemotherapy regimen, type of chemotherapy (i.e., adjuvant, neoadjuvant, and palliative), chemotherapy regimen prescribed, number of the chemotherapy cycle at the recruitment date, number of days for chemotherapy administration, number of days of chemotherapy cycle interval, complications of chemotherapy, cancer treatment history, and other underlying diseases. For perceived sources of comfort and discomfort, the participants were asked in an open-ended question to provide what made them feel comfortable and discomfortable. In analysis, these open-ended answers were categorized into perceived sources of

comfort and discomfort according to Kolcaba's concept, i.e., physical, psychospiritual, sociocultural, and environmental sources.[24,25]

The second part was the comfort questionnaire assessing the opinion of the participants while receiving chemotherapy in the hospital about physical, psychospiritual, sociocultural, and environmental comforts. The researcher used a Thai questionnaire[15] which was back-translated from the Hospice Comfort scale of Novak and colleagues.[26] The questionnaire was developed based on the comfort concept of Kolcaba.[7] Of the total 49 questions, there were 27 and 22 positive and negative questions, respectively. The response was a 6-point Likert-type scale ranging from 1-the most disagreed, to 2-moderately disagreed, 3-slightly disagreed, 4-slightly agreed, 5-moderately agreed, and 6-the most agreed. Scores of negative questions were reversed when summed. With a possible total score of 49 – 249 points, comfort was categorized as low, moderate, and high (49 – 130, 131 – 212, and 213 – 249 points, respectively).

The anxiety was measured using the Thai version[27] of the anxiety questionnaire originally developed by Zigmond and Snaith.[28] The questionnaire assessed anxiety which is the effects of the individual's emotions toward being tensed, frightened, worried, and feared toward. Such reactions are a body response to being ill of life-threatening metastatic cancer which could alarm the body and physiological changes. The questionnaire has 7 questions with a 4-point Likert-type scale ranging from 0-never, to 1-sometimes, 2-usually, and 3-most of the time. With the possible total score of 0 – 21 points, anxiety was categorized as no, low, moderate, and high (0 – 7, 8 – 10, 11 – 14, and 15 – 21 points, respectively).[29-31]

In the fourth part, uncertainty in illness was measured using the back-translated Thai version[32] of the Mishel's Uncertainty in Illness Scale Community-Form.[33] The uncertainty toward illness arises from being unable to defy the meaning or understand the unclear information, or understand their illness situation to the point that the outcomes of their illness and treatment could not be predicted. Uncertainty in illness could be measured in 4 aspects including uncertainty about illness, uncertainty about treatment, a lack of information about the illness, and inability to predict the prognosis. With the total of 23 questions, 6 and 17 items were positive and negative statement, respectively. The response was a 5-point Likert-type rating scale ranging 1-completely disagree with the statement, to 2-partially disagree with the statement, 3-undecided whether to agree or disagree, 4-partially agree with the statement, and 5-completely agree with the statement. With the possible total score of 23 – 115 points, uncertainty in illness was categorized into low, moderate, and high (23 – 53, 54 – 84, and 85 - 115 points, respectively).

In the fifth part, social support was assessed by a Thai language questionnaire[34] developed based on the concept of House.[35] All 17 questions were positive. The response was a 5-point Likert-type rating scale ranging from 1-no support at all, to 2-little support, 3-some support, 4-support for most of things, and 5-support for all things. With the possible total score of 17 – 85 points, social support was categorized as low, moderate, and high (17 – 39, 40 – 62, and 63 – 85 points, respectively).

Quality assurance of the instruments

In this study, the questionnaire was tested in 30 individuals with characteristics comparable to the participants. The internal consistency reliability was at an acceptable level for the questionnaires of comfort, anxiety, uncertainty in illness, and social support Cronbach's alpha coefficients of 0.88, 0.89, 0.82, and 0.83, respectively.

