



Dietitians of Canada
Les diététistes du Canada

**Competencies for Public Health Nutrition Professionals:
A Review of Literature**

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Executive Summary

The practice of public/community health nutrition has existed in Canada since the early 1900's. While it has evolved significantly over the past century, aspects of public health nutrition practice remain loyal to its roots. Factors that have influenced the growth and change in public health nutrition practice over the past century include advances in, and communication of, food and nutrition science knowledge, health and social systems reform, food systems change, health promotion and population health theory, and population health trends, among others.

Building on work completed in other jurisdictions and among other public health professional groups in Canada, interest exists for the development of a set of nationally agreed-upon competency statements to articulate the unique knowledge, skills and abilities required for efficient and effective practice in the specialty area of public health nutrition. As a human resource tool, competency statements form the basis of professional practice, for training new professionals, developing professional infrastructure and for defining quality practice.

The purpose of this report, as part of larger environmental scanning process, is to synthesize existing published and non-published literature related to discipline-specific competencies required for dietitians working within the publicly funded public health system in Canada. The results of the environmental scanning process, which was guided by a Pan Canadian Advisory Committee, will lay the groundwork required to develop competencies that are unique to public health nutrition, having the potential to set the stage for strengthening the public health nutrition workforce in Canada.

The literature search identified five existing competency sets for nutrition professionals in public health from four different national jurisdictions. In addition, competency statements were included within numerous publications either within the body of the article as discussion or as part of the reported-upon profiling or competency or training assessment process.

To provide a foundation for the report and the envisioned competencies, definitions for the practice area of public health nutrition were reviewed across publications and reports. While varying somewhat in intent and format, there were considerable consistencies. All generally described public health nutrition as the unique practice area (within the field of nutrition and dietetics) within which groups, communities and populations are the 'client' of interest and for whom an array of programs, policies and services are designed to prevent diet-related diseases and conditions and promote optimal nutritional and overall health. Specific roles and functions of public health nutrition professionals cited include: nutrition surveillance and monitoring; assessment of the nutritional health of groups, communities and populations; nutrition education and communications; program and policy planning and evaluation; leadership, and cross-agency and intersectoral collaboration. Related to roles and functions, two reports reviewed identified and

articulated differences and similarities (including areas of overlap) between the roles and responsibilities for public health nutritionists and public health dietitians.

Processes used in the development of competency sets were an area of interest within the review. Common processes included defining the practice area and intended use of competency statements/sets, and conducting the following: literature and document review, environmental scan, expert review (key informants and key users), communication and broad consultation with, and validation by, members of the specific professional group or discipline. In addition, several reports outlined mapping to existing public health functions, competency and related professional standards documents as well as steps to ensure consensus in perspective.

The competency areas (categories of competency statements) for public health nutrition professionals outlined in reviewed documents and publications were remarkably similar in intent, while differing in number, detail, organization or categorization, and wording. The common competency areas outlined across all public health nutrition-related publications and documents reviewed include the following: core public health and health system knowledge; analysis (includes research), assessment and monitoring; program and policy development and evaluation; leadership and management; nutritional science and health promotion (including social sciences); communication; professionalism and ethics. Competency areas not included within all, but detailed within several reports include those related to the following: culture, environmental, behavioural, social and economic sciences, specific ways of working, and individual-level approaches.

Related to the application or use of competencies, several authors recommend experiential learning opportunities as essential in adequately preparing public health nutrition professionals for practice. As well, several publications and documents outline preferred experience and qualifications for public health nutrition professionals, specifically related to graduate-level education and post-education work experience. Competency statements and sets are intended to be used for a variety of human resource functions, including curriculum design and evaluation (pre-employment and professional development), practitioner recognition or registration, performance review, recruitment, and organization and system-level capacity assessment. The competency sets identified through the literature review process are found in the appendices and are identified by their primary purpose in one of the final sections of the report.

A significant body of knowledge and experience exists related to the development of competencies for public health nutrition professionals internationally. The development of public health nutrition competencies in Canada should incorporate use of the international intelligence and yet ensure that aspects of public health nutrition that are uniquely Canadian are incorporated into the final product.

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1 Introduction

The practice of public/community health nutrition has existed in Canada since the early 1900's^{1,2}. In fact, the dietetics profession in Canada has its origins in community nutrition, which involved food and nutrition education and skill development with socially and economically disadvantaged residents of settlement houses. Based on this work in settlement houses and the recognition of nutrition as an independent scientific discipline, the School of Household Science and Art at the University of Toronto was established in 1902^{3,4}. Community nutrition became a specialty area within the School when a grant from the Canadian Life Insurance Officers Association made it possible to begin a community nutrition course. Students were selected to participate in the specialty area course if they had good academic standing, strong public speaking and persuasion skills, a sincere interest in people, and a commitment to nutrition as part of a comprehensive community-based public health program³.

While the practice has evolved significantly over the past century, aspects of public health nutrition practice remain loyal to its roots. Factors that have influenced the growth and change in public health nutrition practice over the past century include advances in, and communication of, food and nutrition science knowledge, health and social systems reform, food systems change, health promotion and population health theory, and population health trends, among others. The historically varied practice of public health nutrition within Canadian provinces and territories reflects differences in health and social systems and foundational philosophies, identified population nutrition and overall health-related capacities and needs, and the capacity of existing public health nutrition professionals².

Given practice variations, interest currently exists in Canada for the development of a set of nationally agreed-upon competency statements to articulate the unique knowledge, skills and abilities of nutrition professionals working in the specialty practice area of public health nutrition. This interest builds on the long tradition of national collaboration on public health nutrition-related issues⁵ and commitments to efficient, effective and evidence-based practice within the dietetics profession and overall public health, health and social systems.

The development of competency statements for public health professionals and other professional groups have contributed to workforce development by providing a foundation for curriculum design and evaluation (pre-employment and ongoing professional development), practitioner recognition or registration, performance review, recruitment, career planning, and capacity assessment within systems and jurisdictions^{6,7}. Otherwise stated, competency standards form the basis of professional practice, for training new professionals, developing professional infrastructure and for defining quality practice⁸.

Addressing complex public health issues in Canada requires the collaboration of highly trained groups of interdisciplinary health professionals. Competency-based workforce

planning among public health professionals in Canada has become a key priority of both federal, provincial and territorial governments and numerous non-government associations in recent years.

The first, and the foundational report in Canada, *The Development of a Set of Public Health Workforce Core Competencies (Draft for Discussion)*, prepared for the Federal/Provincial/Territorial Public Health Human Resources Joint Task Group, was released in January 2005. The report proposes a draft set of core competencies for public health professionals for purposes of public health human resource planning, including the further development of discipline specific competencies.

With a view to enhancing workforce capacity across Canada's public health system, and building on the release of the draft core competencies for the public health workforce in Canada, the Public Health Agency of Canada has supported several initiatives to articulate competencies for public health professionals. Completed, to date, are reviews of the literature and environmental scans outlining scope of practice for a number of health professions such as public health nurses, health promoters, epidemiologists and public health inspectors.

In addition to 'generic', public health-related motivations cited above, the development of the public health nutrition workforce has gained interest internationally over the past number of years. This interest is a result of a number of factors including the following:

- changes anticipated and occurring related to health system reform,
- population trends in diet and nutrition-related diseases and conditions and resulting national health and healthy eating frameworks and strategies,
- rapid changes within the agricultural and agri-food sector and the food industry, and,
- the general workforce trend toward the development of competencies, competency standards and professional credentialing^{2,7-11}.

Questions related to the capacity of an appropriately trained, existing and future public health nutrition workforce are implicit within efforts focused on the articulation of competencies for public health nutrition professionals.

1.1 Purpose and Outline of the Report

The purpose of this report, as part of larger environmental scanning process, was to synthesize existing published and non-published literature related to discipline-specific competencies required for dietitians working within the publicly funded public health system in Canada. A Pan-Canadian Advisory Committee (Appendix 1) supported the overall project, funded by the Public Health Agency of Canada and managed by Dietitians of Canada (the national professional association representing dietitians in Canada). The results of the overall project will lay the groundwork required to develop competencies that are unique to public health nutrition, having the potential to set the stage for strengthening the public health nutrition workforce in Canada.

The findings of the literature review were organized with the goal of describing what is known about competencies for public health nutrition professionals, including pertinent background information, definitions, a synthesis of competency statements and relevant information related to whom they apply, their foundations, development processes and intended application or use. Relevant information related to the development of competency sets for other public health professionals in Canada was also included within the report. The following section identifies three areas where definitions and titles vary: public health nutrition, public health nutrition professionals, and competencies, and clarifies the language that was used for the remainder of the report.

1.2 What is Public Health Nutrition?

A broad definition of public health nutrition refers to the practice of preventing nutrition-related diseases and conditions and promoting and supporting the improved nutritional health of the population. This definition encapsulates many roles and functions including nutrition assessment (of groups and populations), program and policy planning, implementation and evaluation, and working in partnership with communities and other organizations and agencies. Having stated this broad definition, descriptions of the practice or field of public health nutrition vary across international jurisdictions while having many commonalities, as detailed below within the literature review findings.

1.3 Who Are Public Health Nutrition Professionals?

A variety of terms and titles are used within the Canadian and international contexts to identify nutrition professionals working in public health. In some cases, different terms describe the same or similar practice, and in others, distinctions in terminology are purposive to reflect distinct roles, functions and professional designations. As detailed below, the search strategy included the following commonly used terms or titles in Canada: public health nutritionist, community nutritionist, public health dietitian.

Three Canadian reports reviewed describe the role, knowledge and skill distinctions variations between public (community) health nutritionists and public (community) health dietitians^{2,13,14}. Two of these reports also recognize the contribution of other allied health professionals (e.g. public health nurses) and lay persons (e.g. community nutrition assistants, Community Food Advisors, family home visitors) to public health nutrition practice, reflecting a continuum of knowledge, skills, capacities and ethical and legal obligations. Within the Ontario context, the term public health nutritionist refers to a registered dietitian, with a graduate level degree, who works in a community setting and whose practice focuses on planning programs, policies and strategies that aim to promote the nutritional health of, and prevent nutrition-related chronic diseases and conditions, groups, communities and the overall population. Also working within a community setting in Ontario, public health dietitians implement programs (mainly education and

skill focused and in some cases include nutrition counseling) that aim to promote the nutritional health of specific population sub-groups^{13,14}.

The key informant interview component of this project will provide further insight into the use of specific terminology and related roles, functions and required professional designations when referring to public health nutrition professionals within Canadian jurisdictions. As noted above, this information will facilitate an analysis of similarities and differences and the impact of these on the development of common competencies for public health nutrition professionals nationally. For the purposes of this report, the generic term, "public health nutrition professionals", refers to all nutrition professionals working in public health, unless otherwise specified.

1.4 What are Competencies?

Competencies are the knowledge, skills and abilities demonstrated by organizational or system members that are critical to the effective and efficient function of an organization or system^{6,15}. Related to public health, core public health competencies are those competencies that are common to all public health practitioners; "the set of cross-cutting skills, knowledge and abilities necessary for the broad practice of public health"^{6,15}.

Competencies for dietitians and public health nutrition professionals are discipline-specific competencies. Discipline-specific competencies provide further detail to core competencies to reflect the unique or technical skills, knowledge and abilities required for effective practice within a specified field. Related to the field of dietetics, Dietitians of Canada (DC) Competencies for the Entry-Level Dietitians "... reflect the knowledge, skills, attitudes, attributes and judgments necessary for the competent performance of entry level dietitians (¹⁶, p.1)." According to DC, "It is expected that individuals will progress to higher levels of practice (¹⁶, p.1)." Based on the assumption that public health nutrition professionals in Canada are required to be registered dietitians, competencies for public health nutrition professionals will build on DC's entry-level competencies, the nationally agreed-upon public health functions and the defined, draft core competencies for public health professionals in Canada. Once developed, the competencies will articulate the specialized knowledge, skills and abilities required to define the unique and effective practice of public health nutrition.

