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## **A Study of Members of a Public Health Nutrition Practice Group: How Education, Training, and Experience Influence Competency in Practice**

Annemarie Jane Novak  
*University of Tennessee, Knoxville*

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I am submitting herewith a thesis written by Annemarie Jane Novak entitled "A Study of Members of a Public Health Nutrition Practice Group: How Education, Training, and Experience Influence Competency in Practice." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nutrition.

Betsy Haughton, Major Professor

We have read this thesis and recommend its acceptance:

Paula Zemel, Charles Hamilton

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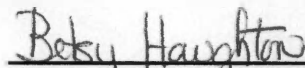
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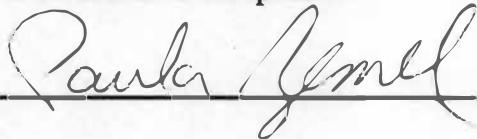
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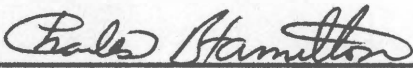
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\_\_\_\_\_

Betsy Haughton, Ed.D., R.D., Major Professor

We have read this thesis  
and recommend its acceptance:

  
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Date

April 27, 1992



**A STUDY OF MEMBERS OF A PUBLIC HEALTH  
NUTRITION PRACTICE GROUP:  
HOW EDUCATION, TRAINING, AND EXPERIENCE  
INFLUENCE COMPETENCY IN PRACTICE**

**A Thesis**

**Presented for the**

**Master of Science**

**Degree**

**The University of Tennessee, Knoxville**

**Annemarie Jane Novak**

**May, 1992**

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## **DEDICATION**

**This thesis is dedicated to my parents,**

**Richard and Bertha Novak,**

**for their continuous love**

**and constant support of**

**my educational endeavors.**

## ACKNOWLEDGEMENTS

I would like to thank my major professor, Betsy Haughton, Ed.D., R.D., for her never-ending patience with my never-ending questions. She is a wonderful mentor and friend. I would also like to thank the other members of my thesis committee, Paula Zemel, Ph.D., R.D., and Charles Hamilton, Dr.P.H., for their support and guidance throughout my research. I appreciate my family - especially, Mom and Dad, Kathy and Doug, Rick, Grandma, Aunt Irene, and everyone else in Cleveland, Ohio - and my friends - especially, Cathy, Michael G., Beth and Rob, and Doug - who were always understanding and encouraging, as well as tolerant of my bouts of impatience. As always, I want to thank Mike for being my computer consultant, sounding board, and, most importantly, my best friend. I also want to recognize my fellow classmates at the University of Tennessee for standing by me and sometimes pushing me forward throughout the past two years. Finally, I am grateful to the Public Health Nutrition Practice Group of the American Dietetic Association for funding this research project.

## ABSTRACT

This research was conducted to identify the self-reported continuing education needs of members of the Public Health Nutrition Practice Group of the American Dietetic Association and to determine the relationships between education, training, and experience factors and public health nutrition practice. The three categories (nutrition, public health, and social/behavioral science and education) of knowledge and skill statements identified in the public health nutrition graduate curriculum guide, *Strategies for Success*, were adapted for use in a survey which asked respondents to self-report the level and degree of use in the job of each knowledge/skill using a Likert-like scale. Respondents were asked also a series of demographic questions and questions concerning continuing education format.

Results showed respondents needed basic continuing education programs dealing with public health competencies and more advanced programs for nutrition topics. In terms of public health nutrition practice, the factors which appeared to have the greatest influence in self-reported level and use of competencies were years experience in public health nutrition and primary position.

Recommendations were made regarding qualifications for three positions in public health nutrition: administrator/manager, direct care service provider, and a combination of the two. Finally, future research needs in the field of public health nutrition were identified.

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### PLATE

### PAGE

1. Survey Instrument

In Pocket

# 1. LITERATURE REVIEW

Identification of factors influencing competency in public health nutrition practice is important to assure practitioners are best qualified for their positions. This study was performed to examine the relationships between education, training, and experience factors and practice of public health nutritionists, and to identify those continuing education needs that will help assure competency.

## INTRODUCTION

Competent practice in any profession requires preparation and on-going improvement in knowledge and ability. Typically, this begins with enrollment in an education program designed according to profession-specific required competencies. Carefully monitored field experiences or training programs may be part of initial education or may follow the didactic component of preparation for entry into professional practice. Finally, continuing education is essential following commencement of professional practice.

Continuing education may be defined as a life-long process in which individuals enhance knowledge with subsequent improvement in competency, enabling personal contributions to advancement of the field.<sup>1</sup> In order for continuing education to take place, learners must be able to assess personal needs and goals within the realm of specific responsibilities. An important aspect in the continuing education process is assurance and improvement of competency.

## COMPETENCY ASSURANCE

A competency assurance program can help a profession better attain congruency, which is defined as "a clear statement of what the profession is and then, in fact, to be what it says it is."<sup>2(p573)</sup> This can only be achieved when education of individuals, credentialing of both academic programs and practitioners, and actual professional practice are related to one another positively. Figure 1 depicts components of congruency that contribute to quality assurance.

Wilson defines competency assurance as "the certainty that the practitioner is able throughout his or her career to carry the responsibilities of any position he or she fills."<sup>2(p573)</sup> Five components of her competency assurance program are: 1) role delineation; 2) initial competency education; 3) practitioner assessment; 4) subsequent competency education; and 5) practitioner evaluation (Figure 2). This has been a useful model in allied health professions and has been cited in the *American Journal of Occupational Therapy*, *Journal of the American Dietetic Association*, *Occupational Therapy, Evaluation and the Health Professions*, and *Public Health Reports*. Due to its demonstrated usefulness, Wilson's model serves as a guideline in this review of literature for identifying factors that influence education, training, and practice of public health nutritionists.

### ***ROLE DELINEATION***

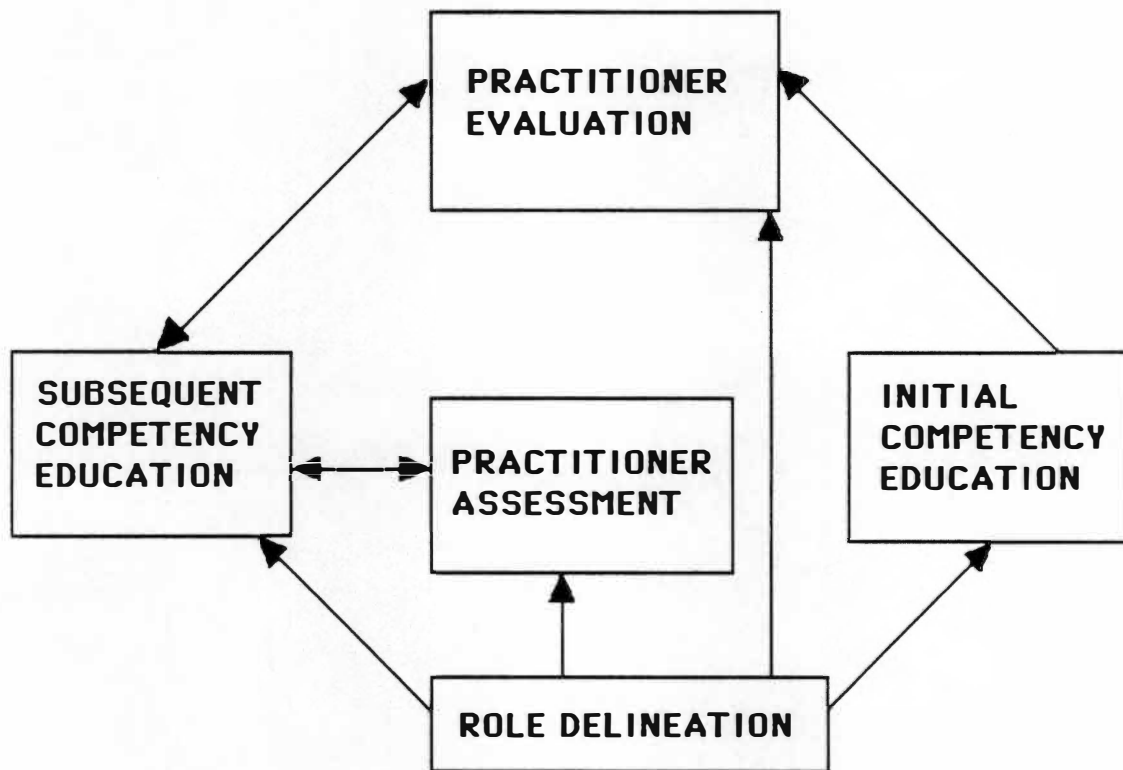
The first component Wilson identifies in a competency assurance program is role delineation.<sup>2</sup> The process identifies responsibilities assumed by practitioners in the





**FIGURE 1. COMPONENTS OF PROFESSIONAL CONGRUENCY CONTRIBUTING TO QUALITY ASSURANCE**

Source: Wilson MA. A competency assurance program. *Am J Occ Ther.* 1977;31:573-579.



**FIGURE 2. COMPETENCY ASSURANCE PROGRAM COMPONENT RELATIONSHIPS**

Source: Wilson MA. A competency assurance program. *Am J Occ Ther.* 1977;31:573-579.

provision of quality care requiring the minimum level of training and experience in each level of practice.<sup>3</sup> Role delineation is therefore goal-oriented.

The American Dietetic Association (ADA) has completed role delineation studies, defining competencies required of entry-level practitioners in the field. "Entry-level position" was operationally defined for entry-level positions in community dietetics in ADA's 1983 role delineation study<sup>4</sup> as one that can be filled by individuals with three or less years of experience. Two positions were identified and described. The community dietitian was defined as "a specialized dietetic professional in a community setting who affects the nutrition services to individuals and groups in health and illness."<sup>4</sup>(p97) This was contrasted with the public health nutritionist "...with advanced training who takes the lead in assessing community nutrition needs, and plans, organizes, directs or coordinates, and evaluates the nutrition component of the health agency's services."<sup>4</sup>(p101) This suggests the public health nutritionist has more administrative responsibilities while the community dietitian provides direct service nutrition care. Also, a distinction was made between community dietitians who function in general community settings and public health nutritionists who work specifically in public health agencies.

A nationwide random sample survey of entry-level dietetic practitioners was conducted to verify the role delineation.<sup>4</sup> Results showed entry-level Master's degree personnel performed responsibilities of the community dietitian independently more often than Bachelor's degree personnel, including tasks associated with personnel management; in-service education; consultation; community assessment; and program planning, implementation, and evaluation. In other words, Master's-level personnel functioned more as administrators and Bachelor's level practitioners provided more

direct care nutrition services. The roles delineated, therefore, represented what practitioners should be doing and what they actually did in the field.

The study resulted in skill and performance statements and requisite knowledge for the community dietitian and dietetic technician. Performance statements were those for which entry-level personnel had to be accountable. Skill and knowledge statements were utilized in developing the dietetic registration examination and ADA's standards of education and practice. They also served as a model for describing entry-level positions.<sup>4</sup>

ADA's role delineation studies were updated in 1988.<sup>5</sup> Nationally representative samples of entry-level registered dietitians, entry-level dietetic technicians, and beyond-entry-level registered dietitians participated in a survey designed to describe their job functions and responsibilities. Practitioners were not separated according to area of practice (clinical, community, or food service systems management), as they had been in past studies. This study's results are being used in evaluating the registration examinations for both registered dietitians and dietetic technicians; these examinations test individuals on a core of knowledge in nutrition and dietetics and do not address particular specialty areas in the field. Though this study can provide a comprehensive description of work patterns within the profession, it is not practice-specific, as were the previous role delineations. Therefore, the 1983 role delineation for the community dietitian<sup>4</sup> remains more useful in the development of entry-level, practice-specific competency statements which could then provide a framework for curriculum guidelines for specialization in public health nutrition.

In addition to ADA's community dietetics role delineation, other position classification characteristics have been developed in the field. *Personnel in Public Health Nutrition for the 1980's*<sup>6</sup> (hereafter referred to as *Personnel. . .1980's*) was

developed by the Association of Faculties of Graduate Programs in Public Health Nutrition (AFGPPHN), in collaboration with a working committee comprised of representatives of seven other professional organizations: ADA; Society for Nutrition Education; Association of State and Territorial Public Health Nutrition Directors (ASTPHND), an affiliate member of the Association of State and Territorial Health Officers; American Public Health Association (APHA); American Institute of Nutrition and American Society for Clinical Nutrition; United States Department of Health and Human Services' Bureau of Community Health Services, Office for Maternal and Child Health; and the Centers for Disease Control.

The public health nutritionist was defined as:

that member of a public health agency staff responsible for assessing community nutrition needs and planning, organizing, managing, directing, coordinating, and evaluating the nutrition component of the health agency's services. The public health nutritionist establishes linkages with community nutrition programs, nutrition education, food assistance, social or welfare services, child care, services to the elderly, other human services, and community based research.<sup>6(p1)</sup>

Classifications of public health nutrition personnel were identified as the public health nutritionist; public health nutrition director/administrator; direct service nutrition care provider; and related personnel. Education and experience qualifications were recommended for each category. Fourteen functional roles for specialized nutrition professionals and paraprofessionals employed in public health agencies were also identified, with designated duties/responsibilities and knowledge/skills required for each. The roles were: Planner/Evaluator, Standard Setter, Coordinator, Consultant, Advocate, Researcher/Investigator, Manager, Fiscal Manager, Personnel Manager, Supervisor, Counselor, Educator, Teacher, and Outreach Worker. Figure 3 shows a

Roles	Public Health Nutritionist <sup>a</sup>			Directors/Administrators <sup>b</sup> of Public Health Nutrition	Direct Service Nutrition Care Providers	
	Sole	Supervisor	Consultant		Nutritionist/Dietitian <sup>c</sup>	Dietetic Technician <sup>d</sup>
Planner/Evaluator	**	**	**	**		
Coordinator	**	**	**	**		
Consultant	**	**	**			
Educator	**	*	**	*	**	
Supervisor		**				
Standard Setter	*	*	*	**	*	
Manager	*	*		**		
Manager (fiscal)	*	*		*		
Manager (personnel)		*		*		
Counselor	*				**	
Advocate	*	*	*	*		
Researcher/ Investigator						
Teacher						**
Outreach Worker						**

\*\*Major role

\*Intermediate role

<sup>a</sup>Master's degree in nutrition with coursework in public health (biostatistics, epidemiology, health administration, health planning); three years experience with at least two years in public health; RD.

<sup>b</sup>Master's degree in nutrition with coursework in public health (biostatistics, epidemiology, health administration, health planning); five years experience with at least three years in public health with administrative, consultation, supervisor capacity, RD.

<sup>c</sup>Bachelor's degree in nutrition, dietetics, or community nutrition; RD.

<sup>d</sup>Associate degree in dietetic technician program.

### FIGURE 3. PRIMARY PUBLIC HEALTH NUTRITION CLASSIFICATIONS WITH ASSIGNED FUNCTIONAL ROLES

Source: Haughton B, Shaw J. Functional roles of the public health nutritionist as practiced. *J Am Diet Assoc.* In press.

modified matrix that summarizes the three primary public health nutrition classifications with assigned functional roles.

To determine whether primary public health classifications and assigned functional roles were consistent with practice, public health nutrition personnel employed in agencies throughout the eight southeastern states were surveyed to assess professional practice.<sup>7</sup> Respondents identified the degree to which the 69 tasks defined in *Personnel . . .1980's*<sup>6</sup> were used in their job. It was found that those with Bachelor's degrees performed the Counselor, Teacher, and Outreach Worker roles significantly more than Master's-level respondents; Master's-level respondents performed all other roles significantly more than those with Bachelor's degrees.

Respondents classified their position as either Direct Care Service Provider or Administrator/Manager only, or as both Direct Care Service Provider and Administrator/Manager. Counselor and Teacher responsibilities were significantly more important for both categories of respondents providing direct care compared to those in administration and management only. The direct care respondents had significantly less responsibility for all other roles compared to the other two position categories of respondents.<sup>7</sup>

Many of the findings in this study<sup>7</sup> were consistent with classifications defined in *Personnel . . .1980's*.<sup>6</sup> However, roles of Counselor and Educator were somewhat inconsistent. It was suggested by *Personnel . . .1980's*<sup>6</sup> that Bachelor's-level, Registered Dietitians who are direct care providers should have primary roles in counseling and education. In this study, Bachelor's-level respondents did have more counseling responsibilities than those with more advanced degrees. However, non-Registered Dietitians also had more counseling responsibilities than Registered

Dietitians. The recommendation by *Personnel . . . 1980's*<sup>6</sup> was that Associate degree-level personnel should have primary roles in teaching and outreach.

