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Content Validation of Nutrition Diagnostic Term Involuntary Weight Loss by Board Certified Specialists in Gerontological Nutrition

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CONTENT VALIDATION OF NUTRITION DIAGNOSTIC TERM

INVOLUNTARY WEIGHT LOSS

BY BOARD CERTIFIED SPECIALISTS IN GERONTOLOGICAL NUTRITION

by

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The purpose of this study was to validate content of the Nutrition Diagnostic Term NC-3.2 Involuntary Weight Loss using expert raters. This descriptive survey invited all Board Certified Specialists in Gerontological Nutrition (CSG) to participate by mail. An instrument was developed that included the definition, etiologies, and signs and symptoms of the diagnosis with items added from literature review. CSG rated how common or characteristic each item is to the diagnosis using a 5 point Likert scale. A weighted response for each item was used to calculate a Diagnostic Content Validity (DCV) score. DCV scores of 0.80 and above were classified as major characteristics, 0.50 to 0.799 were minor characteristics, and those scoring below 0.50 were unrepresentative of the diagnosis. A mean total DCV score was calculated using the major and minor characteristics. Dietitians were asked to comment on clarity and completeness of the language. Seventy three percent of CSG (n=110) had participated, 43% percent had an MS degree or higher level of education. Reported years of practice in gerontological nutrition were 15±10 years (mean ± SD). The DCV score was 0.80 for the definition, 0.63 for the etiologies, and 0.69 for signs and symptoms. Total DCV score for the diagnostic term was 0.69. Thirty six percent and 40% of the CSG recommended adding language to etiologies and signs and symptoms respectively. Results indicate the majority of items were valid to the diagnostic term but responses for adding items need further investigation in clinical testing, the next phase of validation.

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"Pray constantly . . . always and for everything giving thanks in the name of our Lord Jesus Christ to God the Father."(1 Thess 5:17; Eph 5:20)

TABLE OF CONTENTS

Appendix A: Nutrition Diagnostic Validation Instrument (NDVI)

Appendix B: Demographic and Standardized Language Use Questionnaire

Appendix C: Institutional Review Board Approval Letters

Appendix D: Demographic Characteristics of Participants

Appendix E: Standardized Language Addition Recommendations

Appendix F: DCV Score among Years of Practice, Expert level, NCP/SL usage,
and practice setting

LIST OF TABLES

INTRODUCTION

A health care quality gap exists in the U.S. Our health care delivery system does not provide consistent, high quality care to all people due to the complex and uncoordinated delivery of care. Wasted resources, loss of information, and failure to build on strengths of health professionals to give care that is appropriate, timely and safe predominate (1). One redesign recommended by the Institute of Medicine (IOM) is for clinicians and institutions to actively collaborate and communicate to ensure appropriate exchange of information and coordination of care. Describing nutrition care in health care settings is becoming increasingly important due to greater amounts of information required by policy makers, third-party payers, and accrediting agencies as well as the documentation of patient outcomes (2).

In the same year of the 2001 IOM report, the American Dietetic Association's (ADA) strategic plan identified the need for a standardized nutrition care process and language allowing for uniformity in the description and documentation of nutrition care services by the dietetic practitioner. Models for effective nutrition care were developed and proposed after a review of the literature (3-5). In 2003, the Nutrition Care Process and Model (NCPM) were introduced within the dietetics community and replaced other nutrition care processes in use within education and practice. The standardized NCPM is defined as a systematic problem-solving method that dietetic professionals use to critically think and make decisions to address nutrition related problems and provide safe and effective nutrition care. The Nutrition Care Process/Standardized Language (NCP/SL) is a taxonomy describing four skill areas that dietetic professionals are uniquely qualified to provide; Nutrition Assessment, Nutrition Diagnosis, Nutrition

Intervention, and Nutrition Monitoring and Evaluation. ADA has established a goal of implementation of the NCP/SL by dietetics professionals by the year 2013.

The first SL published was the nutrition diagnostic terms. A nutrition diagnosis consists of a cluster of characteristics that dietitians use to identify a nutrition problem and the diagnosis directs the intervention, and monitoring and evaluation needed for resolution of the problem. Sixty diagnostic terms are published in the International Dietetics and Nutrition Terminology (IDNT) (6) which has been updated annually since the first edition in 2005 to include terms for assessment, intervention, monitoring and evaluation. The SL was conceptualized by a select group of ADA recognized leaders and award winners in the early phase prior to the appointment of a 12 member NCP/SL Committee which collected input from groups of community, ambulatory, acute care, and long-term care practitioners along with feedback from experts concerning research supporting the SL.

The proposed SL must be validated for use in education, practice, research and policy. Validation is needed to provide evidence that a diagnostic term exists, and the characteristics (definition, etiologies and signs and symptoms) are appropriate for the term. Validation is accomplished by asking nutrition experts to analyze the content of the term and testing the results in the clinical setting. SL that is true or validated provides uniformity in describing, documenting and communicating nutrition care services among dietetic and other health care practitioners and assists in the transition to electronic health records needed to close the gap between present health care and that needed in the immediate future. A recent ADA survey of the dietetic profession revealed that 57% use

patient electronic records but less than one-third were familiar with ADA's SL initiative and only 16% use the nutrition diagnostic terms (7). Validating the SL may make the language more manageable and meaningful for clinical use (8-10). Since the 2003 introduction of the SL nutrition diagnostic terms, one validation study, using a validation model developed for nursing research (11-12), studied all diagnostic terms among convenience samples of 36-46 registered dietitians (13). A reliability study of the use of the diagnostic terms among dietitians at different practice levels has also been conducted (14). More research is needed to test each diagnostic term with sufficient numbers of experts in the diagnosis beginning with nutrition problems of significant occurrence.

The prevalence of weight loss is the highest ranked quality measure of nutrition/eating established by the Centers for Medicaid and Medicare (CMS) (15-17) for long term care facilities receiving federal funding and nationally up to 65% of residents in extended care experience malnutrition and unintended weight loss (18-19). Dietetic practitioners, including Board Certified Specialists in Gerontological Nutrition (CSG) assess and treat this nutrition problem (20-21) with positive outcomes documented (22-25). No research has been conducted to study content validity of the nutrition diagnosis involuntary weight loss using experts in gerontology nutrition. The purpose of this study was to measure the content validity of the nutrition diagnostic term NC-3.2 Involuntary weight loss using CSGs.

REVIEW OF THE LITERATURE

Nutrition Care Process/Standardized Language

A health care quality gap exists in the U.S. Our health care delivery system does not provide consistent, high quality care to all people due to the complex and uncoordinated delivery of care. Wasted resources, loss of information, and failure to build on strengths of health professionals to give care that is appropriate, timely and safe predominate (1). One redesign recommended by the Institute of Medicine (IOM) is for clinicians and institutions to actively collaborate and communicate to ensure appropriate exchange of information and coordination of care. A taxonomy identifying the nutrition care process would assist in this endeavor. In addition, describing nutrition care in health care settings is becoming increasingly important due to greater amounts of information required by policy makers, third-party payers, and accrediting agencies as well as the documentation of patient outcomes (2). Standardized terminology and digital sources of evidence are becoming essential for evidence-based practice. Dietitians must be involved in incorporating standardized dietetic language in electronic health care management systems at every practice setting (3).

In the same year of the 2001 IOM report, the American Dietetic Association (ADA) identified the need for a standardized nutrition care process and language allowing for uniformity in the description and documentation of nutrition care services by the dietetic practitioner. Models for effective nutrition care were proposed (3-4). In 2003, the original model of the Nutrition Care Process and Model (NCPM) was introduced within the dietetics community for the implementation and dissemination to the dietetics

profession and for the enhancement of the practice of dietetics (5). This standardized

NCPM is defined as a systematic problem-solving method that dietetics professionals use

to critically think and make decisions to address nutrition related problems and provide

safe and effective nutrition care. This model was developed after a review of the

literature and is intended to replace other nutrition care processes in use within education

and practices. NCPM is for problem solving, and identifying and describing the specific

functions of dietetics practice. The Nutrition Care Process/Standardized Language

(NCP/SL) describes a process consisting of four skill areas that dietetic professionals are

uniquely qualified to provide; Nutrition Assessment, Nutrition Diagnosis, Nutrition

Intervention and Nutrition Monitoring and Evaluation.

ADA has established a goal of implementation of the NCP/SL by dietetics

professionals by the year 2013. Numerous resources have been provided to practitioners

to assist with the use of the NCP/SL. According to an ADA House of Delegates Report

(26), many opportunities are available to the ADA membership for learning the NCP/SL.

As of June 2007, over 6500 publications have been sold regarding the NCP, website

usage reports 1417 downloads of presentations on the ADA website, and 45 presentations

from NCP/SL Committee members and others to ADA members.

The identification and definition of the SL for nutrition diagnostic terms was the

first taxonomy conceptualized and proposed for practice application. A nutrition

diagnosis is identifying and labeling an actual occurrence of a nutrition problem that a

dietetics professional is responsible for treating independently. The current standardized

language, including the diagnostic terms, is incorporated into the International Dietetics

and Nutrition Terminology (IDNT) (6) which is designed to provide clear and consistent descriptions of the services provided by Registered Dietitians. Nutrition research is assisted by having terminology that describes the nutrition problems in a patient population along with interventions provided. Outcomes of nutrition interventions can be described. Documentation in the health care system is facilitated by a single set of defined terms provided by the IDNT. Beyond the use in the health care record, policies, procedures, rules and legislation will benefit with use of the terminology.

Nutrition Diagnosis Research

The nutrition diagnostic terms SL proposed for dietetic practitioner use needs to be validated by analyzing content using experts and testing the results in the clinical setting with patients. The need for standardization and validation of terminology is to provide standardized, prioritized, and reliable patient problem lists to all users of the patient care information (9). SL that is true or validated provides uniformity in describing, documenting and communicating nutrition care services among dietetic and other health care practitioners and assists in the transition to electronic health records needed to close the gap between present health care and that needed in the immediate future.

SL that has been validated can be used for nutrition research on patient outcomes and health care expenditures. The field of nursing uses their validated taxonomy in research. Using data stored in a nursing information system, Coenen and colleagues (27) described the frequency of interventions across select nursing diagnosis. Chang and colleagues (28-30) established the construct validity of the nursing diagnosis, self care

deficit, and has moved on to development of a computerized assessment guide that is used to analyze data sets for nursing diagnoses. Mehmert and Delaney (31) used an existing database to validate a diagnosis of impaired physical mobility. The ability to conduct nutrition research will be enhanced with the use of a validated SL as databases using standardized language will magnify the possibilities for studying the nutrition problems and interventions in patient populations.

The elements of a diagnostic term consist of the definition, etiology, and signs and symptoms. Etiology is defined as a cause or contributing risk factor that contributes to the existence or the maintenance of pathophysiological, psychosocial, situational, developmental, cultural, and/or environmental problems (6). Signs and symptoms are defined as a cluster of subjective and objective defining characteristics that provide evidence that the problem exists, quantify the problem and describe its severity. Signs are observations of a trained clinician. Symptoms are changes reported by the patient/client. A diagnostic statement that is well written should be clear and concise, and specific to the patient/client, accurately related to one etiology and is based upon signs and symptoms of the assessment data (32).

The need for definition of the defining signs and symptoms is required. What a sign or symptom means to one dietitian might not be the same to another. These definitions are instruction on what observations will be observed and how they will be observed. Grant (33) reports that operational definitions provide the bridge between incidental observation and scientific validation and recommends that all signs and symptoms in nursing research development be defined to explicate their meanings. The

use of operational definitions, describing what is going to be measured and how it will be measured, will improve reliability and validity as they make it possible to replicate studies and to relate findings across studies. By explicating the meaning of the signs/symptoms the evidence provided by the validation model is strengthened. This process may be helpful in eliminating redundancy in the signs and symptoms. By reducing the number of unnecessary defining signs and symptoms the diagnosis would be more clinically useful. The need to recognize numerous signs and symptoms can be cumbersome.

Sparks and Lien-Geischen (34) maintain that accurate diagnosing occurs when the number of defining characteristics is limited and valid. Benner (35) reported that experts used fewer cues than novices to arrive at correct diagnoses. The specificity and concreteness of cues assist in the ability to retrieve cues in clinical situations (10). Conceptual clarity, a tangible definition of a phenomenon, is needed in the first stages of diagnoses development and research (36). In her paper on validation studies, Hoskin (9) emphasized the necessity of operationally defining all variables for proper measurement. Fehring (37) used a rigorous method of administering his validation models (expert raters, definitions, and testing in the clinical setting) to eliminate non-valid signs/symptoms and recognize critical defining characteristics.