As noted above, in contrast to several other jurisdictions, the envisioned Canadian competencies for public health nutrition professionals will apply only to registered dietitians and nutritionists practicing within the publicly-funded public health system in Canada.

Similar to other noted variations in terminology, competencies, competency statements and competencies standards are terms to identify knowledge, skill and ability statements for specific professional groups. In some cases, competencies were organized into sets and frameworks, reported in documents and publications. For the remainder of this report, competencies that are not part of formal sets or frameworks are referred to as

"competency statements" and those that have been organized into sets or frameworks will be referred to as "competency sets".

2 Literature Search Strategy

First, the relevant Canadian, public health competency-related reports, provided at the outset of the project were reviewed followed by informal telephone interviews with their authors to gain insights.

The literature search primarily sought information related to existing competencies for nutrition professionals working in public health, development approaches, uses for, and the evaluation of competencies intended for nutrition professionals working in public health. Using a defined strategy, a search of the following indexed databases was conducted: MEDLINE, EMBASE, CINAHL, Cochrane Library, ERIC and the NLM Gateway (formerly HealthSTAR <http://gateway.nlm.nih.gov/gw/Cmd>). Consistent with the search goal stated above, terms used included combinations of the following words: (professional) competency/ies, qualifications, roles, knowledge, skills, responsibilities, entry-level, advanced training, and workforce development combined with public health nutritionist, community nutritionist and public health dietitian. Citations were limited to the English language and included those published from 1992 onwards. Hand searches of bibliographies and reference lists supplemented the systematic search.

A generalized internet search using Google and Google-Scholar was conducted, using a sub-set of the original search terms (public health nutritionist, community nutritionist and public health dietitian combined with (professional) competency/ies). As well, the websites of the following known organizations were searched for relevant information, which in several cases led to the discovery of additional relevant reports and websites: U.S. Public Health Foundation; American Public Health Association, the American Dietetic Association, Ontario Public Health Association, and Dietitians of Canada.

Members of the Pan-Canadian Advisory Committee were also a significant source of reports and documents; primarily those generated within the province, territory, region or jurisdiction represented, relevant to the overall project.

The search of the indexed databases using all search terms initially, identified several hundred citations. (The combination of search terms used and the search approach of the specific indexed database, in some cases, identified thousands of citations.) Titles and abstracts were reviewed for relevance to this project and efforts were made to retrieve 36 publications. Of these 36 publications, just over 20 were of direct relevance to the project. The Google and Google-Scholar searches, retrieval of publications from secondary sources, and reports provided by Pan-Canadian Advisory Committee members contributed numerous additional published and grey literature publications.

Generally speaking, publications and reports which aim to articulate competencies for, and assess competency-based training and professional development needs of, public health nutrition professionals in Canada and the United States have their origins in the 1980's and 1990's. In recent years, workforce development, competency development and registration/certification among public health nutrition professionals in the United Kingdom and Australia have gained prominence.

The majority of relevant, identified publications focus on assessment of competency and training and professional development needs, competency development, curriculum development and profiling of public health nutrition professionals in several jurisdictions. Several publications focused on processes to define public health nutrition as a unique practice area. The secondary search strategy and documents provided by members of the Pan-Canadian Advisory Committee identified six competency sets and two documents focused on articulating the roles and functions for public health nutrition professionals. The six sets and two documents were either the focus, or included as part of, unpublished reports and were associated with a professional, academic or non-government association.

3 Findings

This section of the report outlines the key findings from the literature review process organized in the following subsections: defining public health nutrition practice, competency development processes, common competency areas for public health nutrition practice, and training and qualifications of public health nutrition professionals. Table 1 provides a summary of the selected features of the existing competency sets for nutrition professionals in public health.

3.1 Defining Public Health Nutrition Practice

As noted above, the definitions of public health nutrition reviewed varied somewhat in intent and format, however, there were considerable consistencies. All generally described public health nutrition as the unique practice area (within the field of nutrition and dietetics) within which groups, communities and populations are the 'client' of interest and for whom an array of programs, policies and services are designed to prevent diet-related diseases and conditions and promote optimal nutritional and overall health. Perhaps to solidify the first uniqueness of public health nutrition as cited above, the publisher of one document reviewed specifies within its definition that public health nutrition does not include the "healthcare of individuals"¹¹. A public health nutrition professionals' specialized knowledge in the science of nutrition and food and food systems is emphasized within several definitions to distinguish public health nutrition specialists from other nutrition professionals and public health practitioners^{11,13,17,18}. Several publications originating from the European Union reference a 'new multidisciplinary specialty' of public health nutrition which integrates knowledge, strategies and approaches from the sciences of nutrition and physical activity to promote

overall health and prevent related illness within the population^{19,20}. While not related to physical activity, the multi-disciplinary composition of the public health nutrition workforce, broadly defined, is noted within several publications and reports^{13,14,21}.

In support of the literature synthesis above, using a modified Delphi study among a 24 member international expert panel, Hughes¹² reported the following consensus based descriptors defining public health nutrition: population-based, focus on health promotion, food and nutrition systems focus, wellness maintenance, primary prevention, applies public health principles, education, environmental and political descriptors.

Further to the possible reasons for largely-context driven variations in definitions of public health nutrition outlined above and the nature, magnitude and impact of complex food and nutrition-related problems, Mason and others²², in Rogers and Schlossman²³, define a 'new' field of "public nutrition". "Public nutrition" includes the range of factors known to influence nutrition in populations, including diet and health; social, cultural, and behavioural factors; and the economic and political context. Public nutrition shares the objectives and key elements of the population health approach in its aim to maintain and improve the health and nutritional status of the population and reduce inequities among population groups using multiple strategies at multiple levels²⁴. According to Beaudry et al²⁵, the fundamental goal of public nutrition is to fulfill the human right to adequate food and nutrition. The intentional use of the word 'public' within the term public nutrition refers to work in the interest of the public, with the public, and involving concerted actions by multiple sectors beyond health. Public nutrition is encompassed within the principles, definition and dimensions proposed for the 'new' nutrition science which acknowledges ecological, environmental and social science-related determinants and approaches (in addition to its biological and biomedical foundations) required for the effective and sustainable promotion of nutritional health among populations and prevention of nutrition-related diseases and conditions.²⁶

Specific roles and functions of public health nutrition professionals cited include nutrition surveillance and monitoring, assessment of the nutritional health of groups, communities and populations, nutrition education and communications, program and policy planning and evaluation, leadership, and cross-agency and intersectoral collaboration^{2,7-14, 17-18,21,27-31}. In contrast to the Nutrition Society definition above, individual nutrition counseling or clinical work and primary care are functions of public health nutrition professionals (specifically community nutritionists and public health dietitians) within two Canadian jurisdictions^{14,18}. Another unique role identified within a Canadian jurisdiction is monitoring and enforcement of regulations¹⁸.

Two reports reviewed identified and articulated differences and similarities (including areas of overlap) between the roles and responsibilities for public health nutritionists and public health dietitians^{13,14}. In brief and as mentioned earlier, within this Canadian jurisdiction public health nutritionists are generally responsible for leading and planning population-based nutrition promotion strategies and interventions, while public health dietitians lead and/or support implementation of the same.

Related to definitions, several reports reviewed identified practice locations for public health nutrition professionals. The majority referred to health and/or social system agencies, however, one publication implicitly¹⁰ referred to non-public practice settings, and several explicitly^{11,21,31} identified one or more of the following additional practice areas: consumer organizations, food industry, research and academic settings, and government.

As noted earlier, the envisioned competencies for public health nutrition professionals will apply to those working within the publicly-funded public health system in Canada.

3.2 Competency Development Processes

Presumably, key to the successful development and use of competency sets or frameworks is the formulation process or strategy. Five of the six identified competency sets for public health nutrition professionals included a description of the competency formulation process^{2,7,14,28,33}. In addition, while not specific to public health nutrition, approaches used in the development of competency sets for public health professionals (core, draft) and by public health nursing and public health inspection groups in Canada, are included in the following synthesis.

Overall, the common steps in articulated processes include defining the practice area and intended use of competency statements/sets, and conducting the following: literature and document review, environmental scan, expert review (key informants and key users), communication and broad consultation with, and validation by, members of the specific professional group or discipline^{2,6,7,14,15,33,34-37}. While labeled as common, detailed information about the extent to which these steps were carried out was somewhat limited within the reviewed publications and reports. In addition, mapping to existing public health functions, competency and related professional standards documents were outlined as additional processes in three reports^{7,11,33,37}. Steps to ensure consensus in perspective (explicitly stated) was a key feature of the process used in Australia⁷ and the UK³³. In addition, 'up front' consultation with various stakeholders to build consensus about the definition, roles and functions of public health nutritionists^{7,14,33} and public health dietitians¹⁴ within specific jurisdictions was identified as a key step.

While referred to, but not fully detailed within the Australian Public Health Nutrition Academic Collaboration (APHNAC) Competencies Framework, Appendix 2 includes a table providing a synopsis of largely Hughes-led, Australian-based, public health nutrition-related competency research. The synopsis details the chronology of related research, the socio-ecological model, and the triangular analysis, that according to Hughes⁷, informed the competency units and elements in the competency set. All of the publications summarized in Appendix 2 were reviewed in preparing this literature review report.

3.3 Common Competency Areas for Public Health Nutrition Practice

As mentioned earlier, the literature search (specifically the internet search and hand-selection processes) identified six existing competency sets for nutrition professionals in public health^{2,7,11,14,28,31}. In addition, competency statements were included within several publications either within the body of the article as discussion^{10,32,38,40} or as part of the reported-upon profiling or competency or training assessment process^{9,13,21,27,29,39}.

While differing in number, detail, organization or categorization, and wording, the competency areas outlined in the various documents and publications were remarkably similar in intent. The APHNAC framework⁷ is by far the most detailed in its organization and articulation of discrete competency elements and corresponding performance criteria. This detail and comprehensiveness is likely, in part because competencies are defined within the framework as the "required knowledge, skills, attitudes and experience of *work groups*, ranging from small teams through to the collective workforce"^(7, p.12). According to Hughes⁷, this approach of defining competencies is consistent with recommendations related to the need for interdisciplinary approaches to public nutrition and the multi-disciplinary composition of public health nutrition workforces. Hughes⁷ states that it would likely be unrealistic for an individual practitioner to have proficiency in all of the 'referenced' competency units identified within the framework, providing the rationale to develop work teams that ensure a competency mix required for effective work effort. Both the Nutrition Society¹¹ and the APHNAC⁷ competency sets acknowledge that existing public health (core or generic) competency sets informed the development of the competencies for public health nutrition professionals within their respective jurisdictions. In fact, within the Nutrition Society report¹¹, it is stated that the key competency areas will (or have) been re-aligned in 2005 to directly correspond with the key areas for public health. The APHNAC competency set⁷ seems to include the generic or core competency elements and corresponding performance criteria in addition to those specific to public health nutrition. In contrast, within the Nutrition Society set¹¹, the statement, "Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with specialists in other areas or contexts", is made within each key element section.

Competency statements in the identified documents and publications are, or can be, organized into areas or domains. The common competency areas outlined across all public health nutrition-related publications and documents reviewed include the following: core public health and health system knowledge; analysis (includes research), assessment and monitoring; program and policy development and evaluation; leadership and management; nutritional science and health promotion (including social sciences); communication; professionalism and ethics^{2,7,9,10,11,13,14,21,28,29,31,39,40}. In addition, three documents^{14,27,30} and one publication⁹ included cultural sensitivity as a competency area and three others^{9,11,14,30} included a specific area to reflect common 'ways of working' (i.e. working with and for communities, collaboration, partnership). Detailed competencies related to environmental, behavioural, social and economic sciences are included within one competency set⁷ and knowledge of the relationship of environmental factors of food

and nutrition is included within another²⁸. Two competency sets^{14,28}, one report¹⁷ and one publication¹⁰ specifically articulated individual-level approaches (counseling and nutrition education for general and high-risk populations) as a key area of expertise or role for public health nutrition professionals. As noted above, several publications, however reported on public health nutrition professionals performing what were termed dietitian-type functions (i.e. individual counseling, clinical intervention, treatment). While these functions are required within health systems, the authors of both articles expressed concern with this practice 'inconsistency' as it limits the capacity of the limited public health nutrition workforce to achieve population-focused goals and mandates of public health nutrition^{9,30}. Landman et al³³ acknowledge areas of overlap and uniqueness between the complementary roles and functions of public health nutritionists and community dietitians in the UK.