Human subject right protection

The study was approved by the Ethic Committee for Human Study, Graduate School, Burapha University (approval number: G-HS 047/2563) and by the Ethic Committee for Human Study of Nakhonratchasima Hospital (approval number: 162/2020). All participants were informed about the voluntary nature of the study. They were able to withdraw from the study at any time with no effect on the care they received. Written informed consent was obtained before participating the study. All participants data were secured and presented as summary. No participants needed medical attention during the study.

Data collection procedure

Once approved for human right protection, the researcher contacted the hospital director for the survey permission and the heads of nursing department and heads of cancer wards for male and female patients for data collection. At each ward, the researcher reviewed medical records of the patients to screen for eligibility and their upcoming follow-up dates. Data collection was done from December 14, 2020, to January 29, 2021. At each day of data collection, eligible participants were selected using simple random sampling without replacement.

A total of 3 – 4 participants were recruited for data collection. The researcher approached each participant to introduce and provide details of the study. Once the informed consent form was signed, the data collection started. The self-administered questionnaire took about 30 – 45 minutes to complete. The filled questionnaire was inspected for completion and corrected for any mistakes or missing data if any.

Data analysis

Demographic characteristics and clinical status data and the study psychosocial factors data were presented using mean with standard deviation (SD) and frequency with percentage. Before testing bivariate correlation between scores of comfort, anxiety, uncertainty in illness, and social support, distribution of these variables were tested and found to be normally distributed. Pearson's product moment correlation (r) was used to test the bivariate correlation. A multiple regression was used to examine the associations between comfort and predictive variables (i.e., anxiety, uncertainty in illness, and social support) that were significantly correlated with comfort in the bivariate correlation analysis. Multicollinearity and homoscedasticity were tested if necessary. Statistical significance was set at a type I error of 5% (or *P*-value < 0.05). All statistical analyses were performed using the SPSS software program version 25.

Results

Of the 7 participants, there were slightly more men (54.5%) (Table 1). Their average age was 62 ปี ± 10.19 years old. Most participants had formal education (98.7%) with the majority having primary education (75.0%). The majority were married (77.9%), with monthly income (90.9%) which was less than 15,000 Baht per month (84.3%).

Regarding colorectal cancer diagnosis, the majority had rectum cancer (32.5%), followed by transverse colon and sigmoid colon (28.6% each). Almost three-quarters were at stage 3 (70.1%) while the rest were at stage 4. Their chemotherapy was mostly as an adjuvant treatment (81.8%). The most used regimen was Mayo (42.9%), followed by FOLFOX 4 (37.7%). At the collection date, the majority received their 4th cycle (18.2%). While 57.1% spent 3 days for chemotherapy administration; the rest 42.9% spent 5 days. In accordance with FOLFOX regimens given in 57.1% of the participants, the interval between cycles was 2 weeks (57.1%). Almost three-quarters faced complications from chemotherapy (72.7%) with fatigue as the most found symptom (57.1%), followed by numbness in extremities (48.2%). Most patients had surgeries on colon and/or anal sphincter (85.7%) with

Table 1 Demographic characteristics and clinical status of the participants (N = 77).

