# CONTINUING EDUCATION

# Pain-Related Distress and Interference With Daily Life of Ambulatory Patients With Cancer With Pain

Nancy Wells, DNSc, RN, Barbara Murphy, MD,
Debra Wujcik, MSN, RN, AOCN®, and Rolanda Johnson, PhD, RN

**Purpose/Objectives:** To examine the unique and combined effects of pain intensity, pain-related distress, analgesic prescription, and negative mood on interference with daily life because of pain.

**Design:** Descriptive, cross-sectional.

**Setting:** Two cancer clinics in academic medical centers in the southeastern United States.

**Sample:** 64 ambulatory patients with cancer who had pain that required analgesics.

**Method:** Participants completed a number of self-report instruments during a regularly scheduled clinic visit. Standard instruments were selected to measure the main research variables.

**Main Research Variables:** Worst pain intensity, pain-related distress, analgesic adequacy, negative mood, and interference with daily life.

**Findings:** Patients with higher levels of worst pain, pain-related distress, and negative mood and inadequately prescribed analgesics reported greater interference with daily life because of pain. Multiple regression analysis indicated that interference with daily life was explained by the combination of these four predictors. All variables except negative mood were significant predictors of interference. The unique variance explained by pain-related distress exceeded that explained by worst pain intensity or inadequately prescribed analgesics.

**Conclusions:** Data suggest that pain-related distress may be an important factor when investigating interference with daily life caused by pain. In addition, pain-related distress may provide a target for future intervention studies aimed at improving the impact of cancer-related pain on daily life.

**Implications for Nursing:** Assessment of pain-related distress may be important in planning interventions. Common nursing interventions may be employed to reduce pain intensity and pain-related distress, which may result in enhanced physical and emotional well-being.

## Key Points . . .

➤ Pain has a significant impact on physical and emotional well-being in patients with cancer.

➤ Higher pain intensity, pain-related distress, inadequately prescribed analgesics, and negative mood are related to interference with daily life because of pain.

➤ Pain-related distress plays an important role in interference with daily life.

### Goal for CE Enrollees:

To further enhance nurses' knowledge regarding pain-related distress and interference with daily life in ambulatory patients with cancer with pain.

### Objectives for CE Enrollees:

On completion of this CE, the participant will be able to
1. Discuss the significant impact of pain on physical and emotional well-being in patients with cancer.
2. Describe how higher pain intensity, pain-related distress, inadequately prescribed analgesics, and negative mood are related to interference with daily life because of pain.
3. Discuss the important role that pain-related distress plays in interference with daily life.

P atients with cancer experience numerous symptoms related to their disease and its treatment. Symptom experiences may be defined as the perception (Rhodes & Watson, 1987) and labeling of unusual sensations (Leventhal & Diefenbach, 1992). Symptom experiences can be approached from a purely biomedical perspective, where symptoms signal the presence of disease or adverse effects of its treatment. This approach, however, fails to recognize that symptoms are more than physical manifestations of biologic processes. Symptoms have profound secondary effects on emotional, social, and spiritual well-being (Cella, 1994; Ferrell, 1995; Wells, 1998). In addition, symptoms affect a patient's ability to perform daily activities. Thus, a multidimensional assessment of pain that includes physical and emotional well-being is required to

provide a full and comprehensive description of the variables that contribute to the symptom experience.

Recently, attention has been focused on symptom distress (McClement, Woodgate, & Degner, 1997). Symptom distress connotes the amount of discomfort (McCorkle & Young, 1978), anguish, suffering (Rhodes & Watson, 1987), or unpleasantness (Price, 2000; Price, McGrath, Rafii, & Buckingham, 1983) associated with a symptom. Symptom distress, like a symptom itself, is a subjective experience. Data from the pain literature support the concept that symptom distress varies based on the context of the experience. For example, Price, Harkins, and Baker (1987) found greater distress than pain intensity for patients with chronic pain and cancer pain, whereas women in labor reported greater pain intensity than distress. The expectation of pain of limited duration resulting in a positive outcome may explain the differences in responses to labor pain as opposed to chronic pain.