The following section provides a brief description of the common competency areas identified above. As noted earlier, the competency sets reviewed varied in terms of the level of detail with which competency statements are articulated. While the competency areas identified below were common across all reviewed competency sets and numerous publications containing competency statements, the manner in which competency statements within an area were expressed varied across reports and publications. The detailed competency sets for public health nutrition professionals identified through the search process are located in Appendix 1.

3.4 Core Public Health and Health System Knowledge

Competencies included within this area include knowledge and skills related to health, food and nutrition, socio-political systems and structures and, the impact of the same on the nutritional and overall health of groups, communities and populations.

Analysis, Assessment and Monitoring

Analytical knowledge and skill-related competencies range from critical analysis of research, research methods and paradigms to statistical and epidemiological knowledge and skills and the ability to interpret and apply nutrition-related surveillance data and research findings within evidence-based interventions at the community and population levels^{7,11,14,28,31}. Knowledge related to population level nutrition assessment, the development of nutrition surveillance systems, and the communication of research and surveillance related information to a variety of publics are also areas of competency within this domain category.

Program and Policy Development and Evaluation

Competencies included within the program and policy development and evaluation area include those related to the appropriate use of information (research, surveillance, community-based, etc.) for the development and evaluation of evidence-based public health nutrition-related programs, policies and performance measures. Competencies that reflect 'ways of working' (i.e. interdisciplinary, intersectoral, collaborative practice, community capacity building, and partnership) are also included within this competency area.

Leadership and Management

Leadership and management competencies range from managing organizational policy implementation and change to project management, human resource management, fiscal management, data management and risk management. Leadership competencies, specifically, relate to advocacy, leadership in practice and decision-making approaches.

Nutritional Science and Health Promotion

Nutritional science and health promotion competencies include those related to basic foundational knowledge and the ability to apply the same within practice. While varying across competency sets, competencies categorized as those primarily relating to nutritional science include the ability to translate public health science and food and nutrition science into nutrition guidelines and targets within the context of psychological, social, behavioral and cultural factors that influence food choices and environments. Health promotion competencies include those related to the application of public health and health promotion theory to community and population focused evidence-based interventions. Within one competency set¹¹, each key competency area section opens with the statement "Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of nutritional, dietary and food aspects of health status and well being."

Communication

Competencies within the communication area include those related to effective written and oral communication in a range of contexts and to a variety of audiences to skills and knowledge related to information literacy, information technology, interpersonal skills, media communication and consultation.

Professionalism and Ethics

Professionalism and ethics competencies range from knowledge and skills related to ethical practice, commitment to life long learning and practice improvement.

3.5 Beyond Competency Development: Issues in Public Health Nutrition Training

In addition to competency statements, one competency set²⁸ outlines several goals and objectives for public health nutrition field experiences. Field experiences are deemed essential in providing an opportunity to integrate theory with practice and in assisting students to obtain a broad overview of nutrition-related health needs of populations and population subgroups, programs and services available to assist in meeting needs, and the practice of public health nutrition. The report also states that field experiences provide an opportunity to facilitate the transition from student to professional status²⁸.

In addition, two publications cited below describe advanced level training programs for public health nutrition professionals, which include a fieldwork or skills component. Related to competency areas that reflect 'ways of working', Pelletier³⁸ proposes a

problem-oriented, participatory approach (versus intersectoral and multidisciplinary approaches) for the development of effective and sustainable solutions to community and population-based food and nutrition problems in developed and developing jurisdictions. Pelletier states that “the key to an effective practitioner is the ability to seek out and integrate knowledge from diverse sources, being guided by the particular characteristics of a given problem and the ecological, social, economic, political, and institutional context within which it occurs”. The outline for Pelletier’s proposed problem-oriented training program has content and skills components which are based on 8 ‘generic’ knowledge and skill statements. The content component of the program focuses on the assimilation and integration of core knowledge from numerous disciplines (i.e. nutrition and public health, economics and public policy, agricultural and food sciences, social sciences, planning, management and evaluation, and adult education, communication and negotiation). The skills component centers on the application of skills related to obtaining and integrating knowledge using participatory approaches from diverse sources in the course of problem solving³⁸.

Somewhat similarly, Rogers and Schlossman²³ propose core elements for advanced training in the distinct field “public nutrition” for three tiers of public nutrition professionals (program managers, policy managers and applied research). According to the authors, the following core elements of the proposed curriculum, remarkably similar to those outlined above, should be achieved primarily using problem-solving, applied approaches in real-world settings: applied research skills, communication and advocacy, program management and administration, nutrition science, nutrition policies and programs, social science concepts, fieldwork, practica and internships, and personal qualities (leadership, etc.)²³.

3.6 Entry-Level versus Graduate Training, Experience and Qualifications

Related to competencies, several reports and publications detail^{11,17,28,30}, imply⁷ or recommend² preferred qualifications for public health nutrition professionals, specifically related to graduate-level education and work experience. For example, by its nature as a curriculum guide for graduate programs in public health nutrition, the U.S.-based Association of Graduate Programs in Public Health Nutrition, Inc., believes that public health nutrition professionals should complete a graduate program that builds on the core knowledge and performance requirements established by the American Dietetic Association for dietetic registration²⁸. Registration as a Public Health Nutrition Specialist in the UK requires demonstrated competence in nutrition, specialist education and training (formal or informal) in public health nutrition resulting in specialist core competencies in public health nutrition (and public health practice), and appropriate and relevant experience in the field of public health nutrition¹¹. In order to form the basis for a specific curriculum in public health nutrition, the Nutrition Society developed a public health nutrition competency set³³.

Within the Canadian context, several provinces and territories recommend or prefer that public health nutrition professionals have master’s degree preparation prior to

employment^{2,17,27,31}. In Ontario, the provincial Health Protection and Promotion Act requires that health units employ the services of appropriately trained professionals to deliver mandatory programs and services¹³. Regulation 164/84 of the Act outlines the required qualifications for public health nutritionists, which include registration with the College of Dietitians in Ontario and a masters degree from a Canadian university in nutrition/community nutrition (with various exceptions noted)^{1,13}. According to Clemens, public health nutritionists, trained at the Master's level, have the following, additional unique skills and knowledge: community needs assessment, program planning and evaluation, information management, and facilitation¹³. To carry out articulated public health nutrition roles and functions in Saskatchewan, postgraduate education and training in public health nutrition, typically achieved through a master's degree in public health nutrition or closely related field, a community nutrition residency, or relevant independent study, is identified as necessary¹⁷. In addition, the Public Health Nutritionists of Saskatchewan Working Group recommends at least three years of applicable education and/or experience, beyond that required to become an entry level registered dietitian, to foster the development of competencies required to fulfill the public health nutritionist's roles and functions¹⁷. Related to the issue of qualifications, research conducted by Hughes³⁹ and Gatchell & Woolcott²⁷ revealed that a considerable proportion of nutritionists working in public health who had not completed a master's degree in community or public health nutrition expressed dissatisfaction with the educational preparation completed prior to employment.

Further to qualifications, several publications refer to the issue of credentials for public health nutrition professionals. It appears that within the UK, Australia, the Caribbean and the USA, achieving licensure or registered status as a dietitian is not required for employment as a public health nutritionist^{6,33}. This is in contrast to the Canadian context, where public health nutritionists and public health dietitians are required to be registered dietitians. Landman et al³³ note that in the UK, Australia, the Caribbean and the USA, public health nutritionists can be registered dietitians and dietitians can be public health nutritionists.

3.7 Intended Use for Identified Competency Sets

As noted in a previous section, competency statements and sets are intended to be used for a variety of human resource functions, including curriculum design and evaluation (pre-employment and professional development), practitioner recognition or registration, performance review, recruitment, and organization and system-level capacity assessment. Related to the definition of competencies and their use, Hughes⁷ states that competencies should reflect desired work or practice even in situations or jurisdictions when actual practice does not reflect desired.

While they presumably can be used for all of these functions, several of the identified competency sets or frameworks seemed to have a primary 'purpose' which, logically, seems connected to the nature of the publishing organization.

Curriculum Design

Strategies for Success: Curriculum Guide for Graduate Programs in Public Health Nutrition²⁸ outlines *guidelines for the didactic and experiential content of graduate level public health nutrition curricula* including knowledge and skill statements, and goals and objectives statements for field experiences forming the basis for the public health nutrition curriculum. The U.S.-based Association of Graduate Programs in Public Health Nutrition, Inc. publishes the guide. Related to application of competency sets, the internet search process resulted in the identification of the websites for numerous programs, mainly US-based and graduate level, in public health nutrition. A detailed review of the competency statements outlined within the various program descriptions was not conducted as it was outside the primary scope of this report; however, it was assumed that they are based on those outlined within *Strategies for Success*, given the intended purpose of the guide.

Professional Registration Requirements

Specialist Registration in Public Health Nutrition¹¹ outlines *registration* requirements for *specialist* public health nutrition practice in the United Kingdom. The Nutrition Society, a self-professed learned society exists 'to advance the scientific study of nutrition and its application to the maintenance of human and animal health'. The Nutrition Society publishes the requirements and the report states that the Society is working to establish Defined Specialists and that it is envisaged that those with appropriate competencies in public health nutrition and in public health will be eligible for dual registration with the Society and the UK Voluntary Register for Public Health Specialists.

Standards of Practice

A Competency Framework for Public Health Nutrition Workforce Development⁷ outlines competency standards for *advanced level* public health nutrition *training and practice* that build on existing public health competency frameworks. The framework is a publication of the Australian Public Health Nutrition Academic Collaboration (APHNAC), prepared by Dr. Roger Hughes (School of Public Health, Griffith University), a key scholar in the area of public health nutrition competencies and workforce development. As noted above, the competencies outlined within this framework apply to workgroups versus individual practitioners. Within the framework, Hughes⁷ states that while different tiers of the workforce will require different levels of competency, depending on roles, responsibilities and jurisdictions, there are a core or essential set of competencies consistently required for effective public health nutrition practice regardless of jurisdiction or context.

Workforce Recruitment

As detailed within its title, the document, Public Health Nutritionists: Scope, Qualifications, and Competencies³¹ outlines qualifications and competencies for public health nutritionists in Nova Scotia. This document was developed primarily to provide a consistent basis for recruitment and scope of practice, further to an announcement of new provincial funding for additional public health nutritionist positions to support the full implementation of the recently released provincial healthy eating strategy³¹.

Role Design

As described previously, the Toronto Public Health Nutrition Services Redesign Report¹⁴ outlines roles, responsibilities, and proficiency-rated competencies for a variety of professionals and non-professionals involved in the delivery of public health nutrition services. The nutrition redesign initiative was undertaken to clarify roles, responsibilities and skill sets required of staff, to increase integration, coordination and communication among staff and teams, and to explore options for efficient and effective service delivery and organizational structures¹⁴.

Competency Development in other Disciplines

While not specific to public health nutrition, within the Canadian context, the competency standards for public health nurses and public health inspectors (under development) are or will be used primarily for certification processes, established within each discipline's respective professional organization^{35-37,41}. Consistent with most certification processes, competency statements or standards developed for this purpose are normally intended for practitioners having several years experience (versus entry-level) at which point they become practice expectations.

