

# **Development and Testing of the Primary Health Care Questionnaire (PHCQ): Results with Students and Faculty in Diploma and Degree Nursing Programs**

**Karen I. Chalmers, Ina J. Bramadat, and Jeffrey Sloan**

Les soins de santé primaires (SSP) sont perçus comme stratégie essentielle pour l'amélioration de la santé de la collectivité et les infirmières sont reconnues comme étant les professionnels de soins de santé essentiels pour atteindre ce but. Pour que les infirmières mettent en place les diverses politiques de SSP, il faut d'abord qu'elles aient connaissance de cette méthode de soins de santé et qu'elles y adhèrent. L'objectif sous-jacent de la présente étude était d'élaborer une façon de mesurer les connaissances, les attitudes et les pratiques concernant les SSP ainsi que d'évaluer la fidélité et la validité de la mesure auprès d'un échantillon d'étudiantes-infirmières et du corps enseignant des programmes au niveau du baccalauréat et au niveaux collégial. Le questionnaire sur les soins de santé primaires (QSSP) est un instrument d'auto-évaluation en trois volets; il fournit des données quantitatives sur les connaissances et les attitudes ainsi que des données qualitatives sur les pratiques concernant les SSP. L'instrument a été élaboré à partir d'une étude rigoureuse de la documentation et de la rétroinformation systématique de deux comités (au niveau local et national) spécialisés en SSP. Des données ont été recueillies dans une province de l'Ouest canadien, à partir d'un échantillon de 457 étudiantes et membres du corps enseignant dans le cadre d'un programme de 4 ans menant à un baccalauréat (trois sites), d'un programme post-collégial pour le baccalauréat et de trois programmes d'études collégiales. Les estimations quant à la fidélité par rapport à la cohérence interne, d'après le coefficient Alpha de Cronbach, étaient de 0,76 (pour ce qui a trait aux connaissances) et de 0,85 (pour ce qui a trait aux attitudes). La fiabilité de mesure test-retest après deux semaines était de  $r = 0,67$  (pour ce qui a trait aux connaissances) et de 0,76 (pour ce qui a trait aux attitudes). La validité du contenu était rehaussée grâce à une révision systématique de l'instrument par un comité de spécialistes en deux temps, au niveau local et au niveau national. Les résultats ont montré de plus grandes connaissances et des attitudes plus positives parmi les étudiants en fin de scolarité par rapport aux étudiants en début de scolarité, parmi les étudiants au baccalauréat par rapport aux étudiants au niveau collégial, et parmi le corps enseignant par rapport aux étudiantes. Ces résultats corroborent la validité de la mesure. Les données qualitatives ont montré que les occasions d'apprendre liées aux SSP étaient fournies autant dans les programmes d'études collégiales que dans ceux du baccalauréat grâce à l'enseignement en cours, la pratique clinique et les travaux écrits.

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Primary health care (PHC) has been proposed as a key strategy for improving the health of the world community, and nurses are acknowledged as key health-care professionals in meeting this goal. Efforts to have nurses implement PHC policies presuppose that they are knowledgeable about this approach to health care and have positive attitudes. The underlying aim of this study was to develop a measure of knowledge, attitudes, and practices in PHC and to assess the reliability and validity of the measure with a sample of student nurses and faculty in degree and diploma programs. The Primary Health Care Questionnaire (PHCQ) is a three-part self-report measure that provides quantitative data on knowledge and attitudes and qualitative data on practices of PHC. The instrument was developed from a rigorous review of the literature and systematic feedback from two panels (local and national) expert in PHC. Data were collected from 457 students and faculty in one four-year degree program (three sites), one post-diploma degree program, and three diploma programs, in a western Canadian province. Internal consistency reliability estimates using Cronbach's alpha were .76 (knowledge) and .85 (attitudes). Test-retest reliability at two weeks was  $r = .67$  (knowledge) and .76 (attitudes). Content validity was enhanced through a systematic review of the instrument by a two-phase local and a national expert panel. Findings indicated greater knowledge and more positive attitudes among senior compared to junior students, degree compared to diploma students, and faculty compared to students. These findings lend support to the validity of the measure. The qualitative data revealed that learning opportunities related to PHC were built into both the diploma and the degree program through classroom teaching, clinical practice, and written assignments.

