

# Determining educational preparation based on job competencies of entry-level dietetics practitioners

CAROL J. GILMORE, MS, RD, FADA; JULIE O'SULLIVAN MAILLET, PhD, RD, FADA;  
BEVERLY E. MITCHELL, MBA, RD

**A**fter the Future Search Conference in 1994, an Educational Competencies Steering Committee was created to study the feasibility of defining entry-level dietetics education in terms of expected competencies for practice. Competency-based education in the dietetics profession has been described in a previous issue (1) and is illustrated in Figure 1. Competencies are broad, functional statements of the skills,

*C. J. Gilmore is the assistant director of nutrition care services, University of Kansas Medical Center, Kansas City. J. O. Maillet is the associate dean of academic affairs and research, School of Health Related Professions, University of Medicine and Dentistry of New Jersey, Newark. B. E. Mitchell is with the Education & Accreditation Team of The American Dietetic Association, Chicago, Ill.*

*The authors are members of the Educational Competencies Steering Committee. Other committee members are Stella H. Cash, MEd, MS, RD; Elizabeth Corner; Margaret P. Garner, MS, RD; Mary Gregoire, PhD, RD; Wanda Hain Howell, PhD, RD; Helene M. Kent, MPH, RD; Marilyn Laskowski-Sachnoff, MA, RD; Joyce Mooty, EdM, MPH, RD; and Lillie R. Williams, PhD, RD.*

*Address correspondence to: Beverly E. Mitchell, MBA, RD, Education & Accreditation Team, The American Dietetic Association, 216 W Jackson Blvd, Chicago, IL 60606-6995.*

supporting knowledge, and professional values necessary to begin independent professional practice (2). The charge given to the Educational Competencies Steering Committee was to identify core competencies characterizing the beginning practice repertoire of registered dietitians and dietetic technicians, registered, and to develop a matrix for more opportunities for concentration in entry-level education based on additional knowledge and skills. The Steering Committee's goal was to develop a set of competency statements to guide the development of educational curricula that will prepare entry-level dietetics practitioners to compete effectively in evolving job markets.

The Steering Committee was composed of members representing dietetics education programs, the Council on Professional Issues, Commission on Accreditation/Approval for Dietetics Education, the Commission on Dietetic Registration (CDR), and additional members and consultants, as necessary. In addition to the experience and judgment of its members and written reports and frequent consultations with a parallel CDR task force working on the practice audit of dietetics practitioners and their employers, the Steering Committee convened work groups and sought the input of various constituencies such as the House of Delegates of The American Dietetic Association (ADA).

The Steering Committee completed five major activities over a 2-year period: (a) agreed on an innovative definition of competencies that included a hierarchy of levels of perfor-

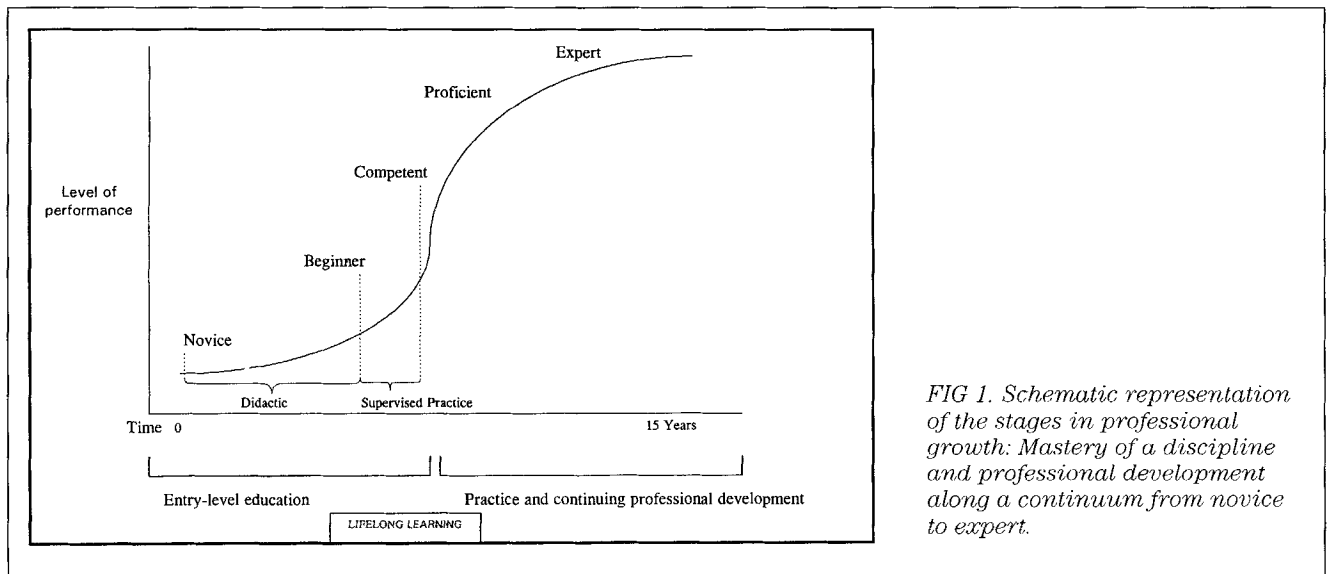


FIG 1. Schematic representation of the stages in professional growth: Mastery of a discipline and professional development along a continuum from novice to expert.

