The palliative care quiz for nursing (PCQN): the development of an instrument to measure nurses’ knowledge of palliative care

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INTRODUCTION

The particular needs of individuals who are dying and their families are increasingly met through the establishment of palliative care services. Such services offer compassionate and competent care that is directed primarily towards improving quality of life (Health & Welfare Canada 1989). These services are interdisciplinary in nature and situated in a variety of community, hospice and hospital-based facilities where nurses constitute a major proportion of the service delivery team. Despite increased recognition of the importance of curricular inclusion of content related to palliative care among educators of health care providers, such content is only incidentally rather than systematically addressed in most educational programmes.

Furthermore, such programmes are accessible primarily to students enrolled in full or part-time programmes of a pre-service nature that are located in established educational facilities. Within a health care environment characterized by fiscal restraint and downsizing, the availability of continuing education for front line workers is problematic. As a result, there is evidence that health care providers, including nurses, continue to experience difficulties in providing skilled and sensitive care to those who are dying (Hamric 1977, Benolea 1985, Lev 1986). Indeed, a study by Rutman & Parke (1991) in an extended care facility affirmed the need for educational programmes aimed at upgrading nursing staff’s knowledge of palliative care, including learning about the normal ageing process, death and dying, pain and symptom control and medications and intervention techniques.

There is, therefore, a need for more educational...
To both educational needs assessments and evaluations measure knowledge are also needed to identify information levels disseminated in academic and clinical programmes of an educational nature. Tools to measure knowledge are also needed to identify information needs and misconceptions regarding palliative care and to stimulate discussions during which erroneous information can be corrected. Such tools, which are critical to both educational needs assessments and evaluations that address the effectiveness of educational programmes aimed at increasing knowledge of palliative care, must be of high quality both educationally and psychometrically. The purpose of this paper is to describe the process and outcomes of a project to develop such a tool.

PURPOSE OF THE PROJECT

The overall purpose of this project was to develop a tool to measure nurses' knowledge of palliative care. In addition, it was intended that the tool would be able to stimulate discussion about the provision of palliative care, measure and compare different groups' level of knowledge, and identify their most frequently held misconceptions about palliative care practice. In developing the palliative care quiz for nursing (PCQN), the following criteria were considered important: (a) brevity, to maximize ease of administration and likelihood of completion; (b) linguistic simplicity, to accommodate varied educational backgrounds and to encourage use of the tool in a variety of settings; (c) ecological validity, to provide content that nurses are likely to encounter in their practice; and (d) specificity, to cover aspects of care that are central to palliative care practice.

METHOD OF DEVELOPMENT

The development of the PCQN was informed by the work of Dieckmann et al (1988) and Pratt et al (1992) who developed knowledge tests focusing on Alzheimer's disease and alcohol problems and depression in later life. The Alzheimer's disease knowledge test (Dieckmann et al 1988) consists of 20 multiple choice questions in direct question or incomplete statement form, with five response alternatives consisting of the correct response, three distractors and an 'I don't know' alternative. Content areas covered by the items include prevalence, etiology, diagnosis, symptoms, proposed cures, management of problem behaviours and symptoms, and the role of supportive services. The knowledge tests on alcohol problems and depression in later life (Pratt et al 1992) are short true and false quizzes reflecting concepts considered critical for professional practice and education in ageing and health.

In addition, the standards of educational evaluation established by the Joint Committee on Standards for Educational Evaluation (1981) and utilization focused procedures (Patton 1986) provided direction for this study. These standards and procedures emphasize the importance of utility, feasibility, propriety and accuracy in evaluation and measurement. Utility requires that assessment tools provide useful information that is relevant to the intervention being planned or evaluated. Feasibility in measurement requires that the measures be practical to administer and interpret. Propriety requires that the rights of participants be respected and that they not be required to give more in terms of time than they can reasonably be expected to gain from the educational programme. Finally, accuracy requires that the measures are soundly developed and technically adequate. The development of the PCQN entailed the following steps:

Convening of an advisory committee

An advisory committee of palliative care coordinators provided direction throughout the entire development process. Committee members were experienced nurses in palliative care with responsibilities for education (pre-service and continuing) and supervision who worked in both hospitals and community-based agencies. Their responsibilities entailed identifying aspects of knowledge that were central to palliative care practice, determining the format to be used for the tool, specifying the appropriate level of difficulty for items, generating the items, and facilitating access to respondents for psychometric testing.

