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Critical Care Nurses' Assessment of Patients' Anxiety: Reliance on Physiological and Behavioral Parameters

Abstract

Background: Anxiety activates the sympathetic nervous system and hypothalamic-pituitary-adrenal axis and may increase morbidity and mortality in vulnerable critical care patients. Despite the adverse effects of anxiety, little is known about critical care nurses' practices for assessing anxiety.

Objective: To determine the importance that critical care nurses place on evaluating anxiety and to describe clinical indicators used to assess anxiety.

Methods: Twenty-five hundred members of the American Association of Critical-Care Nurses received the Critical Care Nurse Anxiety Identification and Management Survey and were asked to rate the importance of anxiety assessment, to rate the importance of 61 anxiety indicators, and to select and rank the 5 most important anxiety indicators.

Results: Seven hundred eighty-three completed surveys (31.6%) were returned by female (92.0%), white (88.6%) staff nurses (74.2%) who practiced critical care nursing 32.5 hours (SD, 12.3 hours) weekly. Nearly three quarters (71.3%) of respondents thought that anxiety assessment is very important. Only 2 indicators, agitation and patients' verbalization of anxiety, were rated as very important to anxiety assessment. Thirty-nine indicators rated as important primarily included measurable physiological changes and observable behaviors. The top 5 anxiety indicators were agitation, increased blood pressure, increased heart rate, patients' verbalization of anxiety, and restlessness.

Conclusion: Important indicators of anxiety included observable behaviors and measurable physiological changes. Reliance on these criteria may produce an inaccurate and incomplete anxiety evaluation in vulnerable patients and lead to poorer outcomes. A comprehensive, systematic anxiety assessment tool for valid and reproducible evaluation of patients' anxiety is needed.

Disciplines

Behavioral Medicine | Health and Medical Administration | Health Services Research | Medical Humanities | Medicine and Health Sciences | Mental and Social Health | Musculoskeletal, Neural, and Ocular Physiology | Neurology | Neurosciences | Nursing | Psychiatric and Mental Health Nursing | Psychiatry and Psychology | Public Health

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CRITICAL CARE NURSES' ASSESSMENT OF PATIENTS' ANXIETY: RELIANCE ON PHYSIOLOGICAL AND BEHAVIORAL PARAMETERS

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- **BACKGROUND** Anxiety activates the sympathetic nervous system and hypothalamic-pituitary-adrenal axis and may increase morbidity and mortality in vulnerable critical care patients. Despite the adverse effects of anxiety, little is known about critical care nurses' practices for assessing anxiety.
- **OBJECTIVE** To determine the importance that critical care nurses place on evaluating anxiety and to describe clinical indicators used to assess anxiety.
- **METHODS** Twenty-five hundred members of the American Association of Critical-Care Nurses received the Critical Care Nurse Anxiety Identification and Management Survey and were asked to rate the importance of anxiety assessment, to rate the importance of 61 anxiety indicators, and to select and rank the 5 most important anxiety indicators.
- **RESULTS** Seven hundred eighty-three completed surveys (31.6%) were returned by female (92.0%), white (88.6%) staff nurses (74.2%) who practiced critical care nursing 32.5 hours (SD, 12.3 hours) weekly. Nearly three quarters (71.3%) of respondents thought that anxiety assessment is very important. Only 2 indicators, agitation and patients' verbalization of anxiety, were rated as very important to anxiety assessment. Thirty-nine indicators rated as important primarily included measurable physiological changes and observable behaviors. The top 5 anxiety indicators were agitation, increased blood pressure, increased heart rate, patients' verbalization of anxiety, and restlessness.
- **CONCLUSION** Important indicators of anxiety included observable behaviors and measurable physiological changes. Reliance on these criteria may produce an inaccurate and incomplete anxiety evaluation in vulnerable patients and lead to poorer outcomes. A comprehensive, systematic anxiety assessment tool for valid and reproducible evaluation of patients' anxiety is needed. (*American Journal of Critical Care*. 2002;11:57-64)

