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The Effects of Sense of Coherence, Demands of Illness, and Social Support on Quality of Life After Surgery in Patients With Gastrointestinal Tract Cancer

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Cancer has been the leading cause of death in Japan since 1981. In 2005, the death rate for cancer was 258.3 people per 100,000, accounting for 30% of the total number of deaths (Health and Welfare Statistics Association, 2007). Gastrointestinal tract cancer has been a major threat to the Japanese population. In terms of mortality rankings of cancer sites in 2005, lung was the leading site for men, followed by stomach, liver, colon, rectum, and pancreas. The leading site for women was stomach. When colon and rectal cancers were combined, the death rate was higher than that for stomach (Health and Welfare Statistics Association).

Having cancer is a life-threatening event and an existential plight. However, patients can adapt to a cancer diagnosis at some point. A literature review of multidimensional quality of life (QOL) among long-term (five years or longer) adult cancer survivors showed that they experienced good to excellent QOL (Bloom, Petersen, & Kang, 2007). Taylor (1983), who verified a theory of cognitive adaptation to threatening events, proposed that people have self-curing abilities and use their social networks and individual resources to help them deal with personal issues. Results of a study of patients' responses to cancer by Stiegelis et al. (2003) also supported Taylor's theory of cognitive adaptation in cancer.

If patients do have the self-curing abilities referred to by Taylor (1983) and can develop their self-care skills, then nurses are in a good position to provide patients with help in developing those skills. This study explores the factors related to self-care skills of patients who had undergone surgery for gastrointestinal tract cancer and the relationship between those factors and patients' adaptation.

Study Concepts

People, in general, try to cope with stressful life conditions. Patients with good self-care skills may ef-

Purpose/Objectives: To examine the relationship between quality of life (QOL) as an index of adaptation status and concepts related to self-care skills of patients who have been diagnosed with and undergone surgery for digestive system cancer: sense of coherence (SOC), social support, demands of illness, and the thought "Why me?"

Design: Cross-sectional survey.

Setting: General hospitals in Japan.

Sample: 60 patients who had been newly diagnosed with digestive system cancer and had undergone surgery.

Methods: Questionnaires were distributed to participants whose discharge date had been determined. The questionnaires were returned through the mail within two weeks of the discharge date.

Main Research Variables: QOL, SOC, social support, demands of illness, and the thought "Why me?"

Findings: QOL was strongly correlated with SOC and the demands of illness and was moderately correlated with social support. The only variable that was negatively correlated with SOC was the question, "Why me?" SOC and demands of illness accounted for 54% of the variance in QOL; social support was not a significant factor.

Conclusions: This study suggests that SOC is positively correlated with QOL and the demands of illness are negatively correlated with QOL among study participants.

Implications for Nursing: Nursing interventions focusing on SOC and illness demands may have a significant effect on QOL of patients following cancer surgery.

fectively use social networks and be able to engage in appropriate coping behaviors. The coping strategies that they use lead to a reappraisal of their condition. In understanding the stress-coping process, Lazarus (1999), who determined the extent of psychological stress by the relationship between the individual and the environment, argued the importance of identifying the personality variables involved and how individuals appraise what is happening.

Quick Facts: Japan

Geography: Japan is an Asian archipelago nation.

Population: The total population was about 127.74 million in 2008.

Healthcare system priorities and programs: Although Japan is a medically advanced country, surgical patients have longer hospital stays than in the United States, which may be because the Japanese healthcare insurance system covers every individual living in Japan. In Japan, although physicians offer informed consent to patients and their families for treatment as needed, they are not required to inform a patient about a true cancer diagnosis. Some physicians comply with family members' request to refrain from disclosing a true diagnosis to a loved one.

Education: About 33% of the students enrolled in RN training courses in Japan study at a university (four-year bachelor's degree program). The rate of students seeking higher education is growing, and the number of universities providing postgraduate nursing courses is increasing.