Psychological distress in patients with chronic, noncancer pain can produce a high level of disability (McCracken, Faber, & Janeck, 1998; Millard, Wells, & Thebarge, 1991). In this body of research, measures of mood disturbance commonly are used to reflect psychological distress. Investigators have begun to explore the relationships among psychological distress and functional deficits in patients with cancer-related pain (Sist, Florio, Miner, Lema, & Zevon, 1998; Turk et al., 1998; Zaza, Reyno, & Moulin, 2000). Findings have suggested that chronic cancer pain and noncancer pain have physical and emotional consequences. These relationships should be explored more fully in patients with cancer.

Symptom distress is distinguished from psychological distress by its relationship to symptoms. In contrast to the specific nature of symptoms, psychological distress connotes a general state of predominantly negative feelings such as anxiety and depression. This distinction is reflected in a model of pain processing proposed by Fields (1999) and Price (2000). Pain processing begins with stimuli carrying sensory and discriminative information to lower brainstem and limbic areas. This activation results in the sensation of pain and unpleasantness, which is labeled primary affect. This primary affect is the emotional response, which is related closely to perception of intensity of sensation. Therefore, this model predicts a relatively high correlation between ratings of intensity and pain-related distress (primary affect). The cognitive processing of this sensory and emotional experience, which involves memory, meaning, and context, results in secondary affect (Fields; Price). The final stage in this model is the impact of sensory and affective processing on behavior (Wade, Dougherty, Archer, & Price, 1996). Thus, the concepts of primary and secondary affect support the distinction between symptom distress and psychological distress. Although symptom distress (primary affect) and psychological distress (secondary affect) are related, they are distinct phenomena (Fields; Price). The distinction becomes important when selecting interventions designed to reduce distress. Focused or targeted strategies may be effective in reducing symptom distress, whereas mood disturbance may require broader and more time-intensive interventions. Isolating the source(s) of distress enables healthcare professionals to target interventions appropriate for individuals.

Measures of symptom distress vary in length, complexity, and content. Some address multiple symptoms, whereas others focus on a single symptom, such as pain. Portenoy et al. (1994) developed the Memorial Symptom Assessment Scale, which is scored along the dimensions of frequency, intensity, and distress. The Symptom Distress Scale (McCorkle & Young, 1978) also sums multiple symptoms along a single dimension to obtain a symptom distress score. Alternative symptom distress measures use a single distress item, in addition to a single intensity item, with a numeric rating or visual analog response format (Price et al., 1983). Although some investigators question patients' ability to distinguish between pain intensity and pain-related distress (Fernandez & Turk, 1992, 1994), research with experimental pain and clinical pain has demonstrated that patients respond differently to pain intensity and pain-related distress (Johnson, 1973; Price et al., 1987; Wells, 1982). The single-item approach was used in the current study because of the focus on the symptom of pain and the distress caused by pain.

## Cancer Pain and Correlates

Pain is a common symptom in cancer (Weber & Huber, 1999) that can have a substantial impact on quality of life (Ferrell, 1995; Wells, 1998). As with other symptoms, pain is not an isolated biologic phenomenon. It is affected by emotional and physical variables that must be evaluated to understand how the pain experience is shaped. The emotional dimension of pain has been recognized for some time (Beecher, 1959; Melzack & Wall, 1982). For example, Sist et al. (1998) found elevated depression in patients with chronic, noncancer pain and those with cancer pain. In patients with cancer, mood disturbance is present more often in patients with pain than those without pain (Glover, Dibble, Dodd, & Miaskowski, 1995; Miaskowski, Zimmer, Barrett, Dibble, & Wallhagen, 1997). Ample evidence also exists that cancer pain affects daily activity and is, therefore, associated with functional deficits (Burrows, Dibble, & Miaskowski, 1998; Serlin, Mendoza, Nakamura, Edwards, & Cleeland, 1995; Ward et al., 1993; Ward, Carlson-Dakes, Hughes, Kwekkeboom, & Donovan, 1998; Wells, 2000). Patients with cancer-related pain also have lower provider-rated function than patients without pain (Glover et al.). Unfortunately, many patients with cancer-related pain are treated with inadequate levels of analgesics (Cleeland et al., 1994; Ward et al., 1993, 1998; Wells, 2000). Therefore, patients experience unnecessary pain. Inadequate pain control may affect ability to engage in daily activities, mood, and distress. Although investigators have examined the relationships among these variables, they have not investigated the relative contribution of these variables to interference with daily life that reflects physical and emotional well-being.