Anxiety, a common subjective experience, signals that a threat of some type has stimulated the stress response. The complex of subjective feelings associated with anxiety includes apprehension, feelings of uncertainty,

uneasiness, dread, and worry.¹ Mild anxiety generates heightened awareness of the environment and current situation and may enhance a person's ability to deal with a stressor, whereas higher levels of anxiety alter cognitive function and may produce hypervigilance, distraction, reduced ability to concentrate, altered memory, and confusion.²

Anxiety may precipitate activation of the sympathetic nervous system and the hypothalamic-pituitary-

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adrenal axis. This activation produces a variety of physiological responses such as increased oxygen consumption, reduced immune response, and altered coagulation and autonomic tone.³⁻⁷ These responses are associated with increased morbidity and mortality in patients with acute myocardial infarction and heart failure.⁸⁻¹¹ When the markedly adverse sequelae of anxiety are considered, it is surprising how few investigations have been done on anxiety and its assessment in critical care patients.

Anxiety is estimated to occur in as many as 70% to 87% of critical care patients.^{12,13} Critically ill patients experience anxiety not only because of the physiological alterations that occur but also because of perceived threats related to the hostile critical care environment.^{14,15} Isolation from familiar faces, excessive and unfamiliar noise, disturbed sleep, the presence of sophisticated and unfamiliar technology, loss of privacy, inability to communicate effectively, restricted mobility, and fear of death or disability are common to the critical care experience. Although these varied stimuli have been identified by retrospective investigation of patients' experiences in critical care, few researchers have attempted prospectively to quantify anxiety in this population of patients.

In a prospective investigation, Van der Does¹⁶ found a positive relationship between anxiety and the use of analgesia while burn dressings were being changed ($n=30$). Those patients who reported greater anxiety received significantly more pain medication for dressing changes ($r=0.31$ before and $r=0.3$ during, $P<.001$); pain was not associated with use of analgesia in this group of subjects. Elliott¹⁷ evaluated anxiety in 56 coronary care patients a mean of 12 hours after admission for unstable angina or acute myocardial infarction. When compared with established normative values,¹⁸ scores on the State-Trait Anxiety Inventory indicated that 45% of the subjects had moderate anxiety and 4% had high anxiety. In an investigation of anxiety, depression, and sleep after coronary artery bypass graft surgery, Edell-Gustafsson and Hetta⁵ detected moderate preoperative anxiety in 80% of their subjects ($n=38$), as measured by the State-Trait Anxiety Inventory. Six months after the surgery, 38.9% of subjects continued to have moderate anxiety, and this anxiety was associated with poorer sleep patterns and reduced physical functioning. Nelson et al¹⁹ investigated the relationship between anxiety and postoperative pain in 96 patients who had coronary artery

bypass graft surgery. On postoperative day 2, 24% of these subjects reported moderate anxiety, and 5% reported high anxiety. On postoperative day 3, 21% continued to experience moderate anxiety and 5% high anxiety. In addition, anxiety was significantly related to present pain intensity, sensory pain, and affective pain, as measured by the McGill Pain Questionnaire on postoperative days 2 and 3 ($P<.05$). The investigators concluded that nurses should implement strategies to evaluate and reduce anxiety in patients after coronary artery bypass graft surgery. Although this recommendation is a common one in these research reports, little is known about critical care nurses' understanding and attitude toward the assessment of anxiety or how they evaluate anxiety in their patients.

Although evidence suggests that a significant proportion of critical care patients experience moderate to high levels of anxiety, no published investigations have focused on the beliefs and practices of critical care nurses. Insight into critical care nurses' attitudes toward anxiety assessment and the clinical cues the nurses use to determine when a patient is anxious may provide a basis for the development of a comprehensive, systematic plan for assessing anxiety. Thus, the purpose of this investigation was to determine the importance that critical care nurses place on the assessment of anxiety in their patients and to describe specific clinical indicators of anxiety used by these nurses.