## **Introduction**

Primary health care (PHC) has been proposed as a key strategy for improving the health of the world community (Pan American Health Organization, 1988; World Health Organization [WHO], 1978, 1981, 1986, 1992). Nurses are acknowledged as key professionals in meeting this goal (Mahler, 1978, 1985), and nursing associations worldwide advocate the development of PHC as the basis for national health-care systems. Efforts to have nurses carry out PHC work presuppose that nurses are knowledgeable about this approach and that their attitudes to PHC are positive ones. However, little empirical evidence is available regarding nurses' understanding, acceptance, or practice of PHC, or regarding PHC content in current nursing programs.

Education programs play a key role in socializing nursing students and often are perceived as introducing new ideas and ideals. The World Health Organization (WHO) has pointed out that if PHC is to become "the central function and main focus" of a country's health-care system (WHO, 1978) it is imperative that it becomes central to the nursing curricula. For many nursing programs, this will require "a major shift... from a cure orientation based on hospital medicine to a prevention orientation based on the practice of primary health care in the community" (WHO/ICN, 1989, p. 4). Diploma/community college programs have a long history of effectively preparing staff for acute-care institu-

tions. Although the vast majority of teachers in these programs are baccalaureate or master's prepared, the extent to which they continue to espouse the values of community-based PHC practice is not known. Even within university schools, the focus is on the ill individual, and elective courses often are selected from disciplines in which the focus is on the individual. Concepts related to the community form a comparatively small portion of the nursing curriculum (Chalmers & Kristjanson, 1989). A recent study of Canadian baccalaureate schools of nursing (Tenn & Niskala, 1994) found that all schools acknowledged PHC in their course content; however, only 60% of schools had, to a "reasonable" degree, integrated PHC into their curriculum.

One of the difficulties in measuring diffusion of PHC concepts and practice has been the lack of instruments available to obtain this information. The purpose of this study was to develop a psychometrically sound questionnaire to assess knowledge, attitudes, and practice of PHC, and then to use the instrument to measure these variables among faculty and students in nursing programs.

## **Method**

### *Instrument Development*

The Primary Health Care Questionnaire (PHCQ) was developed from a review of the theoretical and empirical literature on PHC. The WHO definition of PHC as "essential health care based on practical, scientifically sound and socially acceptable methods and technology and made universally accessible to individuals and families in the community through their full participation and at a cost they can afford" (WHO, 1978, p. 34) provided the conceptual underpinning for development of the instrument.

Items in Part A of the questionnaire (Knowledge) were developed with nominal response options in which respondents assessed whether they considered the statements to be "true" or "not true" of PHC. Correctly answered items were totalled to produce a knowledge score. Part B (Attitudes) used a four-point Likert-type response format. Each item was rated from "strongly agree" to "strongly disagree." Items from parts A and B are listed in Table 1. The third part of the questionnaire addressed PHC practices using an open-ended response format. Respondents were asked to list PHC practices experienced (students), or offered to students (faculty), in their program. Demographic and work-experience items also were included in the questionnaire.

**Table 1** *Items from PHCQ. Part A: Knowledge; Part B: Attitudes*

**Part A: Knowledge items from PHCQ (True/Not true)**

1. Accessibility to health care is a basic concept of primary health care.
2. The World Health Organization considers primary health care to be the best way to achieve "Health for All."
3. The WHO considers that primary health care is equally important for both industrialized and developing countries.
4. The key approach to achieving primary health care is technology.
5. Provincial health economists should be the key planners in any primary health-care project.
6. One major emphasis of primary health care is disease prevention.
7. Within a primary health-care system, safe adequate drinking water is considered as important as professional health services.
8. A statement of commitment to primary health care was ratified at the International Conference held at Alma Ata in 1978.
9. In a primary health-care system, lay health-care personnel replace most health professionals.
10. Primary health care emphasizes the importance of a biomedical approach to health care.
11. An increase in physicians is needed in Canada to fully implement primary health care.
12. The Canadian Nurses Association supports the goals of primary health care.
13. The primary health-care movement began under the auspices of the International Council of Nurses.
14. Many governmental departments, such as Agriculture and Municipal Planning, are important for the implementation of the goals of primary health care.
15. Within a primary health-care framework, the health-care system is considered to be the key determinant of the population's health.
16. Supporters of primary health care consider that the most effective way to improve the mental health of the community is to increase the number of psychiatrists.
17. In a primary health-care system, nurses have an increased role in prevention and promotion.