**Table 1**

Respondents' (n=246) assessment of level taught for all 102 competency statements combined by education program and work function category in first jobs (data are reported as percentages based on number [n=353] of work functions)

Level taught in education program	Education program type		Practitioner work function category			
	Technician	Dietitian	Nutrition care	Community	Foodservice	Nontraditional
Not taught	34	26	29	25	30	29
Assist	37	39	40	38	40	34
Perform	22	29	27	29	23	28
Manage	2	6	5	9	7	9
	V=.185		V=.287			

**Table 2**

Respondents' (n=246) assessment of performance level in first jobs for all 102 competency statements combined by education program type and work function category in first jobs (data are reported as percentages based on number [n=353] of work functions)

Performance level in first job	Total	Education program type		Practitioner work function category			
		Technician	Dietitian	Nutrition care	Community	Foodservice	Nontraditional
Not done	56	61	54	52	52	49	65
Assist	17	18	17	20	18	19	11
Perform	20	16	23	23	23	21	18
Manage	6	5	7	5	7	11	7
	V=.184		V=.416				

**Table 3**

Respondents' (n=246) assessment of relevance to first job of all 102 competencies combined (data are reported as percentages based on number [n=353] of work functions)

Relationship of competencies to job or application to practice	Total	Education program type		Practitioner work function category			
		Technician	Dietitian	Nutrition care	Community	Foodservice	Nontraditional
Underused	47	47	47	42	46	38	58
Overtaught	19	22	16	20	24	13	6
Undertaught	35	34	36	37	39	38	29
On-the-job-training	13	10	15	13	16	13	15

mance; (b) developed, by expert consensus, a draft set of 102 competency statements for dietetics practitioners; (c) pilot tested the concept of competencies (including levels) and the initial set of 102 statements with a sample of dietetics educators; (d) surveyed a sample of entry-level registered dietitians and dietetic technicians, registered, about the edited set of 102 competency statements; and (e) used the results of the aforementioned surveys, the 1995 Dietetics Practice Audit conducted by CDR (3), other information, and expert opinion to define a set of 47 core competencies and competencies for four emphasis areas for dietitian education programs and a set of 45 competencies for dietetic technician education programs, as well as foundation knowledge and skills to support development of the competencies. This report summarizes key results of the survey of entry-level practitioners, information from the educators' surveys, as well as the outcomes of the Steering Committee.

## METHOD AND SAMPLE

The practitioner survey instrument presented 102 draft competency statements organized by nine domains and asked respondents to answer three questions about each. The original 102 statements were developed through previous role delineation studies (4), the current knowledge and performance statements in the Standards of Education (5), new competencies identified through the Future Search Conference (6), and other trends identified by various ADA organization units. The nine domains were established by grouping the competencies into logical categories. Domains identified were nutrition care, education, community service, foodservice, human resources, management, leadership and professional development, performance improvement, and technology. The practitioners' survey instrument was based on the feedback from the educators' survey; thus, slight differences between the survey instruments existed.

**Table 4**  
Competencies most likely and least likely taught in their educational programs as reported by registered dietitians (RDs) and dietetic technicians, registered (DTRs)

RDs		Competency	DTRs	
%	Rank		%	Rank
<b>Most taught in education programs</b>				
98	1	Document assessments, treatment	89	22
98	2	Assessment, no complications	95	8
98	3	Screen, no complications	94	11
98	4	Screen, common conditions	93	14
97	5	Counsel medical nutrition therapy	95	5
97	6	Counsel preventive dietary habits	95	6
97	7	Design dietary modifications	93	13
97	8	Assessment, common conditions	94	10
97	9	Assessment, complex conditions	90	19
97	10	Screen, complex conditions	91	17
96	11	Assure safety, sanitation	95	3
96	12	Identifies foods/menus for common medical needs	97	1
95	13	Food preparation	96	2
95	14	Procurement	93	12
93	21	Production of meals	95	4
92	24	Observe dietary intake	94	9
91	26	Relate needs to health promotion menus	95	7
<b>Least taught in education programs</b>				
19	1	Selling products	21	1
26	2	Use of video for evaluation, treatment	29	4
28	3	Formulate food security policy	23	2
30	4	Contract negotiation	37	8
33	5	Technologies in formal education	33	7
34	6	Preceptor supervised practice experience	38	9
36	7	Design shared systems	46	17
40	8	Work with decentralized multidisciplinary teams	41	14
44	9	Self-directed work groups of dietitians	38	11
44	10	Design interdisciplinary nutrition research	24	3
44	11	Use of computer for communication	32	6
45	12	Design emergency procedures	51	28
50	16	Lecture to undergraduates	32	5
56	23	Data collection for funding, reimbursement	38	12
62	27	Evaluate community research to set needs	38	10

For each competency, respondents were asked to choose the verb that best described the level of performance they were prepared for during their educational experience, select the verb that best described the level at which they were expected to perform during the first year of their first job, and rank the importance of the competency during the first year of the first job. The six verb choices were the same for education and job performance and included "did not learn/do," "assist in/participate in," "perform/conduct," "consult on," "supervise," or "manage." The survey form also contained 14 questions designed to gather demographic and practice information, including work settings and the major type of work functions.

The survey was mailed in 1996 to 500 dietitians and 400 dietetic technicians who, according to CDR records, had been registered for 3 years or less. The response rates were 31% (n=149) for registered dietitians and 25% (n=97) for dietetic technicians, registered, for a total sample size of 246. Of the 134 dietitians responding to the question on number of years in practice, 97% (n=130) reported 1 year or less in practice. Similarly, of the 71 dietetic technicians responding to the same question, 75% (n=53) reported practicing for 1 year or less.

In 1995, a similar survey was mailed to 630 dietetics educators. The return rate was 40% (n=249) representing a stratified sample of program types, with approximately one third from dietetic technician programs. Although the demographic and work-setting questions were different for the educators' sample, the competency statements were similar and were rated in terms of level of teaching in the educational program

and anticipated level of performance of graduates on their first jobs. Two important decisions were made by the Steering Committee in the preliminary stages of data analysis. The demographic information revealed that 41% of all respondents said they spent a substantial portion of their time in two or more work functions, such as clinical and foodservice. Previous research demonstrated that work setting and work function strongly affect the competencies a practitioner is called on to perform (2, 4). Therefore, it was decided to analyze by work function rather than respondent. This created an effective sample size of 353 work functions. The only effect of this assumption is to underestimate the statistical significance of differences between work settings.

The second decision addressed how to analyze the work functions. Respondents were allowed to choose from among nine alternatives. Because the distribution across categories was uneven ranging from 41% selecting clinical services to 1% each selecting commercial foodservice or sales and marketing, analysis was based on four combined work-function categories: nutrition care—clinical services; community—public health/community nutrition, wellness/disease prevention, and nutrition information/communication; foodservice—institutional and public/commercial foodservice; and nontraditional for entry-level practice — research, sales/marketing or product development, and higher education.