Related to uses and application of competency statements and frameworks, levels of proficiency (aware, knowledgeable, proficient) were explored and proposed for specific competency areas, as part of a process to illustrate the draft core competencies for the public health workforce⁴². As noted previously within this report, levels of proficiency were applied to individual competency statements for the continuum of professional and lay staff who contribute to achievement of public health nutrition goals as part of a comprehensive nutrition services redesign initiative¹⁴. While not specifically detailed in terms of the wording of competency statements and sets, the APHNAC framework⁷ recognizes the need for competencies to inform advanced-level workforce development.

Table 1 Comparison of Key Features of Identified Competency Sets/Frameworks Compared to the Canadian Draft Core Competencies for Public Health Professionals

Competency Set/Framework	Publishing Organization	Intended Use	Key Competency Areas/Elements (Number and Key Categories)
<i>Strategies for Success: Curriculum Guide for Graduate Programs in Public Health Nutrition (Didactic and Experiential Guide)</i>	Association of Graduate Programs in Public Health Nutrition, Inc. (US) (2002)	<p>Development and assessment of graduate programs in public health nutrition (didactic and experiential components).</p> <p>Knowledge and skill attainment of individuals completing graduate programs which include field experience in public health nutrition.</p> <p>Curriculum builds on the core knowledge and performance requirements established by the American Dietetic Association for dietetic registration</p>	<p>43 knowledge and skills statements organized into four categories: Food and Nutrition Science, Research and Evaluation, Communication and Culture, Management and Leadership.</p> <p>3 goals and 10 objectives for public health nutrition field experiences.</p>
<i>Specialist Registration in Public Health Nutrition</i>	The Nutrition Society (UK) (2005)	<p>Requirements for full registration as a Public Health Nutritionist which include:</p> <ul style="list-style-type: none"> - demonstrated competence in nutrition, - specialist education and training (formal or informal) in public health nutrition resulting in specialist core competencies, and - appropriate and relevant experience in the field of public health nutrition. 	<p>28 core specialist competencies organized by 10 key areas:</p> <ul style="list-style-type: none"> - surveillance and assessment of the population's health and well being; - promoting and protecting the population's health and well being; - developing quality and risk management within an evaluative culture; - collaborative working for health and well being; - developing health programmes and services and reducing inequalities; - policy and strategy development and implementation to improve health and well-being;

Competency Set/Framework	Publishing Organization	Intended Use	Key Competency Areas/Elements (Number and Key Categories)
			<ul style="list-style-type: none"> - working with and for communities to improve health and well-being; - strategic leadership for health and well being; - research and development to improve health and well being; and, - ethically managing self, people and resources to improve health and well being.
<i>A Competency Framework for Public Health Nutrition Workforce Development</i>	Australian Public Health Nutrition Academic Collaboration (APHNAC) (2005)	Competency standards for advanced level public health nutrition <i>training and practice</i> . Competencies defined as applying to work groups versus individual practitioners.	22 key competency areas organized into 7 knowledge and skill categories: <ul style="list-style-type: none"> - Foundation and theoretical - Analytical skills - Public health systems - Socio-political - Management and leadership - Professional and communication
<i>Public Health Nutritionists: Scope, Qualifications, and Competencies</i>	Nova Scotia Health Promotion and provincial District Health Authorities (2005)	Scope of practice, qualifications and competencies for recruitment of new public health nutritionists.	38 competencies organized into 7 domains: <p>Core public health services</p> <ul style="list-style-type: none"> - Analysis and assessment - Policy development and program planning - Partnership and collaboration - Communication - Soci-cultural competencies - Leadership and systems approaches
<i>Toronto Public Health Nutrition Services Redesign Report Chapter 7: Roles, Responsibilities, Skills and Knowledge of Staff Delivering</i>	Toronto Public Health (2003)	Redesign of TPH nutrition services based on a comprehensive process that matched program recommendations with knowledge and skill sets required, clarifying roles*,	Primary roles and responsibilities outlined for each identified role/position- type linked to the following 9 common competency themes:

Competency Set/Framework	Publishing Organization	Intended Use	Key Competency Areas/Elements (Number and Key Categories)
Nutrition Services (and Appendix J)		<p>and maximized the use of finite human resources.</p> <p>* Roles within scope for the redesign initiative included the following: public health nutritionist, public health dietitian, public health nurse, community nutrition assistant, family home visitor and program support worker.</p>	<ul style="list-style-type: none"> - Nutrition skills and knowledge - Analytical and assessment skills - Policy development and advocacy - Communication skills - Cultural competencies - Community dimensions of practice skills - Basic public health sciences skills - Program planning and evaluation - Leadership and systems thinking
<i>Nutrition Personnel in Public/Community Health in Canada for the 1990's and Beyond (Draft Working Paper)</i>	Prepared for the Federal/Provincial/Territorial Group on Nutrition (1995)	Recommendations related to roles, functions, and qualifications of three tiers of public health nutrition professionals for used by provincial/territorial and municipal or local government agencies. Recommendations related to required professional competencies and academic programs to enhance preparation of public health nutrition professionals.	6 Knowledge and Skill Statements are included within the Public/Community Health Nutritionist position description: <ul style="list-style-type: none"> - principles and practices of nutrition, dietetics and public health, case management and coordination - organization of community health and nutrition services - current scientific information re nutrition, diet and health and ability to communicate to professionals and the public - using the consultation process with advanced skills in interviewing, problem diagnosis and evaluation - adult learning and principles of interdisciplinary techniques - presenting ideas orally and in writing clearly, concisely and persuasively.

Competency Set/Framework	Publishing Organization	Intended Use	Key Competency Areas/Elements (Number and Key Categories)
<i>The Development of a Set of Public Health Workforce Core Competencies (Draft for Discussion)</i>	Prepared for the Federal/Provincial/Territorial Public Health Human Resources Joint Task Group (Canada) (2004-2005)	Once finalized, the public health workforce core competencies are to be used for public health human resource planning.	62 core competencies organized into 7 domains: - Core public health services - Analysis and assessment - Policy development and program planning - Partnership and collaboration - Communication - Soci-cultural competencies - Leadership and systems approaches

4 Conclusions

As evidenced by the synthesis and analysis of the key features of reviewed reports and publications, a significant body of knowledge and experience exists related to the development of competencies for public health nutrition professionals internationally. While presented, detailed and categorized somewhat differently, and despite somewhat varying definitions and terminology, the five ‘formal’ and several informal competency sets seem to capture similar skills and knowledge required of public health nutrition professionals. The five formal competency sets reviewed were:

- A Competency Framework for Public Health Nutrition Workforce Development (Australia);
- Voluntary Register Of Nutritionists Application Pack, Section 3: Specialist Registration in Public Health Nutrition (UK);
- Strategies for Success: Curriculum Guide for Graduate Programs in Public Health Nutrition (US);
- Public Health Nutritionists: Scope, Qualifications and Competencies (NS) and,
- The Nutrition Services Redesign Project Report (Toronto).

Perhaps because of the recent publication of many of the documents reviewed, literature was not identified that focused on the evaluation of either competency development approaches or their implementation. The development of public health nutrition competencies in Canada should incorporate use of the international intelligence identified within this review as well as implement processes to ensure that aspects of public health nutrition that are uniquely Canadian are incorporated into the final product.

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Appendix 1

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Appendix 2

Competency Statement Sets/Frameworks (Excerpts from Referenced Reports)

A PUBLIC HEALTH NUTRITION COMPETENCIES FRAMEWORK (17)
(Australian Public Health Nutrition Academic Collaboration)

FOUNDATION AND THEORETICAL KNOWLEDGE AND SKILLS

A1: THE CONTRIBUTION OF THE BIOLOGICAL SCIENCES TO UNDERSTANDING THE HEALTH OF POPULATIONS

Competency Element	Performance Criteria
Biological determinants of health	Interprets the biological factors that determine the health status of individuals and populations.
Models of disease causation	Compares basic models of disease causation for communicable and non-communicable disease.

A2: THE CONTRIBUTION OF ENVIRONMENTAL SCIENCES TO THE HEALTH OF POPULATIONS

Competency Element	Performance criteria
Environmental determinants of health	Identifies environmental determinants of health and disease and describes how these factors might be addressed to improve nutrition and disease prevention in populations.
The risk framework	Appraises the contribution of epidemiology, toxicology and ecology to environmental risk assessment and risk management and identifies the principles of risk assessment, risk management and risk communication.
Paradigms of environmental health	Compares paradigms pertaining to the discipline of environmental health (eg transition from traditional through industrial to ecological systems approaches) and describes the relevance to nutrition.

A3: THE CONTRIBUTION OF THE BEHAVIOURAL SCIENCES TO UNDERSTANDING THE HEALTH OF INDIVIDUALS AND POPULATIONS

Competency Element	Performance criteria
Behavioural determinants of health	Examines evidence regarding factors that influence individual health behaviour, health status and utilization of health services.
The individual in a social environment	Examines social and cultural factors, including the mass media, which influence the health behaviour of individuals.
Behavioural theories	Applies theories of individual behaviour and behaviour change to public health practice.

A4: THE CONTRIBUTION OF THE SOCIAL SCIENCE DISCIPLINES (SOCIOLOGY, ANTHROPOLOGY, POLITICAL SCIENCE) TO UNDERSTANDING OF THE HEALTH OF POPULATIONS

Competency Element	Performance criteria
Social determinants of health	Analyses the social and cultural factors that influence individual dietary behaviour, health status and utilisation of health services.
Theoretical foundations	Compares the sociological, anthropological and political science underpinnings of health leading to these determinants.
Social context	Critiques the role of cultural and social factors in communities, organisations and policy arenas.

A5: THE CONTRIBUTION OF ECONOMIC CONCEPTS AND PRINCIPLES TO PUBLIC HEALTH

Competency Element	Performance criteria
Key economic concepts	Interprets and applies principles of opportunity cost, marginal analysis, efficiency and equity and identifies how these are applied in public health programming.
Financial incentives	Identifies how financial incentives promote or create barriers to health at individual and institutional levels.

A6: SPECIALIST KNOWLEDGE AND SKILLS IN NUTRITION SCIENCE AND THEIR APPLICATION TO PUBLIC HEALTH PRACTICE

Competency Element	Performance criteria
Assessment of dietary intakes	Develops dietary assessment protocols for population level dietary assessment using various methods appropriate to context, resources and purpose.
Food composition	Applies knowledge of food composition to relevant aspects of practice.
Food guidance	Uses contemporary and evidence-based food guidance devices to promote optimal population dietary behaviour.
Nutritional requirements	Applies knowledge of dietary requirements across age-groups, gender and health states to effective public health practice.
Nutrition intervention strategy options	Uses critically assessed intelligence about intervention options to develop effective public health nutrition interventions.
Food science	Incorporates knowledge of food science to inform public health nutrition practice.
Nutritional physiology and biochemistry	Applies knowledge of nutritional physiology and biochemistry to public health nutrition analysis and practice.

ANALYTICAL SKILLS

B1: GENERIC ANALYTICAL KNOWLEDGE AND SKILLS FOR PUBLIC HEALTH [43]

Competency element	Performance criteria
Research paradigms	Discriminates between deductive and inductive reasoning and identify the strengths and limitations of different research paradigms.
Information on determinants of health	Locates, evaluates and interprets information about the key determinants of health.
Information on theory, assessment and intervention	Locates, evaluates and interprets behavioural and social science theories and models relevant to public health activity, and current paradigms for assessment and intervention.
The role of data	Identifies how data illuminates ethical, political, scientific, economic and overall public health issues.
Reading critically	Identifies ideas and evaluate arguments in texts relevant to public health and applies understanding to various aspects of public practice.

Community research partnerships	Partners with communities to attach meaning to collected quantitative and qualitative data.
Problem analysis and needs identification	Applies information and intelligence from various sources to analyse public health issues and identify specific intervention needs.
Critical appraisal	Integrates information from descriptions of research activities (eg. journal article, report etc) to assess issues that affect interpretation of results (eg. data quality).
Presentation of data	Given a study question and relevant data, chooses appropriate forms of presentation of the data for an oral or written report to summarise the information relevant to the study question, to various audiences.