In the population of patients with cancer, physical and emotional well-being may be compromised by symptoms such as pain. This may be particularly true of pain that affects freedom of movement. Symptom distress may contribute to further decay in physical and emotional well-being (McClement et al., 1997; Rhodes & Watson, 1987). As noted in patients with noncancer pain, symptom distress contributes significantly to dysfunction; novel interventions may be designed and tested to target this aspect of the symptom experience. Thus, symptom-related distress is an important variable for further study. Because the influence of pain-related distress on physical and emotional well-being of patients with cancer has

not been established clearly, the authors undertook a study of ambulatory patients to examine the relative contribution of pain intensity, pain related-distress, negative mood, and adequacy of prescribed analgesics to variability in interference with daily life.

# Methods

## Design and Procedure

The researchers used a descriptive, cross-sectional design. The data reported were collected as baseline data for a longitudinal intervention study. The study was approved by the institutional review board. Patients were approached at a regularly scheduled clinic visit and asked to participate. Patients who agreed to participate completed a brief interview with a trained research team member to provide demographic information, and then they completed measurements of pain intensity, pain-related distress, mood, and interference with daily life. Data were collected from the patients' clinic records on analgesics prescribed and clinical course of disease.

## Setting and Sample

Participants were recruited from a cancer center and a cancer clinic in a veteran's hospital in the southeastern United States. To be included, patients had to be 18 years of age or older, have new pain or escalation of pain within the past three months that required analgesics, have a family member or friend providing support, and understand English. Patients with documented psychiatric illness or cognitive impairment were excluded from the study.

## Instruments

**Brief Pain Inventory–Short Form (BPI–SF):** The BPI–SF is a short, self-report instrument (Cleeland, 1990; Daut, Cleeland, & Flanery, 1983). Four items measure pain intensity: least, average, and worst pain in the past 24 hours and pain now. Interference with daily life because of pain is rated for seven areas of daily life: general activity, mood, ability to walk, normal work, relations with others, sleep, and enjoyment in life. All intensity and interference items are rated on 11-point (0–10) numeric scales, with higher values reflecting greater pain and interference with daily life. The BPI–SF has demonstrated adequate internal consistency of the seven interference items (Cleeland; Ward et al., 1993). Cleeland et al. (1996) identified a two-factor structure of the interference items, one reflecting activity (i.e., general activity, ability to walk, normal work, and sleep) and one reflecting affect (i.e., mood, relations with others, and enjoyment in life). Internal consistency of the activity and affect subscales was adequate in the current sample ($\alpha > 0.80$). In this study, the seven-item interference scale was used to reflect multiple aspects of daily life. Internal consistency of the seven interference items was adequate ($\alpha = 0.89$) in this sample. Validity of the instrument as a measure of pain and its effect on daily life has been supported (Daut et al.; Cleeland et al., 1994; Serlin et al., 1995).

**Pain-related distress:** A single item was used to measure pain-related distress. Pain-related distress was defined as the amount of bother caused by pain. An 11-point numeric rating scale was used (0–10) and rated for the prior 24 hours. Higher scores reflect greater pain-related distress. The use of a single-item distress rating is supported in the literature (Johnson, 1973; Price et al., 1983; Wells, 1982). Sensitivity and stability of the distress rating using a visual analog scale format have been supported in the laboratory (Price et al., 1983). The numeric response format was selected for this study to be consistent with the BPI–SF.