## SURVEY RESULTS

Table 1 reports respondents' assessment of the level to which they were taught for all 102 competency statements combined compared by education program type (dietetic technician or dietitian) and related to one of the work function categories selected. For Tables 1 through 3, each separate competency and competencies grouped by the nine major competency domains were analyzed separately and then combined aggregately into a data set for the 102 competencies. As expected, respondents from dietetic technician programs reported more competencies not taught and fewer taught at the perform or manage level than did graduates from dietitian education programs. This difference in level of instruction between programs is summarized in the *V* statistic (*V* = .185 in this case).

Cramer's *V* is analogous to a correlation coefficient in that 0.0 means no relationship exists and ±1.0 is the maximum value possible. It is used for contingency table data. The statistic is computed from the  $\chi^2$ , and for program and work function comparisons, a value above .150 is statistically significant at *P* < .05 because of the size of the data set. Because the strength of the association is difficult to interpret with the Cramer *V*, a standard linear correlation coefficient, such as Pearson's, cannot be used. At the .150 level the correlation is weak but present.

Level taught (ie, do not do, assist, perform/conduct, and consult/supervise/manage) was also analyzed by work function. The four groups of work functions (nutrition care, community, foodservices, and nontraditional) were crossed with the four levels of instruction in educational programs. Those engaged in foodservice functions, for example, said they learned competencies generally at the perform level 23% of the time (somewhat lower than those in other functions) and those in the nutrition care functions were less likely to have learned competencies at the manage level (at 5%). There is a significant interaction between level learned and work function, as evidenced by the Cramer *V* of .287.

In comparison, educators were also asked at what level competencies were taught. Educators said that only 20% of all competencies were not taught and 30% were taught at the perform level. The educators were consistently more positive

relative to their students in the level of dietetics education achieved.

Table 2 summarizes responses to the question: "At what level do you function currently in your job?" Considering all competencies assessed by all respondents, 56% of the competencies were not being used in respondents' first position, 17% were done at the assist level, 20% were done at the perform level, and 6% were at the manage level. There are differences among respondents based on program type (dietitians vs dietetic technicians) and large differences based on the work function category. The *V* (.416) for level of performance and work function is consistently the largest of those tested and highly significant in statistical terms. Table 2 illustrates that the foodservice area is where the most management-level performance occurs. Comparing Table 1 to Table 2, one observes that manage as a work function is selected more frequently than management is taught in the educational program.

Table 3 reports respondents' assessment of the relevance of all competency statements in comparison to responsibilities on their first job. It is further divided into work function. These are conditional probabilities. For all respondents, regardless of program type or work function, the "underused" index of 47 means that for all respondents who learned any competency at any level, 47% say they do not now use it. The index is lowest for those in foodservice functions and highest for those performing nontraditional functions. When the comparable question was asked in the survey of educators—"What competencies would not be used during the first few years of employment,"—educators tended to project a much lower underused (23%) index than did their students.

"Overtaught" is also a conditional probability. In this case, 22% of dietetic technicians said they use the competency at the assist level but were taught at the perform or manage level; whereas 16% of the dietitians reported using the competency at the assist level when they were taught at the higher level. Undertaught is an analogous index: 34% of dietetic technicians who use the competencies at the perform or manage levels said they were taught these competencies at the assist level, and 36% of dietitians reported performing competencies at a higher level than they were taught. "On-the-job training" refers to the conditional probability that a respondent said he or she uses a competency as part of the job but was not taught the competency in an educational program. For example, 10% of dietetic technicians and 15% of dietitians reported learning required tasks on the job. Educators tended to underestimate the need for on-the-job training.

The information in Tables 1 through 3 is available for all 102 competency statements. The summary described above illustrates the analysis used by the Steering Committee for each statement. Presented in Tables 4 through 8 are some of the extreme values that characterized the 102 competencies. Table 4 identifies topics typically covered in educational programs and shows the percentage of respondents who stated that they were taught the competency as students. Rank identifies the 12 competencies most often reported as taught and the 12 least often reported as taught in the educational program, independent of verb level. The most-taught topics are characteristic of the dietetics profession and illustrate some of the major distinctions between entry-level dietetic technician and dietitian education. The least-taught topics reflect nontraditional areas added to the list of competencies to test whether they were entry level.

Table 5 is similar but highlights competencies dietitians and dietetic technicians perceive as being taught at the perform or conduct level. The lower percent values in Table 5 illustrate the

**Table 5**

Competencies most likely and least likely taught at the "perform or conduct" level as reported by entry-level registered dietitians (RDs) and dietetic technicians, registered (DTRs)

RDs		Competency	DTRs	
%	Rank		%	Rank
<b>Most taught at the perform/conduct level</b>				
79	1	Noncomputer nutrient analysis	69	1
79	2	Document assessment, treatment	55	10
78	3	Assessment, no complications	62	5
76	4	Screen, no complications	62	4
74	5	Assessment, common conditions	52	12
74	6	Counsel preventive dietary habits	64	3
73	7	Screen, common conditions	59	7
73	8	Counsel medical nutrition therapy	55	11
72	9	Computerized nutrient analysis	51	14
71	10	Adjust counseling to patient background	52	13
69	11	Observe dietary intake	64	2
68	12	Design dietary modifications	56	9
58	14	Relate needs to health promotion menus	62	6
56	17	Food preparation	57	8
<b>Least taught at the perform/conduct level</b>				
1	1	Self-directed work groups of dietitians	3	5
2	2	Multidisciplinary team review of patient	3	6
3	3	Multidisciplinary team in nutrition	6	17
4	4	Formulate food security policy	3	4
4	5	Legislative process affecting nutrition	0	1
4	6	Work with decentralized multidisciplinary team	4	9
4	7	Food delivery	12	43
5	8	Work teams with other professionals	3	3
5	9	Selling products	4	8
5	10	Facility-wide organizational change	9	30
5	11	Unit organizational change	8	25
6	12	Quality control for food, nutrition	8	23
6	13	Incorporate new science into practice	5	11
6	15	Overall foodservice operation	5	12
9	22	Use of computer for communication	5	10
9	23	Ethical discussions	4	7
15	36	Design interdisciplinary nutrition research	1	2

**Table 6**

Competencies showing largest differences between registered dietitians and dietetic technicians, registered, in performance level taught; in all cases, the performance level reported as taught is higher for registered dietitians