Methods

Design and Subjects

The methods used in this investigation are described elsewhere (D.K.M. et al, unpublished data, 2001). In brief, 2500 active members of the American Association of Critical-Care Nurses who met the criteria for inclusion in the study were invited to participate in this descriptive survey. Nurses were included in this investigation if they were (1) actively practicing critical care nursing in a coronary care unit; in a medical, surgical, neurological, or trauma intensive care unit; in a combined intensive care unit; or in a critical care step-down unit; (2) providing direct care to patients at least 8 hours per week; and (3) providing direct care primarily to adults.

The Biomedical Human Subjects Institutional Review Board of The Ohio State University exempted this investigation from review. Consent to participate was implied by return of the survey instrument. Confidentiality of all study participants was ensured by using a third-party mailing service and by using

identification numbers on survey instruments rather than actual names of participants.

Instruments

The investigators developed the instrument used in this investigation, the Critical Care Nurse Anxiety Identification and Management Survey. A panel of 8 advanced practice nurses reviewed the survey for content validity, readability, comprehensiveness, and clarity. The reviewers were chosen on the basis of their clinical expertise with critical care patients and their proficiency in research. After revision, the instrument was pilot tested with 25 critical care nurses from 3 acute care hospitals in central Ohio. This group of nurses was requested to complete the instrument; evaluate it for clarity, readability, and inclusiveness; and report any difficulties with completion. After a second revision, stability of the instrument was evaluated by repeated administration of the survey to 10 critical care nurses from the pilot-test group 15 to 20 days

apart. Test-retest reliability of 90% indicated a high level of stability.

This instrument has 4 sections. Section 1 is a list of 61 clinical indicators (signs and symptoms) of anxiety. Subjects are requested to rate the importance of each indicator by using a 5-point Likert-type scale (1 = not important to 5 = very important; Table 1). Indicators were obtained from an exhaustive review of the literature on anxiety. Two blank areas were provided for subjects who wished to provide indicators other than those listed. Indicators were listed in alphabetical order to reduce the likelihood of bias. At the end of section 1, subjects were requested to select the 5 most important indicators of anxiety and place the indicators in rank order from first to fifth most important.

Section 2 of the instrument focuses on management of anxiety. Subjects were asked to respond to 5 broad questions concerning their beliefs about anxiety assessment and management by using a 5-point

Table 1 Clinical indicators of anxiety found in a literature search

Agitation	Frequent complaints	Nausea/vomiting
Anger	Headache	Pallor
Anorexia	Hesitation	Palpitations
Apprehension	Highly distorted cognitive function	Patients' verbalization of anxiety, nervousness, or tension
Changes in voice pitch	Hostility	Paresthesias (numbness/tingling)
Changes topics frequently	Hyperventilation	Rapid speech
Chest pain	Hypervigilance	Regressed or regressive behavior
Chills	Inability to retain information	Repetitive questioning
Choking feeling/dyspnea	Inability to speak	Restlessness
Confusion	Inappropriate joking	Sadness
Crying	Inattention/easily distracted	Sense of impending doom
Decreased ability to concentrate/learn	Increased blood pressure	Shortness of breath/smothering
Difficulty swallowing	Increased diaphoresis	Tendency to blame others
Difficulty verbalizing	Increased heart rate	Tremulousness
Decreased pain threshold	Increased pain level	Unintelligible conversation
Dry mouth	Increased respiration	Unrealistic perception of situation
Easily upset	Increased verbalization	Urinary frequency
Easily fatigued	Insomnia	Verbalizes feeling loss of control
Fear	Irritability	Withdrawn
Flushing/hot flashes	Laughing inappropriately	
Focus on self/self-conscious	Narrowed perceptive field	

Likert-type scale (1 = not important to 5 = very important). Subjects were then provided with a list of 23 interventions that might be used for anxious patients and asked to estimate how often they used each intervention (none of the time, 1%-20% of the time, 21%-40% of the time, 41%-60% of the time, 61%-80% of the time, 81%-99% of the time, or all of the time). These interventions were obtained from a comprehensive review of the literature on anxiety management.