As years of experience in public health nutrition increased, nine roles became increasingly important. Only respondents with six or more years of experience had any significant changes in job responsibilities compared to those with less experience. Only after 10 years of experience did job responsibilities associated with more advanced training and experience increase again. This suggested that personnel must be employed for more than five years before job responsibilities change significantly.<sup>7</sup>

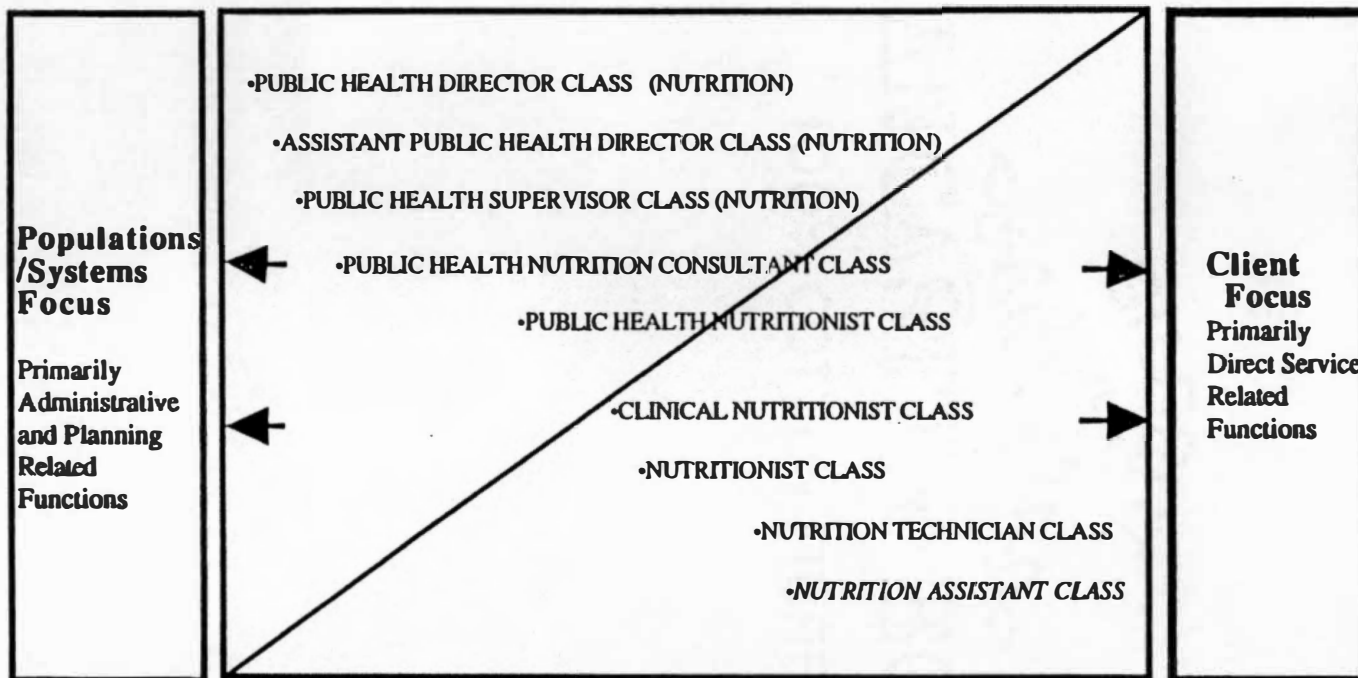
*Personnel . . . 1980's*<sup>6</sup> was revised, reflecting changes for the 1990's (hereafter referred to as *Personnel...1990's*).<sup>8</sup> Public health personnel were divided first into three series of position classes based on major responsibilities: management, professional, and technical/support. Then, these series were subdivided into position classes. Figure 4 illustrates the major focus of public health nutrition team positions.

Sims<sup>9</sup> conducted a study which identified and priority-ranked 17 behavioral competencies expected of entry-level public health nutritionists. She defined the entry-level public health nutritionist as:

one who has completed a Master's Level approved curriculum in Public Health Nutrition and who is an RD [Registered Dietitian] or RD-eligible. Upon assuming a first time role as nutritionist in a health agency, s/he may not be in an administrative or supervisory position, but should be educated to assume these responsibilities if and when needed.<sup>9(p1100)</sup>

This definition was much more specific than those previously discussed; training and experience recommendations were identified. Sims also designated the type of position in which the public health nutritionist should function, suggesting the need for further training and experience before individuals move from entry-level positions to





**FIGURE 4. MAJOR FOCUS OF PUBLIC HEALTH NUTRITION TEAM POSITIONS**

Source: Dodds JM, Kaufman M (Eds.). *Personnel in Public Health Nutrition for the 1990's*. Washington DC: Public Health Foundation;1991.

administrative roles. It is not clear if this should be formal training or if the skills required could be learned on the job.

Competencies were identified first by graduate educators in public health nutrition and subsequently evaluated by a nationwide sample of practitioners in the field. While there were no statistically significant differences between faculty and practitioner priority-rankings, practitioners consistently ranked competencies dealing with direct care service higher than faculty. Public health nutritionists then ranked competencies in relation to degree of use by nutritionists or other personnel. Highest ranking competencies dealt with communication, direct service provision, and program planning. Although respondents were instructed to respond to competency statements based on what entry-level public health nutritionists *should* be able to do, they also responded based on what they themselves were doing. These findings have implications for academic groups planning and evaluating curricula in public health nutrition and for individuals working in the field. The results of this study provided information from which a competency-based educational curriculum in public health nutrition could be developed.<sup>9</sup>

In 1990 a committee with representatives from both academia (AFGPPHN) and the field of public health (ASTPHND), supported by a grant from the Bureau of Maternal and Child Health and Resource Development, United States Public Health Service, developed such a curriculum guide for graduate study in public health nutrition: *Strategies for Success*.<sup>10</sup> Members of the Food and Nutrition Section of APHA and of the Public Health Nutrition Practice Group (PHNPG) of ADA served as reviewers for the curriculum. The definition of a public health nutritionist from *Personnel . . .1980's*<sup>6</sup> was used in this document. The basis of the curriculum was derived from 42 knowledge and skill statements in three related areas: 1) nutrition,

with public health application; 2) public health; and 3) social/behavioral sciences and education (Appendix 2). This curriculum builds on core knowledge and performance requirements which were established by ADA for dietetic registration eligibility (Appendix 1). The curricular guidelines in *Strategies for Success*<sup>10</sup> go beyond entry-level dietetics and prepare practitioners for specialization in public health nutrition, which requires graduate education and field experiences.

Role delineation identifies practitioners with generic position classifications which may be at any hierarchical level in an organization. It is the responsibility of a professional association to produce this delineation with input from its own members, accrediting and credentialing entities, other health professions, the public, and other appropriate groups. Emphasis is placed on responsibilities and performance, and the entire process is goal-directed.<sup>2</sup> ADA has identified entry-level competencies for practitioners in community dietetics.<sup>4</sup> AFGPPHN and ASTPHND have gone beyond entry-level in the development of curriculum guidelines in *Strategies for Success* for specialization in public health nutrition.<sup>10</sup>

### ***INITIAL COMPETENCY EDUCATION***

Public health nutritionists cannot perform according to role delineation specifications without proper education and training. Guidelines for preparation of entry-level public health nutritionists have not always existed. As society's public health concerns graduated from sanitary issues to infectious disease treatment to chronic disease treatment and prevention, the education of public health practitioners evolved to include nutrition. From 1913-1930, physicians and a few other health professionals were taught about the operation of local health departments primarily to maintain

sanitary conditions. Instruction was broadened from 1930-1945 to examine all aspects of preventive health service, including nutrition. From 1945-1965 organized financing and delivery of various aspects of health care were included. Finally, after 1965, social science approaches were applied to problems of health and disease in populations, including more effective control of disease through prevention and treatment.<sup>11</sup>

As the focus in public health changed, public health students also diversified. The earliest students were primarily physicians. Later, individuals from many other backgrounds, most from biomedical disciplines, sought public health education. The composition gradually became even more varied, with students from social sciences and humanities entering the field of public health. Frequently, two or three years experience in some health setting was required for those not trained in a health profession. Public health had gradually become a distinct health discipline rather than a secondary skill based on a primary health profession.<sup>11</sup>

As new departments in schools of public health developed, fields for specialization multiplied. After 1945 all MPH and MS degree graduates were expected to have some basic knowledge of the following core subjects: biostatistics, epidemiology, environmental health, and public health administration. Students could specialize in one of the core disciplines or in one of many other fields, including nutrition.<sup>11</sup>

Due to increasing diversification among public health professionals, challenges for both schools of public health and practitioners have arisen. Public health faculties have become more specialized; academic specialists and researchers are often more familiar with their basic discipline rather than with the practice of public health. Those already employed in the field are experiencing an increasing rate of job obsolescence, in which positions either cease to exist or change so substantially that a new set of skills is

required.<sup>12</sup> Public health physicians, who traditionally receive little academic training in public health, may not be adequately qualified for their work. Their success may be "due largely to their personal philosophy, courage, self-instruction, insight through experience, [and] advice from colleagues."<sup>11</sup>(p451) This suggests on-the-job learning is occurring among public health physicians. Therefore, professionals in the field and faculty should share the responsibility for improving elements in both degree-based and continuing public health education.

Effective professional training should integrate classroom theory and practical experience. This can be accomplished through an experiential learning program, which assumes people do not learn very well from being given answers to questions they do not have; instead, they learn from actively discovering answers necessary to solve their own problems. This leads to greater acceptance, evaluation, utilization, and retention of knowledge. The teacher's role is assisting learners to make proper choices concerning what to learn and how to learn it.<sup>13</sup>

What public health education needs, then, are programs that introduce reflection and experimentation into currently separate realms of academic and service training. Reflection is defined as the evaluation of an experience in order to synthesize it with previous learning. This will guide future learning, which will include further experience.<sup>13</sup>

Public health practice today continues to be based on assessment and analysis of population-based problems, linking together many disciplines. Knowledge of core disciplines introduced after 1945<sup>11</sup> is still expected of public health students. The National Academy of Science report, *The Future of Public Health*,<sup>14</sup> recommended that public health academic programs should provide students with opportunities to learn about public health on a broad scale, including environmental, educational, and

personal health approaches to solving public health problems; basic epidemiological and biostatistical skills for analysis of problems; and political and management techniques required for leadership in public health. The report also recommended that:

. . . schools of public health establish firm practice links with state and/or local public health agencies so that significantly more faculty members may undertake professional responsibilities in these agencies, conduct research there, and train students in practice situations. Recruitment of faculty and admission of students should give appropriate weight to prior public health experience as well as to academic qualifications.<sup>14(p16)</sup>

As education for general public health practitioners evolved, so did education for public health nutritionists. As early as 1946, graduate level course work in public health was recommended for public health nutritionists by APHA.<sup>15</sup> *Strategies for Success*,<sup>10</sup> the current curriculum for graduate training in public health nutrition, coordinates didactic and experiential components of public health nutrition education. Completion of both course work and field experiences are required of students; evaluation methods are included in order to synthesize experiences with previously learned knowledge. This curriculum, then, can be considered an experiential learning program.<sup>13</sup>

Education qualifications are described for the position classes identified in *Personnel...1990's*.<sup>8</sup> Within the technical/support series, nutrition technicians should obtain and maintain registered dietetic technician status. Nutrition assistant class qualifications are graduation from high school or completion of a General Equivalency Degree (GED) and completion of a planned on-the-job training curriculum.

Four positions are identified in the professional series.<sup>8</sup> Minimum education requirements for both the public health nutrition consultant class and the public health nutritionist class include: a Master's degree in public health with a major in public

health nutrition; or Master's degree in nutrition with emphasis in public or community health; or Master's degree in applied human nutrition with core course work in public health (biostatistics, epidemiology, health administration and planning). Educational requirements for the clinical nutritionist class are: Master's degree in clinical nutrition or dietetics with emphasis in public or community health; or Master's degree in applied human nutrition with course work in clinical nutrition and advanced clinical training; or Bachelor's degree in dietetics with additional clinical training and course work in nutrition and the specialty area of practice. The final position class is the nutritionist class which requires a Bachelor's degree in community nutrition, food and nutrition, or dietetics that includes course work meeting ADA's Standards of Education and Standards of Performance for dietetic registration. All positions in the professional series are required to meet state licensure requirements; where no dietetic licensure law exists, practitioners are required to maintain dietetic registration status.

Finally three position classes are identified in the management series: public health director (nutrition), assistant public health director (nutrition), and public health supervisor (nutrition).<sup>8</sup> Educational requirements for the management series are the same as those for the public health nutrition consultant and public health nutritionist classes. All classes of positions in this series are required to maintain dietetic registration status or meet state licensure requirements.

An unfortunate reality is agency personnel systems do not always require post-graduate training in public health nutrition that best prepares nutritionists for work in public health. A survey<sup>16</sup> was conducted in 1984 of 50 state and 4 territorial public health nutrition directors. Based on a 100% response rate, researchers found that only 35% of state/territorial personnel systems required a minimum of a Master's degree with course work in public health and nutrition for public health nutrition positions; two

state personnel systems had no educational requirement. In addition only 30% of state nutrition directors estimated that 60% or more of their public health nutritionists had obtained a Master's degree with course work in both public health sciences and practice and nutrition.

Results of a later study by Kaufman and Lee<sup>17</sup> showed that the number of state personnel systems requiring public health course work decreased from 35% in 1985 to 11% in 1987. Also, the number of states requiring either a Master's degree in nutrition or public health nutrition decreased from 52% in 1985 to 44% in 1987. Regardless of whether or not state personnel systems required a Master's degree with public health course work, the percentage of public health nutritionists who had this background remained the same as the 1984 study.<sup>16</sup>

Another indication of the educational background of public health nutritionists came from a 1985 membership assessment of ADA's Public Health Nutrition Practice Group (PHNPG).<sup>18</sup> Forty-six percent (46%) of the 1,086 members responded to a questionnaire. Of those respondents, 76% were employed in public health nutrition. Seventy percent (70%) of those who completed the survey had Master's degrees: 36% had a Master's degree in public health or Master's of Science in public health nutrition, and 34% had Master's degrees in some other area. Two percent (2%) had a doctorate in public health or public health nutrition; 1% had a doctorate in some other area. The use of this study's results is limited. The PHNPG is a self-selected group for members of ADA who have an interest in public health nutrition. The results, then, depict the characteristics of this group and not necessarily of the national population of public health nutritionists; the limitations of this study affect its generalizability.

Public health nutritionists need specialized training to best assess and meet the community's needs, especially in today's changing society. The National Academy of



Science report, *The Future of Public Health*,<sup>14</sup> examined the current status of the public health system in the United States and found it to be in disarray. Koplin<sup>19</sup> believed that one factor contributing to this, especially at the local level, was lack of necessary professional expertise. Implementation of mechanisms to assure maintenance of qualified personnel in public health agencies was only one of the Committee's many recommendations.<sup>14</sup> Schools of public health or other programs offering approved curricula are in a unique position to prepare practitioners as well as influence the values and direction of the health care system.

Fundamental concepts addressed in *Strategies for Success*<sup>10</sup> determined by both faculty and practitioners are based on the mission of public health: "fulfilling society's interest in assuring conditions in which people can be healthy."<sup>14(p7)</sup> The curriculum builds upon the knowledge and performance requirements established by ADA for dietetic registration eligibility to provide specialized education that prepares professionals to deal with a changing demographic and economic society. Important skills needed presently include the ability to compete for scarce funds and document cost-effectiveness.<sup>20</sup> Since there are nutritionists practicing in public health without the recommended post-graduate training, there may be specific continuing education needs for advancement of knowledge and skills in public health and nutrition to assure on-the-job competence.

## ***PRACTITIONER ASSESSMENT***

Professionals require some mode of evaluation to make certain they continue to be qualified properly for their job. Practitioner assessment, the third component of the competency assurance model, includes both self-assessment and external observation assessment. Wilson<sup>2</sup> cited the national professional association as the party responsible for providing a comprehensive appraisal tool based on role delineation. The instrument should not pose a threat to practitioners; rather, it should be helpful in preparation for formal evaluation of skills.

The Public Health Nutrition Practice Group (PHNPG) of ADA developed a self-assessment tool for public health nutritionists in 1988 which objectively assesses expertise in five general areas of public health nutrition.<sup>21</sup> Results can be used for planning individual professional development. This knowledge and skill inventory was based on the role delineation study,<sup>4</sup> was isolated from credentialing activities, and can provide practitioners with competency levels privately.

External observational assessment may include supervisor appraisal and peer observation.<sup>2</sup> Quality assurance programs in public health agencies designate criteria and indicators for performance, which can be viewed as supervisor appraisal. ADA's Code of Ethics<sup>22</sup> sets standards for professional responsibility and provides a peer review process. Principle No. 8 states that "the dietetic practitioner assumes responsibility and accountability for personal competence in practice."<sup>22</sup>(p1592)

A more indirect method of practitioner appraisal is determination of degree of job satisfaction which can influence productivity and job turnover. In a 1982 study of job satisfaction among dietitians in the United States,<sup>23</sup> there were no significant differences between total job satisfaction and years in present position, place of

employment, or level and types of responsibilities. However, there were significant differences among dietitians in three areas: work, colleagues, and promotion.

Dietitians, in general, were most satisfied with supervision they received and least satisfied with opportunities for promotion. Researchers concluded there were increasing educational and service demands made on practitioners without an increase in factors leading to job satisfaction.

Job satisfaction among dietitians in the United States then was related to role conflict and role ambiguity.<sup>24</sup> Role conflict was experienced when behaviors expected of individuals were inconsistent with what they expected of themselves; role ambiguity was when what was expected was not clear or did not exist. Results reflected little role ambiguity among dietitians and no significant correlation between role ambiguity and job satisfaction; role conflict and job satisfaction were not significantly correlated. This study could not conclude role ambiguity and conflict influenced job satisfaction.

In another study, public health nutritionists were found to experience over three times more job discomfort than "other" groups (the composition of "other" was undefined in this study).<sup>25</sup> Discomfort was defined as individuals being both stressed and dissatisfied with their job and was related to ability to perform a task well. The researchers suggested some problems concerning discomfort begin in the course of professional training and continue with subsequent employment where role definitions may be vague. They stated nutritionists working in public health were usually trained for generalist roles and given a broad range of responsibilities for which they frequently failed to develop priorities.

A study of job satisfaction among public health nutrition personnel was conducted in 1986.<sup>26</sup> Overall job satisfaction was correlated most strongly with management/supervision activities and with education and outreach activities, and

fulfillment of the following work-related values: making full use of one's abilities at work, being challenged by one's work, and opportunity to help in policy-making. Those who categorized themselves as "directors/chiefs" had highest overall job satisfaction scores, while nutritionists and coordinators working in the Supplemental Food Program for Women, Infants, and Children (WIC) and community dietitians/nutritionists had lowest scores. Overall job satisfaction was correlated positively with number of years in the profession, but was not related to whether respondents had public health nutrition training and course work, registered dietitian status, level of education obtained, or job setting. Variance in overall job satisfaction was best explained by satisfaction with kind of work.

Determining job satisfaction among public health nutritionists has led to conflicting results. Vermeersch, et. al<sup>25</sup> found although public health nutritionists experienced more job discomfort than other professional groups, whose composition was not defined by the researchers, primarily due to a lack of management training and personal efficiency, Sims and Kahn<sup>26</sup> found public health training and course work was not significantly correlated with overall job satisfaction. Age, years in the profession, and years in the current position positively influenced satisfaction for public health nutritionists<sup>26</sup> and had no effect for dietitians in general.<sup>23</sup> Levels and types of responsibilities showed the same trend; for those who practice in public health, administrative responsibilities were positively related to satisfaction while direct care responsibilities showed the opposite effect.<sup>26</sup> Though these studies give some insight into variables influencing job satisfaction, they are not conclusive regarding what will have the greatest overall effect.