B2: FOUNDATION BIOSTATISTICAL METHODS APPLIED TO FOOD AND NUTRITION ANALYSES [43]

Competency element	Performance criteria
Statistical concepts	Correctly interprets results involving confidence intervals, significance tests and power showing an understanding of the role of random variation and the effects of sample size.
Comparison of two groups	Conducts a statistical analysis of data from two groups (independent or matched) where the measurements are either categorical or continuous, and presents the results in a report that includes an interpretation of the findings and a discussion of their strengths and limitations.
The relationship between two variables	Investigates by graphical and simple linear regression models the relationship between two continuous measurements and presents the results in a report that includes an interpretation of the findings.
Sample size and power estimates	Obtains the information required to estimate sample size or power, carries out the calculations and report the findings taking into account the practical implications for implementation of a study, involving one or two groups.
Statistical Software	Uses a statistical software program, for example SPSS, including defining data types, selecting appropriate forms of analysis and interpreting the output (to support other competencies).

B3: EPIDEMIOLOGICAL METHODS AND THEIR APPLICATION TO FOOD AND NUTRITION PROBLEMS

Competency element	Performance criteria
Routine data collection	Uses health and nutrition-related data collections appropriately to describe the food and nutrition related health situation and trends in populations, identify possible determinants, and monitor progress toward population goals.
Morbidity and mortality	Describes the major causes of diet-related and all-cause mortality and morbidity in Australia at present and identify trends over the last 50 years, and the projected trends among sub-groups including age, sex, ethnicity and socio-economic status.
Study design (health status)	Selects and uses appropriate designs to collect data for assessing population health status and the determinants of health.
Study design (causality)	Selects and uses appropriate study designs to investigate causal factors (personal or environmental) for diet-related diseases (acute and chronic) and to evaluate the effects of public health interventions on these diseases or their determinants.
Measures of frequency and association	Calculates and interprets measures of disease occurrence (e.g. incidence), measures of association between exposures and disease (e.g. relative risk) and measures of public health impact (e.g. population attributable risk) and states the designs for which the various calculations are appropriate.
Study bias	Assesses how the three major types of bias (selection, information and confounding) may arise in a study using any of the principle designs and describe what impact they have on interpreting the results.
Chance and significance	Interprets the role of chance on the measure of effect and distinguish between statistical significance and public health/clinical significance.
Confounding and effect modification	Discriminates between effect modification and confounding.
Calculation of mortality and morbidity rates	Calculates age-adjusted rates using the direct and indirect methods and interpret the result.
Diagnostic test evaluation	Assesses the validity of a diagnostic test for nutritional status by calculating the sensitivity and specificity, describing its relative usefulness in various populations (positive predictive value) and describing the necessary criteria for determining the usefulness of a population screening program.

B4: METHODS OF QUALITATIVE INQUIRY AND THEIR APPLICATION TO RESEARCH, PLANNING AND EVALUATION IN PUBLIC HEALTH NUTRITION

Competency element	Performance criteria
Qualitative inquiry	Compares different approaches to qualitative inquiry and identify their theoretical foundations.
Qualitative data collection	Demonstrates competence in at least one qualitative data collection technique. Identifies appropriate uses of qualitative information for research, planning and evaluation in public health nutrition.
Qualitative data analysis	Describes the range of data analytic techniques and demonstrate competence in at least one.
Interpretation	Categorises the range of data interpretation methods and models and interprets an analysis.
Software for qualitative research	Competently use a qualitative data management and analysis software program, for example NUD*IST or Ethnograph.

B5: METHODS AND EVIDENCE FOR NUTRITION POLICY, PROGRAM PLANNING, EVALUATION AND MANAGEMENT.

Competency element	Performance criteria
Using information	Demonstrates appropriate uses of information for decision-making and collects, summarises and interprets information relevant to policy, planning, management and evaluation of programs.
Applied quantitative and qualitative methods	Applies quantitative and qualitative research methods in policy, programming, evaluation and management.
Evidence	Identifies the role of evidence in developing health policies and programs, and appropriately applies evidence to these tasks.
Performance monitoring and program evaluation	Describes methods of performance monitoring and program evaluation and is able to develop mechanisms to monitor and evaluate programs for their quality, implementation, and effectiveness.
Economic evaluation	Identifies the value of economic evaluation to evidence required to select interventions. Distinguish the methods of health economic evaluation and identify their appropriate application.

B6: FOOD AND NUTRITION MONITORING AND SURVEILLANCE

Competency element	Performance criteria
Diet-related disease surveillance and monitoring	Identifies the contribution of disease surveillance and monitoring to policy and program planning and evaluation.
Disease and exposure monitoring and surveillance	Demonstrates familiarity with the procedures undertaken by public health units to investigate and control an outbreak of communicable disease, such as food borne diseases.
Levels of Prevention	Analyses a health problem and identifies the appropriate level/s at which to target the disease, condition or determinant, and population groups to be targeted.
Risk factor surveillance, including food and nutrition data	Identifies and understands the role of risk factor surveillance to inform analysis of diet-related problems. Utilises data from monitoring and surveillance to describe trends in risk factors for diet-related disease, among key population groups.

PUBLIC HEALTH SYSTEMS KNOWLEDGE AND SKILLS

C1: HEALTH SYSTEMS KNOWLEDGE

Competency Element	Performance criteria
Set priorities	Contrasts and uses various approaches for setting priorities regarding problems and population groups to target health and nutrition service development and investment, and nutrition-related research.
Understands health system structures and the drivers of health system change	Describes the structure and dynamics of the health system and the key dimensions of health system performance.
Health system development	Describes the major trends in health system development and identifies their implications for society.
Healthcare financing	Describes financing arrangements and mechanisms for funding health services.
Public health functions	Identifies and defines the core functions of public health and identifies the individual and organisational responsibilities within health and other sectors that fulfill these functions.
Public health history	Describes the historical development of public health and assesses the implications of historical developments for current practice.
Public health in a system	Describes the interaction of public health with social and bureaucratic systems (including the health care system) to promote the health of populations.

C2: FOOD AND NUTRITION SYSTEMS KNOWLEDGE

Competency Element	Performance criteria
Key players	Identifies key stakeholders in the food and nutrition system.
Understands food and nutrition system structures and the drivers of system change	Describes the structure and dynamics of the food and nutrition system and the key dimensions of system performance.
Food and nutrition system development	Describes the major trends in food and nutrition system development and identify their implications for society.
Food and nutrition as business	Describes the mechanisms and impact of corporate profit motives and strategies that impact on food and nutrition.

C3: PROGRAM PLANNING, ORGANISATION AND MANAGEMENT

Competency Element	Performance criteria
Intervention Planning	Applies the principles of public health intervention planning and develops a plan for a specified population, including the evaluation of objectives.
Intervention design	Designs a health promoting intervention for an individual, community or organisation using theory and evidence to guide the selection of strategies and the identification of outcomes.
Health promoting strategies	Describes the range of health promoting strategies and methods, and for each strategy and method, defines appropriate groups for whom the strategy or method is designed.
Theoretical applications	Applies relevant behavioural and social science theories to a selected health promotion intervention, and reviews and evaluates the adequacy of the approach(es) selected for practice
Implementation planning	Identifies training needs and resources and organisational and agency needs that would allow an intervention to be effectively implemented.

C4: BUILDING CAPACITY FOR PUBLIC HEALTH ACTION

Competency Element	Performance criteria
Capacity building principles	Applies the principles of capacity building to enhancing public health effort and outcomes.
Determinants of capacity	Describes the determinants of community and organisational capacity as it relates to public health action.
Capacity assessment and evaluation	Describes methods of evaluating community, organisation and system level capacity to address public health nutrition issues.
Intersectoral action	Establishes linkages with key stakeholders. Applies the principles of effective intersectoral action and apply to population health activity.
Organisational development	Demonstrates knowledge of organisational development and change. Recognises that organized effort at a population level is required to achieve improved health outcomes. Identifies individual and organisation responsibilities for promoting public health.
Workforce development	Identifies and develops key workforce components (individuals, groups, units) with a stake in public health nutrition effort.
Partnership development	Describes the key determinants of effective partnership development and applies strategies to support sustainable and effective collaboration.
Community development	Identifies community assets and available resources. Involves communities as active partners in all aspects of public health nutrition effort. Applies community development processes and principles in public health nutrition practice.

SOCIO-POLITICAL KNOWLEDGE AND SKILLS

D1: IDENTIFY THE POLITICAL AND INSTITUTIONAL CONTEXT OF POPULATION HEALTH

Competency Element	Performance criteria
Systems and institutions	Describes the structure and dynamics of the political and bureaucratic systems and identify the roles of various institutions (government and non-government) in shaping health policy.
Government and legislation	Critically analyses how structures, contexts and processes of government and legislation impact on health programs and policies, including international contexts.
Global factors	Compares the ways in which global institutions and relationships shape the conditions for health.

D2: HEALTH, WELFARE, FOOD AND NUTRITION POLICY ANALYSIS

Competency Element	Performance criteria
Policy analysis	Identifies and communicates the health, fiscal, administrative, legal, social and political implications of policy options. Describes and apply the components and processes of a major policy analysis using epidemiological, economics and social science tools.
Determinants and theories	Considers biological, behavioural, social/cultural and environmental factors and relevant models and theories in policy analysis.
Presents policy options	Articulates policy options and states the feasibility and expected outcomes of each policy option.

MANAGEMENT AND LEADERSHIP KNOWLEDGE AND SKILLS

E1: MANAGEMENT

Competency Element	Performance criteria
Policy implementation	Describes and applies the procedures involved in translating policy into organizational structures and plans.
Human resource management	Describes human resources principles for organisational development, conflict resolution, and motivation of personnel.
Financial management	Describes financial management for health programs, including budgeting.
Change management	Recognises and manages change taking into account educational, cultural , social, technical, economic and political considerations.
Risk management	Effectively identifies, estimates potential implications and manages risk as it applies to public health nutrition practice.
Project resource management	Manages project resources achieving and reporting progress within budget and on time

E2: LEADERSHIP

Competency Element	Performance criteria
Advocacy and lobbying	Applies the principles of advocacy and lobbying appropriately to garner support for action on nutrition problems of public health significance.
Decision-making	Uses analytical, critical thinking, and problem-solving skills to make decisions effectively. Coaches, develops and motivates team members and Teamwork evaluates their performance. Facilitates group/team work and operate effectively as a member of a group or team.
Leadership in practice	Accepts leadership roles in organisations and committees to promote nutrition and health. [45] Uses leadership styles to inspire and motivate others to promote nutrition and health. [45] Manages complex relationships and competing interests of the various stakeholders in the food and nutrition system.

PROFESSIONAL & COMMUNICATION KNOWLEDGE AND SKILLS

F1: COMMUNICATION

Competency Element	Performance criteria
Communication	Demonstrates effective written and oral communication in a range of contexts.
Cultural awareness	Considers the need to communicate effectively across social groups in diverse cultures and subcultures and understands cultural obstacles to effective communication.
Information literacy	Collects, evaluates and interprets information from a variety of traditional and new technology sources.
Information technology	Uses information technology to effectively communicate, locate information and analyse data.
Interpersonal skills	Applies interpersonal skills (negotiation, team work, motivation, conflict resolution and problem solving skills).
Grantmanship	Identifies and applies for funding to undertake research and evaluation to inform public health problem resolution.
Media utilisation	Uses the media, advanced technologies and community networks to communicate information.
Consultation	Solicits input from individuals, organisations and community groups. Listens to others in non biased manner, respects points of view and promotes the expression of diverse opinions and

	perspectives.
Cultural competency	Utilises appropriate methods for interacting sensitively, effectively and professionally with persons from diverse backgrounds, ages and preferences.