**Profile of Mood States–Short Form (POMS–SF):** The POMS (McNair, Lorr, & Droppleman, 1971) is a well-validated measure of mood used in medical settings (Glover et al., 1995; Miaskowski et al., 1997). A short form consisting of 11 negative mood items that measure total mood disturbance (Cella et al., 1987) was used. The scale included the terms blue, discouraged, sad, bewildered, miserable, gloomy, weary, on edge, muddled, uneasy, and unhappy. The original response format of 0 (not like this at all) to 4 (much like this) was used. The time frame for response was mood over the past week. Reliability and congruence between the full POMS and the 11-item POMS have been demonstrated (Cella et al.). In the current sample, internal consistency of the POMS–SF was adequate ($\alpha = 0.89$).

**Adequacy of prescribed analgesics:** The **Pain Management Index (PMI)** provides a single estimate of the adequacy of analgesics prescribed for the level of worst pain reported. In this measurement, the worst pain reported on the BPI is categorized as none (0), mild (1–4), moderate (5–6), or severe (7–10) (Serlin et al., 1995) and coded as none (0), mild (1), moderate (2), and severe (3). Analgesics prescribed are coded using the analgesic ladder recommended by the World Health Organization (1990) and the Agency for Health Care Policy and Research (AHCPR) (1994) Cancer Pain Guideline Panel. The strongest analgesic prescribed is categorized as (0) none, (1) nonsteroidal anti-inflammatory drug (NSAID), (2) weak opioid, and (3) strong opioid. Codeine is an example of a weak opioid, whereas morphine and fentanyl are examples of strong opioids (AHCPR). The PMI is calculated by subtracting the worst pain reported from the analgesics prescribed. The resulting scores can range from –3 (severe pain with no analgesics prescribed) to +3 (no pain with strong opioids prescribed). Negative PMI scores indicate inadequate analgesics prescribed for worst pain reported, and 0 or positive scores indicate adequate analgesics prescribed. Validity of the PMI as a measure of analgesic adequacy has been supported (Cleeland et al., 1994; Ward et al., 1993). However, the PMI provides a gross measure of adequacy of prescribed analgesics because it does not capture dosages or intervals prescribed.

## Data Analysis

Data were analyzed using SPSS® (SPSS Inc., Chicago, IL). Before examining the relative contribution of the predictor variables in the variability in interference with daily life, relationships among the predictor and dependent variables were examined using Pearson's r. Independent t tests were used to determine differences in interference by categorical demographic (e.g., gender) and clinical (e.g., presence of metastases) variables. The correlation among continuous demographic and clinical variables and interference was examined using Pearson's r. Multiple regression, with interference scores as the dependent variable, was conducted with pain intensity, pain-related distress, negative mood, and adequacy of analgesic use entered simultaneously. The unique variance explained by each predictor was examined using a series of hierarchical multiple regression equations. Level of significance was $p \leq 0.05$.

# Results

## Patient Characteristics

A total of 83 patients who met the criteria were approached. Sixty-four agreed to participate, resulting in a response rate of 78%. Patients refused to participate for a variety of reasons: Some did not have the time to spend in the clinic, others said pain was "not that bad," and others were too ill to participate. The mean age of the sample was 53 years (range = 18–79 years). The majority of patients were male, Caucasian, and married (see Table 1). The mean years of education was 11.8 (range = 6–19 years), and 28% currently were employed. The sample presented with a variety of cancer diagnoses, with head and neck and prostate being the most common primary sites. Thirty-five percent of the sample had distant metastases. On average, cancer had been diagnosed for 12 months; however, variability existed in months since diagnosis (range = 1–96 months). Forty patients currently were in active treatment for their cancer. Consistent with primary site of cancer, the primary site of pain varied: The largest proportion of patients reported pain in the head, face, and neck region or abdomen and pelvis. A

substantial number of patients reported back (42%), bone (33%), and joint (45%) pain. Numbness and tingling, two common descriptors of neuropathic pain, were reported by 25% and 22% of the sample, respectively.