Section 3 of the instrument collects demographic information about the subject, including sex, ethnicity, education level, employment information, years of nursing practice, and attainment of national certification.

Section 4 requests subjects to visualize an anxious patient in their usual working environment and to describe the patient's appearance and actions. Subjects were then asked to describe interventions used to alleviate anxiety and to evaluate the effectiveness of those interventions. Finally, subjects were asked to report the outcome of this situation.

This article includes only data related to the critical care nurses' attitudes toward anxiety assessment and data related to the recognition of anxiety in critical care patients (section 1 and section 2, question 1).

Procedure

A random sample of 2500 critical care nurses who were active members of the American Association of Critical-Care Nurses received a packet that contained the following: (1) a cover letter that explained the study, (2) the Critical Care Nurse Anxiety Identification and Management Survey, (3) a stamped envelope addressed to the investigators for return of the completed instrument, and (4) a blank index card that allowed the respondent to participate in a random drawing for \$100. Subjects were informed that they could place their name and contact information on the index card and return it with the completed instrument to be included in the drawing. The cover letter explained that the index card would be separated from the survey immediately upon receipt. Three months after the initial mailing, all subjects received a postcard that reminded them to complete and return the instrument. Subjects who had not yet returned the instrument but wanted to participate in the investigation were offered a second mailing of the instrument or an opportunity to complete the instrument online. Data were placed into a statistical spreadsheet (SPSS 10.0, SPSS, Chicago, Ill) and analyzed. Descriptive statistics (mean, SD, propor-

tion) were used to characterize the sample and summarize the data.

Results

Characteristics of the Sample

Of the 2500 instruments mailed, 783 were completed and returned, and 23 could not be delivered. The response rate was 31.6% (783 of 2477) for this investigation. The sample consisted of subjects with a mean age of 40.7 years (SD, 8.5 years) who were primarily female (92.0%), white (88.6%) staff nurses (74.2%) and who had practiced critical care nursing a mean of 12.9 years (SD, 7.3 years; Table 2). A majority of subjects were educated at the baccalaureate level (53.3%), were employed by a community hospital (67%), and practiced critical care nursing a mean of 32.5 hours (SD, 12.3 hours) per week. Sixty-nine percent of these respondents were certified in critical care nursing.

Attitude Toward Anxiety Assessment

When asked "What level of importance do you believe should be placed on assessing anxiety in critically ill patients?" 71.3% responded that anxiety assessment was very important (a rating of 5 on a scale with 1 = not important and 5 = very important). The mean rating assigned by these subjects in response to this question was 4.7 (SD, 0.7), which indicates that these subjects strongly believe that anxiety assessment is important in the evaluation of their patients. A very small group of subjects indicated that they believe anxiety assessment is unimportant (ratings of 1 and 2 = 1.8%).

Importance of Clinical Indicators

Each clinical indicator was rated from 1 (not important) to 5 (very important). Mean values of the rating for each indicator were calculated and were used to determine the importance of each indicator to clinical evaluations of anxiety. Items with a mean rating of 4.5 or greater were considered very important. Items with a mean rating of 3.5 to 4.4 were considered important. Items with a mean rating of 2.5 to 3.4 were considered neutral. Items with a mean rating of 1.0 to 2.4 were considered unimportant in the evaluation of anxiety. In order to further describe the clinical indicators used in practice, these indicators were inductively categorized as physiological, behavioral, somatic, or psychological. Subjects rated only 2 items, agitation and patients' verbalization of anxiety, as very important (Table 3). Both of these indicators are overt behavioral manifestations. Thirty-nine indicators were

Table 2 Characteristics of the 783 critical care nurses who responded to the survey

