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Multinational Validation of *Anxiety, Hopelessness,* and *Ineffective Airway Clearance*

By Madeline Musante Wake, Richard J. Fehring, and Teresa Fadden

The effective use of nursing diagnosis internationally depends in part on incorporating language and cultural difference into the common language of nursing. International validation studies can provide a basis for this effort. This study tested three diagnoses—anxiety*,* hopelessness*, and* ineffective airway clearance*—through multinational validation. The Diagnostic Content Validity (DCV) model was used to collect data from critical care nurses in six countries. Defining characteristics rated as critical (> .80) by the total sample were dyspnea for* ineffective airway clearance *and panic and nervousness for* anxiety*. No critical defining characteristics for* hopelessness *were identified. DCV ratios for all defining characteristics are compared by country.*

As nursing diagnosis expands to international use, refinement beyond North American English language and perspectives is important. International expansion of nursing diagnosis **is** occurring. The North American Nursing Diagnosis Association (NANDA) has targeted international use of nursing diagnoses as an issue of the 1990s (Gordon, 1989). At an international conference on nursing diagnosis, Kritek (1987) described the nursing diagnosis movement as the large-scale effort to identify the fundamental constructs of nursing and called for inclusive, global networks for naming what nurses do. In a collaborative effort, NANDA and the American Nurses' Association have prepared a nursing diagnosis taxonomy for possible inclusion in the World Health Organization's 10th Revision of the *International Classification of Diseases* (Fitzpatrick et al., 1989).

Articles on nursing diagnosis have appeared in Canadian (Purushotham, 1981), Australian (Nolan, 1987), Italian (Caissie, 1986), and Nigerian (Ofi, 1985) nursing journals. However, most studies of nursing diagnosis are limited to American and Canadian nurses (Carroll-Johnson, 1989; McLane, 1987). To advance nursing diagnosis globally, it is important to include nurses of many nations in studies of nursing diagnosis.

Background of the Study

With this in mind, an exploration of the linguistic and clinical meanings of nursing diagnosis terminology (diagnoses and defining characteristics) to nurses of several countries

was undertaken using the format of a validation study.

To conduct an international validation study, it was expedient to focus on a population of patients with similar problems within a defined specialty of nursing. Critical care provided an opportunity. A session on nursing diagnosis in critical care was presented at the Third International Conference of Intensive Care Nurses (Wake, 1988). Even those participants who had never heard of nursing diagnosis were open to the idea that foci of nursing attention are not medical disease entities, but rather patient problems amenable to nursing treatment. In discussions after the presentation, nurses from 11 countries voiced interest in nursing diagnosis research. Nurses from Belgium, Canada, England, and France were invited to participate as site coordinators in a validation study. This selection allowed for English and French language differences. When the research team decided to add a Spanish-speaking country, Colombia as chosen because it has baccalaureate entry into professional nursing practice.

After a population was determined, diagnoses for validation were selected. The diagnoses were chosen because they represent both physiologic and psychosocial problems, have been tested for validity, and are seen in critical care. Wake, Gotch, and McLane (1985), in a survey of 20 nurse experts who used nursing diagnosis in critical care practice, identified *ineffective airway clearance* and *anxiety* as two of the most frequently occurring diagnoses. Miller (1989) noted that “persons who are critically ill are particularly vulnerable to giving up” (p. 28) and suggested a patient hope self-assessment as an aid to diagnosing *hopelessness.* Defining characteristics have been validated for *anxiety* (Fadden, Fehring, & Rossi, 1987; Levin, Krainovich, Bahrenburg, & Mitchell, 1989; Whitley, 1989), for *hopelessness* (Bruss, 1988), and for *ineffective airway clearance* (McDonald, 1985; York & Martin, 1986).

Purpose

This study was undertaken to perform a multi-national validation of the defining characteristics of the diagnoses of *anxiety*, *hopelessness*, and *ineffective airway clearance*. A secondary aim was to compare the diagnostic validation ratings of these diagnoses among professional nurses in different countries.