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When placed in a difficult environment, some patients recognize their own circumstances as stressful; others may not readily do so. The patients who have the latter disposition may be tolerant of psychological stress; their self-care skills may be more easily activated and they may more readily take action despite a difficult environment. As a dispositional orientation, the current study investigated the concept of sense of coherence (SOC) proposed by Antonovsky (1987). Given strong SOC, one perceives life as comprehensible, manageable, and meaningful. Antonovsky's concept of SOC was developed focusing on salutogenic strengths of human beings. Salutogenic strength is a medical care concept that focuses on factors that support human health and well-being rather than on factors that cause disease. A study by Boscaglia and Clarke (2007) of women recently diagnosed with gynecologic cancer supported the concept that a strong SOC was associated with lower levels of demoralization, a dysphoric mood state that includes feelings of hopelessness, helplessness, loss of purpose and meaning, despair, and existential distress. In a longitudinal study of patients with cancer and their partners by Gustavsson-Lilius, Julkunen, Keskiavaara, and Hietanen (2007), strong SOC alleviated the development of distress as expressed depression and anxiety. A study by Black and White (2005) of survivors of hematologic cancer reported that, as SOC increased, fear of recurrence and precipitation of post-traumatic stress disorder decreased.

As for social support, the theory that others will provide resources when they are needed is a key to stress buffering (Cohen, Underwood, & Gottlieb, 2000). In other words, whether or not one actually receives support is less important for health and adjustment than one's beliefs about its availability. Therefore, rather than focusing on actual received support, the current study investigated patients' perceived social support and the premise that patients' self-care skills are enhanced when they believe that their social relationships will be supportive.

As for the coping process, the study investigated the demands of the illness mediated by coping strategies. Cancer diagnosis and treatment make a variety of demands ranging over multiple dimensions (Klemm, Miller, & Fernsler, 2000). Appropriate coping strategies with good self-care skills may relieve the demands; conversely, heavy demands may disrupt a patient's coping strategies and self-care skills.

In addition to the demands of the illness, this study applied the question "Why me?" as one of the factors that interfere with patients' self-care skills. This kind of question often arises for patients whose health is threatened by events such as a cancer diagnosis. Attributions are the causes individuals generate to make sense of their world (Lewis & Daltroy, 1990). Fife's (2005) findings supported the hypothesis that the construction of positive meaning affects emotional distress or adaptation at the onset of life-threatening illness. However, if patients cannot appropriately handle their attributions, their world view becomes distorted and may lead to a heightened sense of vulnerability.

Quality of Life as an Index of Adaptation Status

This study used QOL as an index of adaptation status. Ramsey et al. (2000) studied QOL in survivors of colorectal carcinoma to examine the function and health status of cancer survivors in a community. Sprangers, Tempelaar, van den Heuvel, and de Haes (2002) used QOL as an index of the impact of and the adaptation to a crisis brought on by cancer diagnosis and treatment. Finally, Anthony, Jones, Antoine, Sivess-Franks, and Turnage (2001) and Anthony et al. (2003) assessed the influence or effect of cancer treatment on QOL.

Patients with cancer have a variety of issues and adaptation tasks related to their disease and treatment. Patients undergoing surgery have multiple issues and tasks, such as recuperating, resuming activities of daily living, and re-establishing a social life. The authors of this study aimed to assess patients' adaptation to their illness, relating it to self-care skills, not with an objective index such as mortality, but according to the patients' perspective. Vallerand and Payne (2003) said that the

two fundamental components of the definition of QOL are multidimensionality and subjectivity. Multidimensionality of QOL refers to a broad range of content that includes physical, functional, emotional, and social well-being. Subjectivity refers to the fact that QOL can only be understood from the patient's perspective. Therefore, the concept of QOL was determined to be an appropriate index of patients' adaptation status.

Purpose

The purpose of this study was to describe the distinctive features of QOL and concepts related to self-care skills associated with patients who have been diagnosed with gastrointestinal tract cancer and have undergone surgery for it. This study examined QOL as an index of adaptation status and SOC, social support, demands of illness, and the "Why me?" question as indexes of concepts related to self-care skills, and identified the relationship among these concepts.

Methods

Sample and Procedures

The sample consisted of patients who had been newly diagnosed with gastrointestinal tract cancer and had undergone surgery in one of five general hospitals in Japan over a four-month period. Qualifying subjects were aged at least 20 years, were aware that they had cancer, and had no psychiatric disorders. Approval for the study was obtained from the research ethics committee of the institution with which the author is affiliated as well as the hospitals where the survey was conducted. The participants were recruited by hospital nurses. Among all eligible subjects, participants who were discharged in the four-month period after October 2006, regardless of the stage of cancer, surgical procedure, or demographic attributes, received a description of the research, questionnaires, and a bookstore gift certificate worth 500 yen (about \$5 U.S.). The questionnaires were completed by patients at home within two weeks after discharge and returned through the mail.