Competency	Cramer V (P<.01)
Formulate complex parenteral regimen	.437
Evaluate response to parenteral formula	.430
Assessment, complex conditions	.382
Basic science nutrition research	.377
Formulate routine parenteral regimen	.356
Formulate enteral nutrition regimens	.351
Screen, complex conditions	.336
Design transition feeding plan	.332
Computer searches for practice	.332
Evaluate response to enteral formula	.331
Legislative process affecting nutrition	.317
Incorporate new science into practice	.309

**Table 7**

Competencies most likely and least likely to be used as part of the first job as perceived by entry-level registered dietitians (RDs) and dietetic technicians, registered (DTRs)

RDs		Competency	DTRs	
%	Rank		%	Rank
<b>Most used in first job</b>				
87	1	Document assessment, treatment	68	10
87	2	Assessment, common conditions	68	11
87	3	Screen, common conditions	73	6
86	4	Counsel preventive dietary habits	75	3
86	5	Design diet modifications	79	2
85	6	Counsel medical nutrition therapy	68	9
84	7	For common medical needs identifies foods/menus	75	4
84	8	Noncomputer nutrient analysis	71	7
84	9	Screen, no complications	70	8
83	10	Adjust counseling to patient background	62	15
81	11	Professional activities	58	21
81	12	Multidisciplinary team review of patient	63	14
81	13	Assessment, no complications	66	13
78	14	Relate needs to health promotion menu	73	5
78	15	Observe dietary intake	79	1
72	17	Quality improvement program in unit	66	12
<b>Least used in first job</b>				
7	1	Formulate food security policy	9	2
8	2	Selling products	12	4
11	3	Kitchen layout design	16	8
13	4	Use of video for evaluation, treatment	16	9
14	5	Assure safety of community food, water	21	14
17	6	Assess community food program	19	11
17	7	Contract negotiation	18	10
18	8	Evaluate community research to set needs	9	1
19	9	Design interdisciplinary nutrition research	11	3
20	10	Develop food program for specific community	25	26
21	11	Assess nutritional status of community	21	13
21	12	Develop business, operating plan, budget	24	22
21	13	Work with decentralized multidisciplinary team	23	19
21	14	Equipment acquisition	29	34
21	15	Basic science nutrition research	12	5
23	17	Lecture to undergraduates	13	6
43	46	Formulate complex parenteral regimen	15	7

**Table 8**

Competencies showing largest differences between registered dietitians and dietetic technicians, registered, in level of performance on the first job; in all cases except food preparation, the level of performance reported is higher for registered dietitians

Competency	Cramer V ( <i>P</i> < .01)
Assessment, complex conditions	.536
Formulate enteral nutrition regimens	.421
Evaluate response to enteral formula	.421
Evaluate response to parenteral formula	.390
Food preparation	.381
Design transitional feeding plan	.348
Document assessment, treatment	.340
Adjust counseling to patient background	.340
Screen, complex conditions	.339
Incorporate new science into practice	.336
Formulate complex parenteral regimen	.334
Counsel medical nutrition therapy	.334

variability of instructional level by program. Table 6 shows the 12 competencies where there is the greatest perceived difference between the dietitian and dietetic technician in performance level taught in the educational program (as measured by the Cramer *V*). The largest differences in performance level taught are found with competencies for screening and assessing patients with complex conditions, involvement with enteral and parenteral nutrition, involvement with legislative issues affecting nutrition, and the application of science to practice. Table 7 displays the 12 most commonly performed competencies and the 12 least likely to be part of the first job of entry-level dietitians or dietetic technicians. Competencies most commonly performed by dietetic technicians were observing intake of patients and designing diets, whereas dietitians most commonly assessed persons with common medical conditions and documented assessments. The largest differences between dietitians and dietetic technicians in terms of competencies performed in their first job are shown in Table 8.

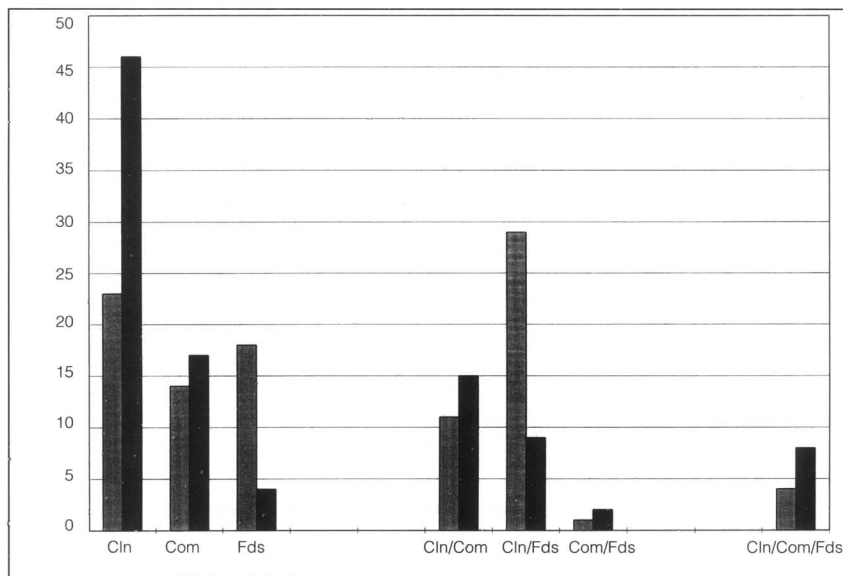
A computer-generated, multidimensional clustering of skills based on the data identified three application clusters with distinct competencies—clinical (nutrition care), community service, and foodservice. A supporting cluster of competencies included management, performance improvement, and leadership and professionalism. It is necessary to caution that the application clusters of clinical, foodservice, and community overlap notably. As shown in Figure 2, when respondents working in nontraditional roles are removed from the total, about 67% of entry-level dietitians and about 55% of entry-level dietetic technicians reported working in only one of these three functional areas (ie, clinical, foodservice, and community). Further, 34% of the dietitians and 45% of the dietetic technicians worked in combinations of two or more functional areas. Data from the CDR Dietetics Practice Audit will allow tracking of overlapping functions over time (3).