## Pain Intensity, Pain-Related Distress, and Interference

Patients reported a substantial amount of pain during the prior 24 hours (see Table 2). The majority of patients reported severe worst pain (59%), with average and least pain falling in the mild range for most patients. The mean pain reported at the time of the interview was 3.58 (SD = 2.57). Pain did interfere with daily life ($\overline{X}$ = 4.75, SD = 2.64) and resulted in a substantial amount of pain-related distress ($\overline{X}$ = 6.45, SD = 2.74). The majority of patients had opioids prescribed for their pain; 56% were taking strong opioids and 35% were taking weak opioids. A small proportion (6%) had NSAIDs prescribed. Based on PMI scores, 30% of the sample had inadequate analgesics prescribed.

**Correlation among variables:** Moderate to strong positive correlations were found among ratings of least, average, worst, and pain now variables (r = 0.35–0.82). Worst pain was selected for subsequent analyses because it reflects breakthrough pain, which is associated with movement or activity. Therefore, the authors hypothesized that worst pain would have the greatest impact on the dependent variable, interference with daily life. The relationships among worst pain intensity, pain-related distress, negative mood, and interference with daily life were positive (see Table 3). Interference was significantly related to PMI score, indicating that patients with inadequate analgesics prescribed reported greater interference ($\overline{X}$ = 5.9, SD = 2.19) than patients with adequate analgesics ($\overline{X}$ = 4.3, SD = 2.70).

**Differences in demographic and clinical variables:** Before examining the predictors of interference, the differences in interference by demographic and clinical variables were examined. No significant differences in interference scores were found for gender, marital status (single versus married), or race (Caucasian or minority). Also, no significant relationships were found between interference and age, years of education,

**Table 1. Sample Demographics**

| Variable | n | % |
|---|---|---|
| **Gender** | | |
| Male | 42 | 66 |
| Female | 22 | 34 |
| **Race** | | |
| Caucasian | 59 | 92 |
| Minority | 5 | 8 |
| **Marital status** | | |
| Married | 42 | 66 |
| Single, widowed, or divorced | 22 | 34 |
| **Employment status** | | |
| Unemployed or retired | 46 | 70 |
| Currently employed | 18 | 28 |
| **Site of cancer** | | |
| Head and neck | 25 | 39 |
| Prostate | 9 | 14 |
| Lung | 9 | 14 |
| Other | 21 | 33 |
| **Site of pain** | | |
| Head and neck | 22 | 34 |
| Abdomen and pelvis | 14 | 30 |
| Thorax | 5 | 8 |
| Other | 23 | 28 |
| **Active treatment** | | |
| Yes | 40 | 63 |
| No | 24 | 38 |
| **Pain descriptors** | | |
| Joint pain | 29 | 45 |
| Back pain | 27 | 42 |
| Bone pain | 21 | 33 |
| Numbness | 16 | 25 |
| Tingling | 14 | 22 |
| **Metastatic disease** | | |
| No metastases | 28 | 43 |
| Distant metastases | 22 | 35 |
| Local metastases | 14 | 22 |

N = 64

*Note.* Because of rounding, percentages may not total 100.

**Table 2. Summary of Pain Reported**

| Pain | $\overline{X}$ | SD | Level | % |
|---|---|---|---|---|
| Worst | 6.35 | 2.50 | None | 2 |
| | | | Mild | 19 |
| | | | Moderate | 20 |
| | | | Severe | 59 |
| Average | 4.18 | 2.10 | None | 3 |
| | | | Mild | 53 |
| | | | Moderate | 30 |
| | | | Severe | 14 |
| Least | 2.66 | 2.23 | None | 20 |
| | | | Mild | 60 |
| | | | Moderate | 14 |
| | | | Severe | 6 |
| Pain now | 3.58 | 2.57 | None | 16 |
| | | | Mild | 45 |
| | | | Moderate | 30 |
| | | | Severe | 9 |

