

Andrea M. Barsevick, DNSc, RN
Jeanne Pasacreta, RN, PhD, CS
Allen Orsi, RN, PhD

Psychological Distress and Functional Dependency in Colorectal Cancer Patients

This research was done to describe the nature and degree of psychological distress persons experience after receiving a diagnosis of colorectal cancer and to describe the effect on functional dependency of that distress during the first 3 months of treatment. The sample consisted of 66 persons who completed interviews before surgery and 1 and 3 months after surgery. Depressive symptoms changed substantially over time in relation to the events of diagnosis and treatment. Having an ostomy, additional treatment, and depressive symptoms were predictors of functional dependency after surgery. The findings suggest that depressive symptoms, even at low levels, are important to address because they may reduce patients' ability to function in their usual roles and activities for considerable periods after colorectal cancer surgery.

KEY TERMS: Psychological distress; crisis; coping; colorectal cancer

Colorectal cancer strikes approximately 149,000 men and women each year, claiming an estimated 56,000 lives.¹ Although research shows that persons have psychological distress after receiving a diagnosis of cancer, the expansion of knowledge in this area has been limited by the use of samples that are heterogeneous with respect to type of cancer, lack of research on consequences or outcomes of psychological distress, and advances in treatment that may change or eliminate sources of distress. The current re-

search (1) described the nature and degree of psychological distress persons experience at various phases of the treatment and recovery process after a diagnosis of colorectal cancer, and (2) described the effect of psychological distress over time on functional dependency in this population.

Review of Literature

The Crisis Model proposed by Gerald Caplan² is a time-honored conceptual framework that has been used extensively to characterize situations involving physical illness.³ A crisis is a transitional period during which a person faces an opportunity for personal growth as well as the danger of increased vulnerability to mental disorder. A crisis occurs in a novel situation for which the person has not developed a repertoire of coping behaviors. The essential factor in a crisis is a perceived imbalance between the difficulty and importance of the problem and the availability of resources for addressing it. As a result of the imbalance, psychological distress is produced, which often is characterized by depression, anxiety, and anger.⁴ Psychological dis-

Andrea M. Barsevick, DNSc, RN, Director of Nursing Research, Fox Chase Cancer Center, Philadelphia, Pennsylvania.

Jeanne Pasacreta, RN, PhD, CS, Psychiatric Consultation Liaison Nurse, Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania.

Allen Orsi, RN, PhD, Postdoctoral Fellow, University of Pennsylvania, Philadelphia, Pennsylvania.

Supported by NIH grant #1-P50-NR02324 and by the Center for Advancing Care in Serious Illness, University of Pennsylvania School of Nursing.

Correspondence to: Andrea Barsevick, DNSc, RN, Fox Chase Cancer Center, 7701 Burholme Avenue, Philadelphia, PA 19111.

tress experienced during a crisis may either stimulate or impair problem-solving efforts, depending on the severity of the distress. Successful resolution of a crisis results in a return to optimal levels of functioning; if the crisis is not resolved, functioning in usual activities can become impaired permanently.² An examination of the experience of diagnosis and treatment for colorectal cancer using the crisis model could reveal the extent of its utility in identifying persons in danger of developing poor functional outcomes.

The most frequently cited problem among persons with cancer is general emotional disturbance.⁵⁻⁷ The most common psychological symptoms reported are anxiety and depression. Almost one half of hospitalized patients with cancer meet the criteria for formal psychiatric disorders, with most diagnosed with depression or adjustment disorders with depression and anxiety.⁸ As the patient learns what to expect with regard to treatment plan, psychological distress often diminishes.⁸ However, a proportion of patients with cancer continue to have psychological distress for as long as 1 year after diagnosis.^{9,10}

Although psychological distress in patients with cancer is well documented, many studies have examined samples that are heterogeneous with respect to cancer diagnoses.⁸ Because physiological processes, problems, and treatments are distinct among cancers and have widely varying outcomes, psychosocial processes are different depending on the diagnosis and type of treatment. Therefore, it is important to examine psychological phenomena in relation to specific diagnoses and treatments.

Patterns of psychological distress after colorectal cancer is diagnosed are higher after initial treatment and decrease gradually during a 6-month period.¹¹ For persons treated with colostomy, fear of the diagnosis and of recurrence or metastasis were among five most important concerns reported.¹² One third of those with ostomies reported depression and one fourth reported anger or irritability more than 1 year after surgery.¹³ However, treatment of colorectal cancer has changed considerably since these studies were reported. Standard treatment now may include radiation, chemotherapy, or both.¹⁴ Also, new surgical techniques have substantially reduced the need for permanent colostomies. Further research is needed to document psychological status in the context of today's more intensive treatment approaches.