Characteristics	N	%
Sex		
Male	42	54.5
Female	35	45.5
Age (years), mean = 62.00 ± 10.19; range = 34 – 80.		
20 - 40 (young adulthood)	2	2.6
41 - 60 (middle adulthood)	32	41.6
> 60 (late adulthood)	43	55.8
Education level		
No formal education	1	1.3
With education	76	98.7
Primary school	*57*	*75.0*
Secondary school	*13*	*17.1*
Associate degree	*2*	*2.6*
Bachelor's degree	*4*	*5.3*
Marital status		
Married	60	77.9
Single	8	10.4
Widow	7	9.1
Divorced	2	2.6
Monthly income (Baht)		
No income (not working)	7	9.1
With income	70	90.9
< 15,000	*59*	*84.3*
15,001 - 21,500	*8*	*11.4*
28,001 - 34,500	*1*	*1.4*
> 34,500	*2*	*2.9*
Diagnosis of colorectal cancer		
Rectum	25	32.5
Transverse colon	22	28.6
Sigmoid colon	22	28.6
Others	8	10.4
Colorectal cancer stage		
3	54	70.1
4	23	29.9
Chemotherapy type		
Adjuvant	63	81.8
Neoadjuvant	11	14.3
Palliative	3	3.9
Chemotherapy regimen		
Mayo	33	42.9
FOLFOX 4	29	37.7
FOLFOX 6	13	16.9
FOLFIRI	2	2.6
Chemotherapy cycle at the data collection date		
2	10	13.0
3	12	15.6
4	14	18.2
5	12	15.6
6	10	13.0
7 - 12	19	24.7
Number of days for chemotherapy administration		
3 days (FOLFOX 4, FOLFOX 6, FOLFIRI)	44	57.1
5 days (Mayo)	33	42.9
Interval between cycles (days)		
2 weeks (FOLFOX 4, FOLFOX 6, FOLFIRI)	44	57.1
4 weeks (Mayo)	33	42.9
Complications from chemotherapy		
No	21	27.3
Yes	56	72.7
Fatigue	*32*	*57.1*
Numbness in extremities	*27*	*48.2*
Nausea/vomiting	*14*	*25.0*
Oral mucositis	*10*	*17.9*
Others (loss of appetite and diarrhea)	*11*	*19.6*
Cancer treatment history		
Radiation therapy	11	14.3
Surgery on colon and/or anal sphincter	66	85.7
With no colostomy	*45*	*68.2*
With colostomy	*21*	*31.8*
Other underlying diseases		
No	38	49.4
Yes	39	50.6
Hypertension	*28*	*71.8*
Diabetes	*11*	*28.2*
Hyperlipidemia	*10*	*25.6*
Others (heart disease, asthma, hepatitis B, benign prostatic hyperplasia)	*5*	*6.5*

colostomy (68.2%). Lastly, about half of the participants had other underlying diseases (50.6%) with hypertension as the most found one (71.8%) (Table 1).

The most perceived source of comfort was sociocultural one, such as a good care of healthcare providers (62.3%), followed by environmental source such as clean and spacious wards (46.7%) (Table 2). For physical source of comfort, it was perceived by 29.8% of the participants. This was for example the remission brought by chemotherapy and no illnesses caused by the cancer. For the psychospiritual source of comfort, the hope on cancer cure was perceived by 12.9% of the participants.

For the perceived source of discomfort, the most perceive one was the psychospiritual one (75.3%). This was in the opposite direction with the source of comfort where psychospiritual was perceived the least. In the discomfort sense, the participants were anxious and/or worried that colorectal cancer could cause their life. The next most perceived source of discomfort was physical one (38.9%) such as fatigue after chemotherapy. For environmental source (36.4%), discomfort could arise from unfamiliarity with the hospital ward causing difficulty sleeping. For the sociocultural source, discomfort arose from loss of income with the illness and treatment (12.9%) (Table 2).

Table 2 Perceived sources of comfort and discomfort among the participants (N = 77).

Source	N	%
Source of comfort		
Physical, e.g., remission brought by chemotherapy	23	29.8
Psychospiritual, e.g., the hope for cancer cure	10	12.9
Sociocultural, e.g., good care from healthcare providers	48	62.3
Environmental, e.g., clean and spacious wards	36	46.7
Source of discomfort		
Physical, e.g., fatigue after chemotherapy	30	38.9
Psychospiritual, e.g., anxiety and worry about life taken by cancer	58	75.3
Sociocultural, e.g., loss of income because of illness	10	12.9
Environmental, e.g., insomnia because of unfamiliar surrounding	28	36.4

Participants had a high level of comfort (mean = 239.6 ± 18.06 points) with a high level of social support (mean = 73.7 ± 4.85 points). The uncertainty in illness was at a moderate level (mean = 74.7 ± 18.97 points). Anxiety was also at a moderate level (mean = 11.7 ± 5.01 points). With 75.3% of the participants having anxiety, the majority had a high level (32.5%), followed by a moderate level (27.3%) (Table 3).