*Note.* Pain categories: none = 0, mild = 1–4, moderate = 5–6, severe = 7–10

## Table 3. Relationships Among Variables

| Variable | Distress | Mood | Pain Management Index (PMI) | Interference |
|---|---|---|---|---|
| Worst pain | 0.64[a] | 0.24[a] | −0.19 | 0.64* |
| Distress | | 0.45[a] | −0.05 | 0.74* |
| Mood | | | −0.17 | 0.40* |
| PMI[a] | | | | −0.27* |

* $p \leq 0.05$, one-tailed test of significance
[a] PMI scoring: 1 = inadequate, 2 = adequate

or months since diagnosis. Interference also did not differ by primary site of cancer (head and neck versus other sites) or presence of metastases. The relationship between presence of metastatic disease and predictor variables was weak and non-significant. Thus, none of the demographic or clinical variables was included in the regression equation.

**Predicting interference:** Initially, the variables of worst pain, pain-related distress, mood, and PMI score were entered as a block to determine the variance in interference explained by the set (see Table 4). The combination produced an $R^2$ of 0.61 ($F$ [4, 58] = 25.1; $p < 0.001$). The adjusted $R^2$ indicates that 61% of the variance in pain-related interference in daily life was explained by this combination of predictors; pain intensity, pain-related distress, and PMI score were statistically significant, whereas negative mood did not contribute significantly to the variance in interference scores. To determine the relative contribution of each predictor, hierarchical equations were constructed entering each predictor last (see Table 5). Controlling for mood, PMI, and pain-related distress, worst pain explained an additional 3% of the variance in pain-related interference. The unique variance explained by PMI score was 3%. When worst pain, mood, and PMI score were controlled, pain-related distress increases explained variance by 15%.

To determine whether the majority of variance in pain-related interference in daily life was related to the affect items contained in the interference scale, additional analyses were conducted. The relationships between BPI activity and affect subscales and pain-related distress were examined using Pearson's r. As anticipated, the correlation coefficients were strong ($p < 0.01$) but slightly lower with the BPI activity ($r = 0.70$) and affect ($r = 0.69$) subscales than for the full interference scale. To determine whether this overlap contributed to the variance explained in total interference, the regression equation was repeated using the subscales ad-

## Table 4. Regression Equation: Dependent Variable Interference

| Predictor | β[a] | R | Adjusted R² | F | df | p |
|---|---|---|---|---|---|---|
| Worst pain | 0.24 | | | | | |
| Distress | 0.55 | 0.80 | 0.61 | 25.1 | 4, 58 | < 0.001 |
| Mood | 0.06 | | | | | |
| PMI | −0.19 | | | | | |

PMI—Pain Management Index
[a] Standardized coefficient

## Table 5. Unique Variance Explained by Each Predictor

| Controlling | Entered Step 2 | R² Change | F | df | p |
|---|---|---|---|---|---|
| PMI Distress Mood | Worst pain | 0.030 | 5.26 | 1, 58 | < 0.050 |
| Worst pain Distress Mood | PMI | 0.030 | 5.00 | 1, 58 | < 0.050 |
| Worst pain PMI Mood | Distress | 0.150 | 23.40 | 1, 58 | < 0.001 |
| Worst pain PMI Distress | Mood | 0.003 | 0.49 | 1, 58 | ns |

ns—not significant; PMI—Pain Management Index
*Note.* $R^2 = 0.63$; adjusted $R^2 = 0.61$

dressing activity and affect as dependent variables. This resulted in small reductions in R and adjusted $R^2$ for both activity (R = 0.77; $R^2$ adjusted = 0.56) and affect (R = 0.73; $R^2$ adjusted = 0.50), with all predictors except negative mood remaining significant within these equations. These analyses suggested that the combination of variables, including pain-related distress, contribute slightly more to the variance in activity than affect when measured with the BPI.