## DISCUSSION OF THE RESULTS

Using the defined verbs to describe levels of performance (Figure 3) made it possible to distinguish between the competencies performed by registered dietitians and dietetic technicians, registered. Previous studies have encountered difficulty distinguishing the job performance of these two groups of practitioners when respondents were asked to characterize their work in terms of categories such as frequency or importance (4). For 59 of the 102 draft competency statements, there is a statistically significant Cramer *V* showing a differentiation between the graduates from the two types of educational programs on level of performance on the first job. As anticipated, the importance ratings in this study were very weakly associated with educational program type or with work function and, thus, are not reported here.

Additionally, the results made it possible to distinguish levels of performance across work functions. Those in foodservice tended to function at a management level most often and those in the nontraditional areas performed fewer of the competencies than their colleagues. Work function category was a better predictor of performance level (*V* = .416) than was type of educational program (*V* = .184).

Overall, 47% of the competencies reported as taught in the educational program were not reported to have been used by entry-level dietetics practitioners on their first job (see Table 3). This number was interpreted with appropriate caution. None of the underused competencies were in the nutrition care or the foodservice domains (except kitchen layout). On the other hand, community service competencies tended to be prominent in this group, as were skills in the nontraditional category, such as research, teaching, and policy. As only 15%



*FIG 2. Percent of or registered dietitians and dietetic technicians, registered, who reported working in one, two, or three work functions. Gray bar = dietetic technicians, registered (n=83) and black bar = registered dietitians (n=125) Key: Cln = clinical; Com = community; and Fds = foodservice.*

of entry-level dietitians and 13% of the dietetic technicians worked solely in community settings (see Figure 2), it is clear why the results identify this as an underused set of competencies. Although it is true that the requirements of the work setting exert strong influence on what one is capable of doing, the underused competencies do not automatically represent inefficiency in the educational process. Some of these competencies were retained in the final set because they are part of foundation knowledge and skills learned to support more advanced job performance (1); having a broad range of skills may be necessary to improve the odds of a job match, or may even be used as selection criteria by employers; some of these competencies typically become useful at a later stage in one's career; or changes in the health care arena may require more of these competencies in the future. As educators notably underestimate, relative to their students, the course content that is not used on the first job, over time, it will be worthwhile to systematically review educational programs to identify those competencies least likely to be used by graduates in the early stages of their professional life.

### DEFINING THE COMPETENCIES

After analyses of the data discussed above and a meeting with the CDR Practice Audit Committee to review its data, the Steering Committee convened work groups of 10 practitioners and 17 educators to refine the competencies and determine the knowledge base needed to achieve them. The work groups reviewed trends and assumptions affecting the future of dietetics practice, compared the theoretical basis for the competency-based approach to the educational process with the current knowledge and performance requirements (5), and used the results of the Dietetics Practice Audit (3) and educational surveys. Using the outcomes of the work group process, the Steering Committee defined the foundation knowledge and skills to support entry-level competence, determined core competencies common for all dietetics practice, and determined which competencies could be used as emphasis areas for dietitian education.

The proposal for educating entry-level dietetics practitioners was presented to the ADA House of Delegates for comment at the October 1996 Annual Meeting and Exhibition. Subsequently, all written, E-mail, and oral testimony received was reviewed and reflected in the final report and recommen-

1. *Assist*: independent performance under supervision; or *Participate*: take part in team activities.
2. *Perform*: able to initiate activities without direct supervision; or *Conduct*: activities performed independently.
3. *Consult*: able to perform specialized functions that are discrete delegated activities intended to improve the work of others; or *Supervise*: able to oversee daily operation of a unit, including personnel, resource utilization and environmental issues; or to coordinate and direct the activities of a team or project work group.
4. *Manage*: able to plan, organize, and direct an organization unit through actual or simulated experiences, including knowing what questions to ask.

*FIG 3. Action verbs used to describe the four performance levels, progressing from 1 to 4, for the competencies. Ability to perform at the higher level of performance assumes the ability to perform at the lower level.*

dations, which were approved by the Council on Professional Issues in December 1996 and forwarded to the Commission on Accreditation/Approval for Dietetics Education for incorporation in the accreditation/approval standards.

The foundation knowledge and skills recommended for both dietitian and dietetic technician education are categorized in the following content areas: communications, research, biological, physical and social sciences, management, health care systems, food, and nutrition. Foundation knowledge and skills may be very general, such as public speaking, and considerably more specific, for example, those in food and nutrition sciences, where the dietetics professional needs more precisely delineated information and competence. Content areas can be integrated across the curriculum and may be taught by dietetics faculty or faculty in another discipline. For the foundation knowledge and skills, levels of learning are differentiated as follows: basic knowledge, defined as awareness or exposure to a topic; in-depth, meaning working knowledge of a topic as it applies to the dietetics profession; and ability to demonstrate

**DIETITIAN EDUCATION**

**Graduates will have demonstrated the ability to:**

- Calculate and interpret nutrient composition of foods;
- Translate nutrition needs into menus for individuals and groups;
- Determine recipe/formula proportions and modifications for volume food production;
- Write specifications for food and foodservice equipment;
- Apply food science knowledge to functions of ingredients in food;
- Demonstrate basic food preparation and presentation skills; and
- Modify recipe/formula for individual or group dietary needs.

**Graduates will have in-depth knowledge of:**

- Sociocultural and ethnic food consumption issues and trends for various consumers;
- Food safety and sanitation;
- Food-delivery systems;
- Food and nonfood procurement;
- Availability of nutrition programs in the community;
- Formulation of local, state, and national food security policy;
- Food production systems;
- Environmental issues related to food;
- Role of food in promotion of a healthful lifestyle;
- Promotion of pleasurable eating;
- Food and nutrition laws/regulations/policies;
- Food availability and access for the individual, family, and community; and
- Applied sensory evaluation of food.

**Graduates will have basic knowledge about:**

- Food technology;
- Biotechnology; and
- Culinary techniques.

**DIETETIC TECHNICIAN EDUCATION**

**Graduate will have demonstrated the ability to:**

- Calculate and analyze nutrient composition of foods;
- Translate nutrition needs into menus for individuals and groups;
- Determine recipe/formula proportions and modifications for volume food production;
- Write specifications for food and equipment;
- Apply functions of ingredients in food preparation;
- Assist with food demonstrations; and
- Apply food safety and sanitation techniques.