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18. A primary health-care system centralizes the planning and implementation of health care.
19. A primary health-care system is based on the belief that if enough effort is spent developing health-care technology systems, quality of life is enhanced.
20. Primary health care involves, among other activities, working on underlying problems that affect social and emotional health.
21. An example of a primary health-care strategy to improve the health of the community is to increase the number of cardiac specialists.
22. Rehabilitative services are part of primary health care.
23. Improved health education is a key concept in primary health care.
24. Cooperation between governments and voluntary organizations is a key concept in primary health care.
25. The primary health-care movement was initiated at the International Health Promotion Conference in 1988.
26. Primary health-care approaches take into consideration ways to provide culturally appropriate care.
27. Community participation is central to an effective primary health-care system.
28. Within the primary health-care perspective, many functions that lay health-care workers currently perform are the responsibility of health-care professionals.
29. Acute care services are not considered part of a primary health-care system.
30. In a primary health-care system, efforts are made to use the least expensive technology and personnel to achieve positive health outcomes.
31. Primary health care focuses on setting targets and plans of action to meet national health goals.
32. One of the five key principles of primary health care is the provision of high-quality, episodic medical care.
33. Primary health-care services do not include curative or palliative care.
34. Our current provincial health-care system is based on a primary health-care model.
35. A coalition of seniors, police, and local merchants working to improve neighbourhood safety is an appropriate primary health-care strategy.

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**Part B: Attitude items from PHCQ**

1. More health-care dollars should go towards developing technological equipment to diagnose disease.
2. Increased medical specialization is needed to improve the community's health.
3. All people in a country should have access to basic health care even if it means that some people would receive fewer services than they currently receive.
4. Nurses could provide many health-care services that physicians currently provide.
5. Most children need "well child" care from a pediatrician rather than from a general practitioner (i.e., family doctor).
6. Fee for service as a method of payment for physicians should be discontinued and another payment system substituted.
7. Access to good health care is a fundamental right of all people.
8. More money needs to be spent on health promotion and disease prevention even if this means less money is available for highly specialized treatment and acute care.
9. Volunteers and lay personnel could provide many services that are currently provided by health-care professionals.
10. The physician is the best person to keep people well.
11. Community members should have input into how health-care dollars are spent in their communities.
12. Many tasks that physicians currently perform could be carried out equally well by nurses.
13. Helping people learn to stay well is an important role for nurses.
14. Doctors and nurses should spend more time providing information to people about their health situations.
15. Childbearing women should have an increased role in decision-making regarding procedures used during their labour and delivery.
16. More effort should be taken by health-care professionals to discourage traditional healers from providing health care.
17. More money needs to be spent on accident prevention for children and adolescents, even if this means longer waits for elective surgery for some patients.

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18. The health-care system should take increased responsibility for developing programs to address problems such as family violence.
19. The way to solve the problem of high death rates from heart disease is to screen children for high lipid levels.
20. Each person has a responsibility to maintain his/her health.
21. Trained midwives should be accessible for women who choose to use the services of this health professional.
22. As much emphasis should be placed on assisting people to cope with their health problems as is placed on diagnosing and treating them.
23. Getting consumers involved in decisions about how health-care dollars are spent would result in lower-quality health care.
24. People should have liberal access to health information from doctors and nurses so they can participate fully in decisions affecting their health.
25. Provincial governments need to assume more responsibility to ensure that people in all areas of the province have access to needed medical services, even if this means controlling where some physicians can practise.
26. Individuals are capable of taking primary responsibility for their own health.
27. If individuals can afford to pay user fees for services, they should be expected to do so.
28. Primary health care is a useful approach for developing countries but has little relevance for industrialized countries.
29. Currently used health indicators (morbidity and mortality) are useful but limited ways of determining the effectiveness of primary health care.
30. Primary health care is appropriate only for low-income groups and communities.
31. Cultural variations in health-care practices are over-emphasized.
32. Community participation is a deterrent in implementing primary health-care programs.
33. No matter where our health-care dollars are spent, we will never be able to reduce the incidence of disease in Canada.
34. All health-care professionals have a role in primary health care.

