

Perspectives in Practice

A Look at the Educational Preparation of the Health-Diagnosing and Treating Professions: Do Dietitians Measure Up?

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ABSTRACT

Basic educational requirements for dietitians were developed almost 80 years ago and remain largely unchanged. In the interim, other health professions have increased their academic standards. A review of the educational preparation of 16 health-diagnosing and treating professions was undertaken to better understand the standards for dietetics education within a larger context. Educational standards for each profession were obtained and reviewed for types of degrees; duration of post-secondary, college-level education; division of didactic and clinical education; and presence of accredited post-professional education. Findings reveal that at least 11 of the professions studied offer first professional degrees. Differences were noted in duration and sequencing of undergraduate education, didactic or classroom education, and especially supervised practice. Models to facilitate comparison between educational standards were developed. The current educational model in dietetics is designed to prepare entry-level practitioners and academics who comprise less than 20% of the profession. This review supports the need to investigate educational opportunities for beyond-entry-level dietitians, and to develop educational programs that amplify the existing models for educating dietitians.

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In 1928, the baccalaureate degree in food and nutrition followed by 6 months of supervised practice was established as the minimum training for entry-level dietitians (1). Seventy-six years later, this basic requirement remains unchanged. All dietitians obtain a minimum of a baccalaureate degree. The 6 months of supervised practice may be completed before the baccalaureate degree as part of a coordinated program, or following the baccalaureate degree as an internship.

Changes in practice since 1928 have resulted in a dra-

matic expansion of the knowledge and skills required for entry-level practice. These changes are regularly measured and used to revise educational standards (2-4). The latest revision of educational standards was implemented in 2003 (5).

To meet similar challenges of expanding knowledge and scope of practice, other health care professions have extended preprofessional education and developed advanced or specialty practice education (6,7). An examination of dietetics education within the global context of education for health care professionals would provide information to those interested in shaping the future of dietetics education. Thus, a systematic review was conducted to describe the standards for educational preparation of dietitians in comparison with the educational standards of other health-diagnosing and treating professions.

METHODS

To conduct a review of the educational preparation of health professions, it was first necessary to select the professions to study. The Bureau of Labor Statistics annual report includes dietitians in a group of 15 health-diagnosing and treating practitioners (8). This peer group was selected based on the diagnosis and treatment functions performed by all professions, and because it contains professionals such as nurses, physicians, pharmacists, physical therapists, and physician assistants, that dietitians often encounter in the health care setting. Members of the group are chiropractors, dentists, dietitians and nutritionists, occupational therapists, optometrists, pharmacists, physical therapists, physician assistants, physicians and surgeons, podiatrists, recreational therapists, registered nurses, respiratory therapists, speech-language pathologists and audiologists, and veterinarians. Counseling psychologists were added to the group to provide information on a profession whose practice is similar to dietitians who counsel patients to achieve long-term dietary change.

Educational accreditation standards for each profession in the cohort were obtained by the authors who have experience as dietetic education program directors and program reviewers. To ensure that reliable information was reviewed, standards were obtained from the websites of the US Department of Education–approved accreditation bodies for each profession (1,9-23). No US Department of Education–approved accreditation body provided educational standards for “nutritionists,” so the group “dietitians and nutritionists” was collapsed into “dietitians.”

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To achieve consistency, a single individual used a standardized data collection form to identify the credentials granted; postsecondary or college level preparation required for entry into professional education, and the duration of didactic education, supervised practice, and total years of education required for entry-level practice in each profession; and availability of accredited advanced practice education. Standardized definitions were used to facilitate comparisons. For example, an academic year was defined as a minimum of 30 weeks of full-time study. Supervised practice requirements were converted into weeks based on a 40-hour work week. Thus, the 900-hour supervised practice requirement for dietetics became 23 weeks. For one profession, the standards provided insufficient information concerning the division of didactic and practice experience. To verify typical program composition for this profession, the curricula of all of 12 existing programs were examined to identify typical program composition.