The accuracy of dietitians' interpretations of the nutrition problems is supported by research based taxonomy of the diagnostic terms and signs and symptoms. If dietitians' interpretations are inaccurate, the most effective interventions and outcomes may not be selected. Another outcome of validation research is a shorter more relevant

list of defining characteristics as a goal espoused by Hoskins (9). She recommended more use of computerized databases in research.

Research methodology required for validation of nutrition diagnosis encompasses concept analysis, expert validation, and clinical validation. These phases have been used in research validation of nursing diagnoses (38). Sequential quantitative methods for addressing reliability and validity issues of diagnoses have been identified (39). These comprise three stages of developmental research for clinical validation. Stage 1 uses descriptive statistics and correlation coefficients associated with content validity and interrater reliability. Stage 2 uses multivariate quantitative statistical methods to further establish predictive criteria and construct validity. Stage 3 advances to measuring prevalence rates to predict diagnosis. Nutrition diagnosis research needs to be initiated with Stage 1 development.

There have been few studies validating the SL of dietetic practice. The diagnostic terms were studied among Members of the Dietetics Practice-Based Research Network (14). The reliability of the diagnoses statements among dietitians at different levels of practice using six clinical scenarios was studied. Good to excellent agreement was found in the selection of diagnostic labels across practice levels. Enrione (13) studied the content validity of the 62 diagnostic statements with a convenience sample of registered dietitians and found the definitions, etiologies and signs and symptoms representative of the diagnostic labels.

Concept Analysis

Concept development is a process of describing, explaining or predicting phenomena and is a critical approach to theory development in nutrition disciplines. Concept analysis is a strategy for examining attributes or characteristics of a concept and therefore it clarifies the symbols used in communication. A concept represents categories of ordered information that contain defining attributes enabling the differentiation of one concept from another. The attributes are seen as a set of conditions necessary and sufficient to describe the domain and boundaries of the concept (40). Walker and Avant (41) describe the basic purpose of concept analysis as distinguishing between the defining attributes of a concept and its irrelevant attributes. The most fruitful uses of concept analysis have been in tool development and developing nursing diagnoses.

Nutrition diagnosis research and development would logically begin with concept analysis of the diagnostic terms. The three components of nutrition diagnoses closely parallel the output of a concept analysis; antecedents, defining characteristics, and operational definition as described by Walker and Avant (41). The antecedents are similar to etiology, the defining characteristics are similar to defining signs and symptoms, and the operational definition is the definition assigned to the nutrition diagnosis. The list of defining characteristics helps name the occurrence of a phenomenon as differentiated from another similar or related one. Importantly, something cannot be an antecedent and an attribute at the same time. Discerning between antecedents and consequences is helpful in further refining critical attributes. Antecedents (etiologies) are events or incidents that must occur prior to the occurrence of the concept.

Consequences (signs/symptoms) are the events or incidents that occur as a result of the occurrence of the concept. Determining empirical referents or indicators for the critical attributes is needed as they demonstrate the existence or presence of the concept itself. In nutrition practice they provide the dietitian with clear, observable phenomena by which to diagnose the existence of the concept (diagnosis) in particular clients.

To engage concept analysis in the research development of nutrition diagnostic terms, a literature review is required to support pre-existing characteristics and identify if additional characteristics need to be added for testing. Good quality nursing diagnosis validation studies have included as complete a list of signs and symptoms as possible from a thorough literature review (34). When precision is used in concept analysis of a nutrition diagnosis, it will be far easier to promote understanding among our colleagues about the phenomena (nutrition problem or diagnosis) being discussed.

Validity

Validity is a form of accuracy or the degree to which a test or instrument measures the construct it purports to measure. In the traditional view, there are three types of validity. These are content, criterion and construct. Content validity refers to how well the test or instrument represents the concept under study. Criterion related validity refers to how well the test or instrument predicts performance. Construct validity answers the question of what the scores on the test or instrument mean (42).

Validating an instrument or measure is a long process involving many steps. Hoskins proposes that concept analysis, professional expert, and clinical validation are

appropriate phases of diagnosis validation research (43). Logically, research on SL

validation begins at the first stage of developmental research where content validity and

interrater reliability are studied. Validation of the nutrition diagnoses must begin with

content validity as the first step is to test if the components of the diagnoses are present.

Content validity is the degree or ability to which the items in an instrument adequately

relate to its goal or purpose (44). Haynes and colleagues (45) defined content validity as

follows: "content validity is the degree to which elements of an assessment instrument

are relevant to and representative of the targeted construct for a particular assessment

purpose" Applied to dietetics, the nutrition diagnosis is the construct being studied or

researched. The test or instrument is the etiologies, signs and symptoms that comprise

that diagnosis. The "degree to which" implies the extent to which the signs and

symptoms represent the breadth of the diagnosis and this validation is done by

quantitatively based judgment.   Relevance of the diagnostic language implies that each

diagnosis only contain items or etiologies and sign/symptoms within the domain of the

diagnosis. The representativeness of the nutrition diagnosis language is the degree to

which the signs and symptoms are proportional to the facets of the diagnosis. Applied to

dietetics, content validity of a diagnosis refers to the extent to which the diagnosis

contains the needed dimensions or signs and symptoms required to define the diagnosis.

Content validity refers to the extent to which a measure represents all facets of a

given concept. Research is needed to provide evidence that a diagnostic term exists and

the definition, etiologies and signs and symptoms are appropriate for the term. In essence,

content analysis provides evidence that these are relevant to practice (34). "Validity

describes the degree to which a cluster of defining characteristics describes a reality that

can be observed in client-environmental interaction" as stated by Gordon (46). Gordon and Sweeney describe the process of validation as "determining if the pre-identified defining characteristics occur as a cluster in a sufficient number of cases" (47). A nutrition diagnosis can be viewed as a cluster of characteristics that dietitians assign a label to for documentation of a nutrition problem that is addressed by intervention, monitoring and evaluation. The process of validation is accomplished by gathering evidence through research that dietitians actually do identify common defining characteristics. The characteristics that define the observed problem are valid when they actually occur as a cluster in the clinical setting.

There has been sufficient evidence that a list of 60 nutrition diagnosis exists and pre-established criteria for those diagnoses are published in the IDNT (6). The methodology that was used for developing these sets of terms began with concept analysis. This consisted of collecting data from multiple sources simultaneously. Initially, a select group of ADA recognized leaders and award winners provided data before a 12-member task force was developed. This NCP/SL Committee provided input from groups of community, ambulatory, acute care, and long-term care practitioners along with feedback from experts concerning research supporting the terms and definitions. The conceptualization and identification of the diagnoses occurred by this process of concept analysis, the first phase of validation.

There is an element of subjectivity that exists in relation to determining content validity of nutrition diagnoses. Commonly experts are used to validate content. Hubley and Zumbo (42) write that content validity is obtained by asking experts if the items tap

the construct of interest. Nutrition experts in the diagnoses are used to determine the degree of agreement of the signs/symptoms. To establish content validity multiple judges or expert dietitians rate the aspects of the diagnoses. The relevance, specificity, representatives and clarity of the diagnosis can be rated using quantitative scales, such as a Likert scale. As such, content validity affects the clinical inferences that can be drawn from the assessment data.

Fehring Models

Validation models evolved in the nursing profession in the early 1980's from earlier work of Gordon and Sweeney (47) and Avant (48). The Fehring Models were first presented at the Sixth Conference on the Classification of Nursing Diagnoses in St. Louis in 1984 and a paper on the methodologies appeared in conference proceedings in 1986 (12) which presented modifications to the earlier models. The evidence for a diagnosis and accompanying cluster of signs and symptoms are derived from two sources, expert and clinical. A model was provided for each approach to content analysis, the diagnostic content validation model (DCV) and the clinical diagnostic validity model (CDV). Fehring (49) listed the major reasons for developing the models were to provide detailed methodology, obtain quantifiable data (at the ordinal and interval level), provide a standardized approach for comparison studies and to establish criteria for decisions about the credibility of the defining characteristics. These models propose ways of standardizing evidence similar to evidence researchers commonly provide for measurement tools with reliability quantified so that the researcher can decide from this evidence how much faith can be placed with the tool and the research results.   In

research validation of nursing diagnoses, the DCV model developed by Fehring (36) has been used in numerous studies to measure content validity.

The DCV model is used to obtain expert opinions from professionals on the degree to which each defining sign and symptom is indicative of a given diagnosis and the strength of the model is the raters' qualifications. Experts provide a rating for all defining characteristics. The DCV model measures weighted interrater reliability ratios for each defining sign and symptom. Each characteristic is rated on a scale from 1 to 5 with 1 being not at all characteristic, 2 being very little characteristic, 3 being somewhat characteristic, 4 being quite characteristic and 5 being very characteristic. Each rating is then assigned a weight; 1= 0, 2= 0.25, 3=0.5, 4=0.75, and 5=1.0. A weighted response for each characteristic is calculated to arrive at the mean score. Scores of 0.80 or above are classified as major characteristics, those scoring at 0.50 to 0.79 are considered minor characteristics, and those scoring below 0.50 are discarded. The total DCV score is calculated by summing up the scores for the validated minor and major characteristics and deriving the mean score. This averaged DCV score represents how confident a dietitian should be when using that nutrition diagnosis. In essence the DCV is based on retrospective evidence from experts on characteristics of a given diagnostic term.

A modified scoring system has been proposed that uses a higher score of 0.6-0.79 for minor characteristics (34). This modification was seen as a method for reducing the number of diagnostic cues needed and thereby improving accuracy and usability. It was advocated that accuracy can be improved by limiting the number of valid defining characteristics that must be identified to make the diagnosis. Due to complex phenomena

of nursing diagnosis, Lunney (50) developed a cue rating system that represents a range or scale of accuracy from high to low. The ordinal scale indicating degrees of accuracy measure the amount of cues present and the amount of disconfirming cues present. By conceptually defining accuracy as a continuous variable that is situationally grounded, the definition would be useful in practice, education, and research. This approach to the concept of accuracy from an interpretation that a diagnosis exists or does not exist to the concept of degree of accuracy may also serve the dietetic practice when using nutrition diagnoses.

After the DCV model is used the CDV model is needed to study the diagnosis in the clinical setting to provide a total picture of content validity. Content validation only provides evidence that a group of experts think a certain way and there are no assurances that their judgment represents real-world phenomena (51). The CDV model obtains evidence from the clinical setting that a diagnosis and accompanying characteristics do exist. Two expert clinicians independently observe and rate the signs and symptoms present when the diagnosis under testing occurs in patients. The pre-diagnosis is made by another clinical expert other than the observers. Fehring recommends that an equivalent measure of the tested diagnosis, if available, be used to establish concurrent type of validity thereby strengthening the study. Patient- focused approach can be used in this model if the diagnosis under study is an affective problem. In this type of study, the patient, receiving the diagnosis, as verified by a clinical specialist, provides the rating of the signs and symptoms applicable to their experience of the diagnosis. The same scoring of the ratings used by the DCV model is used with the results of the CDV model to obtain

major and minor characteristics. Moving beyond content validation to construct and criterion-related validity are future steps.

At the time of his writing, Fehring reported that more than 24 published studies have utilized one or more of the validation models with over 27 different nursing diagnoses studied, some having been studied more than once (37). Eighteen studies have used the DCV model and two funded federal projects were being conducted using the methodologies. Comparisons are now possible between studies of the same diagnoses. Recently published nursing research on content validity continues to use the methodology (52-53).

A limitation of the methodology is the need for true experts to validate the diagnosis. The author of the models recommend an expert should at a minimum have a master's degree in the field of study with a defined area of clinical expertise (37). A rating system was devised to score the expertise and a total of 5 points is needed to meet the expert qualification. The following point system was used; master's degree in nursing (4), master's degree in nursing with thesis in content relevant to the diagnosis (1), published research on the given diagnosis (2), published article on the diagnoses in a refereed journal (2), doctoral dissertation on diagnosis (2), current clinical practice of at least 1 year duration in area relevant to the diagnosis (1), and certification in an area of clinical practice relevant to the diagnosis of interest (2). The higher the number of points, the stronger the evidence for the expertise is present. In this manner it is more desirable to have fewer raters with high level of expertise than many raters with a low level of expertise. Other researchers of nursing diagnosis development have used differing

criteria for experts, including registered professional nurses (54) and specialty

certifications (55). By recruiting registered dietitians that have demonstrated competence

in a specialty practice, indicators of expertise needed for content validation for nutrition

diagnosis research will be present.