## Discussion

The intent of this study was to determine the relative contribution of four variables in predicting interference with daily life in ambulatory patients with cancer with pain. Included in the multivariate analysis were variables known to affect pain or pain-related outcomes. These included worst pain intensity, pain-related distress, adequacy of prescribed analgesics, and negative mood. The combination of these four variables explained a substantial amount of variance in pain-related interference in ambulatory patients with cancer. The unique variance explained by pain-related distress, however, was well beyond the unique variance explained by pain intensity, analgesics prescribed, or mood. This suggests that symptom distress may be an important independent component of interference in patients' daily lives and, therefore, merits further study. This relationship cannot be attributed to the affect items included in the interference scale because the regression equation did not change appreciably when the activity items of the BPI were analyzed alone (R decreased from 0.80 to 0.77). Unfortunately, these data do not suggest a cause-and-effect relationship. Pain-related distress may occur as a result of interference in daily life; alternatively, the degree of pain-related interference may be the result of the degree of pain-related distress experienced. Further studies to elucidate the temporal relationship between pain-related distress and interference with daily life in this population, using longitudinal designs, are warranted.

Of particular interest for future research are the potential long-term effects of pain-related distress. Studies to date have indicated that the sequelae of general symptom distress in the cancer population are significant. Chang et al. (1998), using the Memorial Symptom Assessment Scale, found that

physical symptom distress was an independent predictor of survival in 218 patients with cancer; similar results were reported by McClement et al. (1997) in their literature review. Although the current study focused on only one symptom, pain, the findings may provide a reason for the decreased survival noted by Chang et al. and McClement et al. Symptom-related distress might result in more rapid decay in physical and emotional well-being, thereby shortening survival. This speculation can be addressed only with further longitudinal research.

The pattern of correlations among predictors supports the pain model proposed by Fields (1999) and Price (2000). The strong correlation between pain intensity and pain-related distress (primary affect) suggests the interdependence of these two dimensions of pain during initial pain processing. The more modest correlation of intensity and pain-related distress to negative mood may reflect cognitive processing that occurs after an initial stimulus is recognized as painful. The lower correlation suggests variability that may be related to individual perception of meaning, past experience, and context. The findings from the current study complement the results of Wade et al. (1996), who found that pain intensity and pain-related distress (primary affect) were associated more strongly than either variable was associated with psychological distress (secondary affect).

The current study demonstrated moderate to strong associations among the predictors of pain-related interference: worst pain, adequacy of prescribed analgesics, and negative mood. These results are consistent with previously published studies (Burrows et al., 1998; Glover et al., 1995; Miaskowski et al., 1997). The authors' findings suggest a distinction between negative mood and pain-related distress, an assumption made by several other investigators (McCorkle, 1987; Rhodes & Watson, 1987). Furthermore, the results suggest that pain-related distress contributes to the variance in interference with daily life beyond that explained by negative mood. Although both may affect quality of life of patients with cancer in pain negatively, interventions designed to reduce pain-related distress may produce greater improvements than those that focus on negative mood. The findings also suggest that negative mood and pain-related distress may be best treated independently in patients with cancer pain. The strong association between pain intensity and pain-related distress ($r = 0.64$) suggests that interventions designed to reduce both components of the pain experience may be more successful in improving physical and emotional well-being than those that address intensity or distress alone.

The degree of pain and interference experienced by patients in this sample is consistent with previous research in ambulatory (Cleeland et al., 1994; Glover et al., 1995; Ward et al., 1993) and inpatient (Miaskowski, Nichols, Brody, & Synold, 1994; Ward & Gordon, 1996; Wells, 2000) settings. Although the composition of patient samples varied in those studies, all included a heterogeneous sample with respect to cancer diagnoses. Although the current study's sample contained the greatest proportion of patients with head and neck cancer, the patients did not report higher levels of interference with daily life than patients with other cancer diagnoses. Ambulatory patients in the present sample reported higher levels of pain intensity than those studied by Cleeland et al. (1994) and Ward et al. (1993), but a greater proportion had adequate analgesics prescribed. The relationships previously

demonstrated among pain intensity, adequacy of prescribed analgesics, and interference in daily life (Cleeland et al., 1994; Ward et al., 1993; 1998; Wells, 2000) were supported in the current study's sample. In all instances, patients with higher levels of worst pain and inadequate analgesics prescribed reported greater interference with daily life. Thus, interventions designed to reduce pain intensity and improve use of analgesics to control pain should enhance patients' ability to engage in activities of daily life. This avenue of research warrants further consideration.