The initial instrument was reviewed by a panel of senior nurses who were knowledgeable about PHC ( $n = 4$ ). The panel assessed items for relevance to PHC and provided additional areas that they considered lacking in the questionnaire. Based on this feedback, and on input from an expert in psychometrics, the instrument was revised and then re-assessed by a panel of six national experts in PHC.

Using Imle and Atwood's (1988) model for instrument development, the experts systematically assessed items for clarity, apparent internal consistency, and content validity. Retained were items that exceeded 70% agreement among panel members, the minimum percentage set as acceptable for retention in beginning scales (Topf, 1986). Based on this assessment, one item considered ambiguous was deleted and four items were added to more adequately assess the intersectoral cooperation component of PHC. The instrument was then pilot-tested with subjects deemed similar to the study population.

The final PHCQ comprised 35 knowledge items, 34 attitude items, and three open-ended items addressing experiences in the classroom, with clinical practice, and with assignments. The instrument was designed so that minor changes to the instructions in the practice section and the demographic data sheet would adapt it for use with practising nurses, other health-care practitioners, or members of the community. Completion time was approximately 20 minutes.

### *Sample*

The population from which participants were drawn were faculty and students from diploma and undergraduate degree programs in the study province. Students were recruited from each year of basic programs and from both years of a two-year post-diploma program for registered nurses. The intention was to determine whether the instrument was sensitive enough to detect anticipated differences in knowledge and attitudes between faculty and students, among programs, and across years within programs.

**Students.** The student sample was drawn from a four-year baccalaureate program (delivered at three sites); a two-year baccalaureate program for registered nurses (BPRN); and three diploma programs. The potential student population included more than 95% of nursing students in the province.

A convenience sample of students attending selected classes on the designated data-collection days were recruited into the study. The response rates for each site and class (based on the total population of



students listed on the academic rolls) ranged from 25 to 53% with an overall response rate of 39%. Because of their timetables, many students were unavailable for recruitment. Thus the response rate for students who were present on recruitment days was considerably higher – that is, in excess of 70%. Of the 394 students who returned questionnaires at first testing, 172 completed the questionnaire two weeks later (44% response rate) for the purpose of test-retest reliability assessment.

The mean and median age of the student sample was 23.1 years ( $SD = 11.60$ ) with a range from 17 to 53 years. Most of the respondents were full-time students ( $n = 336$ , 85%). Almost half ( $n = 193$ , 49%) reported having earned previous degrees or certificates.

**Faculty.** Of the 130 educators who participated, 75 were with the degree programs and 55 were with the three diploma programs. Response rates ranged from 43 to 56% across study sites. Sixty-three of the 130 questionnaires (48.5%) were returned at the first testing and 21 (33%) were completed at the second testing.

The majority of the faculty taught full-time ( $n = 50$ , 79%), addressing all the major substantive areas offered in the curriculum, including acute and chronic care, health promotion and disease prevention, and palliative care. Faculty respondents were experienced teachers and nurses. Their work experience ranged from five to 35 years ( $M = 21.0$ ,  $SD = 6.9$ ,  $Mdn = 19.5$ ); teaching experience ranged from less than one year to 28 years ( $M = 10.4$ ,  $SD = 6.9$ ,  $Mdn = 12.1$ ). The ages of the faculty reflected their years of professional work (range 30 to 58 years,  $M = 44$ ,  $SD = 6.9$ ,  $Mdn = 44$ ).