Certified Specialist in Gerontological Nutrition

Dietitians providing nutrition care to the elderly are offered certification to

demonstrate competency. The Commission on Dietetic Registration, the credentialing

agency for the ADA, announced in 2007 the availability of a Board Certification as a

Specialist in Gerontological Nutrition (CSG). Board Certified Specialists have a

maintenance status as an RD for a minimum of two years prior to the examination date,

and a minimum of 2,000 hours of specialty practice in gerontology nutrition within the

past 5 years prior to completing the certification exam.

Knowledge of the NCP/SL is included in the tasks and associated knowledge

published by the credentialing agency for the certifying exam. Content material of the

exam includes nutrition screening, nutrition data gathering, nutrition data synthesis, and

nutrition diagnosis. Knowledge of indicators of involuntary weight loss is listed as

required in the nutrition data gathering component of the exam (20). The CSGs are

recognized for their expertise and skills in gerontological nutrition by their professional

peers and are resources for the expertise needed to validate the language through content

analysis. By virtue of the certification requirements, all CSGs have a 3 point rating using

the expert scale rating of Fehring (37) with graduate level education and publishing

increasing the rating of the dietitian expert score to 6 or higher. These scores compare favorably to the expert scores used in nursing content validation research.

Involuntary or Unintended Weight Loss

Long term care facilities that provide care to older adults are experiencing a nutrition care crisis (56). These facilities provide an array of health care, personal care and social services over a sustained period of time for those with chronic conditions and who have functional limitations (57). Common for many residents is the downward spiral of health outcomes associated with the high incidence of malnutrition and dehydration. Unintended weight loss is a nutrition problem that has been correlated with increased incidence of pressure ulcers and mortality as well as decreased resistance to infections (22, 58). In addition, weight loss may lead to debilitation (48). Many patients in LTC are at risk for this diagnosis as up to 65% of residents experience malnutrition and unintended weight loss as reported by the ADA's Report of the Task Force on Aging (59) and the Council for Nutrition Clinical Strategies in Long Term Care (18).

In 1998 the Centers for Medicare and Medicaid Services (CMS) of the Department of Health and Human Services implemented survey procedures focusing on unintentional weight loss, pressure sores, dehydration and dining and foodservice (15). Weight loss is a measure collected on the Minimum Data Set (MDS). This MDS represents a comprehensive assessment tool, covering 18 clinical domains and over 400 assessment items (16). In 1999, CMS disseminated quality indicator reports for use in identifying areas for continuous quality improvements. These quality indicators are taken from the MDS data and are used as markers to indicate the presence or absence of poor

nursing home care and outcomes. Prevalence of weight loss is the highest ranked quality measure for nutrition/eating (17). Since November 2004, the public and health care professionals can identify the percent of residents with unintentional weight loss at skilled and sub-acute facilities through the CMS Nursing Home Compare website (60).

The diagnostic term, Involuntary Weight Loss (NC-3.2) (6) contains etiologies and signs and symptoms identified by the 12 member task force. A literature review identified additional items germane to the diagnostic term. The inability to obtain preferred foods and high levels of emotional stress such as loss of loved one (61-62), polypharmacy (63, 21), and use of modified therapeutic diets (21, 64) were additional etiologies or cause/contributing factors identified for the diagnostic term. Under signs and symptoms in the anthropometric section of the nutrition assessment category, decrease in waist to hip ratio and loss of centrally distributed fat (65) were additional items providing evidence of the diagnosis. Conditions associated with kidney, gastrointestinal, and heart diseases (65-68) were also identified as relevant client history signs and symptoms.

Registered dietitians are identifying and treating this nutrition problem in extended care facilities. Splett and colleagues (22) found that 52% of 364 residents in residential health care facilities who were identified with unintentional weight loss were successfully treated after nutrition care was provided by dietitians. The increasing awareness of family, public, and government of this nutrition problem and the focus on avoiding and treating weight loss in the elderly residing in extended care facilities creates the opportunity to demonstrate the benefits of nutrition care services. Dietitians must also maintain their standards of practice to avoid possible litigation.

A taskforce of The Quality Management Committee of ADA has created a resource for ADA members regarding the quality indicator for weight loss (18). The resource provides direction in the approaches needed to address this nutrition problem. A position statement of the ADA advocates a liberalized diet along with the use of qualified dietetic professionals to assess and diagnose the need for nutrition intervention and monitoring for older adults in long term care (21). Clearly dietitian practices that apply the four processes of the Nutrition Care Process; Assess, Diagnose, Intervene, and Monitor and Evaluate are required to address this significant and transparent nutrition problem of unintended weight loss. It is essential for the dietetic practice to have SL that describes the dietitians' unique role in managing involuntary weight loss for the electronic health record and for coordination of the patients nutrition care when residents are transferred to other facilities and levels of care. The SL would provide outcome documentation, identify associated interventions that resolve the problem, and improve quality of life while reducing health care costs.

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Manuscript I:

Nutrition Diagnoses Development and Research

In 2003, the American Dietetic Association's (ADA) introduced Standardized

Language (SL) for dietetic practice. This language allows dietitians to describe the

unique services and contributions to health care that they provide. The SL portrays what

dietitians are accountable for to patients, healthcare professionals and policy makers and

measures their influence on patient outcomes. The common language is useful in

documenting, comparing, and improving quality of nutrition care. Standardized

taxonomies have been published for the four steps in the Nutrition Care Process (NCP):

Nutrition Assessment, Nutrition Diagnosis, Nutrition Intervention, and Nutrition

Monitoring and Evaluation (1). A recent ADA survey of the dietetic profession revealed

that 57% use patient electronic records but less than one-third were familiar with ADA's

SL initiative and only 16% use the nutrition diagnostic terms (2).

Nutrition diagnostic terms were the first SL to be developed and published for

implementation. A nutrition diagnosis is a nutrition problem or phenomenon that

dietitians are uniquely qualified to diagnose and treat. These elements of a diagnostic

term consist of the definition, etiology, and signs and symptoms. The definition must be

broad in scope. Etiology is defined as a cause or contributing risk factor that contributes

to the existence or the maintenance of pathophysiological, psychosocial, situational,

developmental, cultural, and/or environmental problems (1). Signs and symptoms are

defined as a cluster of subjective and objective defining characteristics that provide

evidence that the problem exists, quantify the problem and describe its severity. Signs are

observations of a trained clinician. Symptoms are conditions reported by the

patient/client. The nutrition diagnosis is the dietitian's interpretation of nutrition

assessment data. The purpose of this paper is to discuss how SL is developed and the methodology needed to validate the language.

Developing SL terms

The development of a common language or taxonomy requires several phases and requires periodic update and revisions. A historical review of nursing diagnosis research provides directions for development and refinement of SL for dietetic practice. A repeated theme is the necessity for conceptual clarity in the first stages of development. Concept analysis has been used extensively in the past 20 years to develop nursing diagnoses (3). Conceptual clarity provides a tangible definition of a phenomenon or nutrition problem. Concept analysis is a strategy for examining attributes or characteristics of a concept to clarify the symbols or language used in communication. The basic purpose of concept analysis is to distinguish between the defining attributes of a concept and its irrelevant attributes (4). Conceptual work is required to develop and potentially restructure diagnostic terms.

A concept can be viewed as the nutrition problem and represents categories of ordered information that contain defining attributes allowing the differentiation of one concept from another, such as involuntary weight loss (NC-3.2) from evident protein energy malnutrition (NI- 5.2) (1). The use of one sign, the amount and degree of weight loss, is insufficient to arrive at the diagnosis. The common cluster of other signs and symptoms respective to each diagnosis differentiates each concept or nutrition problem. The attributes or signs and symptoms are seen as a set of conditions necessary and sufficient to describe the domain and boundaries of the concept (5).

The identification of the nutrition diagnostic terms began with the process of concept analysis, the first phase of validation. Nutrition diagnostic terms were conceptually identified from multiple sources simultaneously. Initially, a select group of ADA recognized leaders and award winners provided data before a 12-member task force was developed. This task force later called the NCP/SL Committee, collected input from groups of community, ambulatory, acute care, and long-term care practitioners along with feedback from experts concerning research supporting the terms and definitions. A robust literature review is required in the conceptualization of terms to ensure a complete listing of signs and symptoms is available for testing or validating in the next phase of language development (5-7).

Need for validation

To prevent a gap between concept and practice, validation of the SL is needed. The language must be comprehensive, appropriate and clear for use in practice and electronic health records. Research can reduce the defining signs and symptoms into smaller sets to make the SL more manageable and meaningful for clinical use (8). Dietitians must be confident the nutrition problems and signs and symptoms are identified in clinical settings and the terms remain the same across geographical boundaries, care settings, and patient populations. Increasing the accuracy in diagnosing nutrition problems and supporting research efforts for measuring outcomes of interventions require a validated language.

Validation research may produce shorter more relevant lists of defining characteristics (9**).** Redundant and unnecessary signs and symptoms which are

burdensome to recognize are eliminated which can improve usability of the SL in the dietitian's practice. Experts used fewer cues than novices to arrive at correct diagnoses (10). The specificity and concreteness of cues assists in the ability to retrieve cues in clinical situations (11). Annual North America Nursing Diagnoses Association (NANDA) Conference proceedings in the 1980's to mid 1990's presented numerous studies on nursing diagnosis validation studies. When ten frequently reported nursing diagnoses were studied, the number of cues validated for the diagnoses was lowered in 6 out of 10 diagnoses with the mean number of cues for the ten at 13.5 before validation and 10.5 after validation (12). A validation study, using literature review, expert raters, and clinical assessment, reduced the number of 33 defining cues to 15 when studying sleep pattern disturbance (13).

The accuracy of dietitians' interpretations of nutrition problems is supported by research based taxonomy of the terms and signs and symptoms. Accuracy in diagnosing occurs when the number of defining characteristics is limited and valid (6). A prerequisite to achieving positive outcomes is accurate diagnoses (14). When dietitians' interpretations are of low accuracy, the most effective interventions and outcomes may not be selected. The degree of accuracy of a diagnosis can be measured by observing for the validated signs and symptoms as well as the presence or absence of conflicting signs and symptoms similar to an ordinal scale indicating degree of accuracy from high to low (15). Future use of the SL to describe patient populations necessitates a high level of diagnostic accuracy (16).

SL allows for aggregation of data to evaluate outcomes needed to measure quality and effectiveness of nutrition care (17). The field of nursing uses their validated taxonomy in research. SL and data bases facilitate the study of economic benefits of diagnosis and intervention on patient outcomes (18), the frequency of interventions across select nursing diagnoses (19), and validating diagnoses (20). Using a standardized language classification system, nursing interventions for frequently used nursing diagnoses and related factors have been examined to study relationships to demonstrate impact on care (21). In a study of the use of nursing diagnoses, a trend was noted in the improvement of documentation, quality of intervention and outcomes achieved (22). Implementation of standardized nursing language significantly improved quality of the documentations and provided more effective interventions which led to better patient outcomes (23). Use of standardized nursing language as research frameworks for development of evidence- based practice guidelines have been proposed (24). Implementing and using validated dietetics SL in electronic health records allows dietitians to study nutrition problems and identify successful interventions, leading to positive outcome measures.

Validation methodology

Validation provides evidence that a diagnostic term exists and the definition, etiologies and signs and symptoms are appropriate and explicit for the term. Research methodology required for validation of nutrition diagnoses includes concept analysis, expert validation, and clinical validation. Validation by experts (content validity) and clinicians (clinical validity) determines if the items (etiology, signs and symptoms) within

the term adequately relate to the identification of the diagnosis. Haynes and colleagues (25) defined content validity as follows: "*the degree to which elements of an assessment instrument are relevant to and representative of the targeted construct for a particular assessment purpose*". When applied to validation of the SL, the "*construct*" is the nutrition diagnosis. The "*elements of a test or instrument*" are the etiologies, signs and symptoms that comprise that diagnosis. The "*degree to which*" implies the extent to which the signs and symptoms represent the breadth of the diagnosis. "*Relevant*" diagnostic language implies that each diagnosis includes items or etiologies and sign/symptoms within the domain of the diagnosis. The nutrition diagnosis language is "*representative*" by the degree to which the signs and symptoms are proportional to the facets of the diagnosis. Validating the content of a nutrition diagnostic term confirms or verifies the needed dimensions or signs and symptoms required to define the term.