The purpose of practitioner assessment is to make certain professionals continue to be adequately qualified for their work. While traditional methods of appraisal

include self- and external observation assessment, determining the degree of job satisfaction can indicate practitioners' levels of fulfillment which are associated with performance and quality of service. Factors influencing job satisfaction should be incorporated into assessment tools and examined in relation to productivity and job turnover.

### *SUBSEQUENT COMPETENCY EDUCATION*

The fourth component of the competency assurance model is subsequent competency education.<sup>2</sup> Schwartz and Gobert stated the "ultimate goal of continuing education is to improve professional performance and thereby increase the quality of health care available to the public."<sup>27</sup>(p288) Weingand commented "no amount of pre-service education can possibly be adequate for a career span."<sup>28</sup>(p16) An important aspect of the competency assurance model is motivating individuals to select continuing education programs on the basis of self-assessment.<sup>2</sup> Professional life planning may guide practitioners.<sup>29</sup> There are four major actions comprising this self-directed approach: 1) self-assessment of professional strengths and weaknesses; 2) planning advancement through goal-setting; 3) organizing activities using goals as guidance; and 4) periodic evaluation of one's situation and goals.<sup>30</sup> Most importantly, learners need to be involved in planning continuing education programs. Participation in this decision-making can help ensure effective programs, avoid duplication, and serve unique needs.<sup>30</sup>

During practitioner assessment, awareness of deficiencies between levels of competence and specific job requirements is acquired and can serve as a basis for continuing education programs. The Commission on Dietetic Registration (CDR)

requires the accrual of continuing education credits in order to maintain registration status. CDR believes that continuing education is "a lifelong self-development process, requiring long- and short-range goals that are developed, evaluated, and adjusted on a personal and individual basis."<sup>31</sup>(p1225)

Differences may exist between practitioners' self-perceived versus true continuing education needs. Knowledge deficits in established professional competencies constitute true needs based on standards of practice. Practitioners, however, may modify their work environment to their own abilities; those with adequate initial education and training may be able to alter actual job responsibilities to be consistent with level of knowledge and skill. This external adjustment has implications for continuing education program planning in addition to degree-based educational reform.

Appraisals of continuing education needs of dietetic practitioners have been conducted. These include studies done according to area of practice, geographical location, and a combination of the two.<sup>32-36</sup> Results of these studies indicated not only areas in which individuals felt the need for further education, but also methods preferred for its delivery. Assessments are necessary due to changing needs, interests, and preferences of professionals and organizations employing them.<sup>33</sup>

A survey developed by ADA's Council on Practice Continuing Education Committee surveyed a random sample of 4,000 registered dietitians (RD) and 1,000 dietetic technicians registered (DTR).<sup>37</sup> Based on a 61% response rate for RDs and 43% for DTRs, respondents self-identified continuing education topics needed at basic and advanced levels. Most RDs were interested in advanced-level programs in obesity/weight control and diabetes. On a basic level, most RDs expressed interest in grant writing, computer applications, and data collection instruments; these were all

non-traditional dietetics topics that are not specific to nutrition but can increase the effectiveness of nutrition care services.

A questionnaire to determine dietitians' perceptions of effects of continuing education on practice and use of standards to measure quality practice was conducted.<sup>38</sup> A random sample of dietitians from the northeast United States who had been employed in health care institutions for three years or more were surveyed; a 40% response rate was obtained. The study compared continuing education approved for maintenance of dietetic registration status by the Commission on Dietetic Registration (CDR) with continuing education not applicable for registration status (non-CDR). Greater perceived impact on practice was shown for non-CDR continuing education, which included on-the-job training and participation in patient care conferences. These activities were usually relevant to the practice setting and allowed for immediate use of knowledge and skills. Personal standards were used to the greatest extent to measure quality practice. Recommendations from the study included familiarizing dietitians with ADA-established professional standards and assisting them to integrate these standards into practice. This integration may then lead to continuing education activities that assist dietitians in implementing standards in the work setting. In addition, practitioners should consider the benefits of informal work-related activities and CDR-approved continuing education programs for improvement of practice.

There are a variety of continuing education formats available. National or regional conferences/meetings were formats of preference among clinical dietitians in Pennsylvania<sup>33</sup> and dietitians from four upper midwestern states.<sup>35</sup> Factors influencing the decision between attending national versus regional, state, or district meetings included distance to educational site, travel costs, and registration costs. Michigan practitioners preferred a workshop format for continuing education.<sup>36</sup>

Finally, public health nutritionists in eight southeastern states preferred combined practice and theoretical experiences.<sup>32</sup> Other modes of continuing education provision include videotapes, audio tapes, teleconferences, and college courses.

It is the responsibility of practitioners in collaboration with their respective professional organizations to plan continuing education programs that will serve needs effectively. ADA has helped to facilitate this process by forming dietetic practice groups that focus on particular nutrition-related areas, such as the Public Health Nutrition Practice Group (PHNPG). APHA's Sections and Special Primary Interest Groups address specific professional concerns within the multidisciplinary organization. Food and Nutrition and Maternal and Child Health are two such groups that may be appropriate for public health nutritionists. Practice or interest groups within larger professional organizations have the potential to best identify their members' continuing education needs and provide appropriate programs.

### ***PRACTITIONER EVALUATION***

The final component of the competency assurance model is practitioner evaluation. This is defined as formal appraisal of practitioners' ability to carry out role delineation performance responsibilities. It also forms the basis for initial credentialing and eventual recredentialing.<sup>2</sup> ADA grants or denies dietetic registration to practitioners on the basis of a national examination which can only be taken after successful completion of approved didactic and supervised experiences. Dietetic registration is considered a requirement for entry-level public health nutritionists.<sup>6</sup> ADA does not officially recognize specializations within dietetic practice. Therefore, there is no formal evaluation procedure (e.g. a national examination) for public health nutritionists

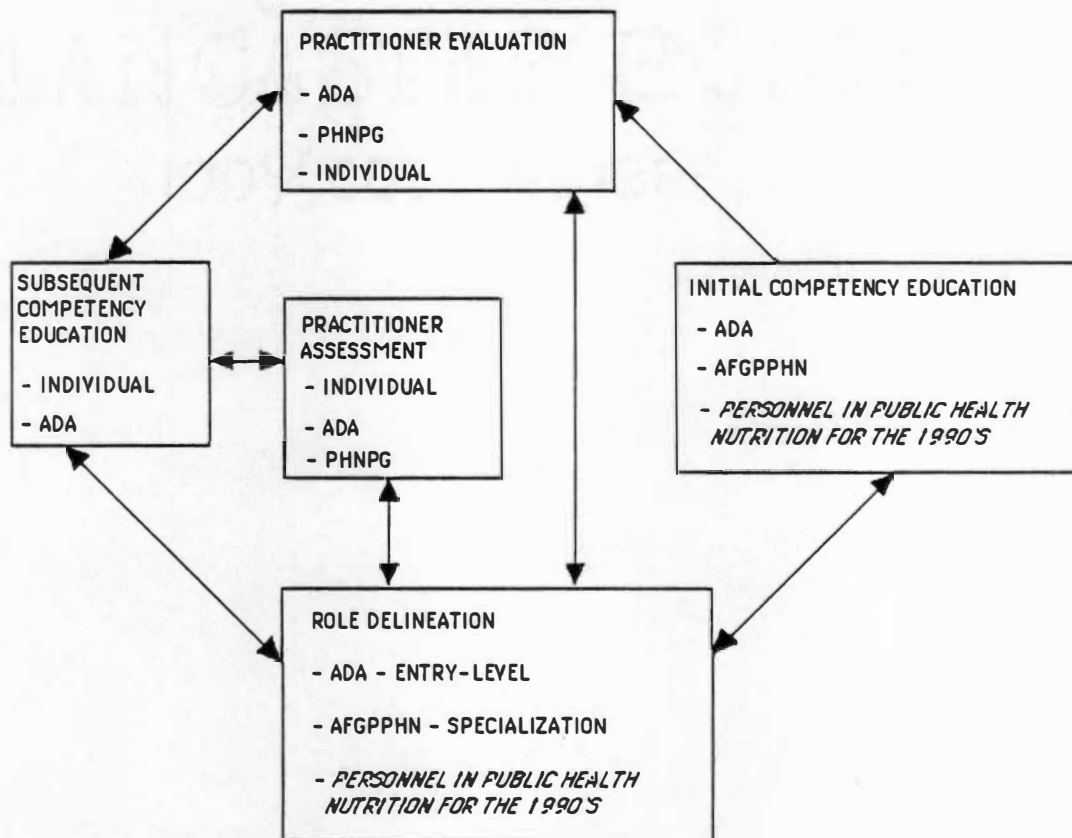


in ADA. Specialization in public health nutrition is determined by successful completion of the AFGPPHN and ASTPHND curriculum and maintenance of dietetic registration credentialing.<sup>10</sup>

## SUMMARY

The five components of Wilson's competency assurance model<sup>2</sup> are interrelated. Figure 5 depicts the model specific to the field of public health nutrition. This figure differs from Wilson's<sup>2</sup> because it includes feedback arrows to the role delineation component from the other model components; in her model, role delineation has a unidirectional relationship with the other components. Individuals and professional organizations are designated as responsible agents for each component in the model. Components should not be mistaken as sequential steps taken by professionals; rather they should work together to ensure competent practitioners through education, training, and continuing education programs. Only by maintaining a positive relationship between these variables can congruence be achieved.

Societal demands for upgrading knowledge and skills in nutrition are increasing. In the field of public health nutrition, recommendations have been made for education and training.<sup>4,6,10,15</sup> Studies have shown that, although there are recommended qualifications for public health nutritionists, state and local agencies do not always require these criteria for employees.<sup>16-17</sup> This can lead to practitioners functioning in roles for which they may not be prepared. Using Wilson's model,<sup>2</sup> it can be hypothesized that inadequate preparation for professional roles could lead to imbalances; discordance between education, credentialing, and practice will have a



**FIGURE 5. COMPETENCY ASSURANCE PROGRAM COMPONENT RELATIONSHIPS FOR PUBLIC HEALTH NUTRITION, WITH RESPONSIBLE AGENTS IDENTIFIED**

negative impact on quality of service. The possibility, then, of achieving congruence is questionable.

The degree to which education, training, and experience influence competency and congruence in the field of public health nutrition is not clear. Though these variables may lead to job satisfaction in the long run, a more precise examination of influences on public health nutrition practice needs to be made. Issues of quality service in an increasingly cost-conscious health care field can best be addressed by determining who is functioning in public health nutrition, what roles are being performed, and how education, training, and experience are influencing knowledge and skill in the field. Ultimately, how these factors influence health outcomes of populations served by public health nutritionists should be examined.

What enables public health professionals to practice competently is possession of prerequisite knowledge and skills. If there are deficiencies in knowledge and skills, practitioners may receive on-the-job training, seek appropriate continuing education, modify the environment to their abilities, or simply not be able to perform necessary functions. Careful assessment of self-perceived and true continuing education needs is essential to meet the future demands of leaders in public health nutrition.

## **2. PURPOSE OF STUDY**

From review of the literature, there is evidence that education, training, and experience are important factors contributing to competency assurance in public health nutrition practice. Recommended educational qualifications, suggested experiential requirements, roles of public health nutritionists, continuing education needs, and practitioner assessment and evaluation methods were identified. Interactions between variables assumed to be influential on practice have not been sufficiently studied, however. The purpose of this study was to determine relationships between education, training, and experience factors and public health nutritionists self-perceived levels of knowledge/skill and practice.

This study had two major components. The first was a descriptive component designed to identify continuing education needs of public health nutrition practitioners and to better understand relationships between continuing education need and education, training, and experience. The study then focused on the practice of public health nutritionists in relation to education, training, and experience. This component was also primarily descriptive, although it included some specific research questions regarding practice.

### **EDUCATION, TRAINING, AND EXPERIENCE FACTORS**

Education, training, and experience are interrelated, as demonstrated by Wilson's model.<sup>2</sup> In this study seven major factors were investigated: level of education, major field of study within the Master's degree level, dietetic registration status, total years experience in nutrition and dietetics, years experience in public health

nutrition, primary position, and primary area of practice. Table 1 lists these factors and their levels.

### **ANTICIPATED RELATIONSHIPS BETWEEN LEVEL OF KNOWLEDGE/SKILL OF COMPETENCIES AND EDUCATION, TRAINING, AND EXPERIENCE FACTORS**

This study was largely descriptive in nature due to limited information concerning influences of education, training, and experience on public health nutrition practice. In general, differences in self-perceived level of knowledge/skill were anticipated in relation to education level, type of Master's degree, dietetic registration status, years experience overall in nutrition and dietetics and specifically in public health nutrition, primary position, and primary area of practice. These differences would then reflect continuing education needs.

### **ANTICIPATED RELATIONSHIPS BETWEEN DEGREE OF USE OF KNOWLEDGE/SKILL COMPETENCIES AND EDUCATION, TRAINING, AND EXPERIENCE FACTORS**

Though determining areas of continuing education need will help to establish priorities for future education planning, actual practice in community dietetics/public health nutrition is also important. The same factors expected to influence level of knowledge/skill of competencies were anticipated to impact degree of use in the job. Combinations of factors may also reveal differences. For example, combining years of experience in public health nutrition and level of education may reflect learning on the job for Bachelor-level versus Master-level personnel. Figure 6 depicts probable

**TABLE 1. LEVELS OF EDUCATION, TRAINING, AND EXPERIENCE FACTORS ANALYZED IN RELATION TO CURRENT LEVEL AND DEGREE OF USE OF KNOWLEDGE/SKILL STATEMENTS**

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**EDUCATION**

**Level of Education**

*Bachelor's*  
*Master's*  
*Doctorate*

**TRAINING**

**Type of Master's Degree**

*Public Health Nutrition*  
*Nutrition*  
*Other*

**Dietetic Registration Status**

*Registered or Registration-eligible*  
*Non-registered*

**EXPERIENCE**

**Total Years Experience in Nutrition and Dietetics**

**Years Experience in Public Health Nutrition**

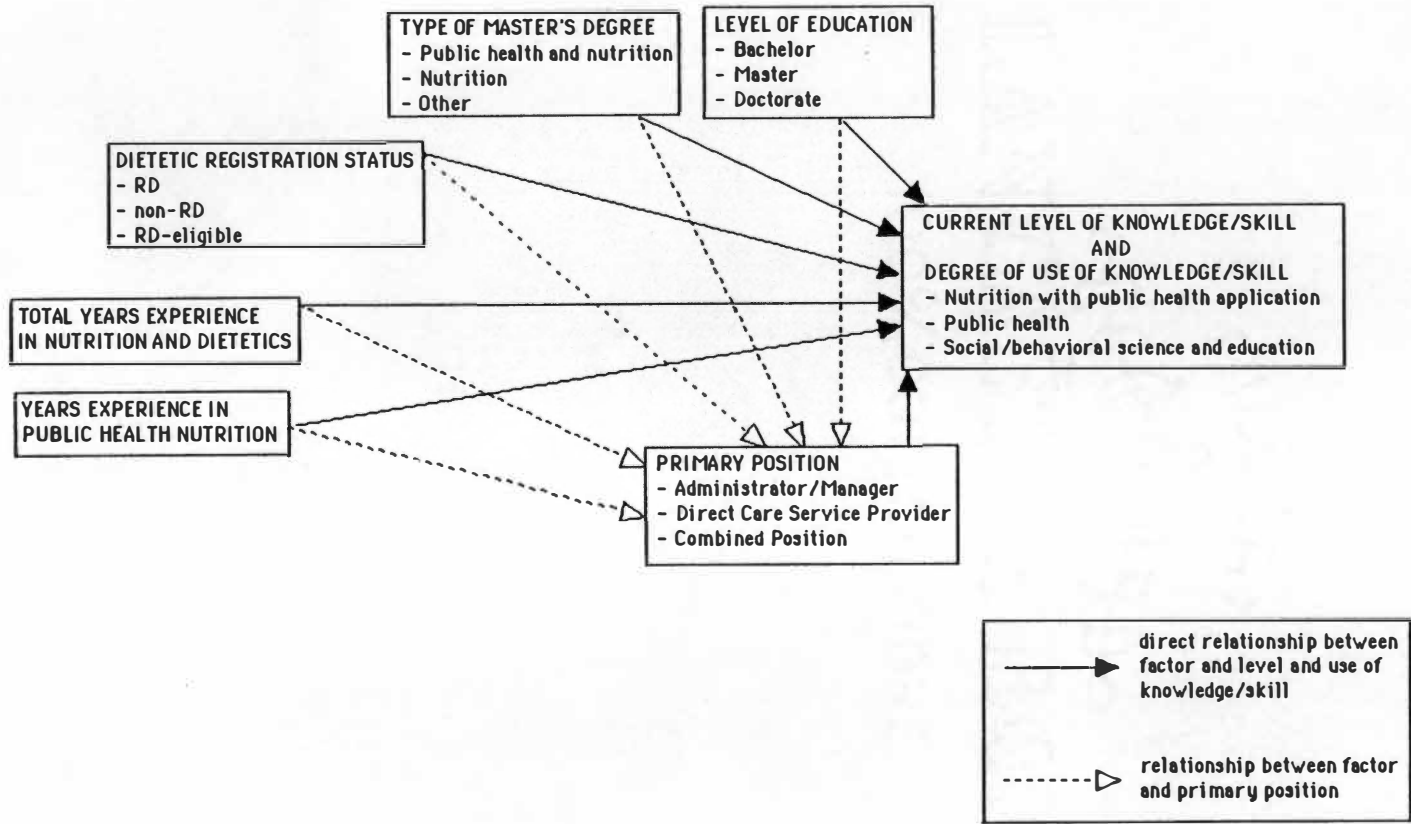
**Primary Position**

*Administrator/Manager*  
*Direct Care Service Provider*  
*Both Administrator/Manager and Direct Care Service Provider*

**Primary Area of Practice**

*Public Health Nutrition*  
*Other*

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**FIGURE 6. SELF-PERCEIVED LEVEL AND USE OF KNOWLEDGE/SKILL AND PRIMARY PUBLIC HEALTH POSITION: ANTICIPATED RELATIONSHIPS WITH EDUCATION, TRAINING, AND EXPERIENCE FACTORS FOR THOSE PRACTICING IN PUBLIC HEALTH**

relationships between self-perceived knowledge/skill level and use of competencies and education, training, and experience factors.