**Graduates will have in-depth knowledge of:**

- Basic concepts and techniques of food preparation;
- Applied sensory evaluation of food;
- Food production systems;
- Food-delivery systems; and
- Food and nonfood procurement.

**Graduates will have basic knowledge about:**

- Sociocultural and ethnic food consumption issues and trends for various consumers;
- Food technology issues;
- Availability of nutrition programs in the community;
- Environmental issues related to food;
- Promotion of pleasurable eating;
- Food availability and access for the individual, family, and community;
- Food and nutrition laws/regulations/policies; and
- Role of food in promotion of a healthful lifestyle.

FIG 4. Foundation knowledge and skills for the food content area for dietetics education programs.

the basic skills associated with the content area. The foundation knowledge and skills precede achievement of the practitioner competencies, which identify the performance level expected on completion of the supervised practice component. As an example, the foundation knowledge and skills for the food content domain are shown in Figure 4.

Practitioner competencies build on foundation knowledge and skills and specify what every practitioner should be able to do at the beginning of his or her career. The final set of core competency statements for entry-level dietitians are shown in Figure 5. Competencies are also defined for four emphasis areas: nutrition therapy, community, foodservice systems management, and business/entrepreneur (see Figure 6). The supervised practice program has the following options.

- Use one or more of the four defined emphasis areas.
- Develop a general emphasis by selecting relevant competency statements from the defined emphasis areas. Because of market need and outcome objectives, the design of a general emphasis may vary from program to program. For example, the mix of performance competencies selected to address the needs of rural health care systems may be different from those identified for an urban integrated health care system.
- Create a unique emphasis area, such as sports/fitness, culinary, public policy, or food industry. The mix of performance competencies should be based on environmental resources and identified needs.

Figure 7 lists the final set of competency statements for entry-level dietetic technicians. Competencies for emphasis areas

were not defined for technician education because it appears that more dietetic technicians than dietitians are working in multiple function areas (See Figure 2).

**FURTHER APPLICATION TO DIETETICS PRACTICE AND EDUCATION**

The work of the past 2 years has been revealing and consistent in determining the scope of dietetics practice. The CDR Dietetics Practice Audit began with 22 theoretically derived activities intended to characterize the profession (3). By statistical analysis of a large survey and in workshop meetings, these dietetics activities were clustered in five areas: clinical; foodservice; community; other; and management, which supports all areas. This basic framework was used as one guide for developing the registration examinations. The Steering Committee's survey of entry-level dietetics practitioners began with 102 competencies. Applying expert judgment and statistical methods to this set produced three clusters: nutrition care, foodservice, and community applications, all organized around a core of managerial and interpersonal skills. The CDR Dietetics Practice Audit employer-survey phase (7) identified conceptual or managerial skills, interpersonal skills, and an unspecified number of technical and clinical applications' skills as the basic structure needed for future practitioners. Four independent data sets and several working groups have come to the same overall picture of dietetics practice.

The Model for Dietetics Practice (Figure 8) illustrates that dietetics practice involves applications in the areas of clinical

## CORE COMPETENCIES

Upon completion of the supervised practice component of dietitian education, all graduates should be able to do the following:

- Perform ethically in accordance with the values of The American Dietetic Association.
- Refer clients/patients to other dietetics professionals or disciplines when a situation is beyond one's level or area of competence (*perform*).
- Participate in professional activities.
- Perform self-assessment and participate in professional development.
- Participate in legislative and public policy processes as they affect food, food security, and nutrition.
- Use current technologies for information and communication activities (*perform*).
- Supervise documentation of nutrition assessment and interventions.
- Provide dietetics education in supervised practice settings (*perform*).
- Supervise counseling, education, and or other interventions in health promotion/disease prevention for patient/clients needing medical nutrition therapy for common conditions such as hypertension, obesity, diabetes, and diverticular disease.
- Supervise education and training for target groups.
- Develop and review educational materials for target populations (*perform*).
- Participate in the use of mass media for community-based food and nutrition programs.
- Interpret and incorporate new scientific knowledge into practice (*perform*).
- Supervise quality improvement, including systems and customer satisfaction, for dietetics service and/or practice.
- Develop and measure outcomes for food and nutrition services and practice (*perform*).
- Participate in organizational change and planning and goal-setting processes.
- Participate in business or operating plan development.
- Supervise the collection and processing of financial data.
- Perform marketing functions.
- Participate in human resources functions.
- Participate in facility management, including equipment selection and design/redesign of work units.
- Supervise the integration of financial, human, physical, and material resources and services.
- Supervise production of food that meets nutritional guidelines, cost parameters, and consumer acceptance.
- Supervise development and/or modification of recipes/formulas.
- Supervise translation of nutrition into foods/menus for target populations.
- Supervise design of menus as indicated by the patient's/client's health status.
- Participate in applied sensory evaluation of food and nutrition products.
- Supervise procurement, distribution, and service within delivery systems.
- Manage safety and sanitation issues related to food and nutrition.
- Supervise nutrition screening of patients/clients.
- Supervise nutrition assessment of patients/clients with common medical conditions such as hypertension, obesity, diabetes, and diverticular disease.
- Assess nutritional status of patients/clients with complex medical conditions (eg, renal disease, multisystem organ failure, and trauma).
- Manage the normal nutrition needs of persons across the lifespan (infants through geriatric patients/clients) and a diversity of people, cultures, and religions.
- Design and implement nutrition care plans as indicated by the patient's/client's health status (*perform*).
- Manage monitoring of patients'/clients' food and/or nutrient intake.
- Select, implement, and evaluate standard enteral and parenteral nutrition regimens (*perform*), for example, in a medically stable patient to meet nutritional requirements where recommendations/adjustments involve macronutrients primarily.
- Develop and implement transitional feeding plans (*perform*), that is, conversion from one form of nutrition support to another (eg, total parenteral nutrition to tube feeding to oral diet).
- Coordinate and modify nutrition care activities among caregivers (*perform*).
- Conduct nutrition care component of interdisciplinary team conferences to discuss patient/client treatment and discharge planning.
- Refer patients/clients to appropriate community services for general health, and nutrition needs and to other primary care providers as appropriate (*perform*).
- Conduct general health assessment such as monitoring blood pressure and vital signs (*perform*).
- Supervise screening of the nutritional status of the population and/or community groups.
- Conduct assessment of the nutritional status of the population and/or community groups.
- Provide nutrition care for population groups across the lifespan (*perform*) (infants through geriatric patients/clients) and a diversity of people, cultures, and religions.
- Conduct community-based health promotion/disease prevention programs.
- Participate in community-based food and nutrition program development and evaluation.
- Supervise community-based food and nutrition programs.