FINDINGS

Data obtained from the documents reviewed are summarized in the [Table](#). The [table](#) represents typical educational preparation based on the most recent standards for each profession. Graphical representations of the most common educational pathways were prepared and are presented in [Figures 1](#) through [3](#). The graphical representations are based on the accreditation standards for the professions reviewed. It is likely that many individual accredited programs across professions vary from the models. This is apparent in dietetics where supervised practice may be coordinated with undergraduate or graduate study, or may occur following baccalaureate or graduate degrees.

Types of Degrees

An important distinction to make among the types of degrees is whether they are academic or professional degrees. According to the US Department of Education, the baccalaureate, Master's, and Doctor of Philosophy degrees are academic degrees (9). Dietitians typically enter the profession following completion of a baccalaureate-level degree. Dietitians who desire an academic career may pursue advanced degrees in areas such as nutrition, nutritional biochemistry, food science, or food systems management. Dietitians may also pursue degrees outside the field of dietetics in areas such as public health or business. Of the professions studied, dietetics alone requires the baccalaureate degree as the sole prerequisite to entry-level practice. Standards for nurses, recreational therapists, and respiratory therapists do not require a baccalaureate degree, although baccalaureate degrees in these fields do exist. The remaining professions use the baccalaureate degree as a prerequisite to the professional degree.

For the majority of health professions, practice, rather than academic degrees, is required. The US Department of Education states that first professional degrees "signify completion of the academic requirements for beginning practice in a given profession and a level of professional skill beyond that normally required for a baccalaureate

degree" (24). A first professional degree may also be known as a practice doctorate, clinical practice doctorate, clinical doctorate, or professional doctorate degree. These degrees differ from the academic doctorate or PhD degree in that they blend didactic or classroom instruction with supervised practice experience. Typically, these degrees require 4 academic years of college level education before admission, are 3 to 4 years long, and blend didactic or classroom instruction with supervised practice instruction. Eleven of the professions included in the [Table](#) use the baccalaureate degree followed by the professional degree as a prerequisite to professional practice. Seven of these professions (ie, chiropractors, counseling psychologists, dentists, optometrists, physicians and surgeons, podiatrists, and veterinarians) have a long-standing tradition of first professional degrees.

The four professions in the [Table](#) that have recently converted to the first professional degree represent a trend of interest to dietitians. The pharmacy profession developed the Doctor of Pharmacy (PharmD) degree in 1955 (10). Originally conceived as an advanced practice degree for registered pharmacists, it rapidly became a first professional degree. For almost 50 years, entry into the pharmacy profession could be obtained at the baccalaureate or first professional degree level. To accommodate changes in pharmacy practice, pharmacy ceased accreditation of baccalaureate programs and moved exclusively to the first professional degree on June 30, 2004 (11).

Three other professions have discontinued baccalaureate preparation in favor of a Master's or first professional degree. The physical therapy profession developed the Doctor of Physical Therapy degree (DPT) and ceased accreditation of baccalaureate degrees in physical therapy as of January 1, 2002 (12). Persons who pursue a physical therapy career may choose between a Master's and DPT degree. The rationale for this change included an increasing breadth and depth of practice skills and the need for patients to directly access physical therapists without a physician referral. The American Occupational Therapy Association will no longer accredit baccalaureate programs as of January 1, 2007 (13). Occupational therapists will be credentialed at the entry-level after obtaining the Master's degree or Doctor of Occupational Therapy (OTD). The rationale given for these changes included the need for practitioners with advanced clinical skills who were able to apply theory to clinical practice (14). The speech-language pathologists have traditionally used the MS degree as the entry-level credential. However, the audiology portion of this profession has initiated the Doctor of Audiology (AudD). By January 1, 2012, applicants for the Certificate of Clinical Competence in Audiology must have a doctoral degree to meet the need for increased professional knowledge and skills that support recent changes in the audiologist's scope of practice (15). Thus, the health professions in the study cohort that do not offer first professional degrees are dietetics, physician assistant, recreational therapy, and respiratory therapy.