## *Procedure*

Following approval by the Ethical Review Committee and access approval from the six study sites, a research assistant recruited students (degree and diploma) through a short oral presentation in a scheduled class. Written information also was provided. Those interested in participating completed the PHCQ and returned it to a box in the classroom. Registered nurse students were recruited at the end of their classes. Due to time constraints, these participants completed their questionnaires at home and returned them by mail. Faculty were recruited by distributing an explanatory letter and questionnaire in their mailboxes at their place of work. Those wishing to participate either returned their envelopes to a sealed box in their workplace or mailed their questionnaire to the researchers. All participants who completed the questionnaire were invited to complete a second administra-

tion of parts A and B of the questionnaire two weeks later (to assess the stability of the instrument).

### *Analysis*

One questionnaire was eliminated because several pages of data were missing. Less than 10% of the data were missing on the remainder of the questionnaires, resulting in 457 questionnaires available for analysis. A comparisonwise type I error rate of 5% was used for all analyses. Instrument reliability was assessed using Cronbach's alpha coefficient and test-retest correlation coefficients. Cross-tabulation of items identified as detracting from the test-retest reliability was examined using Fisher's exact test. Variability of the knowledge items was examined by simple percentage correct responses; variability of attitudinal items was examined using frequency distributions.

Normality testing (Shapiro-Wilks) indicated that the data for the knowledge scale were not normally distributed. The distribution was unimodal and relatively bell-shaped (by histogram), with some extremely low scores ( $n = 4$ ). These outliers were likely responsible for the lack of normality. Attitude scores were normally distributed (Shapiro-Wilks). Parametric and non-parametric tests were conducted as appropriate to distribution of the data. Correlation matrices were calculated to carry out an item analysis. The correlation matrices were examined to assess items with low correlation and item redundancy.

Comparison of knowledge and attitudinal differences across respondent educational level was carried out using both parametric and non-parametric procedures. Use of both approaches allows for cross-validation of results relative to the robustness of procedural assumptions. The use of multiple testing procedures ensures that the uniformly most powerful procedures are included in the analysis, regardless of distributional eccentricities.

Qualitative data from the open-ended questions (Part C) were coded and analyzed using manifest content analysis procedures (Field & Morse, 1991; Fox, 1982). Categories were developed for each portion of Part C (classroom, clinical, assignments).

## **Results**

### *Performance of the PHCQ*

*Reliability and Validity.* An alpha of .70 was pre-set as an adequate indication of internal consistency for a beginning instrument (Nunnally,

1978). The instrument met this standard, with internal consistency reliability estimates (Cronbach's alpha) of .76 for the 35 knowledge items and .85 for the 34 items on the attitude scale. The test re-test reliability for the knowledge scores was .67 (Spearman's) and for the attitude scores .76 (Spearman's). As suggested by Bland and Altman (1995), examining the difference between scores, as well as the correlation between scores, provides valuable insights into the comparability of any two scores. Differences in knowledge and attitude scores over time were consistent regardless of whether the score value was high or low ( $p = .11$  and  $.27$ , respectively). There was a statistically significant increase in knowledge scores, of 2% on average ( $p = .002$ ), which was indicative of a learning effect of one out of three people responding correctly to one more item on average. The average difference in attitude scores over time of 0.7% was not statistically significant ( $p = .25$ ).

Correlations of  $r = .40$  to  $.60$  (item-to-scale correlation) and  $r = .30$  to  $.70$  (item-to-item correlation) are typically accepted for item retention when developing new scales (Nunnally, 1978). For Part A (Knowledge), eight items (23%) were within the accepted range, suggesting that they contributed to the measurement of the construct of knowledge. Several ( $n = 7$ , 20%) also approached the .40 standard. No items exceeded .70, which suggested that none were redundant. For Part B (Attitudes), 14 items (41%) were within the accepted range and an additional nine (26%) approached  $r = .40$ . Inter-item correlation assessment of the knowledge items (Part A) indicated that 17 items (49%) achieved an inter-item correlation of between .30 and .70. In one instance, inter-item correlation of .91 between two items (#17 and #23) suggested redundancy. For Part B, 21 items (62%) met the criterion. Although some items did not meet the accepted criteria, we considered it premature to delete those items with low correlation prior to further testing. A follow-up study is planned; item deletion was deferred until the performance of all items, using both samples, is evaluated.