Gordon states, "*Validity describes the degree to which a cluster of defining characteristics describes a reality that can be observed in client-environmental interaction*" (26). Gordon and Sweeney describe the process of validation as "determining if the pre-identified defining characteristics occur as a cluster in a sufficient number of cases" (27). A nutrition diagnosis is viewed as a cluster of characteristics to which dietitians assign a term for documentation of a nutrition problem that is addressed by dietetic practitioner's intervention, monitoring and evaluation. The process of validation is accomplished by gathering evidence through research that dietitians identify the common defining characteristics. The characteristics that define the observed problem are valid when they actually occur as a cluster in the clinical setting. In essence, content analysis provides evidence that these are relevant to practice (5).

Validation Models

Validation models evolved in the nursing profession in the early 1980's (28-29). The Fehring Models were first presented at the Sixth Conference on the Classification of Nursing Diagnoses in St. Louis in 1984 and a paper on the methodologies appeared in conference proceedings in 1986 (29). The evidence for a diagnosis and accompanying cluster of signs and symptoms are derived from two sources, expert and clinical. A model was provided for each approach to content analysis, the diagnostic content validation model (DCV) and the clinical diagnostic validity model (CDV).

The DCV model is used to obtain expert opinions from professionals on the degree to which each defining sign and symptom is indicative of a given diagnosis and the strength of the model is the raters' qualifications. To establish content validity, multiple judges or expert dietitians rate the aspects of the diagnoses to measure if the items tap the construct of interest (30). The author of the models recommends that experts have advanced education and clinical experience with the diagnosis, while other researchers have used differing criteria (31-33). As such, content validity affects the clinical inferences that can be drawn from the assessment data.

The DCV model measures weighted interrater reliability ratios for each defining sign and symptom and identifies validated minor and major characteristics and non relevant items. The relevance, specificity, representativeness and clarity of the diagnosis are rated using quantitative scales (Likert type scale). Each item is rated on a scale from 1 to 5 with 1 being not at all characteristic, 2 being very little characteristic, 3 being somewhat characteristic, 4 being quite characteristic and 5 being very characteristic. Each

rating is then assigned a weight; 1=0, 2= 0.25, 3=0.5, 4=0.75, and 5=1.0. A weighted

response for each item is calculated to arrive at the mean score. Scores of 0.80 or above

are classified as major characteristics, those scoring at 0.50 to 0.79 are considered minor

characteristics, and those scoring below 0.50 are discarded. The total DCV score is

calculated by summing up the scores for the validated minor and major characteristics

and deriving the mean score. The DCV score represents how confident a dietitian is when

using that nutrition diagnosis. In essence the DCV model is based on retrospective

evidence from experts on characteristics of a given nutrition diagnosis This averaged

DCV score represents how confident a dietitian should be when using that nutrition

diagnosis.

Content validation by experts (DCV model) only provides evidence that the group

thinks a certain way and there are no assurances that their judgment represents real-world

phenomena (34). After the DCV model is used, and the instrument is tested for reliability,

the next phase uses the CDV model which studies the diagnosis in the clinical setting to

provide a total picture of content validity. The CDV model obtains evidence from the

clinical setting that a diagnosis and accompanying characteristics do exist. Two clinicians

independently observe and rate the signs and symptoms present when the diagnosis under

testing occurs in patients. The pre-diagnosis is made by a clinical expert other than the

observers. A patient- focused approach can be used in this model if the diagnosis under

study is an affective problem such as NB-1.3 Not ready for diet/lifestyle change. In this

type of study, the patient, receiving the diagnosis as verified by a clinical specialist,

provides the rating of the signs and symptoms applicable to their experience of the

diagnosis. The same scoring of the ratings used by the DCV model is used with the results of the CDV model to obtain major and minor characteristics.

Fehring (35) listed the major reasons for developing the models were to provide detailed methodology, obtain quantifiable data (at the ordinal and interval level), provide a standardized approach for comparison studies and to establish criteria for decisions about the credibility of the defining characteristics. These models propose ways of standardizing evidence similar to evidence researchers commonly provide for measurement tools with reliability quantified so that the researcher can decide from this evidence how much faith can be placed with the diagnostic term and the research results. More than 24 published studies have utilized one or more of the validation models with over 27 different nursing diagnoses studied, some having been studied more than once, with comparisons between studies possible (36). Current nursing research on content validity continues to use the methodology (37-39).

All signs and symptoms in nutrition research development should be defined prior to validation to explicate the meanings for proper measurement. Definitions are instructions for what will be observed and how it will be observed. Operational definitions provide the bridge between incidental observation and scientific validation (7, 40) and make it possible to replicate studies and to relate findings across studies. For example, the items "early satiety" and "poor intake" may have different meanings among dietitians. The definition of early satiety as "stops eating within 5 minutes" and poor intake as "eats less than 50% offered" has clearer meaning. By explicating the meaning

of the signs and symptoms the evidence provided by validation is strengthened.

Eliminating redundancy in the signs and symptoms may also occur.

Conclusion

Dietetics SL informs other health care professionals and the public what dietitians are accountable for and their influences on positive patient outcomes. Development of SL includes analyzing the concept, and testing the content with experts and among dietitians in the clinical setting. Validation of the SL is needed to ensure the language is useful and meaningful to dietitian practitioners and contributes to research for measuring impact of nutrition services on improving patient care. Fehring models used in nursing diagnosis validation research are applicable for validating dietetic SL diagnostic terms.

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Manuscript I1:

Content Validation of Nutrition Diagnostic Term Involuntary Weight Loss by Board Certified Specialists in Gerontological Nutrition

Introduction

The American Dietetic Association's (ADA) 2003 introduction of the Nutrition Care Process/Standardized Language (NCP/SL) provided dietitians with a taxonomy describing the unique services dietitians provide (1-4). Nutrition diagnostic terms were the first SL identified. A nutrition diagnosis consists of a cluster of characteristics that dietitians use to identify a nutrition problem and this labeling directs the intervention and monitoring and evaluation needed for resolution of the problem. Over 60 nutrition diagnostic terms have been identified by a select group of ADA recognized leaders and award winners and a 12-member task force obtaining input from community, ambulatory, acute care and long-term care practitioners (5). This SL must be validated for use in education, practice and research and policy. Validation is needed to provide evidence that a diagnosis exists, and the characteristics (definition, etiologies and signs and symptoms) are appropriate for the term. Research models for validating content of nursing diagnosis (6) have been used since 1983 (7-10) and have applicability for research development of the nutrition SL.

Nutrition taxonomy development has just begun and few validation studies of the SL have been published. In one study, convenience samples of 36-46 registered dietitians rated the content of all nutrition diagnostic terms (11) but expert level of the raters were not reported. A reliability study of the use of the terms among dietitians at different practice levels has also been conducted (12). More research is needed to test each diagnostic term with sufficient numbers of experts in the diagnosis beginning with nutrition problems of significant occurrence.

The prevalence of weight loss is the highest ranked quality measure of nutrition/eating established by the Centers for Medicaid and Medicare (CMS) (13-15) for long term care facilities receiving federal funding. Incidence of weight loss is reported as a percentage of residents who have experienced significant weight loss defined as 5% or more of their body weight in one month or 10% of their body weight in six months. CMS reports that quality measures have been sufficiently validated to qualify as an indicator of nursing home quality. The weight loss quality measure for all facilities is available nationally (16). Dietetic practitioners, including Board Certified Specialists in Gerontological Nutrition (CSG) assess and treat this nutrition problem (17-19) with increased energy, protein and nutrient intake, weight gain, and improved quality of life as positive outcomes of nutrition intervention (20-23). No research has been conducted using experts to study content validity of the nutrition diagnosis involuntary weight loss in the extended care setting where up to 65% of residents experience malnutrition and unintended weight loss (18, 24). The purpose of this study was to measure the content validity of nutrition diagnosis NC3.2 Involuntary weight loss among CSGs.

Methods

Validation is accomplished by gathering evidence that dietitians identify common defining characteristics, the items are relevant, represent the nutrition problem, and occur as a cluster in a sufficient number of cases. The process of validating the content of a diagnostic term begins with concept analysis (25-27). In this step, the attributes or characteristics of the diagnosis are analyzed. Concept analysis of the diagnostic term was undertaken using literature review to verify defining characteristics of the proposed 2009

SL diagnostic term, NC3.2 Involuntary Weight Loss and identify any missing items. A search was completed using the words involuntary weight loss, undesirable weight loss, and elderly. The results were compared to the published language (5). The review added four etiologies to the existing eleven, and five signs and symptoms to the existing nineteen for the nutrition diagnosis. When the assessment category listed multiple items, such as in client history, each item was separated to collect a response for each item. Definitions were added for items, such as poor intake and fever so that clarity existed in understanding the items (28).

The Fehring Model (29) for validating content of a diagnosis was used to collect expert opinion of the content of the diagnostic term NC 3.2 Involuntary Weight Loss. The Nutrition Diagnosis Validation Instrument (NDVI) was comprised of 70 items (Appendix A). The definition (1 item), etiologies (15 items), and sign/symptoms (24 items) were derived from the proposed SL 2009 edition (5) plus those added from the literature review. The items were rated on a 5 point, Likert type scale, plus a "do not know response". Response options for the definition and etiologies were: never common, rarely common, sometimes common, frequently common, always common, and do not know if common. Response options for the signs/symptoms were: not at all characteristic, very little characteristic, somewhat characteristic, considerably characteristic, very characteristic, and do not know if characteristic. The remaining 19 items asked if additional wording was needed for the definition, if additional etiologies and signs/symptoms need to be added for the diagnosis and if the language was clear and easy to understand. If wording was missing or unclear, the participant was asked to explain their response. The last questions inquired if the diagnostic term is used in their practice,

if not, reasons for any non use of the term, and if they had other comments.

A demographic questionnaire consisting of 17 questions was also used in the study (Appendix B). Gender, age, highest level of education, route used to achieve registration, years of practice, years in gerontological nutrition practice, other credentials, year RD obtained, primary employer, practice area, use of NCP/SL and number of patients seen monthly with involuntary weight loss were listed.

Approval was obtained for the study from the Institutional Review Board before pilot testing (Appendix C). The NDVI and demographic questionnaire were reviewed by two members of the NCP/SL task force of ADA and minor adjustments were made to improve clarity. A mailing list of CSGs was obtained from the Commission on Dietetic Registration. The NDVI and demographic questionnaire were sent by mail to six CSGs who agreed to pilot test the instruments. Completed questionnaires were examined and the instrument format was further modified to improve clarity and facilitate reading and recording responses.

All CSGs (n= 151) were invited to participate by mail and no random sampling was used. The method of recruitment included five contacts (30). The first mailing, a pre-notice letter advised them of the research and upcoming mailing. Seven days later, a cover letter, demographic questionnaire, the NVI, the informed consent, a self addressed stamped return envelope, and a small token of $2 to build social exchange was sent. Voluntary participation was implied when the mailing was completed and returned. After ten days, all CSGs were sent a post-card thanking those who had responded for their participation and encouraging all non-responders to participate. An identifier

number was assigned to each participant and recorded on their instrument mailing. When a response was received, the corresponding name for the code was removed from the mailing list. Ten days later, the survey and a self addressed stamped return envelope was sent to all non-responders. The last contact was made by email followed by a mailing. Dietitians were asked to either respond to the email by identifying reasons they chose not to participate or to complete the upcoming mailing. A final mailing of the instruments was sent to those who did not respond to the email. As each response was returned, the instruments were reviewed for missing responses and the participants were contacted by email to obtain the information.

Data were analyzed with SPSS for Windows (Version 16.0, November, 2007, Chicago, Illinois). The demographic and practice questions were summarized using frequencies, percentages and means with standard deviations. The Likert ratings for the definition, etiologies, and signs and symptoms were assigned the following weights to calculate a Diagnostic Content Validity (DCV) Score: 1=0, 2=0.25, 3=0.50, 4=0.75 and 5=1.0. DCV scores of 0.80 and above were classified as major characteristics, 0.50 to 0.799 were minor characteristics, and those scoring below 0.50 were unrepresentative of the diagnosis. A mean total DCV score for the diagnostic definition, etiology, signs and symptoms was calculated using the major and minor characteristics DCV scores of each respective component. The "do not know responses" were summarized as frequencies and percentages and were not computed into the DCV score. Comments regarding missing language were examined for common themes and frequency of responses for each theme was collected.