Post-Secondary, College-Level Education

For nursing, respiratory therapy, and recreation therapy, professional training may begin following completion of

Table. Comparison of typical entry-level didactic and experiential training for 16 health-diagnosing and treating practitioners

Profession	Entry-level credential	Years of post-secondary, college-level education required for acceptance into professional education	Duration of didactic education in academic years	Duration of practice experience in weeks	Total years of post-secondary education to entry level	Accredited post-professional training available?
Chiropractors ^a	DC, Doctor of Chiropractic	3	3.6	10-15	7	Yes
Counseling psychologist ^a	PsyD, Doctor of Psychology	4	3	50	8	Yes
Dentists ^a	DDS, Doctor of Dental Surgery or DMD, Doctor of Dental Medicine	4	2	100	8	Yes
Dietitians and nutritionists	RD, Registered Dietitian	2	2	23	4.5	No
Occupational therapists ^b	MS or OTD, Doctor of Occupational Therapy	4	2.5	24	7	No
Optometrists ^a	OD, Doctor of Optometry	3	3	50	7	Yes
Pharmacists ^b	PharmD, Doctor of Pharmacy	4	3	50	8	Yes
Physical therapists ^b	DPT, Doctor of Physical Therapy	4	2	40	7	Yes
Physician assistants	PA, Physician Assistant	2	1	50	4	Yes
Physicians and surgeons	MD, Medical Doctor	4	2	100	8	Yes
Podiatrists ^a	DPM, Doctor of Podiatric Medicine	3	2	100	7	Yes
Recreational therapists	AD or BS	0-2	2	9	2-4	No
Registered nurses	RN, Registered Nurse or BSN, Bachelor of Science in Nursing	0-4	1.5	15-20	2-4	Yes
Respiratory therapists	RRT, Registered Respiratory Therapist	0	1	40	2	No
Speech-language pathologists and audiologists ^b	AuD, Doctor of Audiology	4	3	52	8	Yes
Veterinarians ^a	DVM, Doctor of Veterinary Medicine	4	2	100	8	Yes

^aProfessions with well-established entry-level via the first professional degree.

^bProfessions that have recently discontinued baccalaureate degrees as a route to professional practice.

high school. Almost all other professions typically require a minimum of 4 years of college as a prerequisite to professional education. Individual programs in several professions may accept students before completion of the baccalaureate degree, but these programs are in the minority. In medicine, the baccalaureate degree requirement is based on the need for education, including history, arts, and language, that is increasingly important for development of competencies outside the scientific knowledge domain (17). Thus, in professions such as med-

icine, physical therapy, and occupational therapy, students may obtain baccalaureate degrees in chemistry, biology, music, or even nutrition before beginning professional school. Formal professional coursework is begun after a baccalaureate degree is awarded.

Dietetics students typically enter a didactic program in dietetics as early as the first year of college, or a coordinated program at the end of 2 years of college. For both programs, didactic education is completed as part of the baccalaureate degree. Dietitians typically obtain a degree