Through a series of focus groups, the advisory committee identified 86 dimensions of knowledge as central to palliative care nursing. These dimensions reflected the following three conceptual categories: the philosophy and principles of palliative care, the management and control of pain and other symptoms, and the provision of psychosocial and spiritual care. Each of the 86 dimensions was entered into a questionnaire to be used for consultation beyond the advisory committee.

Consultation beyond the advisory committee

A survey of educational and clinical agencies with palliative care programmes elicited additional data about knowledge that is essential to palliative care practice and that should be incorporated into a tool to measure nurses' knowledge of palliative care. The questionnaire developed by the advisory group was distributed to a random stratified sample of individuals, selected from a list of educational programmes and service agencies that had been provided by the Canadian Palliative Care Association. The survey yielded a 80.5% response rate and data from 166 respondents from across Canada.
Respondents rated the 86 dimensions of knowledge identified by the advisory committee on a scale of 1 (strongly disagree) to 5 (strongly agree). Two-thirds of respondents 'strongly agreed' that 45 of these dimensions of knowledge were central to palliative care nursing and should be incorporated into a tool to measure knowledge of palliative care. These dimensions continued to be representative of the three conceptual categories noted above. In addition, respondents described how they would use a tool to measure knowledge of palliative care. They confirmed that a brief and easily administered tool would have the greatest utility for their organization. Consultation beyond the advisory committee regarding knowledge of palliative care also occurred with specialists in other disciplines including medicine, occupational therapy, and social work.

Development of the conceptual framework

The conceptual framework informing this study derived from the literature, consultation with the advisory committee, the results of the survey and communication with other specialists in palliative care. Data from all these sources confirmed that the provision of palliative care nursing entailed knowledge of the philosophy and principles of palliative care, the management and control of pain and other symptoms, and the provision of psychosocial and spiritual care to individuals and families. These concepts, which are congruent with the content of the Canadian Palliative Care Curriculum (MacDonald 1991), that specifies the knowledge, skills, and attitudes associated with palliative care, formed the basis for the development of the PCQN.

Determination of format

The format was modelled after Palmore's facts on aging quiz, a 25-item true and false tool that has had wide utility in practice, education, and research (Martin-Matthews et al. 1984, Palmore 1988, Duerson et al. 1992). This approach was congruent with the goals of the project and fulfilled the criteria of brevity, linguistic simplicity, ecological validity, and specificity. Although true or false items may be less sensitive to instruction (Dieckmann et al. 1988), they are quick to answer, easy to score, and have been successfully used elsewhere (Palmore 1977, Pratt et al. 1992). To distinguish between lack of information and misinformation as well as to reduce guessing (Courtenay & Weidemann 1985), a 'don't know' category was added to the quiz.

Finally, the quiz was designed to avoid ceiling effects (George & Bearon 1980, Toseland & Rossiter 1989, Zant & Toseland 1989). Such effects occur when an intervention is expected to increase scores on a dependent variable but when, prior to the intervention, the subjects are at or near the top of the range for the dependent variable (George & Bearon 1980). Since the tool was intended for use as a measure of increase in knowledge resulting from participation in educational programmes in palliative care, ceiling effects would be problematic as they could obscure the positive effects of such educational programmes.

Generation and pre-testing of items

Members of the advisory committee generated a pool of approximately 30 items for each of the three conceptual categories of knowledge to be incorporated into the PCQN. These items reflected the dimensions of knowledge identified as central to palliative care nursing by the advisory committee and revealed in the wider consultation process with other specialists in palliative care.

As noted by Nunally (1978), the use of systematic procedures for item selection provides the foundation for sufficient content validity. In developing the PCQN, members of the advisory committee had attempted to ensure representation of the three conceptual categories identified through the consultation process. That philosophy and principles of palliative care, management of pain and other symptoms, and psychosocial and spiritual care of individuals and families. All items were also grounded in observed behaviours or based on real life experiences of patients and nurses involved in palliative care.