Instruments

The questionnaires were comprised of four measures that examined concepts related to self-care skills and QOL and a demographic and disease data form.

Sense of coherence: SOC was measured with a questionnaire on orientation toward life. The prototype of this measure is the **Coherence Scale** developed by Lewis and Gallison (1989) as a scale for measuring an individual's attitudinal predisposition toward his or her personal world as more or less coherent. The content validity of this scale was developed by an analysis of construct of coherence by Antonovsky (1987). Research

on patients with breast cancer and patients with diabetes established that the scale's internal consistency reliability is 0.92 or higher (Lewis & Gallison). The authors translated this scale into Japanese with the assistance of a native English speaker and revised the questions for Japanese patients by comparing them with a Japanese translation of the original SOC scale by Antonovsky. The revised version was tested on four patients and two nurses and was revised again based on their comments. The final tool is comprised of 29 items that are formatted with seven-point Likert response options that range from 1 (strongly disagree) to 7 (strongly agree). Higher scores indicate higher levels of coherence and, therefore, higher levels of resistance to stress and vulnerability.

Social support: Social support was measured with the **Norbeck Social Support Questionnaire (NSSQ)**, 1995 version, an instrument designed to measure multiple dimensions of perceived social support (Norbeck, 2003). Test-retest correlations were high (Norbeck). This instrument was translated into Japanese with the assistance of a native English speaker and focused on components of functional properties of social support (e.g., emotional support, tangible support). Respondents were asked to list significant people in their lives, indicating the kind of relationship for each person. They were then asked eight questions about these relationships and the respondents described the amount of support available from each person using a five-point rating scale ranging from 0 (not at all) to 4 (a great deal).

Demands of Illness

For this study, a questionnaire on the demands of illness (Q-Demands) was developed to measure the demands associated with illness after surgery for gastrointestinal tract cancer. The questionnaire was generated through active discussions among four researchers who were oncology nurses. The discussions had three functions: to extract from previous studies the major causes of distress and the means of adaptation of patients with cancer (Mizuno, Arita, & Kakuta, 2005; Mizuno, Kakuta, Ono, Kato, & Inoue, 2007), to create multiple questionnaires through brainstorming based on the stated materials, and to refine the questionnaires by careful consideration that responses were not swayed according to respondents' personal backgrounds. A preliminary questionnaire was tested on four patients and two nurses and was revised again based on their comments. The questionnaire subsequently contained 16 items that were formatted with five-point Likert response options that ranged from 1 (strongly disagree) to 5 (strongly agree). Higher scores indicated greater perceived demands.

Why me? The degree of ascribing causes was measured by asking about the extent of thinking, "Why did this happen to me?" The questionnaire was formatted with five-point Likert response options that ranged from 1

(strongly disagree) to 5 (strongly agree) and was added to the bottom of the Q-Demands. Strong “why” thoughts indicated that the patient was ascribing causes of his or her plight to the cancer diagnosis and treatment.

Quality of life: QOL was measured with a Japanese version of the World Health Organization Quality-of-Life 26-item assessment (WHOQOL-26), which was developed from the WHOQOL-100. The WHOQOL defines QOL as “an individual’s perception of his or her position in life in the context of the culture and value systems in which he or she lives and in relation to goals, expectations, standards, and concerns” (World Health Organization, 1995). Tazaki et al. (1998) verified the validity of this instrument for Japanese patients with cancer. The WHOQOL-26 is comprised of 26 questions with five-point scales that ranged from 1 (not at all) to 5 (a great deal) and assesses QOL in four domains: physical, psychological, social relationship, and environmental, with an additional two questions assessing overall QOL: “How do you evaluate the quality of your life?” and “Are you satisfied with the condition of your health?” (Tazaki & Nakane, 1997). In a sample of patients with cancer of the gastrointestinal tract and other cancer sites, the average score was 3.30 and the tool had an internal consistency of 0.97 (Tazaki & Nakane).

Analyses

Internal consistency for each study variable and descriptive statistics, including the subdivisions, were determined. However, for the demands of illness, factor analysis was performed before testing the internal consistency of the questionnaire. To examine the distinctive features of the study concepts in more detail, the differences in social support networks by gender and the relationships between subdivisions of the QOL variable also were assessed. The relationships between the study variables then were assessed before a multiple regression analysis evaluated the effects that other variables had on patient QOL.