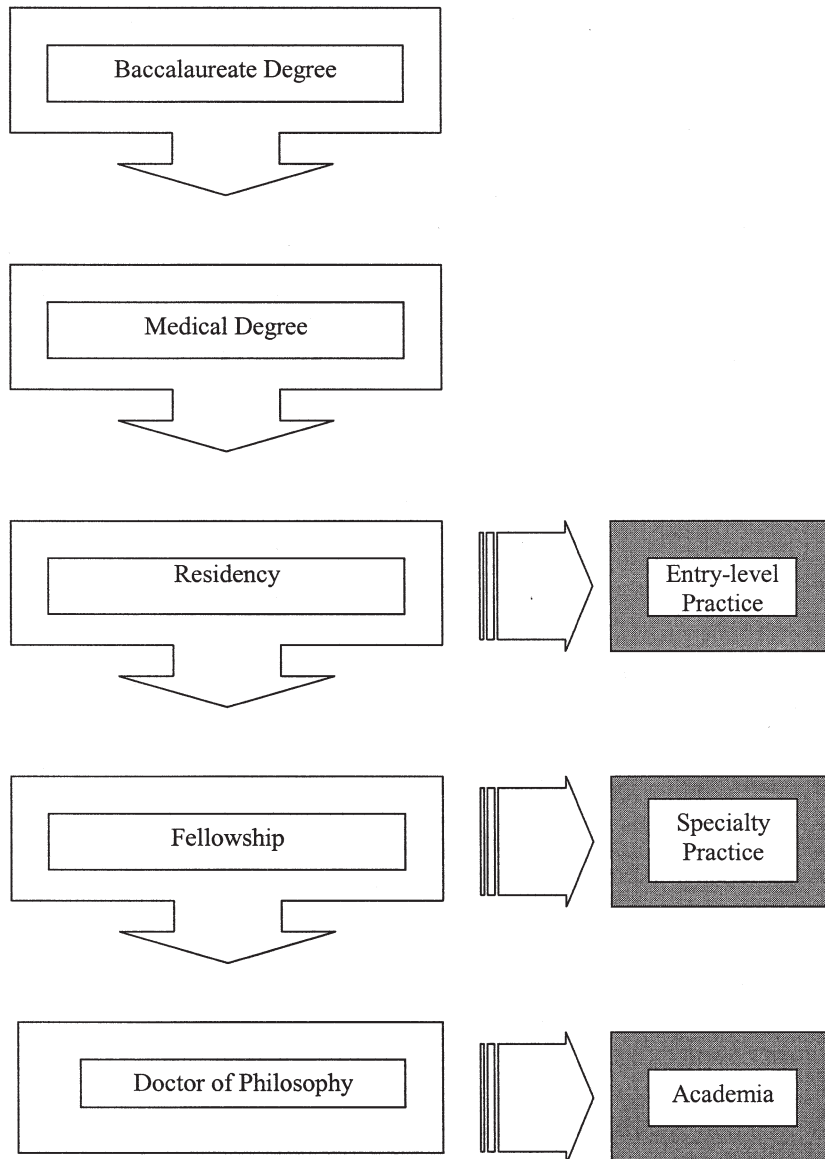


Figure 1. A representation of the medical education model.

in dietetics, nutrition, or food systems management, which incorporates 2 years of didactic education at the baccalaureate level. Thus, dietitians obtain approximately 2 years of general education while health professionals in the cohort other than recreational and respiratory therapists and nurses obtain 4 years.

Division of Didactic and Clinical Education

A common characteristic of standards studied is the combination of didactic and supervised practice experiences before obtaining an entry-level credential. Didactic or classroom training provides understanding of the basic science and theory that supports practice. Supervised clinical practice provides an opportunity for students to apply scientific principles and to gain confidence in performing skills. Edu-

cational standards for dietitians require more didactic coursework than three professions, an equivalent number of years of didactic education to six professions, and less didactic education than another six professions studied. A major difference in dietetics is completion of didactic education at the baccalaureate rather than post-baccalaureate level.

Duration of clinical education ranged from 9 weeks for recreational therapists to 100 weeks for dentists, physicians and surgeons, podiatrists, and veterinarians. Seven professions required 1 year of supervised practice and four professions required 2 years of full-time supervised practice. Thus, standards for 11 of the professions studied mandate more clinical education than the 23 weeks required of dietitians.

