

Limited Agreement on Etiologies and Signs/Symptoms among Registered Dietitian Nutritionists in Clinical Practice



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ABSTRACT

Background Clinical studies that establish the reliability and validity of nutrition diagnoses are absent from the literature.

Objective The purpose of this study was to assess the reliability and validity of the diagnoses, etiologies, and signs/symptoms within the clinical practice of registered dietitian nutritionists (RDNs).

Design Nine pairs of RDNs randomly selected adult patients to diagnose. The two RDNs in each pair independently assessed nutritional data from the same patient. Each RDN chose one nutrition diagnosis and rated the presence or absence of the etiologies and signs/symptoms. Clinical reliability was determined with percentage of agreement for the diagnoses, and percentage agreement, kappa coefficient, and the proportions of positive agreement (p^{pos}) and negative agreement (p^{neg}) for the etiologies and signs/symptoms. Clinical validity was calculated according to a clinical diagnostic validity score for etiologies and signs/symptoms.

Results These RDNs practiced either in an acute-care facility ($n=10$; 58.8%), ambulatory/outpatient facility ($n=3$; 17.6%), or both ($n=4$; 23.5%). Nutrition diagnoses were selected for 316 patients. Two raters selected the same diagnosis for 121 patients (38% agreement). Agreement was moderate ($\kappa=0.54$) for etiologies and at the lower end of substantial ($\kappa=0.63$) for signs/symptoms. For etiologies $p^{\text{pos}}=0.71$ and $p^{\text{neg}}=0.78$ and for signs/symptoms $p^{\text{pos}}=0.82$ and $p^{\text{neg}}=0.79$, indicating that the raters agreed on the presence of each as well as the absence. The overall clinical diagnostic validity score for etiologies was 0.33 and for signs/symptoms was 0.44, signifying they were not characteristic of the diagnoses.

Conclusions Although RDNs knew a nutrition problem was present, they were in poor agreement as to the most important diagnosis, etiologies, and signs/symptoms. The lack of agreement indicated inconsistencies in determining a primary diagnosis among these RDNs.

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INTERNATIONAL DIETETICS AND NUTRITION TERMINOLOGY, the standardized language of the dietetics profession, is the set of terms that identifies and documents the practice of nutrition care throughout the four steps of the Nutrition Care Process (NCP).¹ Through the NCP, the terminology describes the nutrition care of the patient/client that is commensurate with the overall health care and outcomes of the person.²⁻⁵ In addition, International Dietetics and Nutrition Terminology differentiates and communicates the unique contribution of the registered dietitian nutritionists (RDNs) and nutrition and dietetics technicians, registered, to patient/client care.²⁻⁵ Therefore, it is important to consider the reliability and validity of the terminology because of its pivotal role in nutrition care.

The terminology for the second step of the NCP, nutrition diagnosis, lists specific nutrition problems of the patient/client that nutrition and dietetics practitioners can resolve or improve through nutrition interventions.^{1,2,4,5} Clinical reliability studies along with content and clinical validity studies

are needed for the diagnoses to be defined as appropriate and applicable in practice.⁶⁻¹⁰ For RDNs to be accurate and confident in diagnosing, the diagnoses need to be tested for both reliability and validity in practice. RDNs participating in four content validation studies indicated that the content for several of the definitions, etiologies, and signs/symptoms was representative of some of the diagnostic terms but not of others.¹¹⁻¹⁴ Also, RDNs participating in research with case studies found the terms reliable.¹⁵ However, four content validation studies along with one reliability study cannot fully and accurately establish the reliability and validity of the terms. The terms require a series of reliability and validity studies to define them as appropriate and usable in practice.^{8,9,16} Studies that indicate whether the nutrition diagnoses are clinically reliable and valid increase the specificity of the dietetics and nutrition language.

Clinical reliability determines the consistency with which the etiologies and signs/symptoms are interpreted between and among RDNs.^{9,16,17} When the etiologies and

signs/symptoms are reliable, it is anticipated that inter-RDN agreement (ie, interrater reliability) will occur when selecting a diagnosis. Clinical reliability assures minimal variability among and between RDNs in selecting a diagnosis. Reliability indicates that RDNs perceive and interpret nutritional assessment data similarly and, thus, assign the same diagnosis.

Clinical validation of nutrition diagnoses is a critical step in identification of the extent to which the diagnoses, etiologies, and signs/symptoms actually characterize the nutritional status of individuals in practice settings.^{9,10,16,17} Validating nutrition diagnoses establishes that RDNs encounter these nutrition problems along with the etiologies and signs/symptoms.