## RESEARCH QUESTIONS

Based on review of literature, some specific research questions regarding practice were posed. From the study of public health nutritionists in the eight southeastern states,<sup>7</sup> respondents with Bachelor's degrees were found to perform direct service nutrition care tasks more than those with Master's degrees. Also, public health responsibilities increased only after practitioners had been working for six or more years; they increased again after 10 years experience. For position classification, respondents identified themselves as direct service nutrition care providers, administrator/managers, or a combination of the two. Roles involving greater public health responsibilities were practiced more by administrator/managers than the two other position categories.

In the current study, then, Bachelor-level personnel were expected to identify fewer of the public health competencies as being used to a great extent on the job than Master-level personnel. As years experience in public health nutrition increased from 0-5 years, 6-10 years, and 11 years or greater, the degree to which public health competencies were used on the job was expected to increase. Direct care service providers were expected to report greater use of nutrition competencies than combined direct care service providers-administrator/managers and administrator/managers. Alternatively, administrator/managers were anticipated to show greater use of the public health competencies than the other two position classifications.



## SUMMARY

Determining relationships between education, training, and experience factors and self-perceived level of knowledge/skill and degree of use of *Strategies for Success*<sup>10</sup> competencies is important for the future of public health nutrition. While identifying areas of continuing education need will help to prioritize programming efforts, examining the degree of congruency which exists in public health nutrition will have implications for degree-based education and training programs and personnel qualifications for those entering the field. This study was designed to investigate some of these issues.

### 3. METHODOLOGY

The purpose of this study was to investigate the relationships between education, training, and experience factors and self-perceived level of knowledge/skill for public health nutritionists. This was incorporated as part of a funded project by the Public Health Nutrition Practice Group (PHNPG) of ADA who contracted with a public health nutrition professor at the University of Tennessee, Knoxville to conduct a continuing education needs assessment for its members. The primary investigator received funding from the PHNPG to develop, implement, and analyze a survey designed for this purpose.

A tool to determine a practitioner's current knowledge/skill level and the degree to which the knowledge/skill is used in the job was developed. The 42 knowledge and skill statements developed by AFGPPHN and ASTPHND<sup>10</sup> were adapted for use. A questionnaire was designed and consisted of three parts: 1) 13 closed-ended demographic questions; 2) 58 questions about self-perceived level of knowledge/skill in three areas (nutrition, public health, and social/behavioral science and education) and the degree to which these are part of the job as practiced utilizing a five point Likert-like scale; and 3) 2 closed-ended continuing education format questions and 1 open-ended question addressing the respondents' single most important need for continuing education. The Likert-like scale for the current level of knowledge/skill used 'novice' and 'expert' as lower and upper limits. 'Very small' and 'very large' were lower and upper limits for questions addressing the degree to which the knowledge/skill is used in the job. The complete survey contained a total of 74 questions (Plate 1).

The study population consisted of the 1,312 members of the PHNPG identified by ADA. All members were surveyed by the mailed questionnaire described above according to the format recommended by Dillman.<sup>39</sup>

A draft of the survey was submitted to the PHNPG Quality Assurance Committee and the ADA Division of Practice, Department of Research for review. The questionnaire was revised in accordance with this review. This draft was then pilot-tested on a group of dietitians (n=15) who were not members of the PHNPG. Additional revisions were made following this and the resulting survey was resubmitted to the PHNPG and ADA for final review. Based on suggestions from this critique, a final revision was made.

Approval for human subject research was obtained from the University of Tennessee Office of Research Compliance. Subjects were instructed that return of the completed questionnaire constituted informed consent to participate in the study. All questionnaires were kept confidential and on file in the Department of Nutrition at the University of Tennessee, Knoxville. Only the researchers had access to a code that matched names of respondents with numbers on the questionnaire. The purpose of this coding system was to maintain confidentiality, yet permit follow-up of unanswered questionnaires. In no way are the data presented so that individual respondents can be identified.

The initial mailing to all PHNPG (n=1,312) members included: 1) cover letter describing the purpose of the study, encouraging member participation, and detailing procedures for protecting subject confidentiality and use of data collected; 2) survey; and 3) postage-paid return business envelope. One week following the initial mailing, a reminder postcard was sent to all subjects. Approximately five weeks following this

mailing, a follow-up mailing was sent to all non-respondents. This follow-up mailing included a cover letter, survey, and postage-paid return business envelope.

All data were coded and analyzed using the facilities of the University of Tennessee, Knoxville, Computing Center and SAS programming.<sup>40</sup> Frequencies, mean scores, and standard deviations were obtained for each factor. Continuing education needs for all PHNPG members were identified based on highest and lowest mean scores in categories of level of knowledge and degree of use of competencies. Differences in continuing education need due to education, training, and experience factors were determined using General Linear Model and Scheffe's mean separation technique or Student's t-test. Differences within factor levels with respect to knowledge/skill level and use categories were significant at a p-value less than 0.05.

To describe significant ( $p < 0.05$ ) differences in practice of public health nutritionists in relation to education, training, and experience factors, Student's t-test or General Linear Model and Scheffe's mean separation technique were used. More specifically, a one-tailed test was used to answer whether or not Master-level personnel used public health competencies significantly ( $p < 0.05$ ) more than practitioners at the Bachelor-level. One-tailed tests also were employed to determine whether use of public health competencies significantly ( $p < 0.05$ ) increased at higher levels of public health nutrition experience. Finally, to reveal if direct care service providers used nutrition competencies more than the other two position classifications or if administrator/managers used public health competencies more than the other two positions, one-tailed tests were utilized. Again, differences were considered significant at a p-value of less than 0.05.

## **4. RESULTS**

### **RESPONSE RATE**

Completed surveys were returned by 55% (n=728) of respondents. Table 2 shows the distribution of respondents by American Dietetic Association (ADA) established geographic areas.

### **RESPONDENTS' DEMOGRAPHIC CHARACTERISTICS**

#### ***EDUCATION FACTORS***

##### **Level of Education**

Seven-hundred and twenty-one respondents answered the question concerning level of education. Thirty percent (n=219) of those had Bachelor's degrees, 62% (n=449) had Master's, and 7% (n=53) had doctorates. Tables 3 and 4 detail reported type of degree held at each level of education.

#### ***TRAINING FACTORS***

##### **Type of Master's Degree**

Type of Master's degree was collapsed into three categories: public health nutrition (45%; n=207), which included nutrition with a minor in public health and public health with a major in public health nutrition; nutrition (41%; n=191), which

**TABLE 2. DISTRIBUTION OF RESPONDENTS BY AMERICAN DIETETIC ASSOCIATION ESTABLISHED GEOGRAPHIC AREAS**

characteristic	n <sup>a</sup>	% <sup>b</sup>
area		
I. AK, CA, HA, ID, MT, OR, WA, WY	141	19.5
II. IA, MI, MN, MO, ME, ND, SD, WI	103	14.2
III. AL, AR, FL, GA, LA, MS, PR, SC	95	13.1
IV. AZ, CO, KS, NV, NM, OK, TX, UT	83	11.5
V. IL, IN, KY, OH, TN, WV	128	17.7
VI. DE, DC, MD, NC, PA, VA	88	12.2
VII. CT, ME, MA, NH, NJ, NY, RI, VT	85	11.8

<sup>a</sup>n<sub>t</sub> = 723 due to respondents residing outside the United States

<sup>b</sup>Totals do not add to 100 due to rounding

**TABLE 3. DISTRIBUTION OF RESPONDENTS BY TYPE OF BACHELOR'S DEGREE EARNED**

characteristic	n <sup>a</sup>	% <sup>b</sup>
type of bachelor's degree		
foods and nutrition	522	73.9
other	87	12.3
nutrition science	27	3.8
education	26	3.7
foods service/institutional management	24	3.4
biochemistry	8	1.1
food science	6	0.8
public health	3	0.4
business administration/management	3	0.4

<sup>a</sup>n<sub>t</sub> = 706 because some respondents did not complete question

<sup>b</sup>Totals do not add to 100 due to rounding

**TABLE 4. DISTRIBUTION OF RESPONDENTS BY TYPE OF MASTER'S AND DOCTORAL DEGREE EARNED**

degree	master's		doctorate	
	n <sup>a</sup>	% <sup>c</sup>	n <sup>b</sup>	% <sup>c</sup>
nutrition science	158	34.0	16	28.1
public health with major in public health nutrition	134	28.8	11	19.3
nutrition with minor in public health	73	15.7	6	10.5
education	28	6.0	8	14.0
other	23	4.9	13	22.8
food science	22	4.7	0	0.0
business administration/management	16	3.4	1	1.8
food service/institutional management	10	2.2	1	1.8
biochemistry	1	0.2	1	1.8

<sup>a</sup>n varies from total (728) since all respondents did not have Master's degrees

<sup>b</sup>n varies from total (728) since all respondents did not have Doctoral degrees

<sup>c</sup>Totals do not add to 100 due to rounding



included nutrition science, food science, food service/institutional management, and biochemistry; and other (14%; n=67), which included education, business administration, and other respondent-identified majors.

### **Dietetic Registration Status**

Ninety-three percent (n=675) of respondents were registered dietitians (RD) (Table 5). Routes to registration-eligibility are shown in Table 6.

## ***EXPERIENCE FACTORS***

### **Employment Status**

Seven-hundred twenty-one respondents answered the questions dealing with employment status. Seventy-one percent (n=509) of those were employed full time, 18% (n=129) part time, and 12% (n=83) were not employed.

### **Total Years Experience in Nutrition and Dietetics**

Table 7 shows the distribution of respondents by total years experience in nutrition and dietetics. Respondents were grouped by quartile in the following categories of experience: 6 years or less, 7-11 years, 12-18 years, and 19 years or greater.

### **Years Experience in Public Health Nutrition**

For years experience in public health nutrition, 709 respondents to this question were distributed in three categories: least (0-5 years), moderate (6-10 years), and most (11 years or greater). Categories were chosen based on previous research

**TABLE 5. DISTRIBUTION OF RESPONDENTS BY DIETETIC REGISTRATION STATUS**

characteristic	n <sup>a</sup>	% <sup>b</sup>
dietetic registration status		
registered dietitian	675	92.8
registration-eligible	15	2.1
not registered	37	5.1

<sup>a</sup>n<sub>t</sub> = 727 because some respondents did not complete question

<sup>b</sup>Totals do not add to 100 due to rounding

**TABLE 6. DISTRIBUTION OF RESPONDENTS BY ROUTE TO DIETETIC REGISTRATION ELIGIBILITY**

characteristic	n <sup>a</sup>	% <sup>b</sup>
route to dietetic registration-eligibility		
accredited dietetic internship program	183	27.9
qualifying experience with advanced degree: six months	162	24.7
accredited coordinated program	112	17.1
grandfathered	103	15.7
qualifying experience with advanced degree: assistantship	45	6.9
traineeship	23	3.5
three-year preplanned experience program	9	1.4
qualifying experience with doctoral degree	6	0.9
approved preprofessional practice program	5	0.8
three-year non-preplanned experience program	3	0.5
Canadian reciprocity	3	0.5
not applicable	1	0.2

<sup>a</sup>n<sub>t</sub> = 655 since not all respondents were registered dietitians

<sup>b</sup>Totals do not add to 100 due to rounding

**TABLE 7. DISTRIBUTION OF RESPONDENTS BY TOTAL YEARS EXPERIENCE IN NUTRITION AND DIETETICS**

characteristic	n <sup>a</sup>	% <sup>b</sup>
total years experience in nutrition and dietetics		
0 - 6	172	24.1
7 - 11	172	24.1
12 - 18	200	28.0
≥ 19	170	23.8

<sup>a</sup>n<sub>t</sub> = 714 because some respondents did not complete question

<sup>b</sup>Totals do not add to 100 due to rounding

findings which revealed the amount of experience public health nutritionists had before job responsibilities significantly changed.<sup>7</sup> In the current study, majority of respondents (50%; n=351) were least experienced; the remainder were divided equally between moderately (25%; n=177) and most (26%; n=181) experienced.

### **Primary Position**

Of those respondents who were employed, 634 responded to the question regarding primary position. Twenty-four percent (n=155) classified their position as direct care service provider, 25% (n=160) as both direct care service provider and administrator/manager, 22% (n=141) as administrator/manager, 20% (n=124) as consultant, and 9% (n=54) as faculty/teacher.

### **Primary Area of Practice**

Seventy-four percent (n=469) reported their primary area of practice as community dietetics/public health nutrition (Table 8). Table 9 shows the distribution of respondents by primary place of employment; 58% (n=375) reported working in public health agencies primarily. The majority of patients/clients served is presented in Table 10.

### ***CONTINUING EDUCATION FORMAT***

Regional or local conferences/meetings were the preferred continuing education format for 75% (n=526) of the 701 participants responding to this question, followed by national conferences/meetings (11%; n=80), videotapes (3%; n=24),

**TABLE 8. DISTRIBUTION OF RESPONDENTS BY PRIMARY AREA OF PRACTICE**

characteristic	n <sup>a</sup>	% <sup>b</sup>
primary area of practice		
community dietetics/public health nutrition	469	73.9
clinical dietetics	45	7.1
education	43	6.8
consultation	29	4.6
health promotion and wellness	22	3.5
research	9	1.4
business and industry	8	1.3
food systems management practices	7	1.1
private practice	3	0.5

<sup>a</sup>n<sub>t</sub> = 635 since not all respondents were employed

<sup>b</sup>Totals do not add to 100 due to rounding

**TABLE 9. DISTRIBUTION OF RESPONDENTS BY PRIMARY PLACE OF EMPLOYMENT**

characteristic	n <sup>a</sup>	% <sup>b</sup>
primary place of employment		
public health agency	375	58.4
other	80	12.5
hospital (in-patient/acute care and/or out-patient)	53	8.3
college or university faculty	50	7.8
clinic or ambulatory care center	36	5.6
consultation (health care facilities)	16	2.5
extended care facility	9	1.4
consultation (organizations/industries)	8	1.2
HMO, physician or other health care provider	7	1.1
private practice (individual client counseling)	3	0.5
school food service (K-12)	2	0.3
food manufacturer/distributor/retailer	2	0.3
college or university food service	0	0.0
food equipment company	0	0.0

<sup>a</sup>n<sub>t</sub> = 642 since not all respondents were employed

<sup>b</sup>Totals do not add to 100 due to rounding

**TABLE 10. DISTRIBUTION OF RESPONDENTS BY MAJORITY OF PATIENTS/CLIENTS SERVED**

characteristic	n <sup>a</sup>	% <sup>b</sup>
majority of patients/clients served		
adults	151	27.6
prenatal women	142	26.0
children	137	25.0
older adults	47	8.6
infants	31	5.7
handicapped or special needs populations	22	4.0
business and industry	13	2.4
adolescents	4	0.7

<sup>a</sup>n<sub>t</sub> = 547 since many respondents chose multiple items within this category, and those responses could not be used

<sup>b</sup>Totals do not add to 100 due to rounding



college courses (3%; n=23), continuing education articles in the *Journal of the American Dietetic Association* (3%; n=22), teleconferences (3%; n=19), and audio tapes (1%; n=7). The amount 698 participants were willing to spend for 10 hours of continuing education was: \$50-100 (53%; n=371), \$101-150 (39%; n=269), \$151-200 (7%; n=46), and \$201-250 (2%; n=12).

### ***SELF-IDENTIFIED CONTINUING EDUCATION NEED***

Responses (n=792) to the open-ended question concerning respondents' most important need for continuing education were categorized into areas dealing with subject matter (79%; n=626), formats (2%; n=13), and planning issues (19%; n=153) of continuing education programs. Within the subject matter category, top three responses were: current problems or issues in nutrition, skill development and personal growth, and funding/reimbursement. All topics identified are listed in Table 11. Preferred formats were: workshops (46%; n=6), newsletters (23%; n=3), correspondence programs (8%; n=1), focus groups (8%; n=1), teleconferences (8%; n=1), and videotapes of national meetings (8%; n=1). The top planning issues were: relevant/timely programs, affordable programs, and accessible, available, and practical programs. Table 12 lists all identified planning issues.

**TABLE 11. RESPONDENT-IDENTIFIED CONTINUING EDUCATION TOPICS**

topic	n <sup>a</sup>	% <sup>b</sup>
current problems/issues in nutrition	137	21.9
skill development/professional growth	49	7.8
funding/reimbursement	45	7.2
communication	42	6.7
evaluation	39	6.2
program planning	33	5.3
social marketing	31	5.0
policy making/political processes	30	4.8
management issues	24	3.8
grant writing	17	2.7
current issues in public health	16	2.6
epidemiology and biostatistics	15	2.4
cultural sensitivity	15	2.4
computer skills	14	2.2
assessment	14	2.2
maternal and child health issues	14	2.2
specialized topics in nutrition science	14	2.2
quality assurance	10	1.6

**TABLE 11 (continued)**

topic	n <sup>a</sup>	% <sup>b</sup>
counseling skills	9	1.4
nutrition education	9	1.4
research design	8	1.3
health promotion/disease prevention	8	1.3
surveillance	6	1.0
combating nutrition fraud/misinformation	6	1.0
media	6	1.0
team approach	5	0.8
holistic approach	4	0.6
private practice/entrepreneurship	2	0.3
community organization	2	0.3
environment	1	0.2
food industry	1	0.2

<sup>a</sup>n varies from total due to multiple responses

<sup>b</sup>Totals do not add to 100 due to rounding

**TABLE 12. RESPONDENT-IDENTIFIED ISSUES OF CONTINUING EDUCATION PLANNING**

issue	n <sup>a</sup>	% <sup>b</sup>
relevant/timely	30	19.6
affordable	25	16.3
accessible	19	12.4
available	19	12.4
practical	19	12.4
opportunity to network/share	15	9.8
effective teachers	8	5.2
variety/versatility	7	4.6
topics delivered at advanced levels	6	3.9
quality	4	2.6
concise	3	2.0
consistent information	1	0.7
continuing education specifically for public health nutritionists	1	0.7

<sup>a</sup>There were 153 continuing education issues identified by respondents

<sup>b</sup>Totals do not add to 100 due to rounding

## SCORES ON LEVEL AND USE OF KNOWLEDGE/SKILL COMPETENCIES

### *OVERALL MEAN SCORES*

Mean scores for each category (nutrition, public health, and social/behavioral science and education) of level of knowledge/skill of and degree of use in the job of competencies were calculated based on a maximum score of 100. Table 13 shows overall mean scores for each category. The current level of knowledge/skill was greatest in nutrition and lowest in public health. The highest score for use in job of competencies was in social/behavioral science and education and lowest in public health.