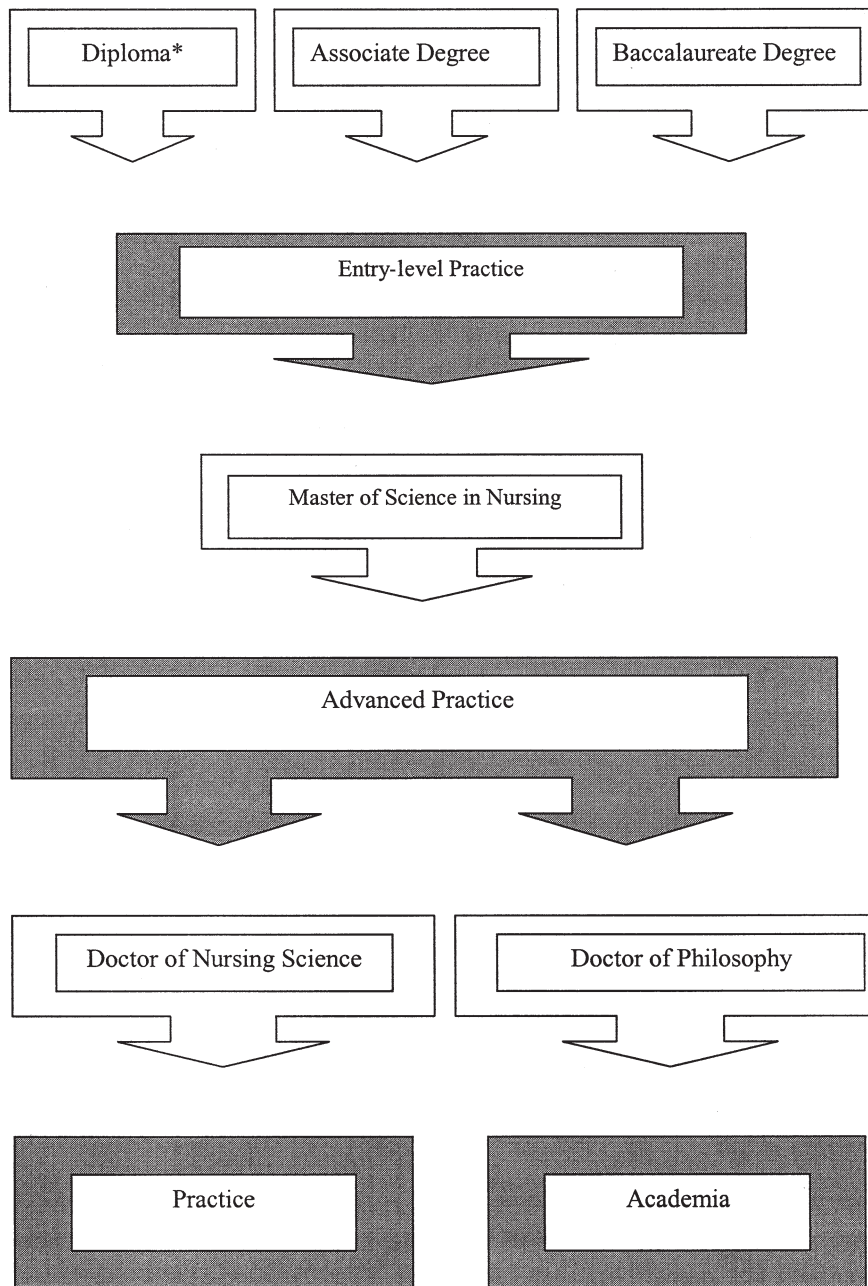


Figure 2. A representation of the nursing education model. *A diploma in nursing is granted by accredited programs that typically consist of 3 years of practice experience.

Accredited Post-Professional Education

The final objective of this systematic review was to identify the availability of accredited post-professional training in the form of residencies or fellowships. Post-professional residencies and fellowships, consisting primarily of supervised practice, provide additional experience in a focused or specialized area of study. For professions such as medicine, pharmacy, and physical therapy, the fellowship includes a year devoted almost exclusively to research (16,17).

