

Research Article

Nutrition Knowledge, Attitudes and Practices of Canadian Public Health Nurses

Nancy E. Schwartz

A survey of Canadian public health nurses indicated that their nutrition knowledge, attitudes and personal/professional practices were somewhat interrelated and associated with certain demographic and environmental factors.

Summary

A mail questionnaire was developed to measure the nutrition knowledge, attitudes and practices of public health nurses in the province of British Columbia, Canada. Responses were obtained from 352 nurses, representing 90.2% of the sample surveyed. The mean score test results for nutrition knowledge, attitudes, and practices were 74.9%, 87.7%, and 65.1%, respectively. Specific areas were identified in which the public health nurses achieved lowest scores in tests of nutrition knowledge and practices.

Type of nursing education, high school home economics education, continuing education courses, and nutrition conferences and workshops were not significantly related to scores in tests of nutrition knowledge, attitudes and practices. Implications relative to the desirability of nutrition inservice education programs and the services of nutrition consultants for the subjects of the study were drawn from the results and may apply to public health nurses elsewhere.

The contribution of public health nurses to the nutrition education of the public they serve is well recognized (1,2). In the public health system, the nurse is the health professional most often in a position to disseminate nutrition information. Because there are many fewer nutritionists than nurses in most public health agencies, the services of nutritionists usually are limited to consultations with the nurses to provide them with sound nutrition information and to help them develop skills for successful application of this knowledge in their public health practice. Thus, most direct nutrition education and counseling is conducted by the nurse rather than the nutritionist.

Limited research has been conducted to investigate the success of public health nurses in integrating nutrition education into comprehensive health care (3). Conflicting opinion exists in the literature with respect to the nutrition content of nursing curricula (4,5), while the question of need for "ongoing inservice programs to update and further supplement the educational background and practice of registered nurses in the community health nursing agencies" (6) remains unanswered.

In the province of British Columbia (B.C.), Canada, public health nurses comprise the vast majority of all health personnel who are potential nutrition educators in the health system. In 1969, Mayer voiced a serious concern about nutrition education by stating: "Nutritionists and health educators are unanimous in declaring that we need more nutrition education. The unspoken assumption is that professionals know how to do it. . . ." (7).

The present study was conducted to test the validity of the above assumption as applied to public health nurses in the province of B.C. by investigating their nutrition knowledge, attitudes and practices. Comparisons were made among the nurses based on their:

1. educational background;
2. recency of acquisition of nursing-related degree;
3. years of nursing experience;
4. age;
5. qualification of the educator who taught nutrition in the nursing training curriculum;
6. years of home economics

(foods and nutrition) studied in high school; 7. number of nutrition-related communications with a nutritionist in the 4-week period prior to the survey; and 8. other types of nutrition experience and education.

This information was considered essential for development of effective inservice nutrition education programs to update and supplement the education and practice of public health nurses. Also information related to nutrition knowledge, attitudes and practices of public health nurses would be invaluable in enabling the nutritionists to use their time most efficiently as consultants to the nurses.

Objectives of the study were to determine which variables were significantly related to the provincial public health nurses' nutrition knowledge, attitudes and practices and to determine the nature of the interrelationship of knowledge, attitudes and practices among the nurses.

Table 1
Sample Statements from the Questionnaire
("Correct" Responses in Bold Face)

Nutrition Knowledge:	True or False	
	True	False
Potatoes and bread should be eliminated from the diet of someone trying to lose weight.	T	F
Pantothenic acid will prevent the graying of hair.	T	F
Green peppers, strawberries and cantaloupes are good sources of vitamin C.	T	F

Nutrition Attitudes:	Agree or Disagree	
	Agree	Disagree
As long as people are not sick, they must be eating right.	A	D
Even if I take vitamins, I feel I should be concerned about my diet.	A	D
Children should be allowed to eat whatever they want.	A	D

Nutrition Practices (Professional and Personal):	Frequency			
	Always	Fre- quently	Some- times	Never
I discuss the possibility of breastfeeding with the pregnant women I counsel.	1	2	3	4
I recommend multivitamin supplements for healthy, well-fed 2-3 year olds.	1	2	3	4
I take vitamin C tablets when I feel a cold coming on.	1	2	3	4

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Procedure

This survey was conducted among all provincial public health nurses employed by 18 health units in B.C., excluding those in Greater Vancouver, as these health units had been studied in an earlier investigation (8) which served as a pilot project for the present survey. The total population of public health nurses numbered 390.

Data were collected by self-administered mail questionnaires¹ consisting of several tests designed to provide a measure of the nurses' nutrition knowledge, attitudes and practices as well as to collect necessary demographic data.

The nutrition knowledge test consisted of 40 statements to which the nurses responded "true" or "false," with one of four degrees of certainty about their response, ranging from "very certain" to "very doubtful." Statements were based on Newton's (9) concept of nutrition knowledge that nurses should possess, i.e., "common tools used in the planning and evaluation of diets; cultural, economic, psychological and physiological factors which influence food intake; and nutrients in foods." This test was developed and validated in previous research by Harrison and coworkers (3). Sample statements from the knowledge segment of the questionnaire appear in Table 1.