F2: PROFESSIONAL ATTITUDES AND VALUES

Competency Element	Performance criteria
Values	Identifies the values and principles that underlie public health nutrition policy debates, organisational practices, and program planning and evaluation.
Capacity building	Critiques the central function and role of public health nutrition practitioners as instruments for capacity building.
Ethics	Prepares ethics /evaluation proposals relating to aspects of public health nutrition research and evaluation. Applies ethical principles to the collection, maintenance, use and dissemination of data and information. Gives prominence to promoting equity in approaches to improving nutrition in populations.
Commitment to better practice	Demonstrates consistent reflective practice. Prioritises professional development to meet learning goals. Committed to life long learning.
Commitment to practice improvement	Contributes to the evidence base relating to effective public health nutrition practice and actively communicates this information.

Section 3: Specialist Registration in Public Health Nutrition (11) (Nutrition Society; United Kingdom)

Registrants provide evidence that they are competent in the following core specialist competencies in public health nutrition that complement generic competencies in public health. The Society is working to establish Defined Specialists. It is envisaged that those with appropriate competencies in public health nutrition and in public health will be eligible for dual registration with the Society and the UK Voluntary Register for Public Health Specialists (see www.skillsforhealth.uk.com).

Therefore, these specialist competencies will be further revised in 2005 to match the ten key areas of public health.

Key Area 1: Surveillance and assessment of the population's health and well being

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of dietary and food aspects of health and well-being.

Specialists would be better able to provide such leadership over a wider range of issues with less supervision than non-specialists in public health nutrition.

This includes being able to:

- Perform, apply and evaluate the theory and methodology of assessment of nutritional status at **group, community, and population** levels in order to research and practice public health nutrition;
- Assess diet, food, and nutrient intake and the consumption of food constituents in **groups, communities** and at **population** level;
- Apply this knowledge to identify markers of nutritional status, in order to plan, modify, implement, and evaluate nutritional surveillance, at **group, community** and/ or **population** levels.

Public Health Nutritionists will also be sufficiently competent in public health to be able to collaborate effectively with specialists in other areas or contexts.

Key Area 2: Promoting and protecting the population's health and well being

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of promoting and protecting the population's health and well-being.

This includes being able to:

- Apply knowledge to translate the science of public health and of nutritional requirements into nutrition guidelines, targets and food-based advice, to formulate, modify, and evaluate progress towards achieving food-based and nutritional guidelines or goals at **group**, **community**, and / or **population** level, to promote health and prevent disease;
- Apply knowledge and understanding of food safety to support research and practice in public health nutrition (e.g. the metabolic effects of antinutrients, toxicants, additives, pharmacologically active agents (drugs) and other constituents of foods and the diet; nutrient-nutrient interactions).

Public Health Nutritionists will also be sufficiently competent in public health to be able to collaborate effectively with specialists in other areas or contexts.

Key area 3: Developing quality and risk management within an evaluative culture

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of dietary and nutritional aspects of quality and risk management.

Specialists would be better able to provide such leadership over a wider range of issues with less supervision than nonspecialists in public health nutrition.

Note (1) above is essential for assessment of risk and improving the quality of health and healthcare services and interventions through audit and evaluation.

This includes being able to:

- Measure physical activity and assess lifestyle and health status, the extent and effects of interactions among measures of health status with measures of nutritional status, genetic and other risk factors in **groups**, **communities**, and/or **populations**.

Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with specialists in other areas or contexts.

Key Area 4: Collaborative working for health and well being

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of dietary and nutritional aspects of health and well-being.

This includes being able to:

- Work with others to design, implement, manage, and evaluate programmes at **community** or **population** level.

To meet national standards, training should entail:

- Collaborative work with peers;
- Developing communication skills including the ability to engage in debate in a professional manner with a range of audiences (lay, peer, technical, academic); producing detailed and coherent written and oral reports supported with audio-visual aids in lucid grammatical style, making appropriate use of literature cited appropriately;
- Using Information Technology and computers;
- Developing organisational skills and the ability to work in teams.

Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with specialists in other areas or contexts. This means they will:

- Have knowledge of the roles of other Public Health Practitioners/ Specialists;
- Have knowledge of the context in which the practitioners of public health function.

Key Area 5: Developing health programmes and services and reducing inequalities

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of dietary and nutritional aspects of health and well-being.

This includes being able to:

- Apply knowledge of psychological, social, and cultural factors that influence food, dietary and lifestyle choices, and how to effect behavioural change through modification of these, in research, surveillance and programme planning, at **group**, **community** and/or **population** levels;
- Design, implement, manage, and evaluate projects and programmes at **group** and/ or **community** levels;
- Design and manage projects and programmes; monitor and evaluate effectiveness and efficiency, including the management of data and some aspects of resource management.

Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with specialists in other areas or contexts.

Key Area 6: Policy and strategy development and implementation to improve health and well-being

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of nutritional, dietary and food aspects of health status and well-being.

This includes being able to:

- Apply understanding of the social theory of institutions, organisations, groups, communities; food, public health and social welfare systems; programmes and policies, to promote evidence-based effective planning and formation of policy in public health.

Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with other practitioners and specialists in other areas or contexts.

Key Area 7: Working with and for communities to improve health and well-being

- Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of nutritional, dietary and food aspects of health status and well-being.

This includes being able to:

- Apply knowledge and understanding of principles and key components of the practice of nutrition-related health education and nutrition-related health promotion, to help others to design health promotion programmes for **groups, communities** and / or **populations**;
- Apply understanding of the aetiology of major public health problems within social and historical contexts, to work with **groups** and/or **communities** and/or at **population** level, to develop, implement and evaluate nutrition health education and nutrition health promotion programmes;
- Develop skills of effective advocacy and animation as well as the technical competence required for community development approaches [e.g. where concerns about diet and nutrition that may not be the client group's or community's or employer's priorities].

Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with others and with specialists in other areas or contexts. This means they will:

- Have knowledge of the roles of other public health practitioners/ specialists who work with communities; in urban or rural areas or in Primary Care;
- Have knowledge of the context in which public health practitioners function in communities; in urban or rural areas or in Primary Care;
- Have knowledge and understanding of nutrition-related community health and development, rural or urban areas or neighbourhoods, or in Primary Care.

Key Area 8: Strategic leadership for health and well being

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of nutritional, dietary and food aspects of health status and well-being.

This includes being able to:

- Developing interactive inter-personal and group skills so that the learner can interact effectively within a group; can recognise or support leadership or be proactive in leadership; can negotiate in a learning / professional context, manage conflict and is able to convene and manage a group and chair meetings.

Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with others and with specialists in other areas or contexts.

Key Area 9: Research and development to improve health and well being

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of nutritional, dietary and food aspects of health status and well-being.

This includes being able to:

- Design, undertake, interpret and use research methodology in the practice or application of research in public health nutrition;
- Develop research protocols and calibrate methods of investigation, at **group, community** and/or **population** levels;
- Use nutritional and other relevant data and databases, applying understanding of statistical issues: sampling, study size and power; appropriate analytical techniques for designing monitoring and evaluating effectiveness and efficiency at **group, community** and/ or **population** levels.

Public Health Nutritionists will be sufficiently competent in public health to be able to collaborate effectively with others and with specialists in other areas or contexts.

Key Area 10: Ethically managing self, people and resources to improve health and well being

Public Health Nutritionists will be expected to show leadership in nutrition and nutrition-related issues and the determinants of nutritional, dietary and food aspects of health status and well-being.

This includes being able to:

- Design and manage projects and programmes; monitor and evaluate effectiveness and efficiency. This includes competency in the management of data and some aspects of resource management.

Public Health Nutritionists will develop an understanding of and commitment to abide by guidance on ethical aspects of managing self and others, as set out in the **Code of Ethics and Statement of Professional Conduct** (2004).

Strategies for Success: Curriculum Guide (Didactic and Experiential Learning) (28) Graduate Programs in Public Health Nutrition (Association of Graduate Programs in Public Health Nutrition, Inc)

Knowledge and Skills

Knowledge and skill statements form the basis for the curriculum and become relevant to the field experience portion of the curriculum, giving direction to the total public health nutrition educational experience.

Food and Nutrition Science

Knows and has skills to translate principles of food science (preparation, sanitation and management) to meet food and nutrition needs of target populations across the life span.

Knows relationship of environmental factors (biological, chemical and physical) to food and nutrition.

Knows factors that impact the accessibility, adequacy and safety of the food supply system (production, processing, distribution and consumption), and their relationship to community food systems and how they affect the desired outcomes of health promotion and disease prevention.

Knows and has the skills to select and use appropriate and current methods to assess nutrition status to prioritize nutritional problems of target populations across the life span. Examples might include anthropometric, biochemical, clinical, dietary, functional (including physical mobility and feeding skills), physical activity/fitness, and socioeconomic assessment.

Knows process, rationale, and issues related to establishing nutrient requirements and dietary recommendations.

Research and Evaluation

Knows and has the skills in biostatistics, including principles of data collection and management, statistical analysis and inferences, computer applications for data compilation and analysis.

Knows and has the skills to apply the principles of the epidemiological approach to measuring and describing health, food and nutrition problems.

Knows and has skills to design, implement, and evaluate research projects for target populations.

Knows and has the skills to analyze current nutrition research and to apply research findings to food and nutrition programs serving high risk target populations across the life span.

Knows federal, regional, state and local governmental structures and the processes involved in the development of public policy, legislation, regulations and delivery of services that influence food intake, nutritional status and health of populations.

Knows and has the skills to assess, plan, implement, and evaluate the food and nutrition component of community-based health promotion/disease prevention interventions.

Knows and has the skills to develop, evaluate and use practice guidelines for target populations.

Knows and has the skills to identify economic and societal trends which have implications for the health and nutritional status of populations.

Knows and has the skills to identify, evaluate and address emerging and controversial food and nutrition issues which impact public health.

Knows and has the skills to apply principles of social marketing for use in the food and nutrition component of health promotion/disease prevention programs and services.

Communication and Culture

Knows and has the skills to communicate effectively and to use mass media and other technologies.

Knows and has skills to communicate food and nutrition information appropriate for different audiences, including individuals, families, communities, health professionals, media, policy and decision makers, food industries, and businesses.

Knows and has the skills to use mass media and other technologies.

Knows and has the skills to use computers and other emerging technologies in support of food and nutrition services.

Knows and has the skills to develop, select, disseminate and evaluate appropriate food and nutrition education approaches and materials for health promotion/disease prevention interventions for target populations.

Knows and has the skills to evaluate interviewing and counseling techniques for effecting behavior change.

Knows and has the skills to present accurately and effectively demographic, statistical, programmatic and scientific food and nutrition information for professional and lay audiences and the community.

Knows and has the skills to interact sensitively, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, and professional backgrounds, and with persons of all ages and lifestyle preferences.

Knows and has the skills to identify the role of cultural, social, and behavioral factors in determining disease, disease prevention, health promoting behavior, and food and nutrition program organization and service delivery.

Knows historical development of public health and public health nutrition, including application of public health core functions.

Management and Leadership

Knows and has the skills to manage grants, cooperative agreements, memoranda of understanding, and contracts, including preparation, budgeting, implementation, monitoring, and evaluation.

Knows and has the skills to apply the principles of human resource management.

Knows and has the skills to apply the principles of financial management in the development and operation of food and nutrition programs and services.

Knows and has the skills to lead and build teams within and across disciplines, agencies, and organizations.

Knows and has the skills to apply effective management principles in the administration of nutrition programs and services.

Knows and has the skills to apply principles of cost-effectiveness analysis, cost-benefit analysis, and other decision making strategies to food and nutrition programs and services.

Knows and has the skills to identify and seek public (local, state and federal) and private funding for public health and food/nutrition programs and services.

Knows and has the skills to analyze policy for health, fiscal, administrative, legal, social and political impact and make recommendations.

Knows and has the skills to build coalitions and to observe effective participation of agency and/or community boards, committees, work groups, coalitions, and task forces.

Knows and has the skills to provide leadership for organized advocacy efforts for food and nutrition programs and services.

Knows and has the skills to plan for food and nutrition services in conjunction with other health services based on information from an adequate and ongoing database focused on health outcomes.