The differences among variables were tested using t test, paired t test, χ^2 analysis, or analysis of variance. Because of the small sample size in this study, however, when significant homogeneity of variance was not demonstrated, nonparametric methods (Wilcoxon’s rank sum test or Kruskal-Wallis rank test) were employed. The relationships among variables were assessed by calculating Pearson’s product moment correlations. The statistical analyses were performed with SPSS® 15.0.

Results

Sample

A total of 92 questionnaires were distributed and 60 (65%) were returned by mail. Thirty-one patients

did not participate in the survey because they did not qualify or did not wish to participate. The average age of the respondents was 66.2 years (SD = 10.9); 65% were men. On average, the respondents were at 41 days (SD = 18.87) after surgery; 38% had gastric cancer, 35% colorectal cancer, and 27% other sites (e.g., cancer of the esophagus, pancreas, liver, gallbladder). Demographic and clinical characteristics of the study sample are summarized in Table 1. A significant difference was found for time elapsed after surgery among the three groups according to type of cancer ($\chi^2 = 10.05$, $df = 2$; $p < 0.05$). Patients in Japan are discharged from the hospital after fully recovering from the surgical operation. Time from surgery to discharge for esophagus, pancreas, liver, and gallbladder cancer in general is longer than that for patients with colorectal cancer and gastric cancer.

Study Variables

Internal consistency of reliability and descriptive statistics for this study’s variables are presented in Table 2. The coefficient alpha of each variable indicated a high score. Because the NSSQ is not a summative-type instrument, the internal consistency with coefficient alpha was not tested.

Table 1. Sample Characteristics

Characteristic	\bar{X}	SD	Range
Age (years)	66.2	10.9	36–85
Duration following diagnosis	81.8	62.74	25–360
Duration following surgery	41	18.87	12–105
Characteristic	n	%	
Gender			
Male	39	65	
Female	21	35	
Cancer site			
Colorectal	21	35	
Gastric	23	38	
Other ^a	16	27	
Operative method			
Laparoscopy	12	20	
Laparotomy	48	80	
Supplemental treatment			
Check-up only	24	40	
Chemotherapy	21	35	
Other	15	25	
Comorbidity			
Present	25	42	
Absent	35	58	
Employment status			
Employed	26	43	
Unemployed	34	57	
Marital status			
Married	52	87	
Single	8	13	

N = 60

^a Includes esophagus, pancreas, liver, and gallbladder

Table 2. Statistics of Study Variables

Variable	N	\bar{X}	SD	Cronbach α
Sense of coherence	60	4.75	0.75	0.91
NSSQ				
Number of patients in network	54	10.56	5.02	–
Emotional support	50	125.9	61.35	–
Tangible support	50	54.06	28.92	–
Total function of support ^a	50	179.96	87.49	–
Demands of illness	60	3	0.58	0.77
WHOQOL-26	60	3.32	0.54	0.92

^a The total of emotional support and tangible support scores NSSQ—Norbeck Social Support Questionnaire; WHOQOL-26—World Health Organization Quality-of-Life 26-item assessment

Based on the factor analysis for the Q-Demands, 4 of the 16 items in this questionnaire did not contribute to the internal consistency on item-total correlation coefficients and, therefore, were deleted. The remaining 12 items were used in the analysis. Using these 12 items, the maximum likelihood method of factor analysis followed by Promax solution and Kaiser normalization were calculated and four factors with Eigen values greater than one were identified (see Table 3). These factors were the concerns related to illness (factor 1), the demands on daily life and recuperation (factor 2), the difficulty brought on by a disease and medical information (factor 3), and the demands of having to control the illness and living (factor 4). The total score of the Q-Demands was strongly correlated with scores of each factor ($r = 0.65$ at the lowest and 0.8 at the highest, $p < 0.001$ for each). The mean of the total score was 3 ($SD = 0.58$) and, of the four factors, concerns related to illness had the highest mean score (3.86, $SD = 1.07$) and demands on daily life and recuperation had the lowest mean score (2.06, $SD = 0.67$).

The mean number of people in each network in the NSSQ was 10.6, the mean score for emotional support was 125.9, the mean score for tangible support was 54.1, and the mean score for total function of support, which is the total of emotional support and tangible support scores, was 180. All scores generally agreed with those obtained from a sample of mainly Caucasian healthy adults by Norbeck (2003). However, in the current study, scores for men were significantly lower and scores for women significantly higher than in Norbeck's investigation. Although a trend existed for women to score higher than men on social support in the NSSQ, the differences in the current study were statistically significant ($p < 0.05$ in each comparison of four pairs).