*FIG 5. Core competency statements for entry-level dietitians. If the verb "manage" is used, it assumes that the student will progress from "supervise" or "perform/do" the activity. The "perform" level is indicated in parentheses at the end of the statement to which it applies.*

**EMPHASIS AREA COMPETENCIES**

In addition to the core competencies, a program's graduates must have achieved the competencies in at least one emphasis area as defined below or as defined by the program.

**Nutrition Therapy Emphasis**

- Supervise nutrition assessment of patients/clients with complex medical conditions (eg, renal disease, multisystem organ failure, and trauma).
- Integrate pathophysiology into medical nutrition therapy recommendations (perform).
- Supervise nutrition care plan from design through evaluation for patients/clients with complex medical conditions (eg, renal disease, multisystem organ failure, and trauma).
- Select, monitor, and evaluate complex enteral and parenteral nutrition regimens (perform), that is, for more complicated health conditions in select populations (eg, renal disease, multisystem organ failure, and trauma).
- Supervise development and implementation of transition feeding plans from the inpatient to home setting.
- Conduct counseling and education for patients/clients with complex needs (eg, renal disease, multisystem organ failure, and trauma).
- Perform basic physical assessment.
- Participate in nasogastric feeding tube placement and care.
- Participate in waived point-of-care testing such as blood glucose monitoring.
- Participate in the care of patients/clients requiring adaptive feeding devices.
- Manage clinical nutrition services.

**Community Emphasis**

- Manage nutrition care for population groups across the life span.
- Conduct community-based food and nutrition program outcome assessment/evaluation.
- Develop community-based food and nutrition programs (perform).
- Participate in nutrition surveillance and monitoring of communities.
- Participate in community-based research.
- Participate in food and nutrition policy development and evaluation based on community needs and resources.
- Consult with organizations regarding food access for target populations.
- Develop a health promotion/disease prevention intervention project (perform).
- Participate in waived point-of-care testing such as measuring hematocrit and cholesterol levels.

**Foodservice Systems Management Emphasis**

- Manage development and/or modification of recipes/formulas.
- Manage menu development for target populations.
- Manage applied sensory evaluation of food and nutrition products.
- Manage production of food that meets nutrition guidelines, cost parameters, and consumer acceptance.
- Manage procurement, distribution, and service within delivery systems.
- Manage the integration of financial, human, physical, and material resources.
- Manage safety and sanitation issues related to food and nutrition.
- Supervise customer satisfaction systems for dietetics services and/or practice.
- Supervise marketing functions.
- Supervise human resource functions.
- Perform operations analysis.

**Business/Entrepreneur Emphasis**

- Perform organizational and strategic planning.
- Develop business or operating plan (perform).
- Supervise procurement of resources.
- Manage the integration of financial, human, physical, and material resources.
- Supervise organizational change process.
- Supervise coordination of services.
- Supervise marketing functions.

**General Emphasis**

Relevant competency statements from the above emphasis areas are selected on the basis of market need and outcome objectives.

*FIG 6. Competency statements for emphasis areas for entry-level dietitians. If the verb "manage" is used, it assumes that the student will progress from "supervise" or "perform/do" the activity. The "perform" level is indicated in parentheses at the end of the statement to which it applies.*

care, foodservice, community, and others, and is supported by a core of skills including leadership, management, technology, research, science, and, at the very heart, collaboration and communication. This model is three dimensional. To provide food and nutrition services requires a strong base in the art and science of food and nutrition. This defines dietetics. Deficiencies in laying this foundation will hamper individual practitioners and the profession for years to come. Another important factor illustrated more clearly in Figure 1 is time. The acquisition of knowledge and the development of competence is not immediate, it is a process extended over a considerable period of time.

As shown in Figure 1, competency-based dietetics education is consistent with the literature on the novice-expert continuum (1) and with the general structure of education as it now exists in the professions (8). Formal education transforms novices into beginners, primarily through exposure to the foundation of food and nutrition. During internships and supervised clinical experiences beginners become competent, largely through learning how to apply textbook knowledge and demonstrated laboratory skills in contexts where interpersonal communication, management, and related core skills are beginning to develop. Growth in the profession from competence to proficiency is regulated by a combination of on-the-job

Upon completion of the supervised practice component of a dietetic technician education program, the graduate will be able to do the following.