Knows and has the skills to apply the principles of community assessment, planning (including program, operational/business, and strategic planning), marketing, implementation, and evaluation to community-based public health, food and nutrition programs and services.

Knows and has the skills to negotiate and use group process techniques (e.g. facilitation, brainstorming, nominal group process and consensus building) to achieve goals and objectives of food and nutrition programs and services.

Knows overall mission, goals, and plan of the health agency and has the skills to advocate for and integrate appropriate food and nutrition programs and services.

Knows political and ethical considerations within and across organizations (public, private, and voluntary sectors) involved in planning and decision making and has the skills to apply them when analyzing and influencing policy.

Knows and has the skills to apply community organizational strategies to increase and enhance consumer participation in health and food and nutrition programs and services by collaborating with public/private sectors, and voluntary and community organizations.

Knows and has the skills to develop mechanisms to monitor and to evaluate programs and outcomes for their effectiveness and quality.

Knows and has the skills to identify and set short and long-term priorities and make program adjustments.

Field Experience Goals and Objectives

To assist graduate students in public health nutrition:

Goal 1 Strengthen their philosophy and understanding

A. Assess community health and of public health, nutrition needs

- B. Define nutrition-related health problems and needs of the population.
- C. Describe programs in the agency and community that address the problems.
- D. Describe the mission and organization of the health agency, and the extent to which nutrition services are integrated into programs
- E. Identify how the agency assesses needs, and uses the assessment to plan, organize, direct, coordinate, and evaluate the nutrition component of health services, programs and projects in the jurisdictional area.

Goal 2 Identify themselves as a public health professional

- A. Describe the roles of the public health and nutritionist as a member of an interdisciplinary public health team.
- B. Use communication and networking skills to work effectively with individuals and groups.
- C. Test self-performance by performing tasks of a public health nutritionist which mutually benefit the student and the agency.

Goal 3 Increase their confidence, strengths

- A. Adapt to policies and organizational competence to make needed improvements structure changes that may occur in the agency.
- B. Record and periodically report performance to evaluate progress in achieving agreed upon objectives.

Public Health Nutritionists: Scope, Qualifications, and Competencies (31) (Nova Scotia)

Qualifications

The Public Health Nutritionist provides a unique skill set and enhanced expertise and training in the area of public health nutrition. She/he uses a population health and a community development approach to address nutrition related concerns and issues. Core functions of a public health system (population health assessment, health surveillance, disease prevention, health promotion, and health protection) are relevant for the practice of public health nutrition. Depending on the situation, the Public Health Nutritionist works in the role of supporter, facilitator, leader, mentor or partner.

a) Academic qualifications

- Four year undergraduate degree in Nutrition from an accredited institution;
- Current license and registration with the Nova Scotia Dietetic Association;
- Active member of Dietitians of Canada;
- Masters Degree preparation and/or equivalent experience resulting in enhanced competencies in the following areas:

b) Competencies

1. Core Public Health Sciences

- Understand the historical development, structure and interaction of public health and health care systems at the local, provincial/territorial, national and international levels and how these impact on the nutritional and overall health of the population.
- Understand the concepts of health status of populations, determinants of health and illness, and factors that contribute to health promotion and disease prevention.
- Apply basic Public Health Sciences including nutritional sciences, behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic diseases.
- Identify and apply basic research methods to nutrition interventions.
- Demonstrate and promote evidence-based approaches to nutrition-related and overall health promotion.
- Review and critically evaluate evidence for appropriate public health nutrition and other health interventions.
- Apply critical thinking to evaluation of evidence, development of initiatives, and other public health interventions.

2. Analysis and assessment

- Work with colleagues and partners to develop a system to assess the health of populations which:
 - Identifies a common set of nutrition indicators that are based on (or grounded in) the broad determinants of health.
 - Gathers data.

- Interprets data in a way necessary to support nutrition-related and overall population health issues, programs and services.
- Identifies community strengths, assets, available resources, trends and health assessment data, and makes recommendations for further investigation or actions that impact the nutritional and overall health of the population.
- Partners with communities to validate data and evidence that has been obtained.
- Communicates the results to the community, districts and province.
- Participate in national and provincial surveillance systems to gather data necessary to assess the population health nutrition issues of Nova Scotians.
- Participate in the identification of nutrition-related population health issues and subsequent population health strategies.

3. Policy development and program planning

- Work with colleagues and partners to develop nutrition related policies, goals, actions and evaluation plans.
- Work with policy makers at a number of levels to build recognition and support for policy decisions that impact nutrition-related and overall population health.
- Participate in the development, implementation and monitoring of initiatives and policies that aim to protect nutritional health (i.e. Breastfeeding, School Food, Childcare Centres, greater affordability and access to Fruit and Vegetables, and Food Security).
- Develop budgets and budget priorities, locally and provincially, for programs that impact the implementation of *Healthy Eating Nova Scotia*.
- Identify, interpret, implement, and understand the limitations and uses of public health laws, regulations and policies as they apply to healthy eating interventions.

4. Partnership and collaboration

- Encourage and support communities to take greater control over their nutrition-related and overall health.
- Work with decision-makers to increase their understanding of, and capacity around, nutrition-related health promotion approaches and initiatives.
- Strengthen and develop partnerships dedicated to prevent and decrease the incidence of nutrition related chronic diseases in Nova Scotia.
- Support colleagues and partners to address common risk factors for nutrition related chronic diseases in an attempt to prevent the onset of disease.
- Establish and maintain linkages with governments and community partners with common areas of influence to coordinate efforts related to the *Healthy Eating Nova Scotia* strategy and additional Public Health priorities.
- Use leadership, facilitation, team building, negotiation and conflict resolution skills to build community partnerships.
- Facilitate dialog among governments and community partners regarding strategies to attain and sustain healthier communities with respect to nutritional health and overall well-being.

5. Communication

- Communicate food and nutrition information in a meaningful and relevant way so that all stakeholders are prepared to take action and know what action to take.
- Report on the health status of the populations and trends among nutrition related risk factors for chronic diseases.
- Understand and apply social marketing, consumer behaviors, media, technology and networking to receive and communicate information related to food and nutritional health.

6. Socio-Cultural

- Use appropriate methods to communicate and interact sensitively, effectively and professionally with persons with diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds and persons of all ages, gender, health status, and lifestyle preferences.
- Identify the role of diverse population characteristics to determine the delivery of nutrition-related public health services.
- Develop and adapt policies and program delivery methods to ensure appropriate response to diversity in population characteristics.
- Understand the importance of a diverse public health workforce.

7. Advocacy

- Advocate for the use of a Population Health approach to address nutrition related chronic disease prevention.
- Advocate for individuals and communities on aspects which will improve their nutritional health and overall wellbeing.
- Advocate for public health programs and resources.

8. Leadership and systems approaches

- Understand how nutrition programming fits within public health organizational mission and priorities
- Contribute to colleagues' and partners' organizational and public health-based learning regarding topics that impact the nutritional and overall health of the population.
- Identify internal and external issues that may impact the delivery of nutrition programming.
- Understand and support the contribution of other government and community partner programs relative to achieving public health vision and mission.
- Understand and incorporate international best practices in decision-making and program planning.
- Contribute to development, implementation, and monitoring of organizational performance standards.

Toronto Public Health Nutrition Services Redesign Report (14) Overview of Competencies for Job Classifications in Scope

PUBLIC HEALTH NUTRITIONIST

Primary roles and responsibilities include:

- Coordinating complex/large-scale activities
- Evaluating programs, services, and activities
- Planning and developing programs, services, and activities
- Conducting community needs assessments
- Developing and analyzing policies
- Participating in political advocacy (i.e., municipal, provincial, federal) efforts
- Consulting on emerging issues
- Developing quality assurance standards and indicators
- Leading projects corresponding to roles and responsibilities, as needed
- Orientating staff related to the rollout of programs, services, and activities
- Participating as a project member, as needed
- Precepting master's practicum students

PUBLIC HEALTH DIETITIAN

Primary roles and responsibilities include:

- Implementing programs, services, and activities (e.g., population wide activities, group activities, and one-on-one counselling)
- Screening, counselling, and referring clients to other programs
- Facilitating workshops
- Conducting community presentations
- Planning and evaluating details of programs, services, and/or activities being implemented
- Developing resources in support of program implementation; providing technical nutrition expertise
- Orienting other staff (who are not Registered Dietitians) regarding technical nutrition-related topics, as needed
- Supporting local advocacy efforts
- Supporting the development of quality assurance standards and indicators
- Leading projects corresponding to roles and responsibilities, as needed
- Participating as a project member, as needed
- Precepting dietetic interns and undergraduate practicum students
- Speaking a second language (Peer Nutrition Program requirement only)

PUBLIC HEALTH NURSE

Primary roles and responsibilities include (related to nutrition services):

- Implementing programs, services, and activities (e.g., population wide activities, group activities, and one-on-one counselling)
- Building community capacity
- Consulting with Public Health Nutritionists/Dietitians regarding technical nutrition aspects
- Working with local coalitions
- Providing expertise regarding health education
- Supporting local advocacy efforts
- Conducting community presentations
- Facilitating workshops
- Planning and evaluating details of programs, services, and/or activities being implemented
- Developing resources in support of program implementation
- Precepting nursing students
- Leading projects corresponding to roles and responsibilities, as needed
- Participating as a project member, as needed

COMMUNITY NUTRITION ASSISTANT

Primary roles and responsibilities include:

- Facilitating workshops
- Conducting community outreach
- Planning and evaluating details of workshops
- Participating in the development of resources
- Possessing a nutrition competency within the scope of Canada's Food Guide to Healthy Eating
- Participating as a project member, as needed
- Speaking a second language
- Possessing a high cultural competency level
- Possessing a certificate in food handling
- Consulting with Public Health Dietitians regarding technical nutrition aspects

FAMILY HOME VISITOR

Primary roles and responsibilities include (related to nutrition services):

- Answering client questions at one-to-one home visits
- Possessing a nutrition competency within the scope of Canada's Food Guide to Healthy Eating

- Consulting with Public Health Nurse mentors regarding complex nutrition questions, who would then consult with Public Health Dietitians for more complex nutrition aspects, as needed
- Speaking a second language and/or representing an identified culture, reflecting community need

**TORONTO PUBLIC HEALTH
SKILLS AND KNOWLEDGE OF NUTRITION SERVICES STAFF**

Consolidated Table¹

The following chart summarizes and provides an “at a glance” view of the levels assigned for each job classification reviewed by the Nutrition Services Redesign Project Team. Details regarding each job classification are available in the following individual tables. **When the individual tables are consolidated in this fashion, it sometimes appears that more than one job classification is assigned the exact same level of competence (i.e., aware, knowledgeable, proficient) for a given role, responsibility, skill or knowledge. However, these levels should be viewed in the context of the “expectations” of each job classification as described in their job descriptions/calls and/or their professional scope of practice.**

SKILLS AND KNOWLEDGE

All Nutrition Services staff are accountable for the fundamental knowledge and expectations inherent in basic professional practice and to the Code of Ethics of their respective Colleges, where applicable. These standards articulate only the practice experiences or variations specific to public health Nutrition Services.

¹ **Legend:**

A = Aware = implies that individuals are able to identify the concept or skill.

K = Knowledge = implies that individuals are able and have experience in applying and describing the concept or skill.

P = Proficient = implies that individuals are able and have experience in synthesizing, critiquing, or teaching the concept or skill.

☼ = Identifies roles, responsibilities, skills and knowledge which all staff are expected to perform at their respective job level/classification.