Each dietitian was assigned an expert scale rating (8). The following point system was used; master's degree = 4, published articles on the diagnosis =2, current clinical practice of at least 1 year duration in area relevant to the diagnosis=1, and certification in an area of clinical practice relevant to the diagnosis of interest =2. The mean DCV scores within subgroups of CSGs by expert score, years of practice in gerontological nutrition, usage of the NCP/SL, and practice setting were compared.

Results

Eighty three percent of the CSGs responded to the mailing and 73% (n=110) participated. Nine who did not choose to participate gave the following reasons: time limitations (n=4), not using the NCP/SL (n=4), and not employed in a clinical practice setting (n=4). Multiple response options were allowed. Expert score ratings of the CSGs were three (57%), six (36%), seven (5%) and eight (2 %). Over 60% of participants were age 40 and above, and over one-third were in the 50-59 year category (Appendix D). Thirty nine percent practiced in the Midwest, 25% in the South, 22% in the Northeast and 14% in the West regions of the United States. Forty four percent had earned the master degree or a higher level of education. Average number of years in gerontological nutrition practice was 15 ± 10 (mean $\pm$ SD) and 58% had practiced 11 years or more in gerontological nutrition. Eighty percent worked in long term, skilled, and rehabilitation care. The average number of patients seen each month with involuntary weight loss was 19 ± 23 (mean $\pm$ SD) and 56% of dietitians saw 1-10 patients/month. Fifty percent of the dietitians are using the NCP/SL. Of those who reported using the NCP/SL, 54% have been in practice for over 20 years. Forty-four percent plan to use the NCP/SL in the

future. The standardized language used most frequently was the diagnosis, monitoring and evaluation language (26%). The combination of diagnosis and intervention language was the second frequently used (17%). Use of only the diagnosis (15%) or the monitoring and evaluation (1%) language was also reported. The diagnostic term, NC3.2 Involuntary weight loss was used by 64% in their practice. When dietitians did not use the term, the most common explanation was the SL had not been implemented in their practice.

The majority of the items were validated as major or minor defining characteristics and the etiology category had the highest percent (47%) of non relevant items (Table 1). The definition of the term was rated as a major characteristic. Tables 2 and 3 show the DCV scores in rank order for etiologies and signs and symptoms. No etiologies were rated as major, eight were rated as minor, and seven were non relevant. Six signs and symptoms were rated as major, twenty four were considered minor, and five were non relevant. The mean DCV score (mean ± SD) was 0.80 ± 0.17 for the definition, 0.63 ± 0.08 for the etiologies, and 0.69 ± 0.12 for signs and symptoms. Total DCV score for the diagnostic term was 0.69 ± 0.11.

Seventeen percent of the CSGs suggested additional wording to the definition with the words "significant" and "unavoidable" reported by over 4% (Table 4). Thirty six percent of the CSG recommended adding language to etiologies. Dysphagia, difficulty chewing, dementia, poor dentition and cognitive decline were frequent etiologies recommended by at least 4%. The published diagnostic language listed no items in the biochemical data, medical tests and procedures category but 40% of the respondents recommended items were needed. Frequent responses were: prealbumin, albumin, blood

urea nitrogen, hemoglobin, swallow evaluation, hematocrit, creatinine, glucose and C -

reactive protein. Twelve percent recommended additional signs and symptoms for the

anthropometric category with the body mass index parameter identified as a missing sign.

Thirty six percent reported the nutrition focused physical findings category was

incomplete. Frequent suggestions were changes in dentition and oral cavity, poor fitting

dentures, missing teeth, skin breakdown and ulcers, and swallowing and chewing

difficulty. Seventeen percent of the CSGs recommended adding language to the

food/nutrition related history category with no items frequently suggested. For the client

history category, 33% suggested additional items of cognitive impairment or decline,

pressure ulcer and wounds, uncontrolled diabetes and prolonged hyperglycemia. Other

recommendations and comments are listed in Appendix E. The signs and symptoms were

judged clear and understood by 79% of the CSGs.

The response "do not know if characteristic" was frequently marked for several

items (Table 5). Decrease in waist to hip ratio (43%), increased heart rate (27%),

conditions associated with the diagnosis or treatment of AIDS/HIV (16%), loss of

centrally distributed fat (16%), increased respiratory rate (15%) and conditions associated

with the diagnosis or treatment of burns (15%) were these items.

The DCV scores rated by CSGs were similar across years in gerontology nutrition

practice, expert rating, use of NCP/SL, and practice setting (Appendix F). The range of

the DCV scores was 0.68-0.71 among these subgroups.

Discussion

Standardized language has been proposed for dietetic practice use but only one study (11) has validated the content of the terminology. The intent of this study was to validate the content of the standardized language diagnostic term, involuntary weight loss, and learn if the language is clear and complete. Experts confirmed essential and necessary cues and identified non relevant cues by DCV scores. These scores depict how much confidence a dietetic practitioner can place in use of the term.

This study used experts in gerontological nutrition who have demonstrated competency by passing a national exam for certification and who had an expert score rating of 3 or higher. The author of the models recommend an expert should, at a minimum, have a master's degree in the field of study with a defined area of clinical expertise and have a total of 5 points on the expert scale rating to meet the expert qualification. The higher the number of points, the stronger is the evidence that the expertise is present (8). Sixty three percent of CSGs received an expert score rating of 3 as they did not have the master's degree. The remaining dietitians had an expert score rating of 6 or higher (n=47) but there were no differences in the total DCV or mean DCV score across expert levels (Appendix F). No difference in score rating of items existed among years of practice within this group of practitioners. Experience with the nutrition problem may have contributed to the ability to define needed and necessary cues regardless of the education level or years of gerontological nutrition practice.

A DCV score is a measure of how representative the item is to the diagnosis with higher scores indicating more confidence that the etiology or sign and symptom is present

when the nutrition problem exists. All DCV scores for the definition, etiologies and signs

and symptoms were lower than those found in a previous study among a convenience

sample of registered dietitians (11). Our study used a large number of experts in

gerontological nutrition and studied one diagnostic term while the earlier study measured

validity of all diagnostic terms among a convenience sample of dietitians with unknown

expert level. The total DCV score of 0.69 is lower than 0.91 found in the previous study

for involuntary weight loss. The CSGs rated 7 out of 15 etiologies and 5 out of 29 signs

and symptoms as non relevant to the diagnosis. Dietitians in the previous study rated the

definition and all etiologies and signs and symptoms as major or minor.

An outcome of our validation study was the reduction in number of signs and

symptoms, from 35 to 30, needed to identify the diagnosis, a benefit for using the SL in

the gerontology nutrition setting. The lower number of essential and necessary cues may

require less practitioner time in identifying the diagnosis in addition to providing clarity

to the diagnostic term. Sparks and Lien-Geischen (31) maintain that accurate diagnosing

occurs when the number of defining characteristics is limited and valid. Benner (32)

reported that experts used fewer cues than novices to arrive at correct diagnoses. The

specificity and concreteness of cues assist in the ability to retrieve cues in clinical

situations (33).

The DCV score of the definition, 0.80 ± 0.17, was lower than 0.99 found in the

earlier study (11). Seventeen percent of the CSGs recommended adding language to the

definition which may have contributed to the lower score as not all terms were judged

present for the definition. Six and 5%, respectively, suggested "significant" and

"unavoidable" as added language. "Significant weight loss" is the phrase used by CMS in the federal regulations governing care in extended care facilities, and the anthropometric parameters of 5% or more weight loss in 30 days and 10% or more in 180 days are identical with the SL term (13).

No etiologies were rated major and the etiology DCV score was 0.63 compared to 0.92 in the previous study (11). Depression was rated as the highest etiology for involuntary weight loss. This corresponds to studies finding depression as one of the leading risk factors for weight loss in the elderly (34-37). Malabsorption, an etiology that often precedes involuntary weight loss, scored 0.49 which classified it as non relevant. This finding is surprising as this condition is known to cause weight loss. However, this etiology may not be prevalent in the patient population or is undocumented in the medical record and therefore is not considered a contributing cause.

The etiologies of disordered eating, inability to obtain preferred foods, limited access to food, economic constraints, and restricted food and cultural practices were not validated. These may reflect components of the pre-admission environment and may not be collected in the nutrition assessment upon admission to the extended care facility. Eighty percent of respondents practiced in long term, skilled and rehabilitating facilities whereas 7% practiced in community and home health where these etiologies are more likely to be observed. Because food and fluids preferences are provided regularly with meals and snacks in the extended care facilities, the incidence of these etiologies would be minimal.

The lower DCV score of the signs and symptoms differed from the earlier study (0.69 ± 0.12 versus 0.90). These differences may be explained by the generalist nature of the earlier study's dietitians and lower number of raters. Also, ratings provided by experts in gerontological nutrition suggest the older adult may present with etiologies and signs and symptoms not present in the proposed SL when this nutrition problem is present.

A common theme among missing language was oral health. This emerged in both etiology and nutrition focused physical findings signs and symptoms. Difficulty chewing and poor dentition were recommended etiologies. Changes in dentition and oral cavity, poor fitting dentures, missing teeth and chewing difficulty were identified as missing language in sign and symptoms. These recommendations are supported as poor oral health is thought to be a contributing factor in the development of involuntary weight loss in the frail elderly population wearing ill fitting dentures or edentulous (38).

Dementia was another theme that was identified as missing in the diagnostic term. Community dwelling older individuals with impaired cognitive performance have increased risk of unintended weight loss compared to higher level of cognition (39). Cognitive impairment is a predictor of adverse outcomes (40). Elderly individuals with dementing illness who depend on others for care are more likely to have unintended weight loss than those less dependent or who are not demented (41). The CSGs in this study identified the condition as characteristic to involuntary weight loss and therefore it should be added as an etiology to the diagnostic term.

The proposed SL listed no items as signs or symptoms in the biochemical data, medical tests and procedures category. Pre-albumin and albumin were frequently cited as

language to add to this diagnostic term. When the diagnosis is tested in the clinical setting, the availability, presence and relevance of these markers should be investigated.

A few items were scored by 14% or more as "do not know". It is unknown if CSGs marked the "do not know" response because they do not see patients with the medical condition or that they were not aware of or observe the sign or symptom. For example, a decrease in waist to hip ratio may not be typically measured longitudinally in older Americans which could explain that 43% of dietitians marked the do not know response to this item. Twenty seven percent of dietitians marked the do not know response for increase in heart rate suggesting this sign is not relevant or is not observed in their practice. These two items were not validated for the diagnosis. Centrally distributed fat (DCV score 0.55) and AID/HIV (DCV score 0.54) were marked by 16% as do not know but were validated by dietitians who assigned a rating. Nutrition gerontologist specialists seldom care for AID/HIV patients as two-thirds of these patients do not live to the age of 45 and only 17% of HIV diagnoses are in people aged 50 and above (42). The measurement of centrally distributed fat may be uncommon in physical assessments of the older adult and therefore may not be available. Likewise an increase in respiratory rate was marked by 14% as do not know, had a DCV score 0.49, and was not validated.

Vital signs such as increased respiration rate, body temperature, and heart rate were not validated despite their presence in the medical record. This suggests these items as not explicit or relevant to this nutrition problem in the older adult and thus should be removed from the signs and symptoms list for the patient population.

Three etiologies and four signs and symptoms added from the literature review were validated. The etiologies of polypharmacy, high levels of emotional stress such as loss of loved one, and use of modified therapeutic diets were validated. Chen (43) found increased amounts of medication taken to be associated with poor nutritional status. Payette (44-45) reports high levels of stress had an independent negative impact on energy intake. Modified diets are often prescribed in acute and home care settings, but diet therapy for the older American may need to be liberalized based upon a current nutrition assessment and diagnosis (19). Older individuals on texture modified diets were found to have a lower intake of energy and protein than those on normal diets (46). Conditions associated with gastrointestional disease, kidney disease and heart disease should be added as they were validated by this group of experts. The incidence of these chronic diseases in the elderly population is high and contributes to weight loss (27, 47-48). The need for a review of the literature to identify additional items that should be added for testing content of a diagnostic term is demonstrated with this study.

The strengths of the study were the large number of expert raters who had experience in the nutrition problem, advanced education, credentials in gerontological nutrition and practiced in all regions of the United States. The study's findings are limited to older adults who reside in extended care facilities. It is expected that the diagnostic term would have differences in etiologies and signs and symptoms when observed in other age groups. For example, the etiologies of depression or high levels of emotional stress validated in the older patient in long term care may not be essential or necessary cues in the younger patient. Lack of or limited access to food, an etiology not validated in this study, may be an important characteristic if the patient is an infant/child or lives in a

community setting. Nursing nomenclature uses an axis based on level of care and patient classification. Nutrition diagnosis may evolve to this level of sophistication with research development.