Much of the research on depression and cancer has focused on the type and degree of depression without regard for the effect of depressed mood on outcomes. A recent exception was a study in which routine psychiatric evaluations were conducted on 100 adult patients having allogeneic bone marrow transplants for acute leukemia. The findings revealed that depressed mood was associated with shorter duration of survival.¹⁵ Another investigation showed that social support groups for women with metastatic breast cancer reduced psychological distress and extended mean survival when compared with a control group.¹⁶

A few studies of persons with diagnoses other than cancer have examined the relationship between depression and functional dependency outcomes. Mossey and associates¹⁷ found that persons with hip fractures who reported high levels of depressive symptoms were more dependent and had poorer physical functioning when compared with

others recovering from hip fractures who had low levels of depressive symptoms. A recent, large-scale study¹⁸ found that substantial morbidity was associated with depressive symptoms. Persons with diagnosed depression and chronic medical conditions had the poorest level of functioning. Those who had depressive symptoms without a chronic medical condition functioned more poorly than did persons with a medical condition alone. For example, persons with depressive symptoms spent more time in bed than did those with hypertension, diabetes, or arthritis who did not report depressed mood.

The findings of these studies suggest that psychological responses to illness, if negative, could result in unfavorable outcomes. An examination of the mood states of patients as they navigate their diagnoses and treatments could provide information that could be helpful in identifying persons who need crisis intervention. The information would also be useful to guide future studies.

Methods

This study used a longitudinal descriptive design to examine biopsychosocial factors associated with functional dependency outcomes during the first 3 months of recovery after a diagnosis of colorectal cancer. Eligibility criteria included having a diagnosis of invasive carcinoma of the colon or rectum, being scheduled for surgery, and being able to communicate in English. Participants were interviewed before surgery as well as 1 and 3 months after surgery for colorectal cancer. Institutional Review Board approval was obtained from the hospitals that participated in the study and from the university that sponsored the research.

Sample

Of 181 persons contacted about the study, 118 (65%) agreed to participate and completed the initial interview. Five persons were removed from the study by the investigator because of extensive illness resulting in lengthy hospital stays or death. Fifteen withdrew from the study after the first or second interview. The most frequent reason was the amount of time required for interviews. Thirty-two persons had incomplete data and were not included in the analysis.

Variables

Psychological Distress. Psychological distress was assessed with two measures. The Bipolar Profile of Mood States (POMS) is a general measure of mood that has been used widely to document various positive and negative moods common with physical illnesses.¹⁹ For this study, a negative mood score was computed by summing the anxious, depressed, unsure, tired, confused, and angry subscale scores. Scores could range from 0 to 108, with a higher score indicating greater negative mood. These subscales

were chosen because they examine emotions commonly associated with a crisis state.

Validity and reliability of the POMS have been established.¹⁹ The negative mood subscales of the bipolar POMS are considered by the authors of the instrument to be analogous to the original POMS, which measures only negative moods. For this sample of patients with colorectal cancer, Cronbach's alpha coefficient for negative mood was 0.93.

The Beck Depression Inventory (BDI) is a second measure used to assess psychological distress. It measures severity of depressive symptoms in patients with psychiatric illnesses and is used as a screening instrument in persons without mental illness.²⁰ It is a self-report scale comprising 21 items, each composed of four statements reflecting gradations of intensity of a particular depressive symptom. Respondents choose the statement that best corresponds to the way they have felt for the past week. Scores range from 0 to 63, with higher scores indicating more depressive symptoms. Scores higher than 15 indicate mild to moderate depression and often are used as a cutoff point in screening for depression in clinical settings.²¹ Internal consistency reliability was Cronbach alpha coefficient = 0.85. Thirty-five studies examining physically or mentally ill persons have shown acceptable levels of concurrent validity with the Hamilton rating scale for depression, the Zung depression scale, and the Minnesota Multiphasic Personality Inventory-Depression subscale.²¹

Functional Dependency. Level of functional dependency was examined with the enforced social dependency scale (ESDS).²² It consists of an interview-based rating by a professional of the amount of help a persons needs to perform usual activities or roles. Scales evaluate eating, dressing, walking, traveling, bathing, toileting, activities in the home, activities at work, recreational activities, and communication. A total ESDS score is computed by summing all 10 ratings. Scores for the total ESDS range from 10 to 51, with higher scores indicating greater dependency. The Cronbach's alpha coefficient for this sample was 0.96, and interrater reliability, calculated as the percentage of agreement, was 90%. Extensive testing of the ESDS has shown construct validity for the scale.²²

Procedures

Participants were identified through the surgical scheduling offices at two large, inner-city university hospitals and two affiliated hospitals. All persons meeting the eligibility criteria were asked to participate and informed consent was obtained. Before surgery, questionnaires were administered during preadmission testing, an average of 2 days before admission to the hospital. Initial data collection lasted 30 to 45 minutes and was conducted by graduate nurse research assistants with expertise in oncology nursing. At the initial interview, participants completed the BDI, POMS, and the demographic and clinical information. Postsurgical follow-up was conducted by telephone or in person in conjunction with physicians' visits and 3 months after surgery. The BDI and POMS were completed at the 1-month visit; the

ESDS was completed at the 3-month visit. The 3-month data point was chosen for the ESDS to evaluate how each person's functioning was affected after the usual crisis period was ended (usually about 8 weeks). Because persons with colorectal cancer are generally healthy and independent with respect to functional activities before surgery, the ESDS was administered only during the postoperative interviews.