The ten highest and lowest scored individual competencies in both level of knowledge/skill and use in job were determined. For current level of knowledge/skill eight of the ten highest scored competencies were from the nutrition subset; there was one from each of the public health and social/behavioral science and education subsets (Table 14). All the lowest scored competencies were from the public health subset (Table 15).

For degree of use in the job, five of the ten highest scoring competencies were from the social/behavioral science and education subset, four from nutrition, and one from public health (Table 16). Nine of the lowest scoring competencies were in public health; one was in nutrition (Table 17).

**TABLE 13. OVERALL MEAN SCORES FOR EACH CATEGORY OF LEVEL AND USE OF KNOWLEDGE/SKILL**

category of knowledge/skill	n <sup>a</sup>	overall mean score ± S.D.
<b>current level of knowledge/skill</b>		
total	484	70.7 ± 14.1
nutrition	671	73.0 ± 12.5
public health	617	63.6 ± 16.5
social/behavioral science and education	585	69.6 ± 15.1
<b>degree knowledge/skill used in job</b>		
total	441	61.5 ± 15.1
nutrition	631	60.0 ± 15.3
public health	563	55.4 ± 18.9
social/behavioral science and education	545	63.0 ± 17.3

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

**TABLE 14. TEN HIGHEST SCORING INDIVIDUAL COMPETENCIES OF LEVEL OF KNOWLEDGE/SKILL**

knowledge/skill statement	n <sup>a</sup>	mean ± SD
Knows how to function as an interdisciplinary team member <sup>b</sup>	721	4.22 ± 0.80
Recognizes roles of other members of the health team <sup>c</sup>	711	4.12 ± 0.75
Knows and has the ability to prioritize nutritional problems of various age and population groups based on assessment techniques <sup>b</sup>	720	3.86 ± 0.87
Knows issues related to establishing nutrient requirements and dietary recommendations <sup>b</sup>	723	3.85 ± 0.78
Knows and applies skills in selecting and/or developing nutrition education materials and approaches, appropriate for target populations <sup>d</sup>	708	3.82 ± 0.92
Applies skills in therapeutic nutrition to people throughout the life cycle and to those at high risk and with special health care needs <sup>b</sup>	719	3.79 ± 0.79
Knows how to evaluate nutrition claims critically <sup>b</sup>	719	3.78 ± 0.89
Knows and has the ability to select and use appropriate anthropometric, biochemical, clinical, dietary, functional, and socioeconomic assessment techniques <sup>b</sup>	725	3.77 ± 0.89
Knows basic nutrition science, including metabolic, physiological, and biological aspects as they relate to health and disease <sup>b</sup>	724	3.77 ± 0.77
Evaluates popular (lay) literature for accuracy, reliability, and practical implications <sup>b</sup>	718	3.76 ± 0.89

<sup>a</sup>n varies from total because some respondents did not complete ratings for all items

<sup>b</sup>Nutrition

<sup>c</sup>Public Health

<sup>d</sup>Social/behavioral science and education

1=novice; 5=expert

**TABLE 15. TEN LOWEST SCORING INDIVIDUAL COMPETENCIES OF LEVEL OF KNOWLEDGE/SKILL**

knowledge/skill statement	n <sup>a</sup>	mean ± SD
Knows and applies skills in computer applications for data compilation and analysis <sup>b</sup>	704	2.50 ± 1.18
Knows and applies personnel management principles in recruiting and staffing <sup>b</sup>	710	2.51 ± 1.27
Knows how to design and implement research projects targeted to specific populations <sup>b</sup>	705	2.57 ± 1.22
Knows and applies the principles of the epidemiological approach to measure and describe health and nutrition problems and trends in the community <sup>b</sup>	707	2.58 ± 1.15
Knows and applies skills in biostatistics, including principles of data collection and management, statistical analysis, and inferences for data compilation and analysis <sup>b</sup>	709	2.60 ± 1.16
Knows and applies skills in grant application, including preparation and monitoring <sup>b</sup>	709	2.69 ± 1.30
Knows political considerations involved in agency planning and decision making and applies skills in influencing policy <sup>b</sup>	707	2.95 ± 1.24
Knows historical development of public health and public health nutrition <sup>b</sup>	723	2.98 ± 1.10
Knows relationship of the environment to public health and biological, physical, and chemical factors that affect public health nutrition <sup>b</sup>	706	3.03 ± 1.05
Knows and applies skill in identifying economic and societal trends which have implications for the health and nutritional status of the population <sup>b</sup>	708	3.03 ± 1.16

<sup>a</sup>n varies from total because some respondents did not complete ratings for all items

<sup>b</sup>Public health

1=very small; 5=very large



**TABLE 16. TEN HIGHEST SCORING INDIVIDUAL COMPETENCIES FOR DEGREE OF USE OF KNOWLEDGE/SKILL**

knowledge/skill statement	n <sup>a</sup>	mean ± SD
Knows how to function as an interdisciplinary team member <sup>b</sup>	677	3.87 ± 1.14
Recognizes roles of other members of the health team <sup>c</sup>	665	3.73 ± 1.06
Knows and applies skills in selecting and/or developing nutrition education materials and approaches, appropriate for target populations <sup>d</sup>	662	3.45 ± 1.23
Applies skills in communicating scientific information, both oral and written, at levels appropriate for different audiences: clients, consumers, health professionals <sup>d</sup>	657	3.44 ± 1.19
Knows issues related to establishing nutrient requirements and dietary recommendations <sup>b</sup>	678	3.43 ± 1.12
Applies social/behavioral sciences and principles of education to public health and nutrition <sup>d</sup>	592	3.39 ± 1.14
Knows and has the ability to select and use appropriate anthropometric, biochemical, clinical, dietary, functional, and socioeconomic assessment techniques <sup>b</sup>	678	3.35 ± 1.21
Knows and has the ability to prioritize nutritional problems of various age and population groups based on assessment techniques <sup>b</sup>	677	3.32 ± 1.18
Knows and is skilled in using standards of practice for the profession of dietetics <sup>d</sup>	658	3.31 ± 1.20
Knows how to evaluate interviewing and counseling techniques for affecting behavior change <sup>d</sup>	656	3.29 ± 1.23

<sup>a</sup>n varies from total because some respondents did not complete ratings for all items

<sup>b</sup>Nutrition

<sup>c</sup>Public health

<sup>d</sup>Social/behavioral science and education

1=novice; 5=expert

**TABLE 17. TEN LOWEST SCORING INDIVIDUAL COMPETENCIES FOR DEGREE OF USE OF KNOWLEDGE/SKILL**

knowledge/skill statement	n <sup>a</sup>	mean score
Knows how to design and implement research projects targeted to specific populations <sup>b</sup>	660	2.02 ± 1.22
Knows historical development of public health and public health nutrition <sup>b</sup>	675	2.10 ± 1.15
Knows and applies the principles of the epidemiological approach to measure and describe health and nutrition problems and trends in the community <sup>b</sup>	664	2.10 ± 1.19
Knows and applies skills in contract management, including preparation, negotiation, and monitoring <sup>b</sup>	665	2.19 ± 1.30
Knows and applies skills in biostatistics, including principles of data collection and management, statistical analysis, and inferences for data compilation and analysis <sup>b</sup>	663	2.30 ± 1.24
Knows and applies skills in computer applications for data compilation and analysis <sup>b</sup>	660	2.30 ± 1.27
Knows principles of food science, preparation, and management <sup>c</sup>	674	2.37 ± 1.22
Knows and applies skills in grant application, including preparation and monitoring <sup>b</sup>	665	2.39 ± 1.39
Knows relationship of the environment to public health and biological, physical, and chemical factors that affect public health nutrition <sup>b</sup>	660	2.40 ± 1.17
Knows and applies personnel management principles in recruiting and staffing <sup>b</sup>	664	2.43 ± 1.36

<sup>a</sup>n varies from total because some respondents did not complete ratings for all items

<sup>b</sup>Public health

<sup>c</sup>Nutrition

1=very small; 5=very large

***RELATIONSHIPS OF LEVEL AND USE OF KNOWLEDGE/SKILL  
COMPETENCIES TO EDUCATION, TRAINING, AND EXPERIENCE  
FACTORS***

**Education**

Table 18 shows the relationships between current level and use of knowledge/skill competencies and level of education. Due to the small number of respondents with doctoral degrees (n=53), this group was eliminated from analyses. With the exception of the public health category, those with Master's degrees self-reported significantly greater knowledge of competencies compared to Bachelor-level respondents.

For use of competencies in the job, scores were significantly higher only in the public health category for respondents with Master's degrees compared to those with Bachelor's.

**Training**

Three categories of Master's degree were identified for analysis: public health nutrition, nutrition, and other (Table 19). The only significant difference in current level of knowledge/skill scores was in the public health subset: those with Master's degrees in public health nutrition scored significantly higher than those with Master's in nutrition.

No significant differences were found in degree of use in the job overall or in any subset except nutrition. Here, those with 'other' Master's degrees reported using nutrition competencies significantly more than those with public health Master's

**TABLE 18. RELATIONSHIP OF LEVEL OF EDUCATION TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES**

category of knowledge/skill	level of education			
	bachelor's		master's	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>				
total	148	63.1 ± 14.3 <sup>b,x</sup>	294	73.2 ± 12.3 <sup>y</sup>
nutrition	208	67.4 ± 13.2 <sup>x</sup>	409	74.8 ± 11.1 <sup>y</sup>
public health	190	54.4 ± 15.3	378	66.8 ± 15.4
social/behavioral science and education	176	63.7 ± 15.8 <sup>x</sup>	361	71.7 ± 13.7 <sup>y</sup>
<b>degree knowledge/skill used in job</b>				
total	131	56.6 ± 13.3	273	62.9 ± 15.3
nutrition	190	58.5 ± 15.2	388	59.9 ± 14.9
public health	167	48.5 ± 16.5 <sup>x</sup>	351	57.9 ± 19.2 <sup>y</sup>
social/behavioral science and education	163	59.9 ± 16.4	338	64.2 ± 17.5

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each row, values followed by different superscripts (x,y) differ significantly (p < .05) from one another.

**TABLE 19. RELATIONSHIP OF TYPE OF MASTER'S DEGREE TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES**

category of knowledge/skill	type of master's degree					
	public health		nutrition		other	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>						
total	142	75.0 ± 11.4 <sup>b</sup>	117	72.0 ± 12.9	50	74.5 ± 14.6
nutrition	192	74.3 ± 11.5	169	76.1 ± 10.8	63	75.2 ± 12.1
public health	175	70.8 ± 13.3 <sup>x</sup>	158	63.2 ± 16.0 <sup>y</sup>	56	66.0 ± 7.8 <sup>x,y</sup>
social/behavioral science and education	171	73.5 ± 13.0	148	70.2 ± 14.2	58	73.5 ± 15.2
<b>degree knowledge/skill used in job</b>						
total	125	63.1 ± 15.0	113	61.9 ± 16.1	48	68.0 ± 15.0
nutrition	184	57.9 ± 15.3 <sup>x</sup>	160	61.2 ± 15.3 <sup>x,y</sup>	59	65.1 ± 13.5 <sup>y</sup>
public health	158	59.5 ± 18.3	151	55.4 ± 19.8	54	61.4 ± 20.2
social/behavioral science and education	158	63.1 ± 18.1	140	63.8 ± 17.5	55	69.8 ± 17.1

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each row, values followed by different superscripts (x,y,z) differ significantly (p < .05) from one another.

degrees. Unlike current level of public health knowledge/skill, no differences were found among the three categories for public health usage.

Since 93% (n=675) of participants were registered dietitians, this factor was eliminated from all study comparisons.

## **Experience**

Categories of total years experience in nutrition and dietetics were determined by distribution of respondents into quartiles (Table 20). Total level of knowledge/skill scores was significantly higher after 12-18 years experience compared to 0-6 years and then again after 19 years compared to 0-6, 7-11, and 12-18 years. Level of knowledge/skill of nutrition competencies remained constant from 0-11 years, increased significantly after 12-18 years and then again after 19 years. Alternately, level of knowledge/skill in public health was significantly greater after 7-11 years and remained the same until after 19 years when it significantly increased again. The same significant trend found for overall knowledge/skill existed for the social/behavioral science and education competencies.

Overall use of knowledge/skill scores differed significantly between the following categories of total years experience, higher scores corresponding to greater experience: 0-6 and 12-18 years, 0-6 and 19 years or greater, and 7-11 and 19 years or greater. Nutrition use scores increased significantly after 12-18 years experience and then again after 19 years. Public health use scores remained constant until they became significantly higher after 12-18 years experience. There were no differences in use among experience categories for social/behavioral science and education competencies.

**TABLE 20. RELATIONSHIP OF TOTAL YEARS EXPERIENCE IN NUTRITION AND DIETETICS TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES**

category of knowledge/skill	total years experience in nutrition and dietetics							
	0 - 6		7 - 11		12 - 18		≥ 19	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>								
total	113	64.0 ± 13.2 <sup>b,x</sup>	119	67.4 ± 13.3 <sup>x,y</sup>	137	71.6 ± 12.9 <sup>y</sup>	104	79.5 ± 12.1 <sup>z</sup>
nutrition	157	67.5 ± 12.5 <sup>x</sup>	159	69.8 ± 11.6 <sup>x</sup>	189	74.3 ± 11.1 <sup>y</sup>	153	80.2 ± 11.5 <sup>z</sup>
public health	146	55.0 ± 14.2 <sup>x</sup>	150	61.2 ± 15.3 <sup>y</sup>	176	65.3 ± 16.7 <sup>y</sup>	133	72.2 ± 14.9 <sup>z</sup>
social/behavioral science and education	133	64.7 ± 14.5 <sup>x</sup>	146	66.6 ± 15.5 <sup>x,y</sup>	163	70.4 ± 14.3 <sup>y</sup>	131	76.6 ± 13.5 <sup>z</sup>
<b>degree knowledge/skill used in job</b>								
total	98	56.2 ± 14.3 <sup>x</sup>	115	59.0 ± 15.1 <sup>x,y</sup>	128	63.5 ± 14.5 <sup>y,z</sup>	89	66.9 ± 14.5 <sup>z</sup>
nutrition	144	55.9 ± 13.7 <sup>x</sup>	152	56.8 ± 14.7 <sup>x,y</sup>	178	60.7 ± 14.3 <sup>y</sup>	144	66.3 ± 16.4 <sup>z</sup>
public health	128	47.0 ± 17.7 <sup>x</sup>	138	52.9 ± 18.3 <sup>x</sup>	166	59.0 ± 18.7 <sup>y,z</sup>	119	60.7 ± 17.6 <sup>z</sup>
social/behavioral science and education	124	60.3 ± 17.1	135	61.4 ± 16.8	153	64.3 ± 17.3	121	65.6 ± 17.7

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each category, values followed by different superscripts (x,y,z) differ significantly (p < .05) from one another.

When investigating public health experience in relation to knowledge/skill level and use, similar results were found (Table 21). For each category of current knowledge/skill level, as years of experience in public health nutrition increased, scores were significantly higher.

For degree of knowledge/skill used in the job overall and for the public health subset, scores were significantly higher with greater public health nutrition experience. Use of nutrition increased significantly only when respondents became most experienced. The only significant increase in social/behavioral science and education use score was from least to most experienced respondents.

Respondents identified their primary position from five position classifications (Table 22). Since the focus of this study was public health knowledge and practice, faculty/teachers and consultants were eliminated from all further analyses. For current level of knowledge/skill overall and in public health, scores were significantly higher at each level of increasing administrative responsibility. Administrators/managers scored significantly higher than direct care service providers and the combined administrator/manager-direct care service provider positions in both the nutrition and social/behavioral science and education categories.

For total degree of knowledge/skill used among position classifications, direct care service providers scored significantly lower than both administrators/managers and the combined positions. All positions used nutrition competencies the same. As positions required increasing levels of administrative abilities, public health scores increased significantly. The combined position used significantly more social/behavioral science and education competencies than direct care service providers.



**TABLE 21. RELATIONSHIP OF YEARS EXPERIENCE IN PUBLIC HEALTH NUTRITION TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES**

category of knowledge/skill	years experience in public health nutrition					
	0 - 5		6 - 10		≥ 11	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>						
total	214	64.8 ± 14.1 <sup>b,x</sup>	128	71.8 ± 12.6 <sup>y</sup>	131	79.0 ± 10.7 <sup>z</sup>
nutrition	321	70.1 ± 13.4 <sup>x</sup>	168	73.7 ± 11.5 <sup>y</sup>	166	78.1 ± 9.9 <sup>z</sup>
public health	287	55.7 ± 16.1 <sup>x</sup>	157	66.4 ± 13.5 <sup>y</sup>	157	74.2 ± 12.9 <sup>z</sup>
social/behavioral science and education	270	65.7 ± 15.7 <sup>x</sup>	151	70.4 ± 15.0 <sup>y</sup>	150	76.1 ± 12.0 <sup>z</sup>
<b>degree knowledge/skill used in job</b>						
total	190	56.3 ± 14.7 <sup>x</sup>	128	62.8 ± 14.4 <sup>y</sup>	112	69.0 ± 13.4 <sup>z</sup>
nutrition	296	57.7 ± 14.6 <sup>x</sup>	165	59.8 ± 15.7 <sup>x</sup>	154	64.9 ± 14.7 <sup>y</sup>
public health	253	47.5 ± 17.8 <sup>x</sup>	150	56.7 ± 17.3 <sup>y</sup>	146	67.4 ± 15.3 <sup>z</sup>
social/behavioral science and education	249	60.5 ± 17.0 <sup>x</sup>	147	63.6 ± 17.6 <sup>x,y</sup>	136	67.5 ± 16.7 <sup>y</sup>

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup> Within each row, values followed by different superscripts (x,y,z) differ significantly (p < .05) from one another.