### ***Knowledge and Attitudes***

*Total sample.* Scores on the knowledge and attitude items were converted to percentages for ease of interpretation and comparison across scales, giving a range of potential scores from 0 to 100. Knowledge scores for the total sample of faculty and students ( $n = 434$ ) ranged from 23.5 to 100. Measures of central tendency for knowledge scores were mean 77.89; standard deviation 11.53; median 77.43; and mode 77.14 ( $n = 434$ ). Respondents with "low" scores ( $n = 15$ ) were evenly distributed between degree ( $n = 8$ ) and diploma ( $n = 7$ ) programs, in the earlier

years of their programs. Attitude scores ranged, in the upper end of the scale, from 53.9 (less positive attitude) to 99.0 (more positive attitude), with a mean score of 74.56, standard deviation 8.65 ( $Mdn = 73.52$ ; mode = 70.58). Mean, median, and standard deviations of knowledge and attitude scores are summarized in Table 2.

<b>Table 2</b> <i>Mean, Median, and Standard Deviations of Knowledge and Attitude Scores</i>						
Variables	N	X	SD	Mdn	Min	Max
Knowledge Time 1	434	77.89	11.53	77.14	23.53	100.00
Attitude Time 1	445	74.42	8.80	74.51	48.49	99.02

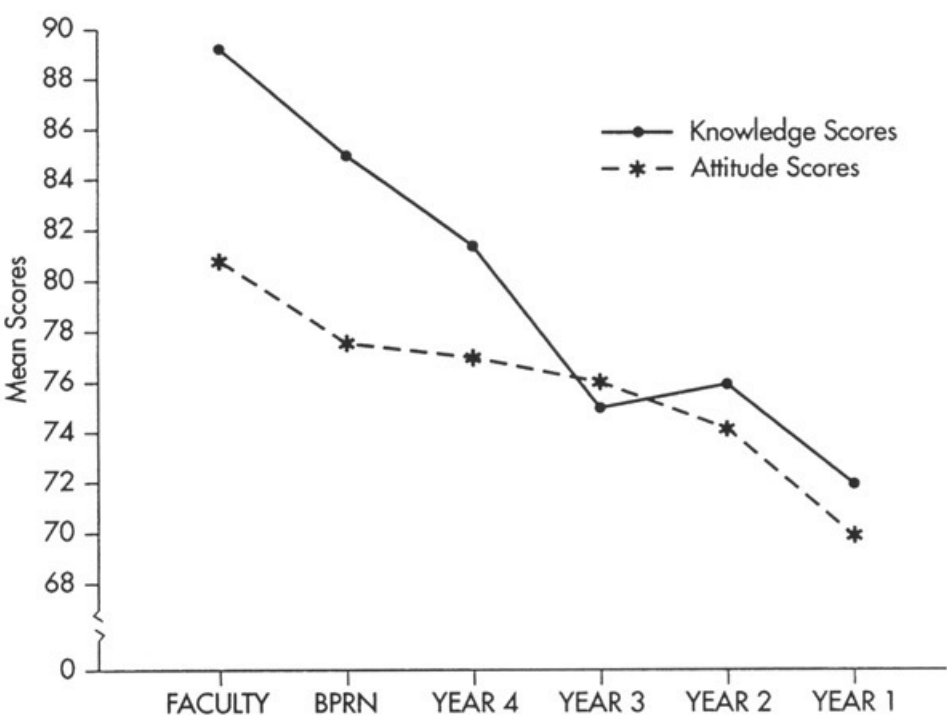
Group comparison was carried out via ANOVA and Kruskal-Wallis procedures, with comparable results. For the sake of brevity, only the ANOVA results are reported here. Mean knowledge and attitude scores for faculty, BPRN students, and diploma/degree students across years are summarized in Figure 1.

*Faculty versus students.* Mean scores for faculty were significantly higher than scores for students, for both knowledge (89.17 vs. 76.05,  $p = .0001$ ,  $n = 434$ ) and attitudes (80.81 vs. 73.3,  $p = .0001$ ,  $n = 457$ ).