Methods

Sample Selection

Professional nurses in six countries—Belgium, Canada, Colombia, England, France, and the United States—composed the sample for this study. The six countries represented three languages: English, French, and Spanish. Several considerations are notable. Although Belgium

and Canada are bilingual, only one language was used per country. The decision to use more than one country for English and French was based on the rationale that a language may differ in meaning among countries. In selecting Belgium, the authors were aware that Belgium had incorporated nursing diagnosis into its national nursing minimum data set (Sermeus, 1988).

The nurse subjects came from one or more hospitals in each country. Detailed instructions were mailed to the nurse site coordinators at each site. The instructions included a description of the study, a procedure for selection of nurses, and a table of random numbers. Telephone conferences were conducted with each coordinator to clarify the instructions. Coordinators randomly selected 50 critical care nurses from all critical care nurses in one or more hospitals who met the criteria of at least 1 year of critical care experience and current direct practice in critical care. Critical care was defined to include general and specialty intensive care units and intermediate care units. Intended subjects were asked to voluntarily participate and were assured that their responses would be confidential. Completion and return of the questionnaire was interpreted as consent.

Validation Method

The Diagnostic Content Validation (DCV) model (Fehring, 1987) was chosen because it is a commonly used method of retrospective validation. Examples of recent studies that have used the DCV model are Gershan et al. (1987); Levin, Krainovich, Bahrenburg, & Mitchell (1 988); Metzger & Hultunen (1986); Mahoney (1988); & Sheppard (1988). The DCV model may be used by nurses unfamiliar with the diagnostic process. Judging if certain signs and symptoms are representative manifestations of patient problems does not require knowledge of nursing diagnosis terminology. The DCV model is applied in three steps: (1) “expert” nurse subjects rate each defining characteristic as to how representative they are of the given diagnoses on a scale of 1 to 5, (2) weighted ratios are calculated for each defining characteristic, and (3) defining characteristics with ratios of .80 or greater are labeled as “critical” and those with ratios greater than .50 and less than .80 as “supporting.”

The Fehring (1987) DCV model recommends the use of masters-prepared experts. Although the authors realize the importance of using masters-prepared nurse experts in validating diagnoses, application of this criterion of the Fehring model is not feasible in multinational studies. Data on education and experience were collected as indicators of expertise.

Instruments

Three rating scales and a demographic questionnaire to assess the experience and expertise of nurses were developed for the study. The rating scales were based on the defining characteristics of the diagnoses from the NANDA Taxonomy I and were refined by a nurse expert in each diagnosis. For *anxiety*, the list of characteristics was refined after comparison with the State-Trait Anxiety Inventory (Spielberger, 1983) and the Clinical Anxiety Scale (Thyer, 1986). Tearful was added because it was found to be a critical characteristic in a clinical validation of *anxiety* (Fadden, Fehring, & Rossi, 1987). For *ineffective airway clearance*, sputum was specified as tenacious secretions and copious secretions. Presence of an endotracheal tube was added because that often cued critical care nurses to a diagnosis of *ineffective airway clearance.* Distracting characteristics were added to all lists of characteristics to verify that the subjects were not just responding randomly. Blank lines were left for additional signs and symptoms ob-served for each diagnosis.

For Belgium, France, and Colombia, the instruments were translated into French and Spanish by bilingual nurses and verified by translators from the Marquette University Language Department. The French translations were also reviewed by the site coordinators and checked against the French language nursing diagnosis book by Riopelle, Grondin, and Phaneuf (1986).

For clarity, the defining characteristics were referred to as signs and symptoms. Subjects were asked to rate each sign or symptom on a scale of 1 to 5; 1 being not at all representative of the diagnosis and *5* being very representative. Demographic data, including years of practice, educational level, and nursing diagnosis knowledge and use, were solicited.