**TABLE 22. RELATIONSHIP OF PRIMARY POSITION TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES**

category of knowledge/skill	primary position					
	administrator/manager		combined positions		direct care provider	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>						
total	101	77.5 ± 10.6 <sup>b,x</sup>	108	69.9 ± 13.5 <sup>y</sup>	107	64.6 ± 12.9 <sup>z</sup>
nutrition	130	76.2 ± 9.8 <sup>x</sup>	148	72.0 ± 12.1 <sup>y</sup>	143	70.2 ± 12.2 <sup>y</sup>
public health	120	74.0 ± 12.8 <sup>x</sup>	141	63.7 ± 15.1 <sup>y</sup>	134	53.1 ± 14.7 <sup>z</sup>
social/behavioral science and education	124	73.9 ± 13.0 <sup>x</sup>	133	69.2 ± 15.3 <sup>y</sup>	126	66.2 ± 14.3 <sup>y</sup>
<b>degree knowledge/skill used in job</b>						
total	104	65.8 ± 15.1 <sup>x</sup>	104	63.2 ± 13.4 <sup>x</sup>	104	56.6 ± 11.8 <sup>y</sup>
nutrition	131	58.6 ± 14.4	146	61.6 ± 13.8	146	61.1 ± 14.1
public health	123	68.9 ± 16.4 <sup>x</sup>	138	58.8 ± 16.5 <sup>y</sup>	126	41.0 ± 13.2 <sup>z</sup>
social/behavioral science and education	124	63.9 ± 18.3 <sup>x,y</sup>	131	66.5 ± 15.6 <sup>x</sup>	128	60.9 ± 14.3 <sup>y</sup>

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each row, values followed by different superscripts (x,y,z) differ significantly (p < .05) from one another.

## **DEMOGRAPHIC CHARACTERISTICS OF THOSE PRACTICING IN COMMUNITY DIETETICS/PUBLIC HEALTH NUTRITION**

In order to assess the current level of knowledge/skill and degree of use by public health nutrition practitioners, the 469 respondents who identified their primary area of practice as community dietetics/public health nutrition were separated from the total group of respondents for additional analyses.

### ***EDUCATION FACTORS***

#### **Level of Education**

Of these respondents, 32% (n=147) had Bachelor's degrees, 64% (n=296) Master's, and 5% (n=22) doctoral.

### ***TRAINING FACTORS***

#### **Type of Master's Degree**

Two categories of Master's degree were identified for those practicing in public health nutrition: public health nutrition and other. The "other" group collapsed the previously used nutrition and other categories into one category due to the small number of sub-group respondents in each. Forty-six percent (n=138) identified their Master's degree as public health nutrition; 54% (n=163) were in the other category.

## ***EXPERIENCE FACTORS***

### **Years Experience in Public Health Nutrition**

Forty-three percent (n=196) of respondents had the least years (0-5) experience in public health nutrition. Twenty-nine percent (n=133) and 28% (n=127) were moderately (6-10) to most ( $\geq 11$ ) experienced, respectively.

### **Primary Position**

Twenty-six percent (n=119) identified their primary position as direct care service provider, 24% (n=111) as administrator/manager, and 30% (n=138) as both direct care service provider and administrator/manager.

## **SCORES ON LEVEL AND USE OF KNOWLEDGE/SKILL COMPETENCIES**

### ***RELATIONSHIPS OF LEVEL AND USE OF KNOWLEDGE/SKILL COMPETENCIES TO EDUCATION, TRAINING, AND EXPERIENCE FACTORS***

#### **Education**

Table 23 shows mean scores and standard deviations for each category of knowledge/skill within each level of education factor. Significant differences between Bachelor- and Master-level personnel as determined by Student's t-test are indicated also. The only significant difference in terms of level of knowledge/skill between the two levels was in the nutrition subset, with Master-level respondents scoring higher than Bachelor-level.

**TABLE 23. RELATIONSHIP OF LEVEL OF EDUCATION TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES FOR THOSE PRACTICING IN PUBLIC HEALTH**

category of knowledge/skill	level of education			
	bachelor's		master's	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>				
total	100	66.3 ± 13.2 <sup>b</sup>	200	74.1 ± 11.8
nutrition	140	69.3 ± 12.4 <sup>x</sup>	271	74.3 ± 10.7 <sup>y</sup>
public health	125	57.9 ± 15.0	253	67.5 ± 15.0
social/behavioral science and education	121	66.2 ± 14.6	244	72.5 ± 13.1
<b>degree knowledge/skill used in job</b>				
total	98	58.7 ± 12.7	197	65.3 ± 14.3
nutrition	133	59.6 ± 14.9	271	60.9 ± 13.8
public health	122	52.1 ± 16.4	249	60.7 ± 19.0
social/behavioral science and education	123	61.9 ± 16.0	243	66.1 ± 16.1

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each row, values followed by different superscripts (x,y) differ significantly (p < .05) from one another.

There were no significant differences in any category for degree of knowledge/skill use in the job.

### **Training**

For level of knowledge/skill of competencies, public health nutrition Master's respondents had significantly higher scores in the public health subset than 'other' Master's holders; there were no other significant differences (Table 24).

There were also no significant differences overall or in any subset of knowledge/skill use.

### **Experience**

There was a significant increase in score at greater levels of experience in public health nutrition in all categories of level of knowledge/skill except nutrition, where knowledge/skill significantly increased at 6-10 years and at 11 years and greater compared to 0-5 years (Table 25).

For degree of use in the job overall and in public health, scores increased significantly with increasing years experience. In the nutrition subset, the only significant increase was between least and most experienced respondents. There were no differences in social/behavioral science and education use.

For knowledge/skill overall and in the public health subset, as position went from direct care service provider to administrator/manager, scores were significantly higher at each level of increasing administrative responsibility (Table 26). The only significant difference in the nutrition subset was a lower score for direct care service providers than for administrators/managers; the same significant trend was seen for the social/behavioral science and education subset.

**TABLE 24. RELATIONSHIP OF TYPE OF MASTER'S DEGREE TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES FOR THOSE PRACTICING IN PUBLIC HEALTH**

category of knowledge/skill	type of master's degree			
	public health		other	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>				
total	96	74.9 ± 11.5 <sup>b</sup>	112	73.6 ± 12.2
nutrition	128	73.5 ± 11.4	150	75.2 ± 10.0
public health	116	70.6 ± 13.4 <sup>x</sup>	142	64.7 ± 16.0 <sup>y</sup>
social/behavioral science and education	116	73.8 ± 12.8	134	71.4 ± 13.5
<b>degree knowledge/skill used in job</b>				
total	91	65.7 ± 13.9	113	65.1 ± 14.6
nutrition	129	59.5 ± 14.1	149	62.5 ± 13.3
public health	113	62.9 ± 17.9	141	59.2 ± 19.7
social/behavioral science and education	114	66.3 ± 16.2	134	66.0 ± 16.3

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each row, values followed by different superscripts (x,y) differ significantly (p < .05) from one another.

**TABLE 25. RELATIONSHIP OF YEARS EXPERIENCE IN PUBLIC HEALTH NUTRITION TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES FOR THOSE PRACTICING IN PUBLIC HEALTH**

category of knowledge/skill	years experience in public health nutrition					
	0 - 5		6 - 10		≥ 11	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>						
total	124	66.2 ± 12.6 <sup>b,x</sup>	102	72.2 ± 12.2 <sup>y</sup>	89	78.5 ± 10.3 <sup>z</sup>
nutrition	181	69.7 ± 11.9 <sup>x</sup>	125	73.7 ± 11.6 <sup>y,z</sup>	119	77.0 ± 9.3 <sup>z</sup>
public health	162	56.9 ± 15.4 <sup>x</sup>	120	66.3 ± 13.4 <sup>y</sup>	109	73.2 ± 13.0 <sup>z</sup>
social/behavioral science and education	159	66.3 ± 13.9 <sup>x</sup>	119	70.8 ± 14.7 <sup>y</sup>	101	76.1 ± 11.5 <sup>z</sup>
<b>degree knowledge/skill used in job</b>						
total	121	58.7 ± 13.3 <sup>x</sup>	107	63.9 ± 14.0 <sup>y</sup>	79	69.4 ± 13.2 <sup>z</sup>
nutrition	180	57.8 ± 13.7 <sup>x</sup>	129	61.4 ± 14.2 <sup>x,y</sup>	113	64.8 ± 13.7 <sup>y</sup>
public health	155	50.2 ± 18.1 <sup>x</sup>	120	58.7 ± 17.2 <sup>y</sup>	108	68.2 ± 15.8 <sup>z</sup>
social/behavioral science and education	161	62.8 ± 15.4	121	64.7 ± 17.1	96	67.8 ± 15.8

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each row, values followed by different superscripts (x,y,z) differ significantly (p < .05) from one another.



**TABLE 26. RELATIONSHIP OF PRIMARY POSITION TO LEVEL AND USE OF KNOWLEDGE/SKILL SCORES FOR THOSE PRACTICING IN PUBLIC HEALTH**

category of knowledge/skill	<u>primary position</u>					
	<u>administrator/manager</u>		<u>combined position</u>		<u>direct care provider</u>	
	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD	n <sup>a</sup>	mean ± SD
<b>current level of knowledge/skill</b>						
total	79	77.4 ± 10.4 <sup>b,x</sup>	94	71.5 ± 12.5 <sup>y</sup>	81	64.5 ± 12.6 <sup>z</sup>
nutrition	103	75.2 ± 9.7 <sup>x</sup>	128	72.8 ± 11.5 <sup>x,y</sup>	111	69.9 ± 12.4 <sup>y</sup>
public health	95	74.5 ± 11.2 <sup>x</sup>	122	64.9 ± 14.5 <sup>y</sup>	103	53.3 ± 14.3 <sup>z</sup>
social/behavioral science and education	96	73.5 ± 13.0 <sup>x</sup>	115	70.0 ± 14.6 <sup>x,y</sup>	95	66.0 ± 14.3 <sup>y</sup>
<b>degree knowledge/skill used in job</b>						
total	79	67.8 ± 15.1 <sup>x</sup>	91	64.3 ± 12.8 <sup>x</sup>	78	56.7 ± 12.1 <sup>y</sup>
nutrition	102	59.3 ± 14.0	126	61.9 ± 13.3	113	60.8 ± 14.6
public health	97	71.5 ± 15.5 <sup>x</sup>	119	60.5 ± 16.1 <sup>y</sup>	96	41.9 ± 13.6 <sup>z</sup>
social/behavioral science and education	96	65.4 ± 18.3 <sup>x,y</sup>	114	67.2 ± 15.0 <sup>x</sup>	97	61.1 ± 14.3 <sup>y</sup>

<sup>a</sup>n's for total score are less than individual subset scores because some respondents did not complete all items within subsets

<sup>b</sup>Within each row, values followed by different superscripts (x,y,z) differ significantly (p < .05) from one another.

For overall use in the job, both administrators/managers and combined positions scored significantly higher than direct care service providers; there was no significant difference between administrators/managers and combined positions. There were no differences in use of nutrition competencies among positions. Significantly greater scores in the public health subset were seen with each successive rise in position from direct care to administration. The only significant increase in score for the social/behavioral science and education subset was between combined and direct care positions.

### ***RESEARCH QUESTIONS***

Prior to conduction of the study, it was anticipated that Bachelor-level respondents would use public health competencies significantly ( $p < 0.05$ ) less than Master-level personnel. Although respondents with Master's degrees scored higher on these competencies, the difference between the two groups of respondents was not significant ( $p=0.06$ ).

Also, as years experience in public health nutrition increased from least to most, the degree to which public health competencies were used on the job was expected to significantly ( $p < 0.05$ ) increase. Results were consistent with this expectation.

Finally, two questions were raised regarding position classification. Direct care providers were hypothesized to report significantly ( $p < 0.05$ ) greater use of nutrition competencies than the other two position classifications. Findings were contrary to what was expected; there were no differences in use of nutrition competencies among positions. Also, administrators/managers were anticipated to

use public health competencies significantly ( $p < 0.05$ ) more than the other two position classifications. Results were consistent with this expectation.

### **COMPARISON OF RESULTS FOR ALL RESPONDENTS TO RESULTS FOR THOSE PRACTICING IN COMMUNITY DIETETICS/PUBLIC HEALTH NUTRITION**

Results of analyses for all respondents were then compared to those for public health practitioners in order to identify consistencies or differences. For the whole population, there were no differences between Master- and Bachelor-level respondents in public health knowledge although there was a difference in public health use. These results were inconsistent with the public health population, where Master-level respondents neither knew or used significantly more public health competencies than Bachelor-level respondents.

Scores for type of Master's degree earned were primarily the same for all respondents and those practicing in public health nutrition with one exception. For the whole population, those who had Master's degrees in the 'other' category used nutrition competencies more than public health and nutrition Master's respondents. Alternatively, there was no difference in nutrition use between public health and other Master's degrees for the public health population.

Two differences between the total and public health nutrition populations were identified when years of experience in public health nutrition was examined. For the whole population, nutrition use was the same for the least and moderate experience classifications; those who had the most experience scored significantly higher than both the least and moderately experienced. In contrast, for the public health population, the only difference in nutrition use was between the most and least

experienced respondents. Also, there were no differences in social/behavioral science and education use for the three experience levels for the public health population. For the whole population, those with the most experience used social/behavioral science and education competencies significantly more than those with the least experience.

The final analysis was concerned with differences in level or use of the competencies based on position classification. For the whole population, administrators/managers had significantly higher knowledge scores of the nutrition and social/behavioral science and education subsets than the other two position classifications. This differed from the public health population where the only significant differences in both of these subsets were between administrators/managers and direct care service providers.

## CONCLUSION

The study population was separated into two groups, all respondents and those practicing in public health nutrition specifically, in order to answer two broad questions. First of all, issues of continuing education need for PHNPG members were addressed by examining differences in level and use of competencies in relation to education, training, and experience. Results identified areas of greatest continuing education need based on self-report information by PHNPG members.

Secondly, differences in practice of public health nutritionists based on education, training, and experience factors were determined. These analyses considered only those respondents practicing in public health nutrition. From these results, the research questions posed prior to the study's conduction could be

examined and education, training, and experience recommendations for those practicing in public health could be made.

## 5. DISCUSSION

Results of this study describe Public Health Nutrition Practice Group (PHNPG) members' level and use of knowledge/skill competencies identified by *Strategies for Success*.<sup>10</sup> This not only allows identification of areas of continuing education need, but also helps determine degree of congruency between education, training, and experience and practice as defined by the curriculum guide.

### CONTINUING EDUCATION NEED FOR PRACTICE GROUP OVERALL

Mean scores on level and use of knowledge/skill competencies indicate areas of continuing education need for PHNPG members. Topics for which level of knowledge/skill was lowest included computer applications, personnel management, research design and implementation, epidemiology and biostatistics, and grant writing. Higher scoring competencies focused on nutritional assessment and nutrition science issues. These results are consistent with reported self-perceived continuing education needs of RDs and DTRs who requested advanced level presentations of topics relating to traditional dietetic practice.<sup>37</sup> Topics requested at a basic level were those newly evolving or not specific to nutrition.

Practitioners tend to choose continuing education topics that are relevant to practice.<sup>32,35-37</sup> Therefore, highest and lowest scoring degree of use competencies serve as indicators of continuing education topics based on practice.

Social/behavioral science and education issues, including nutrition education, oral and written communication, and techniques for affecting behavior change, were among the ten highest scoring competencies used in practice, as were nutritional assessment

and nutrition science topics. These, then, may be offered at more advanced levels. All but one of the lowest scoring competencies were from the public health subset. Topics respondents reported using the least were the same as those they identified as knowing the least about. It is not known whether respondents' positions or work-settings do not require the use of these public health competencies or if lack of knowledge limits usage. Continuing education programs should offer these topics at a basic level since many impact the effectiveness of nutrition services, regardless of work-setting.

It was interesting to note that five of the ten most used competencies were from the social/behavioral science and education subset, although none of these competencies were among those scoring in the top ten for knowledge. Respondents may be using skills involving nutrition education, communication, standards of practice, and affecting behavior change without proper knowledge of how to use them.

### ***CONTINUING EDUCATION NEED BASED ON EDUCATION, TRAINING, AND EXPERIENCE***

#### **Level of Education**

The need for continuing education programs focusing on public health competencies is more apparent when level of education is considered. Although Bachelor- and Master-level respondents claimed to know the same amount of public health, degree of use was significantly higher for Master-level personnel. These Master-level respondents may be practicing in more administrative positions which

require greater use of public health competencies, or they may have sufficient experience allowing for use of competencies.

## **Training**

Relationships between level and use of knowledge/skill and type of Master's degree uncovered interesting trends as well. There were no differences among categories for use of public health. However, those with public health Master's degrees knew significantly more about public health than those with Master's degrees in nutrition. This provides evidence that there is something different about the Master's in public health relative to what people know in the public health subset. It is also possible that personnel with Master's degrees in nutrition are performing public health responsibilities without adequate training and knowledge.

Alternatively, it is possible that those with public health Master's degrees are not functioning in positions or settings that allow opportunity for use of their knowledge. The analysis of level of public health knowledge/skill was performed for the whole population of respondents which includes both those who work within and outside public health nutrition; an individual can belong to the PHNPG without practicing in public health. These findings showed once again that there is a need for continuing education programs involving public health topics.

## **Experience**

When scores were determined based on years experience overall in nutrition and dietetics and specifically in public health nutrition, knowledge generally increased with increasing experience. This suggests that more practiced nutritionists have greater knowledge of the public health nutrition graduate curriculum



competencies. For years experience in public health nutrition, use of nutrition increased only when respondents reached the highest level of experience. There may be a base level of nutrition knowledge/skill that is required for use in entry-level and beyond entry-level practice. Only after 10 years experience may more advanced use of nutrition competencies be required or used. Alternatively, although level of nutrition knowledge/skill successively increased, practitioners may not know enough to increase their usage until after 10 years experience. Continuing education programming, then, should focus on advanced nutrition topics for those with greater experience.

Finally, administrators/managers both knew and used more public health competencies than the other two position classifications. Direct care providers primarily used nutrition competencies, although no differences among positions for the nutrition subset were significant. Clearly, topics regarding nutrition service provision should be included in continuing education programs for direct care providers, while public health topics are more appropriate for administrators/managers and those working in combined positions.

### ***CONTINUING EDUCATION FORMAT***

Results showed respondents preferred regional/local conferences and meetings and were willing to spend \$50-100 for ten hours of continuing education registration. Survey items for preferred format included only those which provide practitioners with continuing education credits. The study did not address informal types of continuing education taking place at the worksite which may be presented as inservices or in workshops and are equally important methods. With increasing

concerns regarding funding in public health programs, the affordability issue regarding continuing education will need to be addressed through the utilization of innovative continuing education presentations.