*Degree versus diploma programs.* Significant differences also were found between the mean scores for degree students and those for diploma students ( $n = 394$ ) on knowledge items (78.24 vs. 72.99,  $p = .05$ ) and on attitude items (76.59 vs. 71.94,  $p = .0001$ ). Likewise, when mean scores were compared between faculty teaching in the degree programs and faculty teaching in diploma programs ( $n = 63$ ) significant differences were found for both knowledge (89.92 vs. 88.36,  $p = .026$ ) and attitudes (82.52 vs. 79.04,  $p = .012$ ).

*Program year versus post-RN versus faculty.* Analysis of variance was calculated on knowledge scores for students (years 1–4 across sites, BPRN) and for faculty. Mean scores ranged from 72.15 to 89.18. Mean scores increased from year 1 through year 4 to BPRN students and faculty, with the exception of the reversal of scores for students in years 2 and 3. Significant differences were found among the six groups ( $p = .0001$ ,  $n = 434$ ).

**Figure 1** Mean Knowledge and Attitude Scores for Faculty, BPRN Students, and Diploma/Degree Students



Mean *knowledge* scores were compared using ANOVA and Kruskal-Wallis procedures (seven student groups and one faculty group). Significant differences were found among the eight groups ( $p = .0001$ ,  $n = 434$ ). First-year students had lower mean scores in both the diploma program and the degree program than did second-year students, and degree students had higher scores than diploma students in both first year and second year.

Similar comparisons were made for attitude scores across years. Analysis of variance was conducted on attitude scores and the year in the program across sites (years 1, 2, 3, 4, and BPRN). Faculty scores were again included as a sixth category for analysis purposes. Mean scores ranged from 69.31 to 80.81. Mean attitude scores increased from year 1 through year 4 to BPRN students and faculty. Significant differences were found among the six groups ( $p = .0001$ ,  $n = 445$ ).

Mean *attitude* scores of diploma and degree students by year and of faculty also were compared using ANOVA procedures (seven student groups plus faculty, to form eight groups). Significant differences were



found among the eight groups ( $p = .0001$ ,  $n = 445$ ). First-year students had lower mean scores in both the diploma program and the degree program than did second-year students, and degree students had higher scores than diploma students in both first and second year. Senior students had higher mean scores than junior students, and faculty had the highest mean scores.

In summary, both knowledge and favourable attitudes toward PHC increased with each additional year in a nursing program (for both degree and diploma students). The only exception was the modest but significant reversal of the mean knowledge scores between second year and third year. Degree students had higher knowledge and attitude scores than diploma students, and faculty scored higher on both measures compared to students.

### *Practice of PHC*

Faculty and students described their practice of PHC in response to the three open-ended questions in Part C of the instrument.

**Students.** Students described their PHC experiences and classified these as classroom, clinical, or assignment experiences. Approximately two thirds of the students completed all or part of this section of the questionnaire.

Diploma nursing students described fairly extensive classroom exposure to PHC concepts: lecture content focusing on the key concept of prevention, including aspects of safety, pollution, fire prevention, STD prevention, nutrition, and self-care; nurses' role in prevention through patient education, identification of risk factors, hygiene, and asepsis. Degree nursing students similarly identified prevention as the key concept in primary health care. Degree students perceived that they received a paucity of information on PHC, and stated that the dominant client model was medically based; however, their responses suggested that their lecture content included more PHC concepts than that of diploma students.

For diploma students, clinical practice activities related to PHC included a focus on patient teaching. Subjects for teaching included identification of risk factors, need for lifestyle changes, and information about community resources. Degree students also identified patient teaching and prevention activities among their clinical experiences. In addition, they frequently mentioned health-education work in the community, with both individuals and families in the home (e.g., families

with a newborn) as well as group education (e.g., health education sessions with schoolchildren and adolescents).

For diploma students, PHC assignments centred around client teaching. Degree students described assignments related to PHC concepts directly, including papers differentiating between health promotion and disease prevention and contrasting the theory and practice of PHC. One assignment involved wellness self-assessment in which students identified areas of concern and described the experience of implementing behaviour modification related to that area. Patient-education plans were by far the most common PHC-related assignment for the degree students, with content similar to that of the diploma students.