Dietetics has defined the term *residency* as a planned educational program following published guidelines for specialty training that includes didactic and supervised experiential learning (18). Guidelines for residency programs in metabolic nutrition care include 400 hours of practice completed in a 6- to 9-month period of time. There are reports of advanced practice residencies and fellowships in some areas of dietetics (19,20). While specialty and advanced practice credentials and certificates for dietetics have been developed, the Commission on

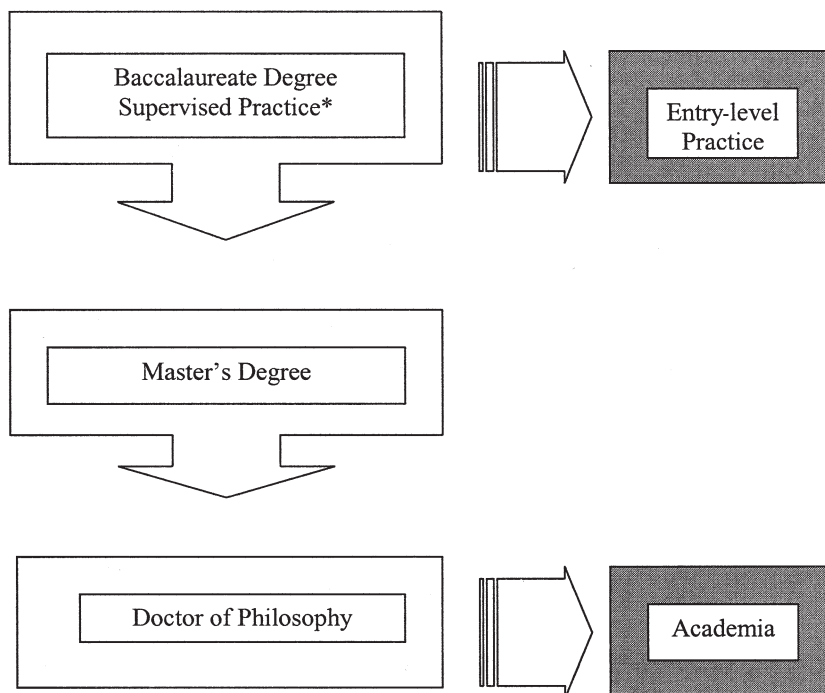


Figure 3. A representation of the dietetics education. *Supervised practice may occur at the undergraduate level in a coordinated program or following the baccalaureate degree as an internship.

Accreditation of Dietetics Education has not developed an accreditation mechanism for the educational programs leading to these credentials (21).

DEVELOPMENT OF EDUCATION MODELS

From the educational standards reviewed for the study, two clear educational models emerge. These models have been represented graphically to facilitate comparison. The model for medical education is depicted in Figure 1. It was pioneered by William Osler at Johns Hopkins Hospital in the 1890s and was widely implemented during medical education reform sparked by the Flexner Report (22,23). The medical model includes a baccalaureate degree as a prerequisite for medical school, which consists of 2 years of basic science training, followed by 2 years of clinical clerkship. Successful completion of medical school results in an entry-level first professional degree followed by a minimum of 3 years of residency before entering practice.

Advanced training in medicine follows completion of the first professional degree and is combined with specialty training. Resident physicians begin to specialize in broad categories, such as medicine, surgery, obstetrics and gynecology, or psychiatry. Fellowships are available in medical and surgical subspecialties, such as gastroenterology, infectious disease, neurosurgery, or orthopedic surgery. Fellowships typically include a research component, but physicians who desire an academic career often obtain a Master's or PhD to augment academic and research skills. Variations of the medical model have been adopted by counseling psychologists, chiropractors, dentists, optometrists, pharmacists, physical therapists, podiatrists, audiologists, and veterinarians.

A graphic representation of the model for nursing education appears in Figure 2. This model is characterized by a number of unique features. The vast majority of nurses enter their profession via an associate degree or baccalaureate degree program. A small and declining number of nurses enter their field through 3-year, hospital-based programs known as diploma programs (6). Another unique feature of the nursing model is that educational progress is typically interrupted to obtain practice experience. For example, 1 or 2 years' work experience may be required prior to entry into a Master of Science in Nursing program, which in turn provides the necessary foundation for advanced nursing practice. The nursing model incorporates advanced practice at the Master's level. On completion of Master's coursework, 6 months of additional supervised practice is typically required as a prerequisite for advanced practice nursing credentials (24).