## **KNOWLEDGE AND USE DIFFERENCES FOR THOSE PRACTICING IN PUBLIC HEALTH NUTRITION**

To analyze public health practice specifically, differences in knowledge and use of competencies based on education, training, and experience factors were determined for those respondents who identified their primary area of practice as community dietetics/public health nutrition.

### ***EDUCATION FACTORS***

Education recommendations for public health nutritionists have been made in numerous publications.<sup>4,6,8,10,14,15</sup> *Personnel...1990's*<sup>8</sup> describes educational qualifications for position classes within each series of position in public health nutrition. All positions within the professional series require a minimum of a Master's degree. The only positions for which a Bachelor's degree is suitable are the nutritionist class and clinical nutritionist class within the professional series. Master's degrees, then, are preferred for personnel functioning in positions with administrative or combined administrative-direct care responsibilities. Bachelor-level personnel are recommended for direct care only positions.

Results of this study showed that Master-level and Bachelor-level personnel self-reported using all three categories of *Strategies for Success*<sup>10</sup> competencies to

the same extent. This is not consistent with the recommendation from *Personnel...1990's*,<sup>8</sup> which suggests that Master-level personnel use public health competencies to a greater extent than Bachelor-level personnel. In addition, Bachelor-level respondents would be expected to use the nutrition competencies more than Master-level if they are truly functioning more in direct care roles.

The verification study of ADA's community dietetics role delineation<sup>4</sup> found practitioners with Master's degrees functioning more as administrators and those with Bachelor's degrees providing more direct care nutrition services. Haughton and Shaw<sup>7</sup> found Master-level personnel performed all roles identified in *Personnel...1980's*,<sup>6</sup> with the exceptions of Counselor, Teacher, and Outreach Worker, significantly more than those with Bachelor's degrees. This suggested again the increase in administrative versus direct care responsibilities for personnel at higher levels of education.

The current study's results, however, are inconsistent with those reported in the literature. Bachelor- and Master-level respondents reported using competencies in all three categories to the same degree. Type of Master's degree, position classification, and years experience in public health nutrition were not included in this single analysis due to small cell sizes, however, and these factors act in conjunction with level of education.

These findings raise the issue of learning on the job. It may be that Bachelor-level personnel have a great deal of experience and the knowledge they acquired with experience allows them to perceive their functioning the same as those with Master's degrees. On the other hand, Master's degree practitioners may be functioning in Bachelor-level positions and therefore may not have the opportunity to utilize competencies at an advanced level.

It is interesting to note although there was no difference in use of nutrition competencies, Master-level respondents had greater knowledge of these. Graduate programs may focus more on nutrition science and service delivery than non-traditional social/behavioral science and public health issues. On the job, however, there may be a certain level of nutrition competency as defined by the curriculum utilized that does not require a Master's degree. In addition, if Master- and Bachelor-level respondents are both functioning as direct care service providers, those who have greater nutrition knowledge may not have the opportunity to use it.

### ***TRAINING FACTORS***

Although type of Master's degree was expected to influence public health competency usage, no differences in use were found in any competency category for public health nutrition versus other Master's degrees. Those with public health nutrition Master's did have significantly greater knowledge in public health which indicates there are differences in graduate training where public health knowledge is concerned.

The fact that there were no differences in use was disturbing, although not entirely surprising. Kaufman and Lee's study of state and territorial public health nutrition directors<sup>17</sup> indicated that a Master's degree in nutrition or public health nutrition was only required by 44% of the states in 1987. This lack of required specialized training is one factor believed to be contributing to the disarray of the public health system in the United States.<sup>19</sup> Without adequate training, nutritionists in public health agencies may be forced to learn administrative competencies on the job.

It is also possible that Master-level personnel, regardless of type of Master's degree, are practicing as direct care providers and do not have the opportunity to use public health competencies. Personnel without public health nutrition training may have to rely on learning on the job in order to progress to administrative positions compared to practitioners with public health nutrition Master's degrees. These results do not indicate the positions held or the time taken to progress upward on the public health nutrition career ladder for individuals with differing Master's degrees. These findings suggest the need for further research in this area.

Since there was no difference in knowledge of nutrition between the two categories of Master's degrees, nutrition use would also be expected to be equal if respondents were functioning in the same position. Position classification and experience are again influencing use of competencies, but were not included in this single analysis due to small cell sizes. Those personnel with public health nutrition Master's degrees may not have the experience required for public health responsibilities or may not function in a position providing opportunity to utilize these competencies.

### ***EXPERIENCE FACTORS***

Public health use, regardless of education or training, increased significantly with level of experience. Haughton and Shaw<sup>7</sup> found only after six or more years of experience respondents had any significant changes in job responsibilities compared to those with less experience. Only after 10 years did responsibilities associated with more advanced training and experience increase again. The current study's results are

consistent with these findings with the exception of use of the nutrition competencies, which only increased after 12 years experience.

One explanation for greater use of public health competencies over time may be promotion to positions requiring greater administrative responsibilities. The increase in knowledge of public health competencies may be due to learning on the job or it may be that nutritionists seek public health nutrition graduate training after working for a number of years. This would coincide with traditional experience requirements for entry into public health graduate schools.<sup>11</sup>

The lack of successive increases of nutrition competency use is curious. There may be a base of nutrition knowledge utilized in entry- and beyond entry-level positions. Although nutrition knowledge may increase, utilization may not until a practitioner has more than 12 years experience. This may reflect movement into specialization areas that usually occurs with greater levels of experience.

At each level of experience, regardless of knowledge and use of the curriculum competencies, the numbers of respondents decreased. This suggests nutritionists may be leaving the field of public health nutrition over time. One factor found by Agriesti-Johnson and Broski<sup>23</sup> to influence job satisfaction among dietitians was opportunity for promotion. If it actually takes five or more years before an individual's job responsibilities increase in public health nutrition, job dissatisfaction due to lack of promotion opportunity may be causing personnel to leave the field. Job satisfaction for public health nutritionists, specifically, was most strongly correlated with management/supervision activities and was highest overall for directors/chiefs.<sup>26</sup> Again, if job responsibilities associated with advanced training and experience only increase after 12 years experience, public health nutritionists may become discouraged and turn to other areas of dietetic practice or new careers.

## RESEARCH QUESTIONS

Questions regarding education level, years of experience in public health nutrition, and position classification were posed prior to conduction of this study based on the findings of Haughton and Shaw.<sup>7</sup> Since Master-level personnel in their study performed most roles in *Personnel ...1980's*<sup>6</sup> more than Bachelor-level personnel, Master-level respondents were expected to use public health competencies more than those with Bachelor's degrees. The difference between the two education levels, however, was not significant, although the score for Master's personnel was higher than that for Bachelor's personnel. This analysis did not consider respondents' position classification or experience level. Differences in public health competency use were found in these two areas.

With increasing years experience in public health nutrition, the degree to which public health competencies were used on the job also increased in the current study which was consistent with Haughton and Shaw's<sup>7</sup> study. This suggests that, according to our data, the amount of experience a public health nutritionist has is a greater influence on use of public health competencies than level of education.

Finally, contrary to expectations, direct care service providers did not use nutrition competencies more than the other two position classifications. The nutrition competencies identified in *Strategies for Success*<sup>10</sup> have specific public health application and may go beyond the skills needed for a direct care provider or may actually represent a basic level of nutrition used by any position.

Administrators/managers did use public health competencies more than the other position classifications as expected. This confirms that the curriculum's public health

knowledge/skill statements are those competencies required of public health nutrition leaders.

## **RECOMMENDATIONS**

Results of this study lead to recommendations for education, training, and experience qualifications for specific public health nutrition positions. These recommendations are based on who the data suggest are most qualified based on knowledge and use of *Strategies for Success*<sup>10</sup> competencies. The issue of quality care was not addressed by this study and it is possible that a practitioner meeting our recommendations may not be able to provide the highest level of quality of care.

### ***ADMINISTRATOR/MANAGER***

Data from this study suggest those who are most suitable for administrator/manager positions have Master's degrees in public health nutrition. Five or more years of experience are also indicated for this position. Practitioners with Master's degrees in other areas are less highly recommended; these personnel would likely require more experience in order to practice at an administrative level. Bachelor-level personnel would not be recommended for this position as our results show they have significantly less knowledge/skill in all the categories of competence.



## ***BOTH ADMINISTRATOR/MANAGER-DIRECT CARE PROVIDER***

Personnel with public health nutrition or other Master's degrees appear best suited for performing responsibilities of the combined position of direct care and administration. Although our results showed the optimal range of experience necessary for this position was 0-5 years, personnel should probably have at least 2 years experience as identified by *Personnel...1990's*.<sup>8</sup> Those with Master's degrees in areas other than public health nutrition may require more experience than those with public health training. Again, Bachelor-level personnel are not recommended for this position unless they have extensive public health experience.

## ***DIRECT CARE SERVICE PROVIDER***

Bachelor-level personnel with limited experience are recommended for direct care service positions. Those who have Master's degrees in nutrition may be best qualified to provide specialized nutrition services. Personnel with public health training are considered overqualified for this position.

## **SUMMARY**

Results of this study indicate continuing education needs of the whole group of PHNPG members and patterns of practice of those PHNPG members who practice as public health nutritionists. For the whole group, continuing education topics requiring presentation at a basic level are those dealing with public health and

social/behavioral science and education issues. Nutrition science and direct care nutrition service issues are suitable for advanced level presentations.

Differences in continuing education need for all members based on education, training, and experience revealed greatest need for programs presenting public health topics. Program planning should, however, consider the relevance of the subject matter to actual practice. Practitioners who have administrative responsibilities will have greater need of continuing education concerning public health competencies than direct care providers who require topics related to nutrition competencies. Programs geared toward improving upon the learners' current level of knowledge or skill, regardless of subject area, will be most beneficial.

The identified patterns of only those practicing in public health nutrition revealed both consistencies with and differences from previous studies. This study was based on the competencies identified in *Strategies for Success*<sup>10</sup> which was only implemented in graduate programs in 1990, and it is possible that no survey respondent was trained using these guidelines. The curriculum does provide a description of the knowledge and skills required for future public health nutrition leaders, however, and this study's results serve as an indicator of how well-qualified those currently practicing in the field are. The data suggest certain levels of education, training, and experience required for specific position classifications, yet in no way does this indicate the quality of care provided by recommended practitioners.

## 6. IMPLICATIONS

Results from this study of continuing education needs and patterns of practice of public health nutritionists based on education, training, and experience led to conclusions regarding continuing education programming and recommendations for personnel qualifications. Although the study provided descriptive information regarding public health nutrition practice, it also raised questions to be addressed by future research.

First of all, this study's results suggest there may be learning which occurs on the job that may be preparing public health nutritionists for positions with greater administrative responsibility. Future research should address the time taken for personnel trained in public health nutrition versus those trained in other areas to advance into more administrative positions.

The number of survey respondents practicing in public health nutrition decreased as years experience in public health nutrition increased from least to most. Although this may only indicate that more practiced public health nutritionists do not belong to the Public Health Nutrition Practice Group (PHNPG) of ADA or that these members chose not to complete the survey, it is also possible that personnel are leaving the field of public health after a certain number of years. It is important to identify if practitioners are actually leaving the field of public health nutrition after a certain amount of experience and, if this trend does exist, the reasons why. Perhaps studies which clearly define factors leading to job satisfaction would indicate those forces which would keep public health nutritionists from leaving the field.

A more detailed role delineation study that examines the amount of time personnel spend on direct care versus administrative responsibilities is recommended

for future study. This would better help to determine required qualifications for various positions in public health nutrition.

Finally, further studies examining health outcomes of populations served by public health nutritionists would best identify the education, training, and experience requirements of public health nutrition personnel that lead to optimal quality of care.

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## LIST OF REFERENCES

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LANCASTER BOND

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**APPENDIX ONE:**

***Strategies for Success***  
**Knowledge and Skill Statements**

## **Nutrition**

- 1) Knows issues related to establishing nutrient requirements and dietary recommendations.
- 2) Knows and has the ability to select and use appropriate anthropometric, biochemical, clinical, dietary, functional, and socioeconomic assessment techniques to prioritize nutritional problems of various age and population groups.
- 3) Has the ability to analyze and critique current nutrition research and apply research findings to nutrition programs serving people throughout the life cycle and to those at high risk and with special health care needs.
- 4) Knows factors that impact on the accessibility, adequacy and safety of the food supply system (production, processing, distribution and consumption) and the relationship of those factors to community health.
- 5) Applies knowledge and skills to affect desired change in food supply systems and promote health.
- 6) Knows principles of food science, preparation and management and translates them to meet food needs of various population groups.
- 7) Identifies and addresses controversial nutrition issues which impact public health.
- 8) Evaluates lay (popular) literature for accuracy, reliability, and practical implications.
- 9) Knows how to evaluate nutrition claims critically, and employs effective procedures for addressing nutrition-related health fraud issues.

## **Public Health**

- 10) Knows historical development of public health and public health nutrition.
- 11) Knows federal, regional, state and local government structures and the processes involved in the development of public policy, legislation, and regulations that influence and relate to nutrition and health services.
- 12) Applies effective management principles in the administration of nutrition programs.
- 13) Knows management principles, including community assessment, program planning, implementation, and evaluation, and applies them to community-based public health nutrition programs and services.

- 14) Applies skills in strategic planning for public health and nutrition services for population groups.
- 15) Identifies short and long-term priorities in the management process.
- 16) Knows and applies systems approach to addressing health-related issues and problems.
- 17) Knows and applies skills in integrating nutrition services into overall mission, goals, and plan of the health agency.
- 18) Applies quality assurance standards to public health and nutrition services.
- 19) Knows and applies skills in fiscal planning and management.
- 20) Knows available funding sources for public health and nutrition programs.
- 21) Knows and applies skills in grant application and contract management, including preparation of grants and contracts, negotiation of grants, and monitoring.
- 22) Knows and applies the principles of personnel management, including recruiting, staffing, supervising, performance appraisal, staff development, and conflict resolution.
- 23) Knows political considerations involved in agency planning and decision making and applies skill in influencing policy.
- 24) Knows and applies community organizational strategies to increase and enhance participation in health and nutrition programs in the public/private sectors and voluntary health organizations.
- 25) Knows and applies skill in identifying economic and societal trends which have implications for the health and nutritional status of the population.
- 26) Knows and applies skills in biostatistics, including principles of data collection and management, statistical analysis and inferences, computer applications for data compilation and analysis.
- 27) Knows how to design and implement research projects targeted to specific populations.
- 28) Knows and applies the principles of the epidemiological approach to measure and describe health and nutrition problems and trends in the community.
- 29) Knows relationship of the environment to public health and biological, physical, and chemical factors that effect public health nutrition.

- 30) Knows the process of consultation and uses the process effectively.
- 31) Applies skills in negotiation and use of group process techniques (brainstorming, focus groups, nominal group process) to achieve goals and objectives.
- 32) Participates effectively as a member of agency and/or community boards, committees, and task forces.
- 33) Recognizes roles of other members of the health team.
- 34) Applies skill in participating in organized advocacy efforts for health and nutrition programs.

### **Social/Behavioral Sciences and Education**

- 35) Knows how to assess, plan, implement, and evaluate community-based dietary interventions to affect behavior change and to promote health.
- 36) Knows and applies principles of social marketing for use in health and nutrition programs.
- 37) Knows and applies skills in selecting and/or developing nutrition education materials and approaches, appropriate for target populations.
- 38) Knows how to evaluate interviewing and counseling techniques for affecting behavior change.
- 39) Knows and is skilled in using standards of practice for the profession of dietetics.
- 40) Applies skills in communicating scientific information both oral and written at levels appropriate for different audiences: clients, consumers, health professionals.
- 41) Applies skills in using various communication channels through contacts with representatives of print media (newspapers, magazines, newsletters), radio, films/videos, and television.
- 42) Applies social/behavioral sciences and principles of education to public health and nutrition.

**APPENDIX TWO:**

**Core Knowledge and Performance Statements  
The American Dietetic Association**

## **Core Knowledge Requirements**

- 1) Knows principles of human anatomy and physiology, microbiology, and biochemistry.
- 2) Knows scientific principles of human nutrition in health and disease.
- 3) Knows nutrient composition of food and appropriate sources of data.
- 4) Knows principles of food science and techniques of food preparation.
- 5) Knows principles of menu planning for optimal nutrition of individuals and groups in health and disease.
- 6) Knows principles of behavioral and social sciences.
- 7) Knows the influence of socioeconomic, cultural, and psychological factors on food and nutrition behavior.
- 8) Knows fundamentals of nutrition care delivery in community programs.
- 9) Knows principles of effective communication and documentation.
- 10) Knows use of computers for data processing and information in dietetics.
- 11) Knows basic concepts of research methodology and statistical analysis.
- 12) Knows principles of education and effective methods of teaching.
- 13) Knows techniques of interviewing and counseling.
- 14) Knows principles of organization and management.
- 15) Knows fundamentals of human relations and group dynamics.
- 16) Knows fundamentals and techniques of fiscal management.
- 17) Knows principles and techniques of human resource management.
- 18) Knows fundamentals of quality assurance.
- 19) Knows principles of nutrition assessment, planning, intervention, and evaluation.
- 20) Knows the principles of procurement, food production, distribution, and service.
- 21) Knows fundamentals of the political and legislative process.

- 22) Knows laws, regulations, and standards affecting dietetic practice.
- 23) Knows fundamentals of merchandising and promoting food and nutrition services.
- 24) Knows nutrient needs for various stages of the life cycle.

### **Performance Requirements**

- 1) Assures that food service operations meet the food and nutrition needs of clients served and target markets.
- 2) Utilizes food, nutrition, and social services in community programs.
- 3) Provides nutrition care through systematic assessment, planning, intervention, and evaluation for individuals and groups.
- 4) Provides nutrition counseling and education to individuals for health promotion, health maintenance, and rehabilitation.
- 5) Applies current research information and methods to dietetic practice.
- 6) Utilizes computer and other technology in the practice of dietetics.
- 7) Integrates food and nutrition services in the health care delivery system.
- 8) Promotes positive relationships with others who impact on dietetic services.
- 9) Coordinates nutrition care with food service systems.
- 10) Participates in the management of cost effective nutrition care systems.
- 11) Utilizes menu as the focal point of the food service system.
- 12) Participates in the management of food service systems, including procurement, food production, distribution, and service.
- 13) Participates in the management of human, financial, material, physical, and operational resources.
- 14) Participates in the management of a Quality Assurance (QA) Program.
- 15) Provides education and training to other professionals and supportive personnel.
- 16) Engages in activities that promote improved nutritional status of the public and advance the profession of dietetics.