Table 3 Levels of comfort, anxiety, uncertainty in illness and social support of the participants (N = 77).

Factor	Possible scores	N (%)	Mean	SD	Level
Comfort	49 - 249	77	239.6	18.06	High
Anxiety	0 - 21	77	11.7	5.01	Moderate
Without anxiety	0 - 7	19 (24.7%)	5.0	2.45	-
With anxiety		58 (75.3%)	13.8	3.46	-
Low	*8 - 10*	*12* (15.6%)	*9.3*	*0.75*	-
Moderate	*11 - 14*	*21* (27.3%)	*12.7*	*1.20*	-
High	*15 - 21*	*25* (32.5%)	*17.0*	*2.13*	-
Uncertainty in illness	23 - 115	77	74.7	18.97	Moderate
Social support	17 - 85	77	73.7	4.85	High

It was found that comfort was significantly correlated with anxiety (r = -0.269, *P*-value < 0.05). Anxiety was further significantly correlated with uncertainty in illness (r = 0.284, *P*-value < 0.05) (Table 4).

Table 4 Pearson's product moment correlations (r) among study variables of the participants (N = 77).

Variables	1	2	3	4
1. Comfort	1			
2. Anxiety	-0.269*	1		
3. Uncertainty in illness	-0.089	0.284*	1	
4. Social support	-0.152	-0.147	-0.145	1

* *P*-value < 0.05.

Since only anxiety was significantly correlated with comfort, it was an only predictor tested in the multiple linear regression analysis. Homoscedasticity comfort score over anxiety was confirmed. It was found that comfort was significantly, negatively associated with comfort with 7.2% of the variance of comfort explained by anxiety (R^2 = 0.072, β = -0.269, $F_{(1,75)}$ = 5.859, *P*-value < 0.05). Finally, the predictive equation was $Z_{comfort} = -0.269 x Z_{anxiety}$.

Discussions and Conclusion

This present study revealed that comfort among Thai colorectal cancer patients undergoing chemotherapy was at a high level and it was significantly, negatively associated with anxiety. The discussions were as follows.

Most participants had stage 3 (70.1%) and stage 4 (29.9%) colorectal cancer which could metastasize to nearby lymph node and have overt discomfort, pain, fatigue, constipation, bloody stool, or diarrhea. However, participants in our study had a high level of comfort. This could be because participants in this study were not facing much suffering since

their cancer was treated with surgery (85.7%) followed by chemotherapy as an adjuvant treatment (81.8%). This treatment modality offers alleviation of discomfort and other symptoms. Surgery removes the lump that directly presses nearby organs and neurons.[36] The surgery hence removes the source of direct pain and other symptoms such as constipation caused by pressure or obstruction of colon and anal sphincter by the tumor.

Chemotherapy could cause complications. However, in-depth information from additional interview suggested that such complications were not severe, and the participants were able to perform most daily activities of living. Such preserved stage of health allowed these participants to not suffer from their cancer and chemotherapy treatments. Their comfort was therefore maintained. This is consistent with a study revealing that Thai colorectal cancer patients suffered from fatigue (80.65%) and numbness in the extremities (74.19%) the most, but these symptoms were not severe.[37]

A high level of comfort could be because surgery and chemotherapy helps the patient feel safe and be hopeful for the cure. Based on additional information, these participants stated that they believed that chemotherapy could help them inhibit or stop the cancer growth. The participants also reflected that chemotherapy could alleviate symptoms related to cancer. This is consistent with a study showing that Thai colorectal cancer patients undergoing chemotherapy the hope for cure was associated with self-esteem and life satisfaction.[38] This satisfaction on life could reflect comfort.[7] In addition, participants in our study perceived that the most source of comfort was a good healthcare provided by healthcare providers (62.3%). This reflects the good relationship between patients and healthcare providers which could bring sociocultural comfort.[7] Our participants were satisfied with the environment of the medical ward as clean and spacious (46.7%). This environment offered comfort according to the concept of comfort.[7] This could be concluded that even with stage 3 and 4 colorectal cancer, these patients did not face an immense discomfort; on the contrary, they expressed a high level of overall comfort. The 4 sources or domains of comfort were also implied to be high, i.e., physical, psychospiritual, sociocultural, and environmental ones.