Results

Sample Characteristics

A total of 236 usable responses were obtained from Belgium (47), Canada (36), Colombia (49), England (24), France (29), and the United States (51). Some sites were unable to obtain the requested number of subjects due to hospital regulations, nursing shortage problems, or unusable questionnaires.

The average years of nursing experience was 8, with a range of 1 to 29. The average years of critical care experience was 4.7, with a range of 1 to 24 years. The highest level of nursing education was technical or diploma for 58% of the sample, baccalaureate for 41%, and master's degree for 1%. The technical and diploma category included various subbaccalaureate preparations for professional nurses. Only the Colombian nurses were all baccalaureate-prepared, and 17 of them had post- graduate preparation in critical care. Three

nurses from the United States had masters degrees.

Experience with nursing diagnosis may relate to expertise in rating defining characteristics. Responding to a question of how often the diagnosis was seen in practice, subjects replied quite often or very often, 86.9% for *anxiety*, 89.6%for *ineffective airway clearance*, and 48% for *hopelessness*.

Nursing process was used in practice by 97% of the subjects, and nursing diagnosis was used by 71%. Nursing diagnosis had been taught in the basic nursing programs of 52%. In addition, 48% had attended a course or conference session on nursing diagnosis, and 78% had read about nursing diagnosis. Subjects rated their knowledge of nursing diagnosis on a 1 to 5 scale, 1 being no knowledge and *5* being extensive knowledge. The mean rating was 3.06 with 36% reporting sufficient or extensive knowledge. Table 1 shows a summary of sample characteristics.

Anxiety

The critical defining characteristics identified for *anxiety* were panic and nervousness. All other characteristics, except the distractors peaceful and decisive, had ratios between .50 and .80. Extraneous movements and poor eye contact were less than .50 in both the Belgian and the French samples. Distressed was greater than .80 in the samples from Canada and the United States. Sympathetic stimulation was greater than .80 in the samples from England and the United States. DCV ratios by country and total sample are shown in Table 2. Additional defining characteristics written in blank spaces by more than five individuals and rated as quite or very representative were: aggressive, talkative, gibbering, and impaired mental processes.

Hopelessness

In the total sample, no critical defining characteristics for *hopelessness* were identified. However, DCV ratios greater than .80 were obtained in country samples for lack of involvement in care (England, France), verbal cues of despondency (Colombia, United States), decreased affect (United States), and lack of initiative (United States). The highest total ratio was .765 for lack of involvement in care. All characteristics, except the distractor optimistic were between .50 and 30. DCV ratios for *hopelessness* are shown in Table 3. Additional defining characteristics noted by more than five individuals and rated as quite or very representative included: crying and suicide ideation.

Ineffective Airway Clearance

Dyspnea was the only critical defining characteristic identified for *ineffective airway clearance*. All other characteristics, with the exception of effective cough and the distractors ease of breathing and clear lungs, had ratios between .50 and .80. DCV ratios greater than .80 were obtained in country samples for ineffective cough (Canada, England, United States), tachypnea (Colombia, France), cyanosis (Canada, England), changes in rate or depth of respiration (France), tenacious secretions (Colombia, United States), and copious secretions (Colombia, United States). DCV ratios for *ineffective airway clearance* are shown in Table 4. Additional defining characteristics noted by more than five individuals as quite or very representative were: decreased level of consciousness, agitated, diaphoresis.

Discussion and Recommendations

Anxiety

Anxiety is one of the most common diagnoses by American nurses (Gordon, 1985).There is reason to doubt that anxiety is a common human response. Manifestations of the response, however, may be influenced by culture. Cultural differences could account for the fact that Belgian and French nurses rated several defining characteristics, including facial tension, tearing, and focus on self, less representative of *anxiety* than did other nurses.