Characteristic	Respondents
Sex	
Men	44 (5.6)
Women	720 (92.0)
Age, mean (SD), years	40.7 (8.5)
Ethnicity	
African American	18 (2.3)
Alaskan Native/ Native American	6 (0.8)
Asian American/Pacific Islander	41 (5.2)
White	694 (88.6)
Hispanic	10 (1.3)
Other	6 (0.8)
Highest degree in nursing	
Diploma	104 (13.3)
Associate's degree	164 (20.9)
Baccalaureate degree	417 (53.3)
Master's degree	92 (11.7)
Practice facility	
Community hospital, nonprofit	413 (52.7)
Community hospital, for profit	112 (14.3)
University-affiliated medical center	131 (16.7)
Military hospital	14 (1.8)
Federal hospital	37 (4.7)
State hospital	7 (0.9)
County hospital	28 (3.6)
Academic institution	10 (1.3)
Nursing registry	8 (1.0)
Self-employed	1 (0.1)
Other	17 (2.2)
Position held	
Staff nurse	581 (74.2)
Charge nurse	142 (18.1)
Nurse manager	11 (1.4)
Supervisor/administrator	8 (1.0)
Education	6 (0.8)
Nurse practitioner	9 (1.1)
Clinical nurse specialist	8 (1.0)
Other	15 (1.9)
Years of nursing practice, mean (SD)	15.5 (8.3)
Years of critical care nursing practice, mean (SD)	12.9 (7.3)
Hours per week of critical care practice, mean (SD)	32.5 (12.3)
Certification in critical care	541 (69.1)

Values are number (percentage) unless otherwise indicated. All percentages are calculated on the basis of the total number of 783 respondents, regardless of the actual number who responded to each question; thus, percentages may not total 100.

rated as important to anxiety evaluation. Most indicators deemed as important to the evaluation of anxiety were physiological (7 items) and behavioral (19 items). Twenty items were rated as neutral in their importance to anxiety assessment. Most (14) of these indicators were somatic or psychological indicators. None of the indicators was rated as unimportant.

Additional Clinical Indicators

Few subjects provided additional clinical indicators. Additional indicators submitted by subjects included the following: demanding, fidgeting, combativeness, attention-seeking behavior, apathy, nervous gestures, facial expression, changes in verbalization, prayer, family input, changes in vital signs, and non-compliance. The majority of these indicators are overt behaviors that can be observed by critical care nurses.

Most Important Clinical Indicators

Subjects were asked to select the 5 most important clinical indicators of anxiety in critical care patients and rank the indicators from the first to the fifth most important. Agitation was ranked as the most important indicator of anxiety. Increased blood pressure and increased heart rate were ranked as the second and third most important indicators, respectively. Patients' verbalization of anxiety was ranked as the fourth, and restlessness was ranked fifth. Of the 5 most important indicators, 2 are physiological indicators and the remainder are behavioral indicators of anxiety.

Discussion

The critical care nurses in this sample believe that anxiety assessment is important in the care of their patients; however, they rely primarily on behavioral and physiological indicators in their clinical evaluations of anxiety. Primary reliance on these indicators may lead to serious underestimation of the extent of anxiety in vulnerable critical care patients because anxiety is an uncomfortable, subjective phenomenon that precedes the development of most objectively detectable signs and behaviors. Although research in this area is limited, as with other subjective phenomena such as pain and dyspnea, the best indicator of anxiety appears to be patients' own reports of the experience. For example, Van der Does¹⁶ found that burn nurses' ratings of patients' anxiety matched the patients' ratings only 37% of the time. More recently, O'Brien et al²⁰ found no association between coronary care nurses' ratings of patients' anxiety and the cardiac patients' own ratings of anxiety ($\lambda = 0.03, P > .05$). In our study, critical care nurses rated