Only anxiety was significantly, negatively associated with comfort with only 7.2%. of the comfort variance explained by anxiety.

This could be because most patients had 2 – 6 cycles of chemotherapy. They could be familiar with chemotherapy steps; hence less fear of the treatment. Less fear could result in less anxiety among cancer patients.[10] The participants were also familiar with the outcomes of the treatment and the complications which were mild and relatively predictable; hence less uncertainty in illness.[39] We found that uncertainty in illness was significantly, positively associated with anxiety (r = 0.284, P-value < 0.05). The uncertainty in illness could transcend its effect to comfort through anxiety; but such relationship needs to be tested in future studies. These participants believed that chemotherapy they received could offer remission (29.8%) and cure (12.9%). This reflects that the trust in the care and the hope for the cure could bring psychospiritual comfort as stated by Kolcaba.[7] A study showed that hope among Thai colorectal cancer patients helped them adjust and overcome difficulties in illness to achieve satisfaction and well-being.[38]

We found that social support and uncertainty in illness were not associated with comfort. This could be because most support was from healthcare providers about the prevention on chemotherapy complications and from family members on burden sharing. However, these supports were not what the patients needed which was the information about the illness they had. This hypothesized association is inconsistent with previous study of Pasek and colleagues showing that the most wanted social support was emotional support.[19]

When only participants with anxiety (anxiety scores of 8 – 21; N = 58 out of 77 participants) were analyzed, social support was positively associated with comfort (results not shown in the Result section). This could be because patients with anxiety, either at a low, moderate or high level, were more likely to need social support.[19,40,41] The analysis on all 77 participants included 24.7% with no anxiety which could dilute the association between social support and comfort which is inconsistent with previous studies.

Based on additional information, uncertainty in illness in participants in our study was mostly from being unable to plan their future, receiving unclear information from providers, being unable to predict changing symptoms. This circumstance is inconsistent with previous research[17,18] showing that patients with worse signs and symptoms from a poor disease prognosis and complications of chemotherapy were more likely to have more uncertainty in illness. Participants in our study, however, did not have much worse

signs, symptoms or complications. They still had trust in the treatment and the hope for cure or remission, and ability to perform activities of daily living. Their uncertainty in illness was thus not intense enough to lessen comfort. In conclusion, only anxiety could predict comfort in this study among Thai colorectal cancer patients undergoing chemotherapy. Findings from this study suggests anxiety evaluation and management is crucial for improving comfort. Nurses and the patient's caregivers should be able to learn to do so for the patient.

This study had certain limitations. The study could suffer from ceiling effect on scores of comfort. With a high mean score of 239.6 out of a possible range of 49 – 249 points, a ceiling effect was evident. In addition, a standard deviation of 18.06 points indicates a low variability of the comfort score. This low variability of the dependent variable could be a reason for nonsignificant associations with its various predicting factors. Such narrow variability could arise from a selection bias or inappropriate inclusion criteria that ended up in a relatively homogenous sample with mostly stage 3 cancer (about 70%) who had undergone surgery (85.7%) before chemotherapy. However, these proportions were comparable to those in the actual study population. Therefore, more studies with more variability of comfort are needed to prove the associations. The study was conducted during the Covid-19 pandemic. A limited time for family members visiting the patient could affect psychosocial status of the patients. Future studies with normal circumstances should be conducted to examine the associations. In addition, qualitative studies for in-depth understanding should be done for a better care management for these patients.

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