- Perform ethically in accordance with the values of The American Dietetic Association.
- Refer clients/patients to other dietetics professionals or disciplines when a situation is beyond one's level of competence (perform).
- Participate in professional activities.
- Perform self-assessment and participate in professional development.
- Participate in legislative and public policy processes as they affect food, food security, and nutrition.
- Use current technologies for information and communication activities (perform).
- Document nutrition screenings, assessments, and interventions (perform).
- Provide dietetics education in supervised practice settings (perform).
- Educate patients/clients in disease prevention and health promotion and medical nutrition therapy for common conditions such as hypertension, obesity, diabetes, and diverticular disease (perform).
- Conduct education and training for target groups.
- Assist with development and review of educational materials for target populations.
- Apply new knowledge or skills to practice (perform).
- Participate in quality improvement, including systems and customer satisfaction, for dietetics service and/or practice.
- Participate in development and measurement of outcomes for food and nutrition services and practice.
- Participate in organizational change and planning and goal-setting processes.
- Participate in development of departmental budget/operating plan.
- Collect and process financial data (perform).
- Assist with marketing functions.
- Participate in human resources functions.
- Participate in facility management, including equipment selection and design/redesign of work units.
- Supervise organizational unit, including financial, human, physical, and material resources and services.
- Supervise production of food that meets nutrition guidelines, cost parameters, and consumer acceptance.
- Develop and/or modify recipes/formulas (perform).
- Supervise translation of nutrition into foods/menus for target populations.
- Design menus as indicated by the patient's/client's health status (perform).
- Participate in applied sensory evaluation of food and nutrition products.
- Supervise procurement, distribution, and service within delivery systems.
- Supervise safety and sanitation issues.
- Perform nutrition screening of patients/clients.
- Assess nutrition status of patients/clients with common medical conditions such as hypertension, obesity, diabetes, and diverticular disease (perform).
- Assist with nutrition assessment of patients/clients with complex medical conditions (eg, renal disease, multi-system organ failure, and trauma).
- Participate in the management of the normal nutrition needs of persons across the lifespan (infants through geriatric patients/clients) and a diversity of people, cultures, and religions.
- Assist with design and implementation of nutrition care plans as indicated by the patient's/client's health status.
- Monitor patients'/clients' food and/or nutrient intake (perform).
- Participate in the selection, monitoring, and evaluation of standard enteral nutrition regimens, for example, in a medically stable patient to meet nutritional requirements where recommendations/adjustments involve primarily macronutrients.
- Implement transition feeding plans (perform).
- Participate in interdisciplinary team conferences to discuss patient/client treatment and discharge planning.
- Refer patients/clients to appropriate community services for general health and nutrition needs and to other primary care providers as appropriate (perform).
- Conduct general health assessment such as monitoring blood pressure and vital signs.
- Conduct screening of the nutritional status of the population and/or community groups.
- Assist with assessment of the nutrition status of the population and/or community groups.
- Participate in nutrition care for population groups across the lifespan (infants through geriatric patients/clients) and a diversity of people, cultures, and religions.
- Participate in community-based or worksite health promotion/disease prevention programs.
- Participate in development and evaluation of community-based food and nutrition program.
- Implement and maintain community based-food and nutrition programs (perform).

*FIG 7. Competency statements for entry-level dietetic technicians. If the verb "supervise" is used, it assumes that the student has progressed from "perform/do" the activity. The "perform" level is indicated in parentheses at the end of the statement to which it applies.*

training and self-initiated and self-monitored learning. Balch (7) has drawn our attention to the fact that characteristics of the employment situation play critical roles in what dietitians do and what they learn and that it is imperative to monitor changes within the work environment. Competencies should be used as an outcome measure to determine when students are becoming competent in those areas essential to successful, independent practice.

The Steering Committee believes the competencies for entry-level education will meet the future needs of the profession because they:

- Are based on national practice and employer data;
- Build on assumptions that education programs are responsive to market changes by being flexible in curricula, methods, and collaboration; emphasize critical thinking, problem solving, and communications; and provide the basis for lifelong learning;
- Increase the focus on areas of need such as food, public policy, and outcomes research;
- Strengthen communication and management skills;
- Increase the expected performance level of entry-level practitioners in areas where dietetics professionals can assume a

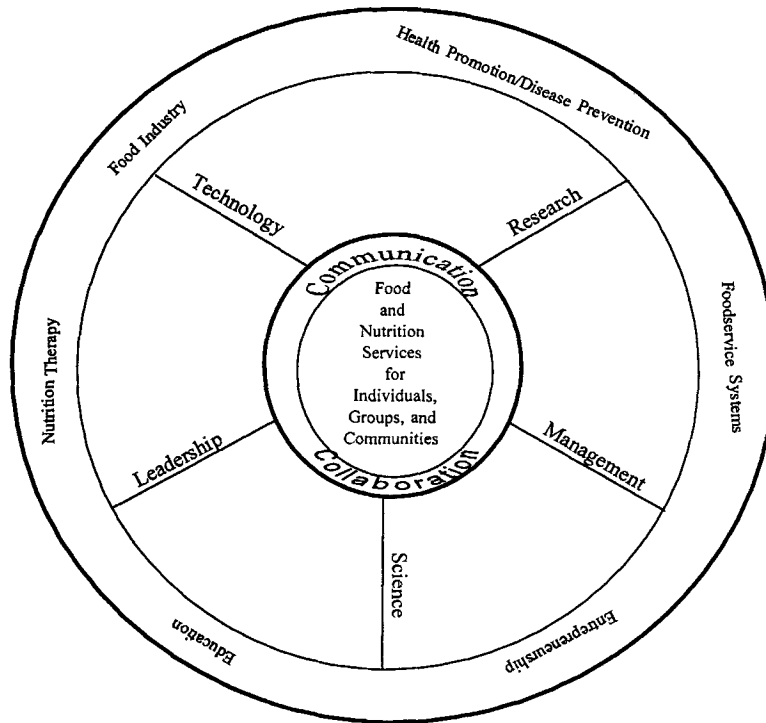


FIG 8. Model for dietetics practice.

leadership position;

- Specify the breadth and depth of dietetics to facilitate curriculum planning and course design;
- Identify the technician role in relation to the dietitian role in promoting teamwork and career laddering; and
- Address issues reported by the Pew Health Professions Commissions (9) and other national commissions on higher education and the professions.

### CONCLUSIONS

Surveys of dietitians and dietetic technicians who had been registered 3 years or less were used to form a picture of the educational and practice competencies of entry-level dietetics professionals. Considerable overlap was observed in the work functions engaged in by these practitioners. The results confirmed the usefulness of the competency approach and the system of performance levels developed by the Educational Competencies Steering Committee. The Steering Committee used survey data to create foundation knowledge and skills and a core set of competency statements for registered dietitians and dietetic technicians, registered. Data revealing areas that may be overtaught or underused in dietetics were used to create competencies for emphasis areas that can be added to dietitian education programs.

The combined work of several committees and the research they have produced on competencies will be useful in four areas. First, competency statements have been used to support the content and format of registration examinations. Second, the educational standards in the accreditation process will be referenced, as they are in other professions, to competency statements defining entry-level dietetics practitioners.

Third, there is an educational advantage to having competency statements as a guide for curriculum development, evaluation, and program outcomes assessment. Fourth, competency statements can be used to help answer the question: "What does it mean to become a dietetics professional and how is the profession changing?"

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