The nursing model clearly supports careers in practice and academia as it includes more than one type of doctoral degree. Nurses who complete advanced practice training may enter advanced practice, or pursue an academic career by obtaining a PhD. Another option available to advanced practice nurses is to obtain a Doctor of Science in Nursing degree (DSN). This degree is designed to prepare clinical practice scholars who extend and generate new nursing practice protocols for the purpose of improving health care (25). Desired roles for the DSN are clinical researcher, clinical administrator, collaborative practitioner with physicians and others, joint appointee to health care agencies and schools of nursing, or clinical teacher.

APPLICATION TO DIETETICS

Figure 3 contains a model based on current standards for dietetic education. The majority of dietetics programs involve a baccalaureate degree coordinated with or followed by supervised practice as was established in 1928. Individual programs may require more education or supervised practice than the standards mandate. For example, credits required for the baccalaureate degree vary between institutions and an unknown number of programs exceed the 900-hour minimum requirement for supervised practice. Other programs provide supervised practice coordinated with or following graduate study. This variety may demonstrate creativity in meeting educational standards for dietetics education or may also reflect the need for additional knowledge and skills consistent with increasing nutrition and dietetics knowledge.

Comparison between the dietetics, medical, and nursing models reveals differences in the depth of education at the baccalaureate, professional, and supervised practice levels. Both the medical and nursing models include accredited specialized practice education and experience. The existence of advanced practice in dietetics was documented more than a decade ago (26), but a mechanism to accredit advanced practice education in dietetics has yet to be developed. Interest in practice doctorate degrees has been reported (27) and at least one advanced clinical nutrition doctorate has been developed recently (28). It is possible that more of these programs exist or are being developed, but they are not widely available.

The dietetic education model depicts the preparation of entry-level practitioners and academics. The most recent survey of the American Dietetic Association membership revealed that more than 90% of members are beyond entry-level and more than 95% work outside academia (29). Thus, it appears that there are large numbers of dietitians who have exhausted the educational opportunities depicted in the model in Figure 3. In 1999, more than 50% of dietitians had or were obtaining an advanced degree, so there is clear interest in advanced education. It is not known whether these degrees are in dietetics, nutrition, public health, business, education, or other fields. Whether the available educational options meet the needs of dietitians beyond entry level who do not wish to pursue an academic career is also unknown.

Dietitians who provide medical nutrition therapy may desire additional education in advanced nutritional pathophysiology, nutritional pharmacology, physical assessment, nutritional diagnosis, nutrition counseling, and practice management that dietitians use to provide medical nutrition therapy. These dietitians may be advised to obtain an advanced degree in nutrition. The majority of nutrition degree programs are located in land grant universities (30) and focus on normal human nutrition or nutrition education rather than the skills that dietitians use to diagnose and treat patients suffering from nutrition-related disorders that occur as part of chronic disease or critical illness. Dietitians in community nutrition, management dietetics, or other areas of practice may also have a need for formal coursework to support development of practice-based skills.

CONCLUSIONS

A review of the standards for educational preparation of 16 health-diagnosing and treating professions illuminates the differences in the educational preparation between dietitians and others in this peer group. The first difference is duration of entry-level preparation. The second finding of interest is the widespread use of professional degrees. The third finding is the widespread use of accredited, advanced practice education in the form of residency or fellowship training.

The impact of differences in educational requirements on practice opportunities and salary structure for dietitians is unknown. The impact of differences in educational requirements on the way in which dietitians approach their work and interact with other health professions studied is also unknown. The need for advanced practice education in dietetics is another unknown. Each of these unknowns presents research opportunities. They also present opportunities to educators who wish to develop viable programs that expand the depth and breadth of educational opportunities available to dietitians.

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