Table 3 Mean ratings for clinical indicators of patients' anxiety

Items rated >4.5 Very important	Items rated 3.5-4.4 Important	Items rated 2.5-3.4 Neutral
Physiological indicators		
	Hyperventilation (4.3±0.7) Increased blood pressure (4.2±0.8) Increased diaphoresis (4.0±0.9) Increased heart rate (4.3±0.7) Increased pain level (4.1±0.8) Increased respiration (4.3±0.8) Tremulousness (3.6±0.9)	
Behavioral indicators		
Agitation (4.6±0.6) Patients' verbalization of anxiety (4.6±0.7)	Changes in voice pitch (3.7±0.9) Changes topic frequently (3.5±0.9) Crying (4.2±0.8) Decreased ability to concentrate (3.8±0.8) Difficulty verbalizing (3.6±0.9) Easily upset (3.9±1.0) Frequent complaints (3.7±0.9) Hypervigilance (3.8±0.9) Inability to retain information (3.6±0.9) Inappropriate joking (3.5±0.9) Inattention/distraction (3.5±0.9) Increased verbalization (3.7±0.9) Insomnia (3.8±0.9) Irritability (4.0±0.8) Laughing inappropriately (3.5±0.9) Rapid speech (3.6±0.9) Repetitive questioning (3.8±0.9) Restlessness (4.2±0.8) Withdrawn (3.6±1.0)	
		Anorexia (3.0±1.0) Easily fatigued (3.1±1.0) Hesitation (3.0±0.9) Inability to speak (3.3±1.2) Regressed behavior (3.4±1.0) Unintelligible conversation (3.0±1.1)
Somatic indicators		
	Chest pain (4.0±1.0) Choking feeling (4.0±0.9) Decreased pain threshold (3.6±1.0) Palpitations (3.7±1.0) Shortness of breath (4.4±0.8) Difficulty swallowing (3.9±0.9)	
		Flushing/hot flashes (2.9±1.0) Dry mouth (2.9±1.0) Chills (2.7±1.1) Headache (3.2±0.9) Nausea/vomiting (3.0±1.0) Paresthesias (3.1±1.1) Pallor (2.9±1.1) Urinary frequency (3.0±1.0)
Psychological indicators		
	Anger (4.2±0.8) Apprehension (4.3±0.7) Fear (4.4±0.7) Hostility (4.1±0.8) Sense of impending doom (4.3±0.9) Unrealistic perception of situation (3.6±0.9) Verbalizes feelings of loss of control (4.1±0.9)	
		Confusion (3.3±1.0) Distorted cognitive function (3.3±1.0) Focus on self (3.2±0.9) Narrowed perceptive field (3.2±0.9) Sadness (3.3±1.0) Tendency to blame others (3.2±1.0)

Numbers in parentheses are mean values of rating ± SD. Ratings are based on a scale of 1 (not important) to 5 (very important).

patients' verbalization of anxiety as very important (mean rating, 4.6; SD, 0.7) and ranked this indicator as 1 of the top 5 most important indicators. However, patients' verbalization of anxiety was ranked as the fourth most important indicator behind agitation, increased blood pressure, and increased heart rate. These critical care nurses appeared to rely more on their ability to measure a physiological variable or to observe an overt behavior than on a patient's own report of a subjective phenomenon.

Behavioral responses to anxiety depend on the fundamental interpretation of the threatening stimulus and the individual's coping style. Overt behaviors that arise from anxiety may encompass a vast variety of responses that range from total withdrawal to violent physical hostility. Patients primarily use coping strategies that have ameliorated anxiety in the past in similar circumstances; unfortunately, these strategies may appear atypical, may be unconventional, and may be difficult to interpret. For example, if a patient previously coped with an acute illness by intense investigation and questioning to gain information about the cause of the illness, the accepted treatments, and their potential outcomes, a new illness will most likely result in a strong need for information to reduce anxiety.

This dependence on observation of overt behavioral manifestations of anxiety implies that these critical care nurses require discernible evidence of anxiety as validation of its presence. Clearly, it is easier for a nurse to infer that a patient is anxious when overt behaviors that the nurse attributes to anxiety are observed. For example, anxiety may be inferred more easily in a patient who changes topics frequently or shows hostility toward the nurse; it is much more difficult to directly observe or infer the presence of a narrowed perceptive field or distorted cognitive function. These last 2 indicators require a specific evaluation by a nurse.

