

TheDigest

Volume 53, Number 2 - Spring 2018

Validation of the Career Aspirations and Motivations of Dietetics Students (CAMDS) Instrument Using Content Validity Index Methodology

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Conflict of Interest: This article was supported by a research grant from the Foodservice Systems Management Education Council.

INTRODUCTION

The *Dietetics Supply and Demand: 2010-2020* report predicted a workforce shortage by 2020 in that only 75% of the demand for credentialed dietetics practitioners would be met by the projected supply. Key factors identified as influencing the demand were a growing aging population, healthcare reform laws, growth in the food industry, and the prevalence of certain conditions such as obesity and diabetes.¹ This issue is influenced in part by a limited number of dietetic internship spots; approximately twice as many students apply for dietetic internships as there are open positions.²

Hooker and colleagues suggested various interventions to address the need for credentialed dietetics practitioners, including “targeting (and marketing) high school counselors, students, and college/university students about the future of the dietetics profession.”¹ In order to strategically recruit students to the field of dietetics, an understanding of existing student motivations and future career aspirations is needed to inform an effective recruitment strategy within academic programs. Schools may utilize this information to assess incoming students’ motivational profiles, design recruitment statements to communicate which types of motivation are known to characterize successful students and promote certain motivations for students that do not naturally have them.³

However, the existing quantitative data regarding student career aspirations is over 10 years old and may not accurately reflect the aims of current or prospective dietetics students. Furthermore, no published, validated, and quantitative instrument exists to capture the motivations and career aspirations of dietetics students. A validated instrument of this nature is needed to accurately assess nutrition and dietetics student career motivations and aspirations and to support the rigor of future research in this area.

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Motivations of Nutrition and Dietetics Students

Existing research on student motivations to pursue a career in nutrition and dietetics is somewhat limited. Both quantitative and qualitative studies have been conducted in the United States, Canada, and Australia and have included undergraduate students at every grade level and dietetic interns. The research identified a range of factors including a personal interest in nutrition, a desire to help others and work with people, a personal struggle with weight management or diet-related conditions, having a friend or family member with a diet-related condition, and exposure to registered dietitians (RDNs) already in the field.⁴⁻¹³

Equally important to understanding what motivates dietetics students is knowing what does not motivate students in this discipline. Numerous studies identified that social prestige or a long-term interest in the discipline were not motivating factors for most students.^{5,7,8,10} High paying job opportunities and flexibility were motivating factors for some but not all dietetics students.^{6,8} Lastly, an interest in cooking, the influence of RDNs, friends, or family, and the desire to help people were motivating to some participants but not others.⁵⁻¹¹

Career Aspirations of Nutrition and Dietetics Students

Relatedly, research on career aspirations of dietetics students has identified both general traits and specific areas of practice. Though many participants in relevant studies had little knowledge of the profession itself, most identified a desire to pursue a career in science, biology,

health care, or human health.^{5,7-9} Markley and Huyck described the specific areas of interest among dietetics students; of those surveyed, 70.5% were interested in health, disease, and health care; 42.7% in teaching and health promotion; 40.7% in sports and fitness; 35.6% in counseling and behavior change; 35.4% in food and cooking; and 37.5% in private practice consulting.¹¹ However, this data is over 25 years old and therefore must be recollected in a new sample of dietetics students using an updated and validated instrument.

Establishing Content Validity using the Content Validity Index (CVI)

The first step in collecting new data on why students choose to become nutrition and dietetics professionals is to generate a validated instrument for assessing their career motivations and aspirations. Validity can be expressed in one of three ways: content validity, or the degree to which the study items reflect the domain of the concept being studied; criterion-related or predictive validity, which is used to describe how well the scores on one measure can be used to predict scores on a different measure; and construct validity, which refers to how well the scores on an instrument measure an established construct.¹⁴ Though the rigor of content validity has been challenged by psychometricians, this criticism may be due to its confusion with face validity, which is determined based on a layperson's judgment, as well as the false assumption that content validity is the mere assertion of two or three experts in the field.¹⁵