Conclusion

The term, involuntary weight loss, was validated among CSGs who practice in extended care with older adults experiencing involuntary weight loss. The proposed definition and about one half of etiologies and signs and symptoms were validated for the diagnostic term, involuntary weight loss, including several items added to the SL from a literature review analysis. CSGs recommendations for adding language to the term need further investigation. These items should be incorporated into clinical testing of the content by registered dietitians observing patients with this diagnosis for the presence or absence of the items empirically validated. The diagnostic term must also be tested in other patient populations and care settings.

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Table 1. Diagnostic content validity (DCV)[1] score classification of language items by Certified Specialists in Gerontological Nutrition of the Nutrition Diagnostic term NC-3.2 Involuntary Weight Loss[2] (n=110)

	Major	Minor	Non Relevant
	no. of items (% of items)		
Categories			
Definition (n=1)	1(100)	0(0)	0 (0)
Etiology (n=15)	0(0)	8(53)	7(47)
Signs/Symptoms (n= 35)	6(17)	24(69)	5(14)

[1] Weighted mean score: ≥ 0.80 = major characteristic, 0.50-0.79 = minor characteristic, ≤ 0.49 = non relevant

[2] International Dietetics and Nutrition Terminology (IDNT) Reference Manual, Chicago, IL: American Dietetic Association;2009.

Table 2. Diagnostic content validity (DCV) scores[1] of etiologies of the diagnostic term NC-3.2 Involuntary Weight Loss[2] as rated by Certified Specialists in Gerontological Nutrition (n=110)

DCV score (Mean ± SD)	Etiology
Minor Characteristics	
0.73 ± 0.16	Depression
0.71 ± 0.19	Prolonged hospitalization
0.67 ± 0.22	Polypharmacy[3]
0.67 ± 0.21	Prolonged catabolic illness
0.65 ± 0.20	Lack of self feeding ability
0.59 ± 0.20	High levels of emotional stress such as loss of loved one[3]
0.54 ± 0.23	Use of modified therapeutic diets[3]
0.50 ± 0.21	Trauma
0.63 ± 0.08	**Total DCV score[4]**
Non Relevant Characteristics	
0.49 ± 0.22	Malabsorption
0.46 ± 0.25	Disordered eating
0.44 ± 0.20	Inability to obtain preferred foods[3]
0.42 ± 0.26	Lack of or limited access to food
0.41 ± 0.24	Economic constraints
0.30 ± 0.24	Restricting food given to elderly and/or children
0.29 ± 0.23	Cultural practices that affect ability to access food

[1]Scoring system: ≥0.80 = major characteristic, 0.50-0.79 = minor characteristic, ≤0.49 = non relevant

[2] International Dietetics and Nutrition Terminology (IDNT) Reference Manual, Chicago, IL: American Dietetic Association;2009

[3] Items added from literature review

[4]Mean score of validated major/minor characteristics

DCV score (Mean ± SD)	Sign/Symptom
Table 3. Diagnostic content validity (DCV) scores [1] of signs and symptoms of the diagnostic term NC-3.2 Involuntary Weight Loss[2] as rated by Certified Specialists in Gerontological Nutrition (n=110)	
Major Characteristics	
0.91 ± 0.17	Weight loss of ≥ 5% within 30 days, ≥ 7.5% in 90 days, or ≥ 10% in 180 days
0.91 ± 0.17	Poor intake or appetite (consumes less than 75% offered)
0.88 ± 0.18	Conditions associated with a diagnosis or treatment of some types of cancer or metastatic disease
0.85 ± 0.18	Conditions associated with a diagnosis or treatment of dysphagia
0.82 ± 0.21	Change in mental status or function (e.g. depression)
0.81 ± 0.22	Cancer chemotherapy
Minor Characteristics	
0.79 ± 0.17	Conditions associated with a diagnosis or treatment of gastrointestinal disease[3]
0.76 ± 0.21	Loss of muscle
0.76 ± 0.20	Change in eating habits
0.76 ± 0.22	Early satiety
0.75 ± 0.21	Conditions associated with a diagnosis or treatment of COPD
0.73 ± 0.22	Conditions associated with a diagnosis or treatment of infection
0.73 ± 0.25	Change in way clothes fit
0.73 ± 0.23	Skipped meals
0.72 ± 0.21	Medications associated with weight loss, such as certain antidepressants
0.71 ± 0.23	Conditions associated with a diagnosis or treatment of hip/long bone fracture
0.71 ± 0.25	Loss of subcutaneous fat
0.70 ± 0.21	Conditions associated with a diagnosis or treatment of kidney disease[3]
0.68 ± 0.22	Conditions associated with a diagnosis or treatment of surgery
0.66 ± 0.19	Decreased sense of taste
0.63 ± 0.26	Conditions associated with a diagnosis or treatment of trauma
0.63 ± 0.22	Conditions associated with a diagnosis or treatment of heart disease[3]
0.58 ± 0.27	Conditions associated with a diagnosis or treatment of hyperthyroidism (pre or untreated)
0.56 ± 0.22	Decreased sense of vision
0.55 ± 0.26	Loss of centrally distributed fat[3]
0.54 ± 0.26	Decreased sense of smell
0.54 ± 0.39	Conditions associated with a diagnosis or treatment of AIDS/HIV
0.52 ± 0.39	Conditions associated with a diagnosis or treatment of burns
0.50 ± 0.30	Normal or usual estimated intake in face of illness
0.50 ± 0.28	Conditions associated with a diagnosis or treatment of substance abuse
0.69 ± 0.12	**Total DCV score**[4]

Non relevant characteristics	
0.49 ± 0.25	Increased respiratory rate
0.44 ± 0.24	Fever (above 98.6 degrees F)
0.41 ± 0.26	Decreased sense of hearing
0.35 ± 0.26	Decrease in waist to hip ratio[3]
0.33 ± 0.21	Increased heart rate

[1]Scoring system: ≥ 0.80 = major characteristic, 0.50-0.79 = minor characteristic, ≤ 0.49 = non relevant

[2] International Dietetics and Nutrition Terminology (IDNT) Reference Manual, Chicago, IL: American Dietetic Association;2009

[3] items added from literature review

[4]Mean score of validated major/minor characteristics

Table 4. Responses of Certified Specialists in Gerontological Nutrition if standardized language is complete for NC-3.2 Involuntary Weight Loss [1](n=110) and recommendations for additions[2]				
	n (%)			no. of
Category	Yes	No	Recommended Additions	responses
Definition	86(78)	19(17)		
			Significant	6
			Unavoidable	5
Etiology	66(60)	39(36)		
			Dysphagia	9
			Difficulty chewing	7
			Dementia	8
			Poor dentition	4
			Cognitive decline	4
Sign/Symptom				
Biochemical Data, Medical Tests and Procedures	59(54)	44(40)		
			Prealbumin	23
			Albumin	16
			Blood urea nitrogen	9
			Hemoglobin	7
			Swallow evaluation	7
			Hematocrit	6
			Creatinine	6
			Glucose	6
			C-Reactive Protein	4
Anthropometric Measurements	92(84)	13(12)		
			BMI	6
Nutrition-Focused Physical Findings	67(61)	38(35)		
			Dentition and oral cavity changes, missing teeth, poor fitting dentures	24
			Skin ulcers and breakdown, wounds	12
			Difficulty swallowing	8
			Chewing difficulty	7
Food/Nutrition-Related History	84(76)	19(17)		

Client history	67(61)	36(33)		
			Cognitive decline, Alzheimer's disease	8
			Skin ulcers and wounds	7
			Uncontrolled diabetes	5
[1] International Dietetics and Nutrition Terminology (IDNT) Reference Manual, Chicago, IL: American Dietetic Association;2009 [2]Language additions recommended by 4% or more of CSGs				

Table 5. Frequency and percent of Certified Specialists in Gerontological Nutrition (n=110) who marked the item as "do not know" if characteristic to the diagnostic term NC3.2 Involuntary weight loss[1]

	n (%)
Etiology	
Cultural practices that affect ability to access food	6(6)
Restricting food given to elderly and/or children	5(5)
Sign/Symptom	
Decrease in waist to hip ratio	47(43)
Increased heart rate	30(27)
Loss of centrally distributed fat	18(16)
Conditions associated with diagnosis or treatment of AIDS/HIV	18(16)
Increased respiratory rate	16(15)
Conditions associated with diagnosis or treatment of burns	15(14)
Conditions associated with diagnosis or treatment of substance abuse	9(8)
Conditions associated with diagnosis or treatment of hyperthyroidism (pre or untreated)	8(7)
Fever (above 98.6 degrees F)	6(6)
Loss of subcutaneous fat	6(6)
Decreased sense of smell	6(6)
[1] International Dietetics and Nutrition Terminology (IDNT) Reference Manual, Chicago, IL: American Dietetic Association;2009	

Appendix A: Nutrition Diagnostic Validation Instrument (NDVI)

NUTRITION DIAGNOSIS VALIDATION INSTRUMENT (NDVI)

INSTRUCTIONS: Indicate how prevalent or common this definition, etiology, sign or symptom is when this diagnosis or nutrition problem is present. Rate the definition, etiology, and each sign and symptom in the boxes to the right of the item by marking the box which agrees with your opinion. Please mark only one box for each item.

Nutrition Diagnostic Term NC-3.2 Involuntary Weight Loss	Never common	Rarely common	Sometimes common	Frequently common	Always common	Do not know if common
1. Definition: Decrease in body weight that is not planned or desired.						
2. Etiology: (Cause/Contributing Factors) Factors gathered during the nutrition assessment process that contribute to the existence or the maintenance of pathophysiological, psychosocial, situational, developmental, cultural, and/or environmental problems.						
a) Prolonged catabolic illness						
b) Trauma						
c) Malabsorption						
d) Lack of or limited access to food						
e) Economic constraints						
f) Restricting food given to elderly and/or children						
g) Cultural practices that affect ability to access food						
h) Prolonged hospitalization						
i) Depression						
j) Disordered eating						

Nutrition Diagnostic Term NC-3.2 Involuntary Weight Loss	Never common	Rarely common	Sometimes common	Frequently common	Always common	Do not know if common
2. Etiology, cont.						
k) Use of modified therapeutic diets						
l) High levels of emotional stress such as loss of loved one						
m) Polypharmacy						
n) Inability to obtain preferred foods						

3. Signs/Symptoms: (Defining Characteristics) A typical cluster of subjective and objective signs and symptoms gathered during the nutrition assessment that provide evidence that a problem exists; quantify the problem and describe its severity		Not at all characteristic	Very little characteristic	Somewhat characteristic	Considerably characteristic	Very characteristic	Do not know if characteristic
Nutrition Assessment Category:							
a. *Biochemical Data, Medical Tests and Procedures*	Currently none listed						
b. *Anthropometric Measurements*	1) Weight loss of ≥ 5% within 30 days, ≥ 7.5% in 90 days, or ≥ 10% in 180 days						
	2) Decrease in waist to hip ratio						
c. *Nutrition-Focused Physical Findings*	1) Fever (above 98.6 degrees F)						
	2) Decreased sense of smell						
	3) Decreased sense of taste						
	4) Decreased sense of vision						
	5) Decreased sense of hearing						
	6) Increased heart rate						
	7) Increased respiratory rate						
	8) Loss of subcutaneous fat						

Nutrition Diagnostic Term NC-3.2 Involuntary Weight Loss		Not at all characteristic	Very little characteristic	Somewhat characteristic	Considerably characteristic	Very characteristic	Do not know if characteristic
c. Nutrition-Focused Physical Findings,.cont	9) Loss of centrally distributed fat						
	10) Change in way clothes fit						
	11) Change in mental status or function (e.g., depression)						
d. Food/Nutrition –Related History	1) Normal or usual estimated intake in face of illness						
	2) Poor intake or appetite (consumes less than 75% offered)						
	3) Change in eating habits						
	4) Early satiety						
	5) Skipped meals						
	6) Medications associated with weight loss, such as certain antidepressants						
e. Client history	1) Conditions associated with a diagnosis or treatment of AIDS/HIV						
	2) Conditions associated with a diagnosis or treatment of burns						
	3) Conditions associated with a diagnosis or treatment of chronic obstructive pulmonary disease						
	4) Conditions associated with a diagnosis or treatment of dysphagia						
	5) Conditions associated with a diagnosis or treatment of hip/long bone fracture						
	6) Conditions associated with a diagnosis or treatment of infection						
	7) Conditions associated with a diagnosis or treatment of surgery						
	8) Conditions associated with a diagnosis or treatment of trauma						
	9) Conditions associated with a diagnosis or treatment of hyperthyroidism (pre-or untreated)						
	10) Conditions associated with a diagnosis or treatment of some types of cancer or metastatic disease						

3

	Nutrition Diagnostic Term NC-3.2 Involuntary Weight Loss	Not at all characteristic	Very little characteristic	Somewhat characteristic	Considerably characteristic	Very characteristic	Do not know if characteristic
f. *Client history ,cont.*	11) Conditions associated with a diagnosis or treatment of substance abuse						
	12) Cancer chemotherapy						
	13) Conditions associated with a diagnosis or treatment of gastrointestinal disease						
	14) Conditions associated with a diagnosis or treatment of kidney disease						
	15) Conditions associated with a diagnosis or treatment of heart disease						

Instructions- Please answer the following questions.