Several validation studies have been completed on this nursing diagnosis. Most of the studies have been of the nurse consensus type, where the participant is asked to rate the defining characteristics of anxiety. Variations of this type are (1) evaluating the presence or absence of the characteristics and calculating frequency distributions (Taylor-Loughran, 1989), (2) magnitude estimating scaling (Kinney & Guzzetta, 1989) and (3) Diagnostic Content Validation (DCV) studies (Levin et al., 1989; Metzger and Hiltunen, 1987). Only one study has used Fehring's (1987) Clinical Diagnostic Validation (CDV) model whereby patients with anxiety are observed and interviewed (Fadden, Fehring, & Rossi, 1987).

Although the research methods have varied, all of the studies mentioned above have similar findings. The subjective indicator, *anxious*, has been labeled as a critical indicator or identified as being present in all of the studies. This is consistent with the findings from this study in which anxious reached a DCV rating of .818. Sympathetic stimulation was listed as a critical defining characteristic in the proceedings of the eighth conference (Carroll-Johnson, 1989). However, it was not identified as such in this study, nor in the previously cited studies. Sympathetic stimulation may indicate an acute anxiety reaction rather than a more sustained state, such as preoperative anxiety.

The anxiety rating scale for this study was based on the NANDA Taxonomy I defining characteristics. Several characteristics were added based on a review of literature. Two of these added characteristics, panic and nervousness, reached DCV ratios of .8 or above. The added characteristics of aggression and impaired mental processes are useful in diagnosis and treatment and should be incorporated into future validation studies. Although neither has been identified by NANDA, both are referred to by Carpenito (1989).

Hopelessness

In a validation study of *hopelessness,* Bruss (1988) found that only one defining characteristic—verbal cues—met the criterion for a critical characteristic. Critical care nurses may find verbal cues less representative because many critically ill patients are intubated and unable to speak. Rather, lack of involvement in care and crying are seen as more representative. Suicide ideation was noted in this study as an additional defining characteristic. Although it is not specified by NANDA as a defining characteristic, two of the seven citations listed as supporting materials for this diagnosis refer to suicide (McLane, 1987). Carpenito (1989) included *potential for self-harm* as a useful diagnosis and related it to hopelessness. Additional research is needed on the relationships among *hopelessness,* depression, and suicide risk.

Ineffective Airway Clearance

York and Martin (1986), in a clinical validation study of *ineffective airway clearance,* found cough and sputum present in all of the sample, and dyspnea, tachypnea, abnormal breath sounds, and rhonchi present in 91%. McDonald (1985) suggested limiting the defining characteristics of the diagnosis to abnormal breath sounds, ineffective cough, and sputum production. The need to differentiate ineffective cough from effective cough was supported by this study. DCV ratios were .792 for ineffective cough and .281 for effective cough. By definition then, effective cough should be dropped from NANDA's list of defining characteristics.

Ratings of abnormal breath sounds, including rales and rhonchi, were probably influenced by two factors. According to site coordinators, critical care nurses in Belgium and France do not routinely perform auscultation. Also, the addition of the American Thoracic Society-approved terms, wheezes and crackles, may have been confusing to subjects.

Physiologically, an endotracheal tube increases mucus production and limits the ability to cough. The nurses in the sample judged the presence of an endotracheal tube as a supporting characteristic. However, nurses may have recognized the endotracheal tube as etiology rather than as a defining characteristic. Shekleton and Neild (1987) have recommended clinical

validation of defining characteristics of *ineffective airway clearance* specific to the presence of an artificial airway.

Language Issues

In both translation of instruments and interpretation of findings, it was difficult to separate language differences from cultural variations. Some terms had no exact equivalent in French or Spanish. On the other hand, even where language was clear, certain behaviors may be culturally inappropriate. This was especially true for the psychosocial diagnoses because the defining characteristics were less concrete and thus more open to cultural influence. For example, tachypnea is a more concrete concept than upset. In some cases, the language differences were obvious. For the characteristics of *anxiety,* it was difficult to capture the nuances of jittery and distressed in French or Spanish. The word for distressed in both languages was the same as the word for afflicted. The French translation of jittery was *movements non-coordonnes*, which may connote spastic motions. In some cases, literal translation did not convey the intended meaning. For example, tenacious secretions was translated into Spanish as *secreciones persistentes,* whereas the nonliteral *secreciones viscosas* may have conveyed the meaning better. The concept conveyed by *hopelessness* was said by site coordinators from Belgium and France to require a paragraph to distinguish it from depression.