Specific differences in social support networks between men and women were tested. The results are summarized in Table 4. Men had a significantly greater number of points for total function of support provided from their spouse compared to women ($Z = -2.53$, $p < 0.05$). Conversely, women had a significantly greater

number of friends than men did ($Z = -2.44$, $p < 0.05$), so that the total function of support provided from friends for women was significantly higher than that for men ($Z = -2.39$, $p < 0.05$). Per person, however, no significant difference existed between men and women on total support provided from friends whereas, as mentioned previously, a difference in support provided by a spouse did exist. No significant difference between men and women was identified for other sources of support or other study variables.

The average score for the WHOQOL-26 was 3.32. This score generally agreed with a score of 3.3 obtained from a study by Tazaki and Nakane (1997) for patients with cancer (average age = 55.9 years; male, $n = 92$; female, $n = 105$). The relationship between the WHOQOL-26 and the subscales is presented in Table 5. The total score of the WHOQOL-26 was strongly correlated with the score of each subscale ($r = 0.65$ at the lowest and 0.9 at the highest). The mean score of a subscale composed of two items of overall QOL was significantly lower than that of the WHOQOL-26 (95% confidence interval [CI] -0.52 to -0.23 ; $t = -5.11$; $p < 0.001$). However, the mean scores of subscales for the domains of social relationship and the environment were higher than that of the WHOQOL-26 (95% CI 0.13 – 0.36 ; $t = 4.36$; and 95% CI 0.08 – 0.24 ; $t = 4.24$, respectively; $p < 0.001$ for each).

Relationships Among Study Variables

None of the study variables were correlated with age or time elapsed after surgery. The coefficients of bivariate correlations between major variables in this study are shown in Table 6. The WHOQOL-26 was strongly correlated with the SOC and the Q-Demands scores ($r = 0.61$ and $r = -0.63$, respectively) and was moderately correlated with scores of subscales except for the number of network members in the NSSQ ($r = 0.30$ and $r = -0.35$, respectively). The correlations between subscales on the NSSQ were naturally strong ($r = 0.72$ and $r = -0.99$).

The only variable that was negatively correlated with SOC was the question "Why me?" ($r = -0.37$). In addition, when the responses to the question "Do you think about why this happened to you?" were collapsed into three categories (disagree, neutral, or agree), a significant difference existed with the SOC variables ($\chi^2 = 8.38$, $df = 2$, $p < 0.05$).

When variables that exhibited a significant correlation with the WHOQOL-26 were entered in a multiple regression analysis using QOL as the dependent variable, two variables (SOC and Q-Demands) were left over and significantly affected QOL ($\beta = 0.47$ and $\beta = -0.36$, respectively, $p < 0.001$ for each). The model explained 54% of the variance for that equation ($F = 34.0$, $df = 2, 57$; $p < 0.001$), although bivariate correlations between SOC and Q-Demands were rather strong ($r = -0.59$, $p < 0.001$).

Discussion

This study suggests that SOC is positively correlated with QOL and the demands of illness are negatively correlated with QOL among study participants. Social support only showed weak correlations with those variables and was not a significant factor in the prediction of QOL. The results on social support did not confirm the authors' premise that patients' self-care skills are enhanced when they believe that their social relationships will be supportive. Schroevers, Ranchor, and Sanderman (2003) found that lower levels of social support for patients with cancer and individuals from the general population were strongly related to higher levels of depressive symptoms. Additionally, in a study using a sample of cancer survivors by Schnoll, Knowles, and Harlow (2002), a multivariate assessment of a prediction model of adaptation showed that greater social support and reduced avoidant coping were the strongest predictors of better adjustment. Compared to other studies, social support in the current study did not affect related factors.

The subscale scores of the NSSQ in this study generally agreed with scores of a sample of healthy adults in the United States (Norbeck, 2003) and were considerably higher than scores of patients with cancer of the reproductive organs in Sweden (Bertero, 2000). The level of function of social support in the current study seemed to be closer to healthy adults in the United States than to patients with cancer. In contrast, the average score for the WHOQOL-26 in this study generally agreed with that in a group of patients with cancer, which was significantly lower than that in a group of healthy individuals in a study by Tazaki and Nakane (1997). That is,

the QOL of participants in the current study, who were patients with gastrointestinal tract cancer and had just left the hospital after surgery, was lower than that of healthy individuals.