4. Is additional or revised wording needed for the *definition* of this diagnosis (decrease in body weight that is not planned or desired)?
  □Yes □ No

If yes, please list_____

5. Are there additional *etiologies not listed* that should be added for this diagnosis?
  □Yes □ No

If yes, please list_____

6. Are there signs/symptoms *in Biochemical Data, Medical Tests and Procedures* that should be added for this diagnosis?
  □Yes □ No

If yes, please list_____

PLEASE GO TO THE NEXT PAGE

7. Are there additional signs/symptoms *not listed in Anthropometric Measurements* that should be added for this diagnosis?
   ☐Yes ☐ No

If yes, please list_____

8. Are there additional signs/symptoms *not listed in Nutrition-Focused Physical Findings* that should be added for this diagnosis?
   ☐Yes ☐ No

If yes, please list_____

9. Are there additional signs/symptoms *not listed in Food/Nutrition-Related History* that should be added for this diagnosis?
   ☐Yes ☐ No

If yes, please list_____

10. Are there additional signs/symptoms *not listed in Client History* that should be added for this diagnosis?
    ☐Yes ☐ No

If yes, please list_____

11. Are the definitions of the *signs/symptoms unclear*?
    ☐Yes ☐ No

If yes, please list the signs/symptoms definitions that are unclear_____

_____

_____

12. Do you **use** NC 3.2 Involuntary Weight Loss (decrease in body weight that is not planned or desired) as a nutrition diagnosis in your practice?
    ☐Yes ☐ No

If no, please list why?_____

PLEASE GO TO THE NEXT PAGE

13. Please list any other comments you may have_____

_____

_____

Thank You!

Please check that you have answered questions on all pages and return along with the demographic questionnaire in the postage-paid envelope provided

Appendix B: Demographic and Standardized Language Use Questionnaire

Content Validation of Involuntary Weight Loss Nutrition Diagnosis by Board Certified Specialists in Gerontological Nutrition

The Nutrition Care Process and Standardized Language (NCP/SL) is a "systematic problem-solving method that dietetics professionals use to critically think and make decisions to address nutrition related problems and provide safe and effective quality care" (JADA, August 2003, vol. 103, no. 8: 1062-1063).

1. **Which of the following best describes your use of the NCP/SL? (please mark only one)**

   ☐ I plan to use the NCP/SL in the future

   ☐ I have used the NCP/SL only within the last 12 months

   ☐ I have used the NCP/SL for over 1 year

   ☐ I do not use or plan to use the NCP/SL

2. **Which of the following best describes your use of the Standardized Language? (please mark only one)**

   ☐ I use the Diagnosis Language only

   ☐ I use the Diagnosis and Intervention Language

   ☐ I use the Diagnosis, Intervention, Monitoring and Evaluation Language

   ☐ I use the Intervention Language only

   ☐ I use the Monitoring and Evaluation Language only

   ☐ I do not use the Standardized Language

3. **Have you used the following resources to learn about the NCP/SL?**

Onsite Workshop/Conference	☐ Yes	☐ No
ADA website	☐ Yes	☐ No
Video Conferencing	☐ Yes	☐ No
ADA Teleseminar	☐ Yes	☐ No
NCP/SL reference manual	☐ Yes	☐ No
Journals/Newsletters	☐ Yes	☐ No

4. **What is your gender?**
   ☐ male   ☐ female

5. **What is your age?**

☐ Under 25	☐ 45-49
☐ 25-29	☐ 50-54
☐ 30-34	☐ 55-59
☐ 35-39	☐ 60-64
☐ 40-44	☐ 65 or older

6. **What is the highest level of education you have attained?**

   ☐ Bachelor's degree

   ☐ Working on Master's degree

   ☐ Master's degree

   ☐ Working on doctorate

   ☐ Doctoral degree

   ☐ Other

7. **In what year did you attain your highest degree?**

   ___ ___ ___ ___

8. **What route did you use to become eligible for the RD exam? (mark only one)**

   ☐ Didactic Program and Dietetic Internship

   ☐ Coordinated Program in Dietetics

   ☐ Other approved route

9. **How many years have you held the RD credential?**

   #_____years

1

10. **What other credentials do you currently hold? (please mark all that apply)**

☐ CDE (Certified Diabetes Educator)

☐ CNSD (Certified Nutrition Support Dietitian)

☐ CSP (Certified Specialist in Pediatric Nutrition)

☐ CSR (Certified Specialist in Renal Nutrition)

☐ CSSD (Certified Specialist in Sports Dietetics

☐ FADA (Fellow of the American Dietetic Association)

☐ other _____

11. **How many years have you practiced in gerontological nutrition?**

\# _____ years

12. **Who is your primary employer? (please mark only one)**

☐ Self-employed

☐ Consulting firm

☐ Hospital system

☐ Higher education institution

☐ Government (local, state or national)

☐ Continuing care facility or company

☐ Retirement Community Corporation

☐ Private or Public owned business

☐ Non-profit agency

☐ Corrections

☐ Community/Home Health Agency

13. **What area of practice best describes your practice? (please mark only one)**

☐ Acute Care

☐ Long Term Care, Skilled Care, Rehab

☐ Home Health

☐ Private Office

☐ Community

☐ Assisted Living

☐ Education/Research

14. **How many patients do you see monthly who have involuntary weight loss (decrease in body weight that is not planned or desired)?**

\# _____ patients

15. **Have you published in the area of weight loss and the elderly?**

☐ Yes ☐ No

16. **Are you willing to participate in a follow up interview study? (see page 3)**

☐ Yes ☐ No

17. **What internet access do you use? (mark all that apply)**

☐ Dial-up telephone

☐ DSL line (digital subscriber line)

☐ Cable modem

☐ Satellite

☐ Other

Thank You!

Please check that you have answered questions on both pages and return along with the validation instrument in the postage-paid envelope provided

In the event that we need to contact you to obtain any un-answered responses on the questionnaire we are asking for the following information. Also, if you responded yes to be willing to be involved in a follow-up interview we will need to know how to contact you.

1. **List a phone number we may contact you at regarding this study.**

   _____

2. **List an e-mail address we may contact you at regarding this study.**

   _____

Appendix C: Institutional Review Board Approval Letters

University of Nebraska
Lincoln

Informed Consent Form

You have been selected to participate in a research project entitled **"Validation of Nutrition Diagnoses among Board Certified Specialists in Gerontological Nutrition".** The purpose of the project is to measure the language content of a standardized language diagnosis adopted by the American Dietetic Association in 2003. Your response will represent the expert opinion needed to validate the signs and symptoms characteristic of the diagnosis.

Participation in this study will require approximately 45 minutes of your time and will involve completing a questionnaire that is mailed to you. You will be asked to return the questionnaire in the stamped addressed envelope provided.

There are no known risks to this study. Results of this study will advance the research progress in validating diagnoses that dietitians are uniquely qualified to make. Ultimately, the nutrition profession will be able to communicate, document and measure outcomes of nutrition care provided.

Any information obtained during this study which could identify you will be kept strictly confidential. Your identifier number will be used only to identify that you have responded and it will be removed from your name upon receipt of the completed questionnaire. Your response will remain anonymous. All information collected will be stored in a locked office of the investigator and will only be seen by the research team during the study and be destroyed five years after study completion. The results of this research may be presented at professional meetings and published in scientific journals. You will not be identified in any way, and results will be presented only in aggregate form.

We offer a small token of appreciation of $2 as a way of saying thanks for your help.

You may ask questions concerning this research, and have those questions answered before agreeing to participate in or during the study. You may call the research staff concerning this study (office) 402-465-8304 or e-mail pgooder@windstream.net. If you have any questions about your rights as a research participant that has not been answered by the investigator, or to report any concerns about the study, you may contact the University of Nebraska-Lincoln Institutional Review Board at (402) 472-6965.

Participation in this study is voluntary. You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with the investigators or the University of Nebraska-Lincoln. Your decision will not result in any loss of benefits to which you are otherwise entitled.

You are voluntarily making a decision whether or not to participate in this research study. By completing and returning the survey, your consent to participate is implied. You should keep this letter for your records.

Name and phone number of investigator(s):

Paula Ritter-Gooder MS, RD, LMNT, Principal Investigator Office: (402) 472-7984
Nancy M. Lewis, PhD, RD, Secondary Investigator Office: (402) 472-4633

October 1, 2008

Dear Board Certified Specialist in Gerontological Nutrition,

A few days from now you will receive in the mail a request to fill out a questionnaire for an important research project being conducted by the University of Nebraska, Department of Health and Nutrition Sciences.

It addresses the Nutrition Care Process/ Standardized Language (NCP/SL) recently adopted by the American Dietetic Association for use by dietitians in their practices to document, communicate, and measure outcomes of their services.

I am writing in advance because it may help to notify you that this questionnaire is coming. This study is important for validating the standardized language our profession has developed. Results will be used for the next steps needed in the validation process.

Thanks for your time and consideration. It's only with the generous help of dietitians like you that our research can be successful and benefit our professional practices.

Sincerely,

Paula Ritter-Gooder MS RD LMNT

Principal Investigator

P.S. We will be enclosing a small token of appreciation with the questionnaire as a way of saying thanks.

October 6, 2008

Dear Certified Specialist in Gerontological Nutrition,

I am writing to ask your help in a study of the Nutrition Care Process and Standardized Language (NCP/SL) among dietitians.

You have the qualifications to represent expert opinion in this field as you have the CSG credential and I am inviting all dietitians with this credential to participate.

Since its introduction in 2003, little research has been conducted on validation of the SL in our profession. The first step in validation is to examine if the content of the language represents nutrition problems identified in practice. Are the definitions, etiologies and signs and symptoms representative of the diagnosis and are they relevant in practice? After validating the content of the language, researchers will be able to continue to study the language in actual clinical settings.

Your answers are confidential and will be released in summaries in aggregate form in which no individual's answers can be identified. When you return your completed questionnaire, your name will be deleted from the mailing list and your responses will remain anonymous. This study is voluntary. However you can help by sharing your experience and opinion. If for some reason you prefer not to respond, please let us know by returning the blank questionnaire in the enclosed stamped envelope.

We have enclosed a small token of appreciation as a way of saying thanks for your help.

If you have any questions or comments about this study, we will be happy to talk with you at (402) 472-7984. You may also contact us at pgooder@windstream.net or at the address at the top of this letter.

Thank you very much for helping with this important study.

Sincerely,

Paula Ritter-Gooder MS RD LMNT

Primary Investigator

October 2008,

Dear Board Certified Specialist in Gerontological Nutrition,

Last week I mailed you a questionnaire seeking your expert
opinion of the Nutrition Care Process/Standardized Language
(NCP/SL). You were selected to participate because you have
Certification as a Specialist in Gerontological Nutrition.
If you have already completed and returned the questionnaire,
please accept our sincere thanks. If not, please do so today.
Your voice serves as expert opinion in validating the language of a
nutrition problem occurring in the elderly, involuntary weight loss.
If you did not receive a questionnaire, or if it was misplaced,
please call us at (402) 472-7984 or email us at
pgooder@windstream.net. We will get one in the mail to you.
Sincerely,

Paula Ritter-Gooder MS RD LMNT
Principal Investigator
University of Nebraska, Lincoln

October 29, 2008

Dear Board Certified Specialist in Gerontological Nutrition,

About three weeks ago I sent a questionnaire that asked for your expert opinion of the content of a nutrition diagnosis common to geriatric nutrition. This is a diagnostic statement of the American Dietetic Association's Nutrition Care Process/ Standardized Language (NCP/SL).To the best of our knowledge; we have not received a response from you.