A clinically reliable and valid nutrition diagnosis is one that RDNs predicatively and consistently choose when interpreting the same assessment data that occur in practice.^{9,10,16,17} Clinical studies that determine the reliability with which RDNs identify the diagnoses and the validity of the diagnoses, etiologies, and signs/symptoms ascertain the accuracy of the nutrition diagnoses. The purpose of this study was to investigate the reliability and validity of the nutrition diagnoses in clinical practice. Specifically, the study determined whether two RDNs independently agreed on the same diagnosis for the same patient and that the etiologies and signs/symptoms were present in the patient.

MATERIALS AND METHODS

The clinical reliability and validity of nutrition diagnosis (CRVND) model is a modification of Fehring's clinical validity model.^{18,19} Calculation of interrater reliability determined clinical reliability, and clinical validity was calculated according to Fehring.^{18,19} The method for data collection was interaction with the patient, nutrition assessment, and documentation and evaluation of a nutrition diagnosis. Briefly, two RDNs independently assessed the available nutritional data from the same patient, then each RDN selected a nutrition diagnosis and rated the applicability of the etiologies and signs/symptoms.

Recruitment of RDNs

Members of the Academy of Nutrition and Dietetics' Dietetic Practice-Based Research Network, who indicated an interest in volunteering for a study related to nutrition diagnoses, were recruited. The study sites were ValleyCare Hospital, Pleasanton, CA; Baystate Medical Center, Springfield, MA; Anne Arundel Medical Center, Annapolis, MD; St John's Regional Medical Center, Joplin, MO; Cardiovascular Care Group, Belleville, NJ; Mercy Medical Center, Canton, OH; Vanderbilt Clinic, Nashville, TN; and Cleveland Clinic, Cleveland, OH.

To participate, the RDNs must have (1) been a clinical RDN who practiced medical nutrition therapy, (2) recruited another RDN in the facility to participate, (3) had permission from their supervisor, (4) provided documentation of completing human subjects training, and (5) obtained approval from their institution's institutional review board for the study. The RDNs who met the criteria were required to attend a 2-day training session. Experts from the Academy of Nutrition and Dietetics presented, through lectures and case studies, the study protocol, the application of the NCP, and diagnosing a nutrition problem. Pre- and postcase studies

were administered to evaluate learning. Overall, there was an increase of 5 percentage points in the ability of these RDNs to diagnose with the standardized language, the mean score increased from 58% correct to 63% correct.

Procedures

Each RDN completed a demographic survey indicating type of employment facility, the facility's geographic location, education, number of patients assessed/counseled per day, years of registration, and years practicing patient care. The RDNs also answered a question indicating whether they had some experience with the nutrition diagnostic terms or none. Then the pair of RDNs was requested to randomly recruit 50 adult patients to diagnose. Each RDN independently assessed the same patient and identified and labeled the most important nutrition problem; that is, one diagnosis. The RDN chose any diagnosis from the 62 diagnostic labels identified in the first edition of dietetics and nutrition standardized language, *Nutrition Diagnosis: A Critical Step in the Nutrition Care Process*,²⁰ then each RDN completed a CRVND instrument for the diagnosis as described in the following section (Figure). For the least possible change in the patient's/client's health status between evaluations by the two RDNs, the time difference between evaluations was a maximum of 4 hours.

Instrument

The CRVND instrument was developed based on reviewing the nursing literature.²¹⁻²⁵ Nurses and RDNs with expertise in diagnoses and research of their respective profession analyzed and refined the instrument for face and content validity. The 2003-2005 Standardized Language Task Force and Terminology Expert Reviewers established the diagnoses.²⁰ The format of the instrument was the same for each diagnosis and its respective etiologies and signs/symptoms, with content specific for the particular diagnosis as indicated in *Nutrition Diagnosis: A Critical Step in the Nutrition Care Process*²⁰ (Figure). Once a diagnosis was chosen, each RDN selected one of the following responses for the etiologies or signs/symptoms that were included on the instrument: Yes, affirming this is a defining descriptor for the diagnosis; No, indicating this is not a descriptor for the diagnosis; No data (ND), indicating no data were obtained about this descriptor that may have been relevant to the patient's care; or Not applicable (NA), indicating that given the information obtained, this descriptor was not applicable to the patient.

Informed Consent

The institutional review boards of Florida International University and each participating facility approved the study. Each patient/client was informed about the study and provided consent. All patients/clients had the right to refuse.

Statistical Analyses

Statistical analyses were computed with either SPSS (version 16.0, 2007, IBM-SPSS, Inc) or SAS (version 9.1, 2003, SAS Institute Inc) analytical software. Frequencies and percentages summarized demographic data. Reliability and validity calculations are described in the following sections.

Clinical Reliability. Clinical reliability was determined with several measures of agreement: percentage of agreement,

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