Several studies have indicated that patients with pancreatic or biliary cancer were more vulnerable to psychological distress in connection with the diagnosis than were patients with colorectal cancer (Nordin & Glimelius, 1997; Zabora, BrintzenhofeSzoc, Curbow, Hooker, & Piantadosi, 2001). In the current study, however, only the time elapsed after surgery showed a significant difference among the three groups: gastric cancer, colorectal cancer, and other sites (e.g., cancer of the esophagus, pancreas, liver, gallbladder). Using the time elapsed after leaving the hospital rather than after surgery as a criterion of sampling might adjust for the impact of surgery among the three groups at the time of examination. Actually, the time elapsed after surgery was the shortest for colorectal cancer and the longest for other sites.

Although the impact on QOL from surgery decreased as time went on, participant QOL did not improve to the level of healthy individuals by the time of the study. In a study by Sprangers et al. (2002) comparing QOL in a group divided into three health levels, patients with cancer in the acute phase of their illness reported a poorer QOL than healthy individuals, but patients who had been disease free for a period of three years or longer had a similar overall QOL compared to healthy individuals. The participants in the current study still may have been in the acute phase.

QOL of patients with cancer in the acute phase was low, and they probably had heavy demands from their illness. However, their perceived social support

Table 3. Factor Analysis of Demands of Illness (Q-Demands)

Item	Factor 1	Factor 2	Factor 3	Factor 4
Being bothered by concerns about my physical condition and trivial symptoms	1.02	-0.1	-0.01	-0.01
Being worried about when I would have a relapse	0.46	0.02	0.08	0.14
Leading a useful daily existence	-0.12	0.81	0.1	-0.09
Being able to manage my daily activities according to my physical condition	0.06	0.65	0.01	0.11
Not being able to communicate my needs to my family or friends	0.37	0.39	-0.16	-0.04
Recognizing the significance of assistance and support from family or friends on coping with my own needs	-0.01	0.27	-0.01	0.13
Feeling overwhelmed by the amount or complexity of medical information I received	-0.13	-0.05	0.75	0.11
Not being able to know and understand what medical information I actually need	0.1	-0.06	0.51	0.05
Lacking medical information	0.02	0.2	0.46	-0.09
Not being able to skillfully manage my social life to recuperate or to have a medical examination	0.34	0.14	0.42	-0.06
Being able to establish a lifestyle that adapts to my present state	-0.01	0.17	-0.06	0.96
Being able to reprioritize and negotiate day-to-day activities according to my physical strength and fatigue	0.09	-0.14	0.22	0.46
α	0.69	0.61	0.66	0.66
\bar{X}	3.86	2.06	3.64	2.73

Note. Positively worded items were reverse coded; therefore, all values were negative. The maximum likelihood method of factor analysis followed the Promax solution.

Table 4. Differences in Social Support Networks Between Men and Women

Item	Total Function of Support			Number of People in Network			Total Function of Support Per Person		
	Spouse	Family	Friends	Spouse	Family	Friends	Spouse	Family	Friends
Z	-2.53	-1.95	-2.39	-3.07	-1.93	-2.44	-2.53	-0.4	-1.27
p	0.01	0.05	0.02	0.001	0.05	0.01	0.01	0.69	0.2
Average rank for men	28.9	21.83	21.17	29	23.44	22.17	28.9	-	-
Average rank for women	18.84	30	31.05	22.16	31.82	32.45	18.84	-	-

Note. Wilcoxon's rank sum test was employed.

was not low. These findings are at variance with findings of a study using a sample of college students by Aspinwall and Taylor (1992). They suggested that the effort to obtain social support made by people who were experiencing negative mood might be at least somewhat unsuccessful or unsatisfying. However, findings of the current study suggest the possibility that patients with cancer in the acute phase were apt to perceive sufficient social support without making much effort to obtain it.

Limitations

The small sample size in this study limits generalizability. Additionally, some of the questionnaires should be studied in more detail to refine their validity and reliability. The participants in this study were limited to people who were aware that they had cancer. At present in Japan, patients are not necessarily informed of their medical diagnosis, so the findings from this study may not apply to the general population of patients with cancer. In addition, this study was cross-sectional and restricted to patients with gastrointestinal tract cancer. A longitudinal study design targeting other patients will be necessary to find distinctive factors that influence the QOL in postoperative patients with cancer.