The input from Board Certified Specialists in Gerontological Nutrition (CSG) who have already responded have been useful in understanding if the characteristics of this nutrition diagnostic statement is representative of the nutrition problem. We believe the results will be very helpful in validating the content of the language so that it can be studied next in a clinical setting.

We are writing again because of the importance of your voice in providing expert opinion. We maintain confidentiality of all responses. An identification number is printed on the back cover of the questionnaire so that we can check your name off of the mailing list when it is returned. The list of names is then destroyed so that individual names can never be connected to the results in any way. All responses will be reported in aggregate thereby protecting the confidentiality of people's answers which is very important to us, as well as the University.

We hope that you will fill out the questionnaire soon. If for any reason you prefer not to respond, please return the blank questionnaire in the enclosed stamped envelope so we can remove your name from the list.

Sincerely,

Paula Ritter-Gooder MS RD LMNT

Principle Investigator

P.S. If you have questions please contact me at (402) 472-7984 or at pgooder@windstream.net or at the address at the top of this letter.

Dear Certified Specialist in Gerontological Nutrition,

During the last two months we have sent you several mailings about a validation research study that we are conducting among Board Certified Specialists in Gerontological Nutrition (CSG).

The purpose of the questionnaire is to validate the content of a nutrition diagnosis of the American Dietetic Association's Nutrition Care Process/ Standardized Language (NCP/SL) among expert dietitians practicing in geriatric nutrition.

We are sending this final contact because of the importance of obtaining opinions of the credentialed experts in the field of gerontological nutrition. Hearing from everyone in this group helps to assure that the survey results are as representative as possible.

We also want to assure you that your response to this study is voluntary, and if you prefer not to respond we accept your decision. **If you elect to not participate please tell us about yourself by returning the demographic questionnaire so we can know more about those who decline to participate.**

Finally, we appreciate your willingness to consider our request as we conclude this effort to validate nutrition diagnostic language among CSG. Thank you very much.

Sincerely,

Paula Ritter-Gooder MS RD LMNT

Principal Investigator

P.S. If you have questions please contact me at (402) 472-7984, at pgooder@windstream.net, or at the address at the top of this letter.

Dear

 During these last 2 months we have sent you several mailings about a nutrition

diagnosis (involuntary weight loss) research study we are conducting among all

Board Certified Specialists in Gerontological Nutrition.

 Since we have not heard from you yet, we encourage you to respond to the last

mailing being sent in a few days by US mail.

 If you choose not to participate, we still want to hear from you. Please answer

the questions below. This will take less than 5 minutes to complete and will

help us understand the reasons dietitians did not participate.

 If you do not want to receive the mailing, please reply to this email by the end of
Thursday, November 20. You may hit "reply", enter your responses by using an X, and
then send back to me.

Which of the following best describes your decision to not participate in the

research study? (mark all that apply)

 ____lack of time

 ____ not familiar with the research topic

 ____ don't have working knowledge of involuntary weight loss

 ____ do not understand what you are asking for on the questionnaire

 ____ don't see how this will help me with my practice

____not using the Nutrition Care Process (NCP)

 ____not using the Standardized Language (SL)

 ____ currently not employed in Dietetic Practice

 ___ employed but my current position is not in an area affected by this research

____other (please list_____)

The Nutrition Care Process and Standardized Language (NCP/SL) is a "systematic

problem-solving method that dietetics professionals use to critically think and

make decisions to address nutrition related problems and provide safe and
effective quality care" (JADA, August 2003, vol. 103, no. 8: 1062-1063).

Appendix D: Demographic Characteristics of Participants

Demographic characteristics of Certified Specialists in Gerontological Nutrition validating the content of diagnostic term NC3.2 Involuntary Weight Loss (n=110)		
Characteristic	**n**	**%**
Gender		
Female	109	99
Male	1	1
Age (y)		
20-30	8	7
31-40	26	24
41-50	25	23
51-60	40	36
60 or older	11	10
Highest Education Level		
Bachelor Degree	62	57
Master Degree	44	40
Doctorate	3	3
Other	1	0
Route to RD eligibility[1]		
Didactic Program and Internship	60	55
Coordinated Program in Dietetics	31	28
Other approved route	18	16
Years holding the RD Credential[1]		
Up to 10	32	29
11-20	21	19
21-30	38	35

31-40	16	15
41-47	2	2
Years of Gerontology Nutrition Practice		
Up to 10	46	42
11-20	32	29
21-30	28	25
31-40	4	4
Primary Employer		
Continuing care facility	29	26
Hospital system	27	25
Self-employed	20	18
Consulting firm	8	7
Government	9	8
Private or public owned facility	7	6
Non-profit agency	6	6
Retirement community corporation	3	3
Higher education institution	1	1
Practice Area[1]		
Long term care, skilled, rehab	88	80
Acute care	9	8
Community	5	5
Home health	3	3
Education, research	2	2
Assisted living	1	1
Number of Patients seen monthly with involuntary weight loss[1]		
0	11	10

1-10	49	45
11-20	21	19
21-30	10	9
31-40	4	4
41-50	2	2
51-60	3	3
61-70	1	1
71-80	3	3
81-90	1	1
91-100	3	3
Use of Nutrition Care Process/Standardized Language		
Plan to use in future	48	44
Used only within last 12 months	33	30
Used for over 1 year	22	20
Not used and not planning to use	7	6
Standardized Language terms used		
Diagnosis only	16	15
Diagnosis and Intervention	19	17
Diagnosis, Intervention, Monitoring and Evaluation	29	26
Monitoring and Evaluation only	1	1
Do not use the Standardized Language	45	41
[1] Missing responses		

Appendix E: Standardized Language Addition Recommendations

Recommended language additions to nutrition diagnostic term NC-3.2 involuntary weight loss and other comments by Board Certified Specialists in Gerontological Nutrition (n=110)

Definition	Number of responses
Significant	6
Unavoidable	5
Insidious, Unintentional, Unexpected, Severe, Avoidable, Excessive	1 each

Etiologies	Number of responses
Dysphagia	9
Difficulty chewing	7
Dementia	8
Poor Dentition	4
Cognitive decline	3
Nausea/vomiting/diarrhea	3
Increased energy expenditure	2
Functional decline	2
Eating Disorder	2
Uncontrolled Diabetes	2
Uncontrolled Pain	2
Infections, UTI, sepsis	1
Alzheimer's, Parkinson, Pressure Ulcer, Diuretics, Inability to consume adequate amounts, Failure to thrive, Trauma, Inadequate knowledge of nutrition, End of life, Quality of life and family preferences, Adaptation to Nursing Home Setting	1 each

Biochemical Data, Medical Tests and

Procedures	Number of responses
Prealbumin	23
Albumin	16
Blood Urea Nitrogen	9
Hemoglobin	7
Swallow Evaluation	7
Hematocrit	6
Creatinine	6
Glucose	4
C-Reactive Protein	4
Vitamin B12	3
Elevated Thyroid Stimulating Hormone	3
Serum Osmolality	3
Hemoglobin A1c	3
Sodium	3
Potassium	3
Basic Metabolic Panel	2
Calcium	2
Cancer screen, Transferrin, Vitamin D, Zinc deficit, Occult Blood Stool, Folate, Protein, MCV, MCH	1 each

Anthropometric Measurement	Number of responses
BMI parameter	6

MAMC	2
Insidious Wt Loss defined by MDS 3.0	2
% UBW	2
Tricep Skinfold, Calf Circumference	1 each

Nutrition Focused Physical Findings	Number of responses
Changes in dentition, oral cavity	10
Ulcers, skin breakdown	9
Poor fitting dentures	8
Swallow difficulty	8
Chewing difficulty	7
Missing teeth	7
Edema	3
Wounds	3
Muscle wasting, sarcopenia	3
Change in ability to feed self	2
Mouth pain	2
Regular consistency not tolerated	2
Oral lesions, Bowel changes, Decreased endurance strength, Limited ROM upper extremities, Amputation, Diarrhea, Dehydration, Increased time needed for eating, Chronic GI disturbance, Refusal to wear dentures	1 each

Food/Nutrition Related History	Number of responses
Alcohol intake	2
Missing or avoidance of food groups	2

Unavailable Cultural Foods	2
Dysphagia, Pacing/wandering, Daily food pleasure, Herbal supplements/Vitamin and Minerals, Oral liquid supplement, Poor dentition/dentures, Nausea/vomiting/diarrhea, Constipation, Change in average intake, Change in living situation/loss, Eating Disorder, Diuretics	1 each

Client History   **Number of responses**

Cognitive decline, Alzheimer, Parkinson	8
Pressure ulcers, wounds	7
Uncontrolled diabetes, prolonged hyperglycemia	5
Depression, mental illness, retardation	5
Recent N/V	2
ED/Anorexia Nervosa, Alcohol/Substance Abuse, Inability to take food and fluid orally, Inability to feed self, Terminal illness, Dysphagia, Failure to thrive, Discontinued steroid use, Inflammatory response, Eliminating one or more food groups, Food intolerance/allergy, Type of living facility/home, Diet change, Stroke	1each

<u>Unclear Terms</u>

Normal or usual estimated intake in face of illness- 2 comments

Fever- prolonged fever versus one day, change definition of fever as normal temp may be lower

Decrease sense of vision/hearing- how does the RD assess?

Quantify the problem- use a scale like severity of pain scale to describe severity level

Define disordered eating – only eats sweets, spits out food

HIV/AID- don't work with this area so need explanation of areas outside of expertise, practice

Why the diagnosis is not used	Number of responses
Not using SL	15
Not practicing in the area	3
Cumbersome	2
Lacks applicability to LTC	1
Unsure of survey impact	1
MD doesn't use	1
Not a diagnosis but a sign/symptom	1
Not enough training	1
Not possible now	1
Just use MDS definition	1
Not in the electronic charting system	1
Use Food and Fluid intake deficit instead	1

Other comments

1. Education of medical records needed

2. Uses in policy/procedures for program administration in community setting

3. Planning to use after attending seminar this month

4. Nutrition Risk Form to be revised, no guidance from state surveyors

5. Address "potential for" as Alzheimer's has big potential for weight loss

6. Some etiologies and history differ to specific area of practice and stage of life cycle

7. If worked with trauma would answer etiology differently

8. Would appreciate more training offered to RDs on NCP by ADA

9. End of life issue, full code status but does not want aggressive nutrition support with poor oral intake, addressing over hydration, edema and wt loss some would call planned loss

10. Unfortunately a frequent occurrence, often issue of accuracy that must be addressed

11. Wt loss is often listed as a s/s of either inadequate intake or etiology such as swallow problems

12. Will not implement in LTC because doctor won't read it anyway, OK to use in hospitals to be concise, but in LTC more explanation is needed, it's not just one diagnosis

13. Important to include dementia in more detail throughout this diagnosis

14. I found the listing of nutrition focused finding/ anthropometric findings consistent with what others and I use in LTC setting

15. I am still getting used to use of this assessment/care planning format

16. Management will initiate

Appendix F: DCV Score among years of practice, expert level, NCP/SL usage, and practice setting

Total DCV Score of Nutrition Diagnostic Term NC-3.2 Involuntary weight loss as rated by Board Certified Specialists in Gerontological Nutrition (CSG) across years of practice, expert level, NCP/SL usage, and practice setting

Group	n	DCV Score ± SD	# total items validated[1]	# etiologies validated	# signs and symptoms validated
CSGs	110	0.69 ± 0.11	41	9	31
Gerontology practice years					
Up to 10	46	0.71 ± 0.12	40	8	31
11-20	32	0.69 ± 0.11	41	9	31
21-30	28	0.70 ± 0.09	33	6	26
31-40	4	0.70 ± 0.13	39	9	29
Expert Level Rating					
3	63	0.69 ± 0.12	39	8	30
6 +	47	0.68 ± 0.11	40	8	31
Use of NCP/SL					
Using NCP/SL	55	0.69 ± 0.11	40	9	30
Non Use NCP/SL	55	0.69 ± 0.12	40	7	32
Practice Setting [2]					
Extended Care	88	0.70 ± 0.11	36	8	27
Other	20	0.70 ± .011	45	11	33

[1] The term's definition was validated among all groups

[2] Missing responses