Limitations of the Study

The results of this study were limited by the deficits of the validation model used, the lack of complete randomization, the stage of the research, and the limits of the expertise of the subjects. The DCV model is limited in that it is based on retrospective impressions from nurses. This is a limitation because the subjects are limited by their human memory, i.e., they are not obtaining information from the actual clinical situation. Defining characteristics in real life are not static and do not exist in isolation. Although randomization was attempted when possible, the subjects were taken from existing staff at select institutions. Therefore, the results must be interpreted in the context of selection bias. Since this study was at the descriptive comparative stage, it was decided not to test difference from the mean. Finally, the expertise and education of the nurse subjects were not standardized because of the many differences among countries.

Conclusion

In this multinational validation study, dyspnea was identified as a critical defining characteristic of *ineffective airway clearance* and panic and nervousness as critical defining

characteristics of *anxiety.* No critical defining characteristics of *hopelessness* were identified. Effective cough was found to have a low total DCV ratio, and a suggestion was made to delete it from the NANDA list. The addition of several new defining characteristics was recommended. Differences by language and country were identified, and suggestions were made for future generations of validation instruments.

Multinational nursing research and development will increase. This study suggests that translation of complex concepts requires extensive dialogue among experts in nursing and linguistics. There is a need for further multinational study of nursing diagnoses, including clinical validation. Clinical validation would require nurse subjects trained in the use of nursing diagnosis as well as in data collection.

International explication and validation of nursing diagnoses could contribute to a universal understanding of the nature of nursing. It is important that defining characteristics aid diagnosis to direct nursing interventions. Adaptation of diagnostic terminology to allow for cultural and language differences is essential for effective multinational use. This study, with its many limitations, may provide an impetus for broadening the scientific and language bases of nursing diagnosis for the international nursing community.

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Appendix

Table 1: Sample Characteristics for Total and by Country

Characteristic	Total	Belgium	Canada	Columbia	England	France	United States
Number	236	47	36	49	24	29	51
Nursing experience years	8	6.7	9.5	8.1	9.7	6.1	8.4
ICU experience years	4.7	5.8	5.1	2.6	5.3	3.8	5.9
Mean age in years	30.1	28.5	30.5	30.5	30.5	27.8	32.1
Highest nursing education							
% Technical or diploma	58	98	78	—	95	100	22
% Baccalaureate	41	2	22	100	5	—	72
% Masters	1	—	—	—	—	—	6
% Use nursing process	97	97.7	100	93.9	100	88.5	100
% Use nursing diagnosis	71.8	80	83.3	30.6	45.8	85.2	100
% ND in nursing program	52	57.4	63.9	20.4	29.2	51.7	82.0
% Conference session on nursing diagnosis	11	42.2	58.3	65.3	29.2	34.5	48
% Read about nursing diagnosis	77.5	57.4	91.7	100	66.7	34.5	94.1
Self-rated knowledge of nursing diagnosis (1-5 scale, 5 high)	3.06	3.13	3.19	2.5	2.4	2.6	3.96