Interestingly, the somatic indicators rated as important by respondents are signs and symptoms that patients would consider potentially life-threatening and would report quickly to the nurse. In response to the report of these signs and symptoms, critical care nurses initially evaluate the patient for an underlying physiological alteration such as pulmonary embolus or myocardial ischemia that logically might produce these effects. Anxiety as the underlying cause of these somatic complaints would be considered after physiological causes have been discounted. Somatic indicators rated as neutral (eg, dry mouth and urinary frequency) may not be considered important by the patient, may not be reported,

and may be attributed to causes other than anxiety by critical care nurses.

Critical care nurses may have limited understanding that covert indicators may be as important as indicators that are overtly measured and observed. In vulnerable patients who are physically incapable of exhibiting observable signs, these indicators may be significantly more important. Anxiety can produce or contribute to a wide variety of clinical indicators that may not be easily measurable or observable in critically ill patients. In particular, psychological indicators of anxiety such as distorted cognitive functioning are difficult to detect without a specific measurement tool. The addition of input from patients' family members as an indicator of anxiety implies that some critical care nurses use information from a patient's family members or significant other in assessing the patient's anxiety. The addition of this type of input to the assessment is particularly useful, because a patient's family members or significant other is familiar with the patient's customary responses to a threatening situation and the patient's usual coping style. However, the family members or significant other may not detect and report somatic indicators that the patient considers unimportant and may not recognize important psychological indicators of anxiety or may be so anxious themselves that they cannot "see" it.

Inaccurate evaluation of anxiety with subsequent inadequate management can result in poorer outcomes because of alterations in immune function, autonomic tone, and cardiopulmonary function.³⁻⁷ Psychoneuro-immunologic investigations previously indicated that anxiety sufficient to stimulate activation of the sympathetic nervous system and the hypothalamic-pituitary-adrenocortical axis reduces lymphocyte proliferation in response to mitogens, mobilizes neutrophils from lymphoid tissues, decreases neutrophil phagocytosis, and alters leukocyte adhesiveness.²¹⁻²⁴ Changes in autonomic tone that result from anxiety include increased dispersion or spread of the QT interval, increased vascular resistance, and decreased ventricular refractoriness with increased myocardial excitability, all of which produce an increased likelihood of dysrhythmias.^{25,26} Alterations in cardiopulmonary function that commonly occur with anxiety include tachycardia, reduced ventricular filling, reduced diastolic coronary blood flow, increased total oxygen consumption and myocardial oxygen consumption in particular, hyperventilation, respiratory alkalosis, and increased work of breathing. Clearly, anxiety induces a variety of physiological effects that may influence outcome in vulnerable patients.

Interesting parallels are apparent between the subjective sensation of pain and the subjective feeling of anxiety. For decades, many healthcare providers lacked knowledge about pain, and many thought that patients' self-reports of pain were inaccurate and unreliable.²⁷⁻³⁴ Researchers have since found that inadequate pain management may contribute markedly to morbidity associated with alterations in immune function.³⁵⁻³⁷ Anxiety may also have an adverse effect on patients' outcome, as described previously. Results of our study indicate that critical care nurses believe that anxiety can primarily be detected by measurement and observation. Research is needed to determine if this type of assessment and subsequent management of anxiety are inadequate and influence patients' outcomes.

Because of the ubiquitous nature of anxiety in critical care patients, it is vital that critical care nurses understand the importance of anxiety to patients' condition and outcome and use a systematic and comprehensive method of assessing anxiety in these patients. An anxiety assessment tool that addresses all dimensions of anxiety, not just physiological and behavioral indicators, would be a useful addition to clinical practice. Although the subjects in our study believe that assessment of anxiety is important, they rely on a wide variety of physiological and behavioral indicators that may be invalid and unreliable in many patients. Presumably, some respondents are more adept at assessing anxiety than are others. Efforts are under way to develop a comprehensive, systematic anxiety assessment tool that will allow valid and reproducible evaluations of patients' anxiety.

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