Clinical Implications

SOC contributes to positive QOL. Given that SOC represents a patient's dispositional orientation, it probably is not easily changed by direct interventions. However, patients who had surgery evidently reframed their internal standards of health in the process of becoming and remaining ill (Bernhard, Hurny, Maibach, Herrmann, & Laffer, 1999; Bernhard, Lowy, Mathys, Herrmann, & Hurny, 2004; Oort, Visser, & Sprangers, 2005). This may be a response to a stressful event. Even if patients' internal standards of

health are fluid in the postoperative period, SOC may be changed by some other intervention. Therefore, introducing cognitive behavioral interventions focusing on the "Why me?" question may be useful. Some studies have already verified the outcomes of cognitive behavioral interventions on QOL for patients with cancer (Osborn, Demoncada, & Feuerstein, 2006; Rummans et al., 2006; Trask, Paterson, Griffith, Riba, & Schwartz, 2003). In the current study, the "Why me" question had a negative association only with SOC.

Actively recognizing attributions for having cancer and undergoing surgery, although it may be stressful, probably improves SOC. When nurses support patients by discussing questions such as "Why me?" the difficulty of this cognitive activity may lessen. Because Japanese people generally tend to avoid talking about their feelings and thoughts, talking to nurses may be even more therapeutic. When this cognitive activity includes the concepts, such as the demands of illness, patients may be more aware of their efforts to adapt to their illness. The demands of illness may be decreased and SOC may be strengthened by continuing to use cognitive behavioral therapy until patients gain self-confidence, which would subsequently improve QOL.

Although patients' perceived social support did not contribute to the prediction of QOL, it was weakly correlated with other factors. For example, patients who perceived that they had sufficient social support

Table 5. WHOQOL-26 and Subscale Interrelationships

Items	r	Confidence Interval	t	df
Physical and WHOQOL-26	0.9**	-0.22, 0.03	-2.63*	59
Psychological and WHOQOL-26	0.88**	-0.15, 0.01	-1.8	59
Social relationship and WHOQOL-26	0.65**	0.13, 0.36	4.36**	59
Environmental and WHOQOL-26	0.85**	0.08, 0.24	4.24**	59
Overall QOL and WHOQOL-26	0.72**	-0.52, 0.23	-5.11**	59

N = 60

* p < 0.05; ** p < 0.001

QOL—quality of life; WHOQOL-26—World Health Organization Quality-of-Life 26-item assessment

Table 6. Inter-Relations Among Study Variables

Variable	1	2	3	4	5	6	7	8
1. Sense of coherence	1	–	–	–	–	–	–	–
2. Demands of illness	–0.59**	1	–	–	–	–	–	–
3. WHOQOL-26	0.61**	–0.63	1	–	–	–	–	–
4. Number of people in network	0.21	–0.2	0.16	1	–	–	–	–
5. Emotional support	0.29*	–0.28*	0.35*	0.9**	1	–	–	–
6. Tangible support	0.19	–0.29*	0.3*	0.72**	0.86**	1	–	–
7. Total function of support	0.27	–0.29*	0.35*	0.87**	0.99**	0.93**	1	–
8. “Why me?”	–0.37**	0.16	–0.16	–0.11	–0.16	–0.06	–0.13	1

* $p < 0.05$; ** $p < 0.01$

WHOQOL-26—World Health Organization Quality-of-Life 26-item assessment

Note. Pearson’s product moment correlation was used.

tended to minimize the demands of illness compared to patients who perceived insufficient social support. Planning interventions that make good use of perceived social support may be useful in relieving the demands of the illness, although using perceived social support to assess the outcome of the intervention is unnecessary. Interventions reflecting a pattern of social support networks according to gender will be easy to match to users’ needs. Significant gender differences in several dimensions of social support, social adjustment, and psychological distress have been found in studies of patients with cancer (Keller & Henrich, 1999; Northouse, Mood, Templin, Mellon, & George, 2000; Peleg-Oren, Sherer, & Soskolne, 2003). In addition, in this study, men tended to rely mainly on their wives whereas women tended to rely less on the support of their husbands, instead relying much more on resources both within

and outside the family. Taking account of patients’ social relationships in planning interventions may be useful.

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