Attitudes toward nutrition and eating habits, and toward nutrition counseling, as well as personal attitudes toward nutrition, meal planning and meal preparation, were measured by a test consisting of 14 statements, adapted from previous research with high school graduates (10). The test for attitudes was designed to evaluate the public health nurses' perception of the importance of nutrition. For the purpose of the research, an attitude was defined as a "learned, emotionally toned predisposition to react in a particular way toward something" (11). Public health nurses were asked to respond to each statement by indicating whether they agreed or disagreed and by indicating the degree of certainty of each response. Table 1 includes sample attitude statements from the questionnaire.

The nutrition practices part of the questionnaire consisted of 20 statements related to the public health nurses' personal dietary practices and professional practices in nutrition counseling. The latter statements concerning the practices of the public health nurses in imparting nutrition information to the public were prepared from information on the role of the public health nurse, obtained from the Provincial Health Department. Responses indicated the frequency of specific practices (always, frequently, sometimes, never). Sample statements from the nutrition practices section of the questionnaire appear in Table 1.

Demographic data were collected in a fourth section of the questionnaire. A packet containing the questionnaire, cover letters from the researcher and a Health Branch official, and an addressed, stamped, return envelope was mailed by first class mail to each nurse in care of her health unit. Anonymity of the nurses was maintained throughout the study.

One follow-up was conducted by mail to solicit a higher response rate. Data collected were coded, keypunched, and statistically analyzed by computer to test hypotheses. Correlation and regression analyses were performed and tested at the 5% significance level.

Results

A total return of 352 questionnaires (90.2%) was achieved. A response rate of 100% was achieved from 5 of the 18 health units included in the study. Ninety to 95% response was obtained from 6 of the health units. Returns from the other 7 health units ranged from 68 to 89%, with most of these units yielding a response rate of between 85 and 89%.

¹Copies of the questionnaires are available from the author on request.

Table 2
Distribution of Public Health Nurses
by Variables Studied (n=352)

Variable	% of Respondents
Nursing Education:	
R.N. plus Public Health	60.8
Bachelor of Science in Nursing	29.8
Other Degrees	9.4
Acquisition of Degree:	
Less than 5 years ago	33.5
5 to 10 years ago	24.7
More than 10 years ago	41.8
Years of Nursing Experience:	
Less than 1 year	4.0
1 to 5 years	19.0
5 to 10 years	19.6
More than 10 years	57.4
Age:	
Less than 25 years	8.0
25 to 40	44.9
More than 40	46.6
No response	0.5
Nutrition Instructor in the Nursing Curriculum:	
Nutritionist or Dietitian	36.9
Nursing Instructor plus Nutritionist	35.2
Nursing Instructor	19.9
No nutrition education	1.7
Other responses	6.3
Years of Home Economics Instruction in High School	
0	29.3
1 to 2	31.8
3 to 4	34.9
Uncertain	4.0
Number of Consultations with Nutritionists During Past Four Weeks:	
No opportunity	61.9
0	18.2
1 to 2	11.4
3 to 4	4.5
5 or more	3.4
No response	0.6
Consultation With Others to Obtain Nutrition Information:	
Yes	84.7
No	15.3
Use of Printed Nutrition Information:	
Yes	98.9
No	1.1
Involvement in Other Nutrition Education Programs or Experiences:	
Yes	73.9
No	26.1

Table 3
Nutrition Knowledge, Attitudes and Practices
Test Results (n = 352)

	Knowledge	Attitudes	Practices
Mean Score:	74.9%	87.7%	65.1%
Range	47.2-89.1%	52.4-98.3%	42.1-88.5%
Areas in which the poorest scores were achieved:	Nutrition and pregnancy Nutrient requirements Nutrient value of foods Function of nutrients	No areas reflected poor attitudes among the nurses studied	Food budget counseling Meat alternate counseling Dietary modification of fats counseling Personal meal management

A univariate frequency table was prepared to display the distribution of the public health nurses in terms of the variables investigated in the study. As shown in Table 2, the majority of public health nurses had completed Registered Nurses' training and had received a diploma in public health; received their last nursing-related degree more than 10 years ago; had more than 10 years of nursing experience; were over 40 years of age; had 3 to 4 years of home economics classes

Table 4
Variables Significantly Related to Scores for
Nutrition Knowledge, Attitudes and Practices*

	Knowledge	Attitudes	Practices
Positive Relationship:	Use of printed nutrition information Attendance at well women's clinic	More than 40 years of age Cook for family and friends	More than 40 years of age Use of health agency publications Consultation with a home economist Attendance at well women's clinic Cook for family and friends
Negative Relationship:	Less than 25 years of age Nutrition education from a nursing instructor	None	Nutrition information obtained from mothers Nutrition education from a nursing instructor

*Significant at the 0.05 level of probability.

in high school; received all or part of their nutrition education in the nursing training curriculum from a nutritionist; had no opportunity to consult with a nutritionist in their health unit but frequently consulted with others for nutrition information, such as a home economist or "mother;" made use of printed sources of nutrition information, especially health agency publications; and had some type of nutrition education or experience after graduation such as cooking for family or friends and attendance at well women's clinics.