Several limitations may be addressed in future research. The distinction between pain sensation and distress has been criticized. Holroyd et al. (1996) suggested that similarities in measurement account for the association between pain and distress. This argument also could be made for the common metric used to measure pain-related distress and interference in this study. Thus, an alternative explanation for the higher degree of association among pain intensity, distress, and interference is the method of measurement used.

The authors' instructions to subjects clearly distinguished pain intensity from distress, which may have produced artificially divergent scores for intensity and distress (Fernandez & Turk, 1992, 1994). The instructions did not suggest any distinction between distress and interference. Thus, patients may have rated the bother (distress) caused by pain in a similar manner as the interference because of pain. De C Williams, Davies, and Chadury (2000) interviewed patients during pain assessment to explain how patients arrive at specific pain ratings. The investigators found that almost half of their sample considered the degree to which pain affected function and produced distress when providing pain scores. Thus, the pain intensity ratings provided by these patients reflected not only intensity, but also distress and interference. Along similar lines, Cleeland et al. (2000) labeled the interference caused by various symptoms as symptom distress, suggesting the interdependence of the two concepts. Future research will require attention to conceptual clarity of variables selected, in addition to their operationalization. The conceptual distinction between intensity and distress is consistent in the literature. Methodologically, however, a single-item measure of distress may be strengthened using a measure that is more comprehensive. Specific instructions about what to consider when rating pain, distress, and interference may improve measurement of these related concepts. Conceptual clarity also is needed when symptom distress and psychological distress are included in an investigation.

The cross-sectional design of the current study provided no indication of causality. Whether interference because of pain precedes or follows the distress experienced has yet to be determined. Longitudinal studies with serial measurement of pain intensity, pain-related distress, and interference with daily life would provide data addressing the causality issue. This causal link will be crucial in understanding the relationships and planning interventions to improve quality of life. Finally, only one symptom, pain, was addressed. The relationships among intensity, distress, and interference may be altered appreciably when symptoms are examined in combination (Dodd, Miaskowski, & Paul, 2001).

## Implications for Practice

The findings from this study suggest several implications for clinicians. In a busy ambulatory practice, clinicians often

need to prioritize issues and problems facing patients and their families. The addition of a simple pain-related distress scale would allow clinicians to target patients with clinically meaningful symptoms and to spend more time formulating interventions. Furthermore, pain is influenced by emotional factors, yet little emphasis has been placed on encompassing these factors into clinical practice. By encouraging clinicians to address pain-related distress, the physical and emotional aspects of symptoms can be explored in a nonthreatening manner. If high levels of pain-related distress are identified, interventions may be instituted to reduce this dimension of pain in addition to providing pain relief. The authors found that by directly targeting pain-related distress, physical and emotional well-being may be enhanced as well.

This study identified an adverse effect of pain-related distress on daily life in ambulatory patients with cancer. The results support the assertion by McClement et al. (1997) that managing symptom distress should be a priority of healthcare professionals. Treating distress and pain concurrently may produce better physical and emotional well-being than treating either alone. Further research clearly is needed to gain a better understanding of the complex relationships among symptoms, symptom-related distress, and their effects on daily life.

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**Author Contact:** Nancy Wells, DNSc, RN, can be reached at nancy.wells@vanderbilt.edu, with copy to editor at rose_mary@earthlink.net.

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➤ Cancer Pain Management in Children
www.childcancerpain.org

➤ World Health Organization
www.medsch.wisc.edu/WHOcancerpain/

➤ Talaria
www.talaria.org

*Links can be found at www.ons.org.*

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