Results

The demographic and clinical characteristics of the sample are presented in Table 1. The mean age was 64 ± 12.1 years. Participants were primarily male (64%), married (77%), white (91%), and had at least a high school education

Table 1. Sample Characteristics: Demographic Factors (n = 66)

Characteristic	Frequency	(%)
Age		
Mean \pm SD	63.8 \pm 12.1	
Sex		
Males	42	(64)
Females	24	(36)
Marital status		
Married	51	(77)
Not currently married	15	(23)
Race		
White	60	(91)
African-American	6	(9)
Education		
High school or less	47	(71)
College graduate	19	(29)
Occupation		
Professional	32	(49)
Skilled	28	(24)
Unskilled	6	(9)
Colostomy		
None	42	(64)
Temporary	14	(21)
Permanent	10	(15)
Added treatment		
None	35	(55)
Radiation, chemotherapy, both	31	(45)
Other diagnoses		
None	26	(42)
≥ 1	36	(58)

(71%). Thirty-six percent ($n = 24$) had colostomies. More than one half of the patients with colostomies (58%) expected to have them surgically reversed; the others were permanent. Less than one half of the sample (45%) received additional treatment, including chemotherapy and/or radiation treatment. More than one half of the sample (58%) had one or more of 11 other diagnoses or medical conditions that could affect their recovery from surgery. These conditions included heart disease, diabetes, chronic obstructive pulmonary disease, obesity, and smoking.

Because attrition of participants was problematic, means for the predictor variables were compared for groups completing and not completing the study. The groups did not differ with respect to age, negative moods (POMS), or depressive symptoms (BDI). Using chi-square analysis, it was determined that the completing group did not differ from the noncompleters with regard to sex, marital status, stage, having an ostomy, or receiving adjuvant treatment.

Table 2 displays a correlation matrix that revealed that preoperative and postoperative depressive symptoms as well as negative moods were correlated with functional dependency at the 3-month data point. Major variables were also examined for differences due to clinical or demographic factors. No differences were found in negative moods, depressive symptoms, functional dependency, or age with regard to adjuvant treatment (treated, not treated), ostomy (none, temporary, permanent), stage (in situ, invasive, metastatic), marital status (married, unmarried), or sex.

Means for the psychological distress variables are presented in Table 3. Repeated measures of analysis of variance were performed with each of the major variables as the dependent factor and time as the independent variable. The analyses revealed that BDI scores changed significantly with time ($F_{3,63} = 9.3$; $P < 0.001$). Profile of mood state scores did not change, suggesting that they were unrelated to the events of diagnosis and treatment. Therefore, this factor was not included in subsequent analyses.

Because depressive symptom scores changed significantly in relation to the diagnosis and treatment of colorectal cancer, individual items from the BDI were examined to determine which symptoms contributed to the overall depression score. Table 4 shows the individual items from the

Table 3. Psychological Distress ($n = 66$)

	Preoperative	Postoperative
	Mean \pm SD	Mean \pm SD
POMS	25.7 \pm 18.9	22.4 \pm 15.9
BDI	5.4 \pm 4.8	8.2 \pm 7.6

SD, standard deviation; POMS, Profile of Mood States; BDI, Beck Depression Inventory.

BDI. Respondents endorsed both cognitive-affective items and somatic-performance items that contributed to the overall depressive symptom score.

To examine the relative effect of preoperative depressive symptoms and clinical and demographic factors on functional dependency, stepwise multiple regression analysis was used. This procedure was chosen because it selects the best combination of factors to predict functional dependency. Depressive symptoms, having an ostomy, and requiring additional treatment (radiation or chemotherapy) were entered into the equation. Because the preoperative and postoperative time points are both clinically important times of transition for patients with cancer, a decision was made to examine the effects of preoperative and 1-month postoperative depressive symptoms in separate analyses.

Preoperative Depressive Symptoms as Predictor

For functional dependency 3 months after surgery, having an ostomy and having depressive symptoms before operation contributed significantly to the prediction of functional dependency ($P < 0.001$); additional treatment did not. Table 5 shows the findings. Overall, 22% of the variance in functional dependency 3 months after operation was predicted by this combination of factors.

Table 2. Pearson Correlations: Psychological and Demographic Factors with Functional Dependency at 3 month period ($n = 66$)

Factors	Pre-BDI	Post-BDI	Pre-POMS	Post-POMS	ESDS
Post-BDI	0.54 ^a				
Pre-POMS	0.68 ^a	0.47 ^a			
Post-POMS	0.47 ^a	0.61 ^a	0.68 ^a		
ESDS	0.26 ^a	0.35 ^a	0.23 ^b	0.30 ^a	
Age	-0.10	-0.10	-0.27 ^b	-0.11	0.06

BDI, Beck Depression Inventory; POMS, Profile of Mood States; ESDS, Enforced Social Dependency Scale.

^a $p < 0.01$.

^b $p < 0.05$.