Some variation was noted between content described by diploma students and that described by degree students. Degree students identified more community-health issues than did diploma students, who were more focused on the health problems of individuals. Both groups noted that prevention was a key concept of PHC, and their value of client education reflected this perspective. A few students in each program indicated that they were not very familiar with PHC concepts, and some of their answers reflected this lack of knowledge.

**Faculty.** Responses of faculty members paralleled those of the students. In general, diploma and degree faculty used similar strategies in classroom teaching, clinical experience, and evaluation of their students. Faculty described student assignments only minimally in the questionnaire: because many faculty noted that PHC concepts were taught indirectly, perhaps they evaluated them indirectly as well.

The qualitative data provided information that learning opportunities related to PHC were built into both diploma and degree programs though classroom teaching, clinical practice, and written assignments. However, learning opportunities for degree students exceeded those of diploma students in both number and scope.

## Discussion

The findings of this study indicate that the PHCQ shows promise as an instrument for studying the dissemination of PHC concepts and practice. The psychometric properties of the instrument, with the exception of the test re-test reliability of the knowledge scores ( $\rho = .67$ ), appear adequate for a beginning instrument. The test re-test reliability of the attitude scores exceeded the minimum accepted standard ( $r = .70$ ). Internal consistency and reliability estimates for both the knowledge and the attitude scores were adequate (alphas of .76 and .85).

Confidence in the content validity of the measure was enhanced by thorough review of the PHC literature and the systematic feedback from the local and expert panel. Validity of the instrument was further demonstrated by distribution of the mean scores. Generally, the students in the senior years and in the post-diploma program had higher knowledge scores and higher attitude scores (indicating more positive attitudes) than students in the lower years, and faculty had the highest scores. It would be expected that understanding of PHC and increasingly positive attitudes would develop over time with exposure to learning opportunities about PHC. That students' scores increased across the years and that faculty had more knowledge and more positive attitudes provides support for the validity of the PHCQ and for its ability to discriminate among groups. The higher knowledge scores and more positive attitudes of degree students compared to diploma students also suggests that the instrument is effective in measuring the relevant constructs. Students in the degree program had more opportunities, including clinical practice, to learn about PHC, particularly as it relates to community-health settings.

The qualitative data indicated that PHC learning opportunities were built into both diploma and degree programs, through classroom teaching, clinical practice, and written assignments. Students in the degree program generally had a wider range and a greater number of learning opportunities than students in diploma programs; however, this was partly a result of the increased time (four years) for learning to occur. Students in both types of programs commented on the importance of disease prevention and health promotion; this appears to indicate an acceptance of the key underpinnings of PHC.

Much of the content reported in Part C (Practices) addressed some aspect of health promotion and disease prevention, including the promotion of self-care with a view to prevention. Little classroom and assignment content and clinical practice related to principles other than prevention (e.g., intersectoral cooperation, accessibility, public participation, appropriate technology). While these topics were likely addressed when content related to PHC was introduced in lectures, the integration of these principles into other content areas was not evident. It was difficult to determine from the data whether PHC was used as an overarching framework for discussion of nursing care of client groups.

### *Use of the PHCQ*

This study began the process of developing and refining the PHCQ. The instrument is being refined further in a comparative study of stu-

dents in nursing programs in the United Kingdom. In Canada, it currently is being used to evaluate development of PHC across four years of a baccalaureate nursing program designed within a PHC framework. We anticipate that the instrument also will be useful as a teaching tool in the classroom or in workshops to initiate and frame discussion of PHC. To date, the PHCQ has been tested in academic settings. However, with minor changes to the instructions in Part C (Practices) and the demographic data sheet, the instrument can also be used with community populations to assess their understanding and acceptance of PHC. This would entail omitting the two questions addressing classroom learning and assignments and retaining the item addressing clinical practice.

Diffusion theory acknowledges that a key factor affecting the adoption rate of any new idea or trend is its compatibility with the knowledge, beliefs, and experiences of the target population (Rogers, 1983). Currently, health-care systems are undergoing reform, and the benefits of PHC strategies are finally being recognized by provincial health-care systems. The PHCQ can be used to assess progress toward implementation of a health-care system based on primary health principles.

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