- 17) **Recognizes the impact of political, legislative, and economic factors on dietetic practice.**
- 18) **Complies with the Standards of Professional Responsibility and Standards of Practice for the Profession of Dietetics.**
- 19) **Utilizes effective communication skills in the practice of dietetics.**
- 20) **Engages in a program of self development and continuing education.**



## VITA

Annemarie Jane Novak was born in Cleveland, Ohio on January 14, 1968. She attended elementary schools in the Cleveland area and graduated from Magnificat High School in Rocky River, Ohio in June, 1986. The following August, she entered Case Western Reserve University and in May, 1990 received the degree of Bachelor of Science in Nutrition. She began her graduate work at the University of Tennessee, Knoxville in May, 1990. While at the University of Tennessee, she was a Maternal and Child Health Public Health Nutrition Trainee and completed the American Dietetic Association Approved Pre-Professional Practice Program to become eligible for dietetic registration. She also served as a teaching assistant for one semester. In May, 1992 she received a Master of Science degree in Nutrition with a minor in Public Health.



THE AMERICAN DIETETIC ASSOCIATION

1992

NOVAK, ANNE MARIE JANE



Public Health Nutrition Practice Group • The American Dietetic Association

**Continuing Education Needs Assessment for Public Health Nutrition  
A dietetic practice group of the American Dietetic Association**

**Department of Nutrition  
College of Human Ecology  
University of Tennessee-Knoxville  
Knoxville, TN 37996-1900**

This survey is designed to assess continuing education needs and practice of Public Health Nutrition dietetic practice group members. The results will be used to guide PHNPG continuing education programming. The questionnaire consists of three parts: 1) demographic questions; 2) questions about your level of knowledge and skills in particular areas and the degree to which these are part of your job as practiced; and 3) continuing education format questions. It is important to select only one response for each item. Thank you for your participation.

Name \_\_\_\_\_  
and \_\_\_\_\_  
Address \_\_\_\_\_  
  
(Optional) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

"The public health nutritionist is that member of the public health agency staff who is responsible for assessing community nutrition needs and planning, organizing, managing, directing, coordinating and evaluating the nutrition component of the health agency's services. The public health nutritionist establishes linkages with community nutrition programs, nutrition education, food assistance, social or welfare services, child care, services to the elderly, other human services, and community based research."

*From Kaufman, M. (Ed.) Personnel in Public Health Nutrition for the 1980's, Washington, DC, ASTHO Foundation, 1982.*

Prepared by the Department of Nutrition, The University of Tennessee at Knoxville.

Public Health Nutrition. A dietetic practice group of the American Dietetic Association. ©1990.

## DEMOGRAPHIC QUESTIONS

1. In which ADA area do you live? Check one. (5)

- (1) Area 1 (AK, CA, HA, ID, MT, OR, WA, WY)
- (2) Area 2 (IA, MI, MN, MO, NE, ND, SD, WI)
- (3) Area 3 (AL, AR, FL, GA, LA, MS, PR, SC)
- (4) Area 4 (AZ, CO, KS, NV, NM, OK, TX, UT)
- (5) Area 5 (IL, IN, KY, OH, TN, WV)
- (6) Area 6 (DE, DC, MD, NC, PA, VA)
- (7) Area 7 (CT, ME, MA, NH, NJ, NY, RI, VT)

2. How many total years have you worked in nutrition and dietetics? (6-7)

\_\_\_ years

3. How many of the total years you've worked in nutrition and dietetics have been in public health nutrition? (8-9)

\_\_\_ years

4. Which of the following best describes your Bachelor's degree program? (10)

- (D) Foods and nutrition (Dietetics)
- (N) Nutrition science
- (F) Food science
- (M) Foods service/institutional management
- (B) Biochemistry
- (P) Public health
- (E) Education
- (A) Business administration/management
- (O) Other. Please specify \_\_\_\_\_

5. What is your highest academic degree? (11)

- (B) Bachelor's (go to question 7)
- (M) Masters (go to question 6)
- (D) Doctorate (go to question 6)



Masters or Doctorate

6. If you answered **Masters or Doctorate**, which of the following best describes your degree program? (12-13, 14-15)

Masters Doctorate

- (MC)  (DC) Nutrition with minor in public health (coursework in public health e.g., biostatistics, epidemiology, health administration and planning, environmental and occupational health)
- (MP)  (DP) Public health with major in public health nutrition
- (MN)  (DN) Nutrition science
- (MS)  (DS) Food science
- (MM)  (DM) Food service/institutional management
- (MB)  (DB) Biochemistry
- (ME)  (DE) Education
- (MA)  (DA) Business administration/management
- (MO)  (DO) Other. Please specify \_\_\_\_\_

7. Are you a Registered Dietitian? (16)

- (N) No (go to question 9)
- (E) No, but dietetic registration-eligible (go to question 9)
- (Y) Yes (go to question 8)

8. If you are a Registered Dietitian, which of the following routes to dietetic registration-eligibility did you complete? (17)

- (G) Grandfathered
- (C) Accredited Coordinated Program (coordinated undergraduate or graduate program)
- (I) Accredited Dietetic Internship Program
- (F) Approved Preprofessional Practice Program
- (P) Three-Year Preplanned Experience Program
- (A) Qualifying Experience with Advanced Degree: Assistantship
- (S) Qualifying Experience with Advanced Degree: Six Months
- (D) Qualifying Experience with Doctoral Degree
- (Y) Three-Year Non-Preplanned Experience Program
- (T) Traineeship
- (R) Canadian Reciprocity
- (N) Not Applicable

9. Are you currently employed in dietetics and nutrition? (18)

- (N) No (go to question 14)
- (F) Yes, full-time (go to question 10)
- (P) Yes, part-time (go to question 10)

↓  
10. Of the following, which one best classifies your primary position? (19)

- (D) Direct care service provider
- (A) Administrator/manager
- (B) Both direct care service provider and Administrator/manager
- (C) Consultant
- (F) Faculty/teacher

11. Of the following, which one best describes your primary area of practice? (20)

- (H) Community dietetics/public health nutrition
- (D) Clinical dietetics
- (M) Food systems management practices
- (E) Education
- (R) Research
- (C) Consultation
- (P) Private practice
- (B) Business and industry
- (W) Health promotion and wellness

12. Of the following, which one best identifies your primary place of employment? (21)

- (N) Not employed
- (A) Public Health Agency
- (H) Hospital (in-patient/acute care and/or out-patient)
- (C) Clinic or Ambulatory Care Center
- (E) Extended Care Facility
- (M) HMO, physician or other health care provider
- (S) School Food Service (K-12)
- (U) College or University Food Service
- (F) College or University Faculty
- (P) Private Practice (individual client counseling)
- (O) Consultation (health care facilities)
- (L) Consultation (organizations/industries)
- (Q) Food Equipment Company
- (D) Food Manufacturer/Distributor/Retailer
- (T) Other. Please specify \_\_\_\_\_

13. Of the following, which one best describes the majority of patients/clients you serve? (22)

- (P) Prenatal women
  - (I) Infants
  - (C) Children
  - (A) Adolescents
  - (D) Adults
  - (O) Older Adults
  - (H) Handicapped or special needs populations
  - (B) Business and industry
- ↓

The following definitions can be used to help you complete each item in this section on knowledge and skills.

**Scale for Current Knowledge/Skill Level**

- |   |  |   |
|---|--|---|
| (1) <b>NOVICE</b><br>Knowledge/skill is inadequate and performance would require technical assistance | (2) <b>ADVANCED BEGINNER</b><br>Knowledge/skill is characterized by uncertainty and lack of confidence | (3) <b>INTERMEDIATE</b><br>Knowledge/skill is satisfactory or average |
|---|--|---|

Please check the scale for each statement that best describes the level of knowledge/skill you possess.

**Scale for Use in Job**

- |   |   |   |
|---|---|---|
| (1) <b>VERY SMALL</b><br>Knowledge/skill is used to a very small extent in my job | (2) <b>SMALL</b><br>Knowledge/skill is used to a small extent in my job | (3) <b>MEDIUM</b><br>Knowledge/skill is used to a medium extent in my job |
|---|---|---|

Please check the scale that best describes the degree to which you use or perform the stated knowledge/skill in your job.

---

**Nutrition**

- \*14. Knows issues related to establishing nutrient requirements and dietary recommendations.
- 15. Knows basic nutrition science, including metabolic, physiological and biological aspects as they relate to health and disease.
- 16. Applies skills in therapeutic nutrition to people throughout the life cycle and to those at high risk and with special health care needs.

**Possessed and Used in Your Job**

(4) **ADVANCED**  
 Knowledge/skill exceeds average, but still not an expert

(5) **EXPERT**  
 Knowledge/skill is exceptional; can speak and perform with authority in this area

(4) **LARGE**  
 Knowledge/skill is used to a large extent in my job

(5) **VERY LARGE**  
 Knowledge/skill is used to a very large extent in my job

Current Knowledge/Skill Level

	NOVICE	ADV BEGINNER	INTERMEDIATE	ADV INTERMEDIATE	EXPERT
(24)					
(26)					
(28)					
	(1)	(2)	(3)	(4)	(5)

Degree Knowledge/Skill Used in Job

	VERY SMALL	SMALL	MEDIUM	LARGE	VERY LARGE
(25)					
(27)					
(29)					
	(1)	(2)	(3)	(4)	(5)

17. Knows and has the ability to select and use appropriate anthropometric, biochemical, clinical, dietary, functional and socioeconomic assessment techniques.
18. Knows and has the ability to prioritize nutritional problems of various age and population groups based on assessment techniques.
19. Has the ability to analyze and critique current nutrition research about people throughout the life cycle and to those at high risk and with special health care needs.
20. Has the ability to apply nutrition research findings to nutrition programs serving people throughout the life cycle and to those at high risk and with special health care needs.
21. Knows factors that impact on the accessibility, adequacy and safety of the food supply system (production, processing, distribution and consumption) and the relationship of those factors to community health.
22. Applies knowledge and skills to affect desired change in food supply systems and to promote health.
23. Knows principles of food science, preparation and management.
24. Translates food science principles, preparation and management to meet food needs of various population groups.
25. Identifies and addresses controversial nutrition issues which impact public health.
26. Evaluates popular (lay) literature for accuracy, reliability and practical implications.
27. Knows how to evaluate nutrition claims critically.
28. Employs effective procedures for addressing nutrition-related health fraud issues.
29. Knows how to function as an interdisciplinary team member.



Current Knowledge/Skill Level

NOVICE

ADV BEGINNER

INTERMEDIATE

ADV INTERMEDIATE

EXPERT

					(30)
					(32)
					(34)
					(36)
					(38)
					(40)
					(42)
					(44)
					(46)
					(48)
					(50)
					(52)
					(54)

(1) (2) (3) (4) (5)

Degree Knowledge/Skill Used in Job

VERY SMALL

SMALL

MEDIUM

LARGE

VERY LARGE

					(31)
					(33)
					(35)
					(37)
					(39)
					(41)
					(43)
					(45)
					(47)
					(49)
					(51)
					(53)
					(55)

(1) (2) (3) (4) (5)

## **Public Health**

30. Knows historical development of public health and public health nutrition.
31. Knows federal, regional, state and local governmental structures and the processes involved in the development of public policy, legislation and regulations that influence and relate to nutrition and health services.
32. Applies effective management principles in the administration of nutrition programs.
33. Knows community assessment principles and applies them to community-based public health nutrition programs and services.
34. Knows program planning principles and applies them to community-based public health nutrition programs and services.
35. Knows implementation principles and applies them to community-based public health nutrition programs and services.
36. Knows evaluation principles and applies them to community-based public health nutrition programs and services.
37. Applies skills in strategic planning for public health and nutrition services for population groups.
38. Identifies short and long-term priorities in the management process.
39. Knows and applies systems approach to addressing health-related issues and problems.
40. Knows and applies skills in integrating nutrition services into overall mission, goals and plan of the health agency.
41. Applies quality assurance standards to public health and nutrition services.
42. Knows and applies skills in fiscal planning and management.
43. Knows available funding sources for public health and nutrition programs.
44. Knows how nutrition services are reimbursed.

Current Knowledge/Skill Level

Degree Knowledge/Skill Used in Job

	NOVICE	ADV BEGINNER	INTERMEDIATE	ADV INTERMEDIATE	EXPERT	
						(56)
						(58)
						(60)
						(62)
						(64)
						(66)
						(68)
						(70)
						(72)
						(74)
						(76)
						(78)
						(2-5)
						(2-7)
						(2-9)
(1)	(2)	(3)	(4)	(5)		

	VERY SMALL	SMALL	MEDIUM	LARGE	VERY LARGE	
						(57)
						(59)
						(61)
						(63)
						(65)
						(67)
						(69)
						(71)
						(73)
						(75)
						(77)
						(79)
						(2-6)
						(2-8)
						(2-10)
(1)	(2)	(3)	(4)	(5)		

45. Knows and applies skills in grant application, including preparation and monitoring.
46. Knows and applies skills in contract management, including preparation, negotiation and monitoring.
47. Knows and applies personnel management principles in recruiting and staffing.
48. Knows and applies personnel management principles in supervision, performance appraisal and conflict resolution.
49. Knows and applies personnel management principles in staff development and in-service training.
50. Knows political considerations involved in agency planning and decision making and applies skills in influencing policy.
51. Knows and applies community organizational strategies to increase and enhance participation in health and nutrition programs in the public/private sectors and voluntary health organizations.
52. Knows and applies skill in identifying economic and societal trends which have implications for the health and nutritional status of the population.
53. Knows and applies skills in biostatistics, including principles of data collection and management, statistical analysis and inferences for data compilation and analysis.
54. Knows and applies skills in computer applications for data compilation and analysis.
55. Knows how to design and implement research projects targeted to specific populations.
56. Knows and applies the principles of the epidemiological approach to measure and describe health and nutrition problems and trends in the community.
57. Knows relationship of the environment to public health and biological, physical and chemical factors that affect public health nutrition.
58. Knows the process of consultation and uses the process effectively.
59. Applies skills in negotiation to achieve goals and objectives.
60. Applies use of group process techniques (brainstorming, focus groups, nominal group process) to achieve goals and objectives.

Current Knowledge/Skill Level

Degree Knowledge/Skill Used in Job

	NOVICE	ADV BEGINNER	INTERMEDIATE	ADV INTERMEDIATE	EXPERT	
						(2-11)
						(2-13)
						(2-15)
						(2-17)
						(2-19)
						(2-21)
						(2-23)
						(2-25)
						(2-27)
						(2-29)
						(2-31)
						(2-33)
						(2-35)
						(2-37)
						(2-39)
						(2-41)
(1)	(2)	(3)	(4)	(5)		

	VERY SMALL	SMALL	MEDIUM	LARGE	VERY LARGE	
						(2-12)
						(2-14)
						(2-16)
						(2-18)
						(2-20)
						(2-22)
						(2-24)
						(2-26)
						(2-28)
						(2-30)
						(2-32)
						(2-34)
						(2-36)
						(2-38)
						(2-40)
						(2-42)
(1)	(2)	(3)	(4)	(5)		

61. Participates effectively as a member of agency and/or community boards, committees and task forces.
62. Recognizes roles of other members of the health team.
63. Applies skill in participating in organized advocacy efforts for health and nutrition programs.

**Social/Behavioral Science and Education**

64. Knows how to assess, plan, implement and evaluate community-based dietary interventions to affect behavior change and to promote health.
65. Knows and applies principles of social marketing for use in health and nutrition programs.
66. Knows and applies skills in selecting and/or developing nutrition education materials and approaches, appropriate for target populations.
67. Knows how to evaluate interviewing and counseling techniques for affecting behavior change.
68. Knows and is skilled in using standards of practice for the profession of dietetics.
69. Applies skills in communicating scientific information, both oral and written, at levels appropriate for different audiences: clients, consumers, health professionals.
70. Applies skills in using various communication channels through contacts with representatives of print media (newspapers, magazines, newsletters), radio, films/videos and television.
71. Applies social/behavioral sciences and principles of education to public health and nutrition.

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**CONTINUING EDUCATION FORMAT QUESTIONS**

72. What type of continuing education format do you prefer most? Please select only one response.

- (N) National conferences/meetings
- (R) Regional or local conferences/meetings
- (T) Teleconferences
- (A) Audiotapes
- (V) Videotapes
- (J) Continuing education articles in the **Journal of the American Dietetic Association**
- (C) College courses

(2-65)

Current Knowledge/Skill Level

Degree Knowledge/Skill Used in Job

	NOVICE	ADV BEGINNER	INTERMEDIATE	ADV INTERMEDIATE	EXPERT	
						(2-43)
						(2-45)
						(2-47)
						(2-49)
						(2-51)
						(2-53)
						(2-55)
						(2-57)
						(2-59)
						(2-61)
						(2-63)
(1)	(2)	(3)	(4)	(5)		

	VERY SMALL	SMALL	MEDIUM	LARGE	VERY LARGE	
						(2-44)
						(2-46)
						(2-48)
						(2-50)
						(2-52)
						(2-54)
						(2-56)
						(2-58)
						(2-60)
						(2-62)
						(2-64)
(1)	(2)	(3)	(4)	(5)		

73. How much are you willing to spend for registration for 10 hours of continuing education?

- \_\_\_(L) \$50-100
- \_\_\_(S) \$101-150
- \_\_\_(M) \$151-200
- \_\_\_(G) \$201-250

(2-66)

74. What do you think is the single most important need for continuing education? \_\_\_\_\_

(13-5)					(13-5)				
(14-5)					(14-5)				
(15-5)					(15-5)				
(16-5)					(16-5)				
(17-5)					(17-5)				
(18-5)					(18-5)				
(19-5)					(19-5)				
(20-5)					(20-5)				
(21-5)					(21-5)				
(22-5)					(22-5)				
(23-5)					(23-5)				
(24-5)					(24-5)				

**YOUR CONTRIBUTION TO THIS EFFORT IS GREATLY APPRECIATED**