Beginning in the 1980's, researchers in the field of nursing popularized the

highly systematic method of establishing content validity through the content validity index, or CVI.¹⁵⁻¹⁸ The CVI method is now the most popular approach to establish content validity and has been successfully applied to related fields of food service, food safety, and nutrition and dietetics.¹⁹⁻²³

Determination of the CVI requires two distinct phases: the developmental stage in which instrument developers generate domains and respective items, and the judgment-quantification stage in which expert raters systematically rate each item's relevance.¹⁵ Polit and Beck describe this two-step process as *a priori* efforts of conceptualizing each domain and related items, followed by *a posteriori* efforts to evaluate the relevance of the content by expert raters.¹⁸ The stepwise process for this protocol is further detailed in the methods section of this paper.

Purpose and Objectives

The purpose of this study was to establish content validity of the instrument, Career Aspirations and Motivations of Dietetics Students (CAMDS), using the CVI method. CAMDS is designed to capture demographic information, path towards a career in dietetics, motivations and influences to practice as a dietetics professional, and future career aspirations. This instrument is intended for use by didactic programs in dietetics, dietetic internships, coordinated programs in dietetics, future education model graduate programs, and nutrition and dietetic technician programs that are accredited by the Accreditation Council for Education in Nutrition and Dietetics. Students may be pursuing credentials as a registered dietitian nutritionist (RDN) or nutri-

tion and dietetic technician, registered (NDTR). Students may be at any level of their training. Related objectives were to 1) establish an item-level CVI of 0.78 or higher and 2) establish a scale-level CVI of 0.90 or higher.

METHODOLOGY

This study was deemed non-human subjects research requiring IRB review by the Saint Louis University Institutional Review Board. The item-level and scale-level CVI was determined through two stages. The developmental, or *a priori* stage, is represented by steps one and two. The judgment-quantification, or *a posteriori* stage, is represented by steps three through eight.

1. **Generation of items from the literature.** A preliminary version of the instrument was composed by the research team. This version was based on *a priori* notions suggested in the existing literature on career aspirations and motivations of nutrition and dietetics students.^{9,11,12} Given the intended use of the survey for quantitative research, existing qualitative studies were not included in this stage.
2. **Focus group.** A focus group of four experts was convened to discuss the instrument. The focus group consisted of nutrition and dietetics faculty members from the research team's home institution with experience ranging from 15 to more than 40 years of experience. The experts represented various expertise areas including clinical dietetics, community nutrition, food service management, and culinary nutrition and sustainability. For each domain, the focus group was presented with the potential

items, or answer choices, as well as the proposed question phrasing. For instance, one domain was characterized as the "path to a career in nutrition and dietetics" and the question phrasing was, "What actions led to your commitment to a career in nutrition and dietetics?" Possible items were provided as they appeared in the existing literature.^{9,11,12} Participants were encouraged to affirm or suggest modifications to the question phrasing, to identify the best items from the existing literature, and to generate any additional items based on their expertise of working with dietetics students. The focus group lasted one hour and participants were incentivized with a nominal gift card.

3. **First relevance assessment.** Six expert raters were convened to systematically rate the relevance of each item to its respective domain via Qualtrics (Provo, Utah).²⁴ The raters were faculty members from two different universities and were diverse in their years of experience, level of training, and area of expertise. Each participant was asked to rate the relevance of each item to its respective domain by selecting "1" as not relevant, "2" as somewhat relevant, "3" as quite relevant, and "4" as highly relevant. Participants were given one week to complete the assessment and were incentivized with a gift card.
4. **First calculation of item-level CVI.** The CVI of each answer choice was calculated by dividing the number of raters that indicated its relevance as "3" or "4" by six, or the total number of raters.