Job Classification in Scope for Nutrition Services Redesign:

PSW = Program Support Worker (CPNP)

PHN = Public Health Nurse (HL, FH, THC)

FHV = Family Home Visitors (HBHC)

PHD = Public Health Dietitian (HBP, PNP, HL)

CNA = Community Nutrition Assistant (PNP)

PHNut = Public Health Nutritionist (HL, P&P-FH & HL, Nutrition Program Coordinator)

	PSW	FHV	CNA	PHN	PHD	PHNut	Gap
Skills and Knowledge							
Nutrition Skills & Knowledge							
Knowledge of nutritional sciences, e.g., food chemistry, nutritional assessment, behavioural sciences related to nutrition, understanding and interpreting nutrition research, nutrition throughout the lifecycle, knowledge of research methods specific to nutrition		A	A	A	P	P	
Skills in diet counselling and individual nutritional assessment (e.g., interpreting medical terminology, etc.)				A	K=other P=HBP		
Skills and knowledge of food safety and sanitation	K	A	K	K	K	K	PSW FHV PHN
Analytical & Assessment Skills							
Apply data collection processes, information technology applications, and computer systems storage/retrieval strategies to nutrition programming (e.g., Word, Group Wise, Nutrition analysis software, database applications, etc.)	A	A	A	K	K	K	
Apply needs assessment skills using a variety of strategies to nutrition programming (e.g community assessment, not individual assessment)		A	K	K	K	P	
Knowledge and skills of setting standards, guidelines and procedures (e.g., working with stakeholders, setting out detailed directions, developing rationale, developing measurable indicators based on research and legislation) applicable to nutrition programming				K	K	P	
Knowledge and skills of decision-making responsibility within scope of practice applicable to nutrition programming ☀	K	K	K	K	K	K	
Knowledge and skills in critical thinking and the decision-making process within scope of practice (e.g., options, criteria, pros/cons, consequences) applicable to nutrition programming			K	K	K	K	
Policy Development & Advocacy							
Policy analysis and advocacy skills – advocacy on an <u>individual</u> level related to nutrition programming (e.g., advocating on behalf of a client in order to access nutrition services that they are entitled to receive)		K		K	K		
Policy analysis and advocacy skills – advocacy and policy on a <u>broader</u> level related to nutrition programming (e.g., for changes in legislation, national nutrition monitoring); policy analysis involves research into the issue, networking with relevant stakeholders, conducting staff consultations, preparing briefing notes/draft policy statements for Managers, Directors and MOH as required, and preparing submissions to Board of Health or relevant government officials as required				A	A	P	PHNut
Communication Skills							
Negotiation skills, consultative skills, listening skills as related to nutrition programming ☀	K	K	K	K	K	K	
Developing nutrition resources, i.e., using clear language, identification of target audience, application of health communication theory, collaboration, following relevant policies and guidelines		A	K	K	P	P	
Communication skills, verbal and written as applied to nutrition programming ☀	K	K	K	K	K	K	
Communicate in a second language (i.e., written, written comprehension, oral) as applied to nutrition programming	P	P	P		P=PNP		

	PSW	FHV	CNA	PHN	PHD	PHNut	Gap
Skills and Knowledge							
Media skills as applied to nutrition programming (e.g. how to be interviewed, positioning message, writing for media, reflecting TPH philosophy and policies)			K	A	K	K	PHD
Cultural Competencies							
Understanding cultural norms and values and applying them in nutrition programs and activities	K	P	P	K	K=other P=PNP	K	
Developing, implementing and evaluating culturally sensitive nutrition programs and activities		A	K	K	K=other P=PNP	K	
Community Dimensions of Practice Skills							
Skills in group process as applied to nutrition programming (e.g., group facilitation, clear communications, team work, conflict resolution, collaboration, leadership, integrating age- and developmentally appropriate learning activities, adult education, bi-and multi-lingual facilitation skills, education)			K	P	P	K	
Knowledge of community, community partners and agencies (including both internal and external community) as applied to nutrition programming ☒	K	K	K	K	K	K	
Basic Public Health Sciences Skills							
Knowledge of social science theories underlying program development as applied to nutrition programming (e.g., stages of change, social learning theory)			A	K	K	K	
Knowledge of research methodology and general critical appraisal skills as applied to nutrition programming				K	K	K	PHNut
Knowledge of determinants of health as applied to nutrition programming	A	A	A	K	K	K	
Knowledge and ability to apply health promotion and disease prevention theories and strategies to nutrition programming (e.g., knowledge of evolution of health promotion theory, ability to apply different health promotion strategies – i.e., one-to-one, small group, community development, community mobilization, advocacy, supportive environments, policy development, reorienting health services and development of personal skills, harm reduction, education)			A	K	K	P	
Research skills and knowledge as applied to nutrition programming (e.g., designing research projects, participating in a research team, submission of ethics review, review of relevant literature, developing methodology, participating in data collection, analysis and interpretation (both qualitative and quantitative), publication and dissemination of results)				A	A	K	
Documentation skills as applied to nutrition services/activities/programming	K	K	K	P	P	P	
Knowledge of socio-political and economic environmental health of the community as applied to nutrition services/activities/programming within the scope of the role ☒	K	K	K	K	K	K	
Knowledge and skills in epidemiology, validation of survey and measurement tools, use of population health indicators as applied to nutrition services/activities/programming				A	A	K	PHD PHN PHNut
Program Planning & Evaluation							
Knowledge and skills of strategic and program planning processes and theory as applied to nutrition services/activities/programming (e.g., needs assessment, review of the literature, data collection/analysis, development of program logic model, development of work plan, resource planning)				K	K	P	
Knowledge and skills in program evaluation, methodologies, setting indicators, etc. as applied to nutrition services/activities/programming				K	K	K	PHD PHN
Knowledge and skills in project management as applied to nutrition services/activities/programming				K	K	K	PHNut

Skills and Knowledge	PSW	FHV	CNA	PHN	PHD	PHNut	Gap
Leadership & Systems Thinking							
Ability to work in multi-disciplinary team, i.e., mutual respect, understanding team members' roles, collaboration ☼	K	K	K	K	K	K	
Knowledge of TPH nutrition services and programs	A	A	K	K	K	K	PSW FHV
Knowledge of all TPH services and programs ☼	A	A	A	A	A	A	PSW FHV
Knowledge and skills in making appropriate referrals internally and externally as applied to nutrition services/activities/programming ☼	K	K	K	K	K	K	
Ability to develop and track CQI indicators as applied to nutrition services/activities/programming				A	K	K	
Ability to apply CQI to nutrition services ☼	K	K	K	K	K	K	
Knowledge and skills in precepting students (e.g., adult education, course requirements, coaching, setting goals, etc.)				K	K	K	
Knowledge and skills in mentoring staff (e.g., adult education, course requirements, coaching, setting goals)				K	K	K	

Nutrition Personnel in Public/Community Health for the 1990's and Beyond (2) (Federal/Provincial/Territorial Group on Nutrition)

Public/Community Health Nutritionist

Knowledge and Skill Requirements

- Broad knowledge of principles and practices of nutrition, dietetics and public health, case management and coordination.
- Knowledge of the organization of community health and nutrition services in the community.
- Knowledge of current scientific information regarding nutrition, diet and health and the ability to communicate to professionals and the public.
- Knowledge and skill in using the consultation process both as a consultant and consultee with advanced skills in interviewing, problem diagnosis and evaluation.
- Knowledge and principles of adult learning and principles of interdisciplinary teamwork and skill in using group process techniques.
- Skill in presenting ideas orally and in writing in clear, concise and persuasive manner.

Appendix 3

Summary of reviewed, relevant and recent Australian public health nutrition related competency publications, 1997-2006*.

(* Adapted from Hughes R. (2005) A competency framework for public health nutrition workforce development. Australian Public Health Nutrition Academic Collaboration. <http://www.aphnac.com>)

Publication Date	Authors	Method Description	Data Type/Use	Reference
1997	Hughes & Somerset	Discussion paper outlining rationale for, and proposed approach for the development of competency standards for public health nutrition. The development of competency standards for community and public health nutrition requires consensus (within a specific jurisdiction/context) on methods, frameworks, philosophies and definitions used to describe these types of service.	A proposed model comprising four domains of nutrition practice (clinical dietetics, community dietetics, community nutrition and public health nutrition), and including definition of classification boundaries.	8
2003	Hughes	Literature review and consideration of “intelligence” (infrastructure) requirements to develop a problem-based workforce development strategy for public health nutrition.	A cyclical conceptual framework including five linked components (public health nutrition problems and priorities, solutions, work needed, capacity to do work, workforce development needs) providing a systematic approach for workforce development research and planning related to public health nutrition.	
2003	Hughes	Qualitative analysis of semi-structured interview transcripts from 41 advanced level public health nutritionists (ALPHNs) employed in academic or senior bureaucratic positions in state and federal health systems related to public health nutrition workforce composition, core functions, competency requirements and existing workforce capacity.	Attitudes from ALPHNs about competencies (skills, knowledge and attitudes) considered as necessary for effective public health nutrition practice. Most commonly identified core functions of the public health nutrition workforce: program management,	21

Publication Date	Authors	Method Description	Data Type/Use	Reference
			research, evaluation, advocacy, needs assessment, nutrition monitoring and surveillance, scientific and lay communication, policy development, workforce development, intersectoral collaboration and community development.	
2003	Hughes	Modified Delphi study among a 24 member international expert panel to articulate a consensus-based definition of public health nutrition as a distinct area of practice. Research based on the stated belief that definitions serve as a statement of intent, philosophy and method, which are important for communication, marketing and identity purposes as well as providing a foundation for strategic and workforce planning, implementation and evaluation	Ranked descriptors to define public health nutrition. Consensus-based descriptors defining public health nutrition: population-based, focus on health promotion, food and nutrition systems focus, wellness maintenance, primary prevention, applies public health principles, education, environmental and political descriptors.	12
2003	Hughes	Cross-sectional national public health nutrition workforce survey (WFS) amongst 240 practitioners (87% RR) from each state and territory. Self-completing questionnaire with items asking respondents to rate opinions against a list of competency items summarized from the literature and informed by earlier qualitative study	Practitioners attitudes about the: - the importance of, - confidence in own ability and - training needs as compared to 37 pre-defined competency items. Respondents reflections on adequacy of pre-employment education/preparation and important factors for professional development specific to public health nutrition.	39
2004	Hughes	Qualitative content analysis of job descriptions obtained from a sample of the known community and public health nutrition workforce in Australia and collation of positions descriptions advertised in the	Descriptive qualitative data about employer's expectations of the core functions, competencies, qualifications and credentials of community and	29

Publication Date	Authors	Method Description	Data Type/Use	Reference
		February 2002-August 2002 period. Job descriptions acting as a proxy of employer or organizational expectations.	public health nutritionists, as expressed by position descriptions.	
2003	Hughes	Modified 3 round Delphi study amongst a 20 member international expert panel to assess and develop consensus on competencies for effective public health nutrition practice.	International agreement on essential competencies and competency levels required by different tiers of the public health nutrition workforce.	40
2004	Hughes	Cross-sectional survey of 240 (87% RR) practitioners working in community and public health nutrition positions in the Australian health system. Self-completing questionnaire to assess roles, practice and work-related attributes of the community and public health nutrition workforce.	Practitioners self-reported: <ul style="list-style-type: none"> - core functions, - frequency of work-related practice activity, and - extent of multi-disciplinary and intersectoral collaboration. Differences noted in all categories above by type of practice (dietitian-type and public health nutrition-type), although mix of functions reported by overall workforce. Small number of practitioners predominantly practicing consistent with public health core functions.	30
2004	Hughes	Cross sectional survey of 240 (87% RR) population-based nutrition positions in Australia to assess the size, demographic, educational and organizational characteristics of the designated Australian public health nutrition workforce.	Descriptive data profiling the demographic, educational and employment characteristics of the designated public health nutrition workforce.	
2006	Hughes	Discussion paper documenting the socio-ecological analytical approach used to assess the capacity of the public health nutrition workforce in Australia, providing the foundation for workforce development strategy planning.	Triangular analysis of qualitative and quantitative information/data from multiple sources including semi-structured interviews, literature review, cross-sectional workforce survey, position description analysis and consensus development.	

Publication Date	Authors	Method Description	Data Type/Use	Reference
			Socio-ecological analysis provides information to inform workforce planning and conceptual framework development.	