It was noted that 61.9% of the public health nurses surveyed did not have opportunity to consult with a nutritionist in their area of the province. However, the majority of nurses, 84.7%, did consult with others (home economists or fellow nurses) when seeking nutrition information, and 98.9% stated that they referred to printed sources of nutrition information such as health agency publications and professional bulletins in their work.

Table 3 presents the mean score test results (and ranges) for nutrition knowledge, attitudes and practices. It also shows those areas in which the nurses achieved the poorest scores—thus reflecting insufficient knowledge and unfavorable practices.

Those variables which were found to be significantly related, either positively or negatively, to nutrition knowledge, attitudes and practices test scores are summarized in Table 4.

Significant and direct positive relationships were found to exist between nutrition knowledge and attitudes (the strongest relationship), knowledge and practices (the weakest relationship) and attitudes and practices.

Discussion and Implications

Based on the results of this study, inservice nutrition education programs for public health nurses and regular consultations with nutritionists appear desirable. These services should be aimed at improving the knowledge of public health nurses in the areas of nutritional requirements during pregnancy and other periods of the life cycle, the physiologic functions of nutrients and the nutrient composition of foods. In addition a better understanding of the principles of food budgeting, use of meat alternates, and dietary modification of fats appears necessary to enable the public health nurses to counsel the public adequately in these vital areas.

Important implications can be drawn from the results of correlation analysis for nutrition knowledge, attitudes and practices among the public health nurses in this study. Similar findings were reported in a study of the nutrition knowledge, attitudes and practices of high school graduates in the State of Ohio (12). Ultimately, all nutrition education is aimed at positive change in knowledge, attitudes and practices, but—according to this study—it would appear unsound to assume that individuals who have gained a basic knowledge of nutrition are able to and actually do apply this knowledge in their professional and/or personal nutrition practices. Nutrition education of public health nurses both as part of the training curriculum and as continuing inservice education must strive for improved practices as well as greater knowledge and positive attitudes among the nurses.

It also appears inappropriate to assume that all sources of nutrition education result in improved knowledge, attitudes and practices of the public health nurses. In this study, nurses who received nutrition instruction from a nursing instructor during their training program achieved significantly lower scores in tests of nutrition knowledge and practices than did nurses who received nutrition instruction from a nutritionist or dietitian. Other variables that optimally should be positively related to knowledge, attitudes and practices were not significant in this study. These variables include nursing-related degree, high school home economics instruction, nutrition courses in continuing education, and nutrition conferences and workshops.

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Program Ideas

Firefighters Learn to "Eat Heart-ily"

Barbara Yee

Nutrition, diets and cooking have traditionally been mainly for women. Today, however, men frequently do their own cooking, go on diets and are interested in nutrition. This has been especially true for firefighters who work 24-hour shifts and must plan their own menus, shop and cook for themselves. As a part of their physical fitness program, a 2-hour nutrition program was presented during their workday at their own or neighboring fire station by the author with the aid and cooperation of the Fire Department.

The program consisted of a short multiple-choice pre- and post-test and a slide program called "Eat Heart-ily".¹ Ninety-four color cartoon-style slides and printed script were specially designed to present in a humorous, entertaining and informative fashion the principles of a low-cholesterol, low-saturated fat and high-polyunsaturated-fat style of eating as recommended by the American Heart Association (1). For example, cholesterol was characterized by the villain "The Blob" and polyunsaturated fat by the hero "Corporal Paul of the Royal Polyunsaturated (he always gets his Blob!)" The program also covered nutrient content of foods, nutritional needs, balanced dieting, food fads and fallacies and available modified products.

This slide presentation provided natural stimuli and pauses for questions and answers and spirited discussions. Several brochures were distributed at the end of the program. These included the American Heart Association brochure "The Way to a Man's Heart," a low-cholesterol weight-reducing diet pattern and recipe booklets.

Formal testing of firefighters' nutrition knowledge was conducted, but the statistical analysis is not yet available. Informally, by a show of hands, it was observed that most people

did improve their test scores. Inasmuch as attendance was not voluntary, the attentiveness (despite sometimes frequent interruptions necessitated by the normal responses to fire and rescue calls), enthusiastic participation and favorable responses of the 1,500 firefighters in 125 sessions led me to conclude that nutrition knowledge had increased and that more of these firefighters will collectively change to a healthier style of eating.

Recognizing that a firefighter only eats a small percentage of his meals at work, efforts are now being made to present the same program to the firefighters' spouses and families.

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Fig. 1—Characters from the slide presentation represent (left to right): The Blob (cholesterol); Corporal Paul of the Royal Polyunsaturated; Bacchus (saturated fat); and Mona (monounsaturated fat).

¹Eat Heart-ily, from Barbara Yee, Nutritionist, Occupational Health Service, 222 N. Grand Ave., Los Angeles, CA 90012, 94 color 35 mm slides, 12 pp. script, mimeo, \$32.00 per set. Make checks payable to Los Angeles County Department of Personnel.

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