Table 2: Anxiety DCV Ratios: Total and by Country

Characteristic	Total	Belgium	Canada	Columbia	England	France	United States
Anxious	.817	.670	.819	.842	.844	.836	.902
Panic	.810	.654	.924	.709	.958	.750	.936
Nervous	.800	.723	.826	.796	.792	.793	.863
Jittery	.763	.452	.757	.776	.771	.621	.843
Insomnia	.746	.713	.701	.735	.750	.810	.779
Worried	.746	.630	.729	.786	.740	.793	.799
Restlessness	.738	.697	.688	.730	.728	.750	.819
Facial tension	.722	.527	.757	.842	.716	.672	.794
Palpitations, tachycardia	.709	.543	.701	.770	.771	.724	.770
Overexcited	.696	.543	.653	.786	.728	.707	.760
Distressed	.695	.495	.819	.663	.771	.517	.887
Expressed concern regarding changes in life events	.682	.505	.688	.750	.708	.688	.760
Increased perspiration	.682	.601	.653	.745	.708	.716	.686
Tearful	.669	.537	.757	.699	.688	.466	.809
Upset	.668	.649	.743	.542	.740	.586	.756
Voice quivering	.662	.511	.681	.699	.719	.534	.799
Sympathetic stimulation	.659	.431	.639	.691	.803	.625	.819
Rattled	.651	.463	.688	.714	.667	.500	.809
Trembling; hand tremors	.640	.484	.674	.663	.681	.586	.745
Focus on self	.608	.537	.625	.651	.625	.481	.681
Extraneous moments	.602	.452	.604	.625	.708	.474	.740
Headache, neck or back pain	.593	.505	.521	.698	.615	.621	.598
Glancing about	.584	.516	.528	.526	.609	.629	.705
Poor eye contact	.566	.415	.569	.577	.604	.482	.721
Increased wariness	.516	.528	.618	.144	.646	.500	.721
Decisive	.190	.346	.186	.104	.208	.139	.147
Peaceful	.190	.351	.132	.194	.188	.172	.088

Table 3: Hopelessness DCV Ratios: Total and by Country

Characteristic	Total	Belgium	Canada	Columbia	England	France	United States
Lack of involvement in care	.765	.693	.729	.781	.802	.810	.794
Verbal cues of despondency	.748	.628	.722	.821	.740	.724	.824
Lack of initiative	.737	.681	.729	.714	.729	.759	.809
Decreased nonverbal communication	.723	.612	.708	.791	.772	.690	.770
Decreased response to stimuli	.706	.612	.674	.740	.781	.716	.740
Decreased affect	.698	.543	.750	.753	.693	.569	.843
Passivity	.697	.681	.643	.653	.698	.679	.799
Decreased appetite	.688	.697	.621	.673	.740	.778	.667
Turning away from speaker	.681	.543	.694	.781	.646	.629	.750
Shrugging in response to speaker	.618	.511	.593	.750	.667	.483	.662
Closing eyes	.606	.596	.569	.587	.625	.603	.652
Increased sleep	.600	.612	.597	.484	.513	.580	.725
Sighing	.587	.644	.542	.479	.656	.580	.637
Optimistic	.100	.213	.104	.031	.104	.086	.064

Table 4: Ineffective Airway Clearance DCV Ratios: Total and by Country

Characteristic	Total	Belgium	Canada	Columbia	England	France	United States
Dyspnea	.815	.745	.826	.832	.823	.871	.891
Cough, ineffective	.792	.647	.819	.760	.875	.732	.926
Tachypnea	.767	.777	.701	.806	.719	.862	.735
Cyanosis	.765	.649	.824	.791	.823	.733	.799
Changes in rate or depth of respiration	.762	.793	.694	.781	.698	.853	.740
Tenacious secretions	.745	.617	.674	.827	.717	.698	.873
Copious secretions	.722	.580	.694	.883	.667	.509	.868
Presence of endotracheal tube	.682	.723	.604	.709	.573	.716	.705
Rhonchi (wheezes)	.649	.609	.583	.791	.552	.603	.667
Decreased breath sounds	.606	.450	.660	.776	.677	.406	.603
Rales (crackles)	.605	.559	.528	.796	.609	.518	.564
Fever	.551	.668	.438	.622	.552	.491	.490
Cough, effective	.281	.537	.181	.191	.125	.214	.309
Ease of breathing	.190	.223	.250	.073	.109	.083	.319
Clear lungs	.126	.283	.090	.041	.042	.216	.078