5. **Revisions.** The research team upheld the standard of item-level CVI as 0.78.^{15,18} Any answer choice with a CVI of less than 0.78 was reviewed by the research team for revision or elimination.
6. **Second relevance assessment.** The revised answer choices were distributed to the same expert raters; the process outlined in step three was repeated.
7. **Second calculation of item-level CVI.** The CVI of each revised answer choice was calculated according to step four. Any answer choices with a CVI of 0.78 or greater was retained; those with a CVI of less than 0.78 were omitted.
8. **Calculation of scale-level CVI.** The scale-level CVI was calculated by taking the average of each item-level CVI with an anticipated standard of 0.90 or higher.¹⁵

RESULTS

Nine domains were generated from the literature regarding student career motivations and aspirations. These included: life stage where career interest was piqued; path to a career in nutrition and dietetics; past experiences; interests and abilities; influential people; influential forms of media or recruitment tools; attractive traits of the profession; desired area of practice; approach towards first job. For each domain, the focus group generated between four and 18 items, with a total of 89 items across the nine domains. Minor revisions were made to the question phrasings. No additional domains were suggested.

Following the first relevance assessment, 27 of the 89 items were calculated to

have a CVI of less than 0.78. Of these, 15 were omitted, and the remaining 12 were revised by the research team. Following the second relevance assessment of the revised items, three of the 12 items were calculated to have a CVI of less than 0.78; these were omitted.

The nine domain names, number of items per domain, and average CVI of the items within each domain are summarized in Table 1. Across the nine domains and 71 items, the item-level CVI was 0.83-1.00. This met the minimum item-level CVI standard of 0.78 or greater.^{15,18} The scale-level CVI was 0.92 which met the standard of 0.90 or higher.¹⁵

Discussion

We have developed a valid instrument to describe the career aspirations and motivations of dietetics students using the CVI method. CVI methodology provided a rigorous and systematic way to establish content validity of the proposed instrument. Though content validity has been critiqued as a less rigorous form of validity compared to criterion-related or construct validity, measures of objectivity and standards for consensus were applied. Furthermore, in this particular protocol, validity was established by six experts in the field versus by two or three experts. These experts represented multiple institutions, a range of academic training, and various subspecialties within the nutrition and dietetics field.

The need to validate an instrument to assess career aspirations and motivations of dietetics students was further substantiated by specific content generated by the focus group that reflected current cultural norms. For instance, regarding the domain of influential forms of media

Table 1. CVI of nine domains of career aspirations and motivations of dietetics students.

Domain number	Domain name	Number of items	CVI-Average
1	Life stage where career interest was piqued	5	0.93
2	Path to a career in nutrition and dietetics	4	0.96
3	Past experiences	9	0.87
4	Interests and abilities	13	0.92
5	Influential people	9	0.94
6	Influential forms of media or recruitment tools	9	0.85
7	Attractive traits of the profession	10	0.97
8	Desired area of practice	7	1.0
9	Approach towards first job	5	0.90

or recruitment tools, the focus group produced and ultimately endorsed items including “cooking shows on TV,” “social media” and “podcasts.” These items were not present in the existing research but do reflect the cultural norms regarding media use by students in present day. This validated instrument offers a tool for upcoming investigations aimed at assessing career aspirations and motivations of dietetics students. By elucidating the factors that influence students to choose dietetics as a career, dietetics educators and program directors may more effectively recruit students to the field. For instance, by knowing the life stage where dietetics students became interested in the profession (domain one), they may concentrate recruitment efforts on that age group. By knowing the influential forms of media or recruitment tools (domain six) that played into a student’s decision, they may improve efficacy and efficiency of their recruitment efforts.

Lastly, an inherent limitation of the CVI method is that the experts’ feedback was subjective and may have been influenced by personal biases. This was man-

aged by ensuring diversity among the experts in terms of specialty area, years of experience, and institution. A second limitation is that this instrument reflects current cultural elements, such as cooking shows or social media. Therefore, it will need to be updated to reflect evolving norms of the future. Minor revisions are likely to be made periodically as technologies evolve.

CONCLUSIONS

Content validity of the CAMDS instrument was established using the CVI method. Given the rapidly growing demand for credentialed dietetics practitioners across various sectors of practice, there is a clear need to recruit and retain students in academic programs. The CAMDS instrument may be used in future investigations to support these aims.

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