To ensure high face validity and the representation of a reasonably valid sample of items from the substantive areas of interest, items were then reviewed by all members of the advisory committee and other specialists in palliative care. Each item was evaluated on a scale of 1 (low) to 5 (high) for correctness, clarity, and relevance to clinical practice. Those items with a rating of 5 for correctness, and at least 4 5 for clarity and 4 5 for relevance to practice, were selected for inclusion. This analysis resulted in the elimination of 33 items, thus yielding a preliminary PCQN of 60 true, false or 'don't know' items.

FURTHER TESTING

Following the receipt of ethical clearance and administrative approval from participating organizations, a total of 200 students and 196 nurses participated in further testing of the PCQN. Students were invited to participate in the study during class time and indicated their consent by responding to the PCQN. They included generic students who were non-nurses enrolled in a generic 4-year baccalaureate nursing programme (n = 147) and post-RN students who were registered nurses studying for a baccalaureate in nursing degree (n = 53). A letter inviting participation in the study was also distributed to nurses in their work setting.

Those agreeing to participate included registered nurses (n = 155) and registered practical nurses (n = 41) who were
Currently employed in community and hospital based settings and worked in several areas of practice including palliative care, chronic specialty care and general nursing. Students in the generic programme ranged in age from 18 to 29 with only a minority (13%) reporting their age as over 30. They had little, if any, experience in nursing other than that which they were receiving part of their programme of nursing education. Since there were no specific courses on palliative care offered in the generic programme, these students were incidentally rather than systematically exposed to the concepts and practice of palliative care.

Post-RN students were older and ranged in age from 30 to 55. Although they had an average of 11 years of nursing experience, few had experience in a palliative care setting. Registered nurses who were currently in practice also ranged in age from 30 to 55 years of age. Their years of experience ranged from 2 to 35 with a mean of 16 and a median of 15 years. All were currently engaged in the direct provision of care in a variety of practice areas. Registered practical nurses (n = 41) were approximately the same age as registered nurses, however, they had less clinical experience. Their years of experience ranged from 1 to 28 with a mean of 12 and a median of 8 years of experience. They reported no formal education in palliative care. The results of these administrations were subjected to two item analysis procedures: item difficulty and item discrimination.

### Item difficulty

Item difficulty indices reflect the percentage of respondents who answered an item correctly. When the item difficulty index indicates that most respondents know the answer without training, pre-tests using that item are run and the risk of a ceiling effect in which performance on the pre-test cannot be improved upon. Item difficulty indices of 0.20 to 0.80 indicate that the item can be correctly answered by a reasonable number of individuals, but that it is not known by all.

### Item discrimination

Item discrimination indices compare the responses of persons with the highest scores on a test with those achieving the lowest scores. Specifically, an item discrimination index is determined by subtracting the proportion of lowest scoring respondents (lower quarter of the sample) who got the item correct, from the proportion of highest scoring respondents (upper quarter of the sample) with the correct response to the item. Thus, the item discrimination index for an item that all high scorers answer correctly and all low scorers answer incorrectly is 1.00. The item discrimination index for an item that all high scorers miss and all low scorers answer correctly is −1.00. Positive indices are desirable, indicating that high-scorers tend to get an item correct, whereas those performing poorly on the test tend to get it wrong.

### DETERMINATION OF FINAL VERSION OF PCQN

The following criteria provided guidance for item inclusion in the final version of the PCQN: (a) ratings by the advisory committee of 5 out of 5 for accuracy, 4.5 out of 5 for relevance, and 4 out of 5 for clarity, (b) an item difficulty index of between 0.20 and 0.80, and (c) a positive item discrimination index that was above 0.50. Two-thirds (n = 40) of the original items were dropped because they were unclear or not particularly relevant or because they were found to have poor item difficulties or did not discriminate among respondents. The application of these criteria to the selection of items yielded a final 20-item version of the palliative care questionnaire for nursing. The distribution according to conceptual category of content is as follows: (a) philosophy and principles of palliative care (n = 4), (b) management of pain and other symptoms (n = 13), and (c) psychosocial aspects of care (n = 3).

### OVERALL RESPONSES

The mean percentage of correct responses to the PCQN for the total sample was 61%. A breakdown of the sample according to type of respondent yielded the following mean percentages of correct responses: generic students (46%), registered practical nurses (60%), post-RN students (65%), and registered nurses (75%). Analysis also revealed that when the sample was divided according to category of respondent (Table 1), several items exceeded the 0.80 item difficulty in the registered nurse sample, items 1, 2, 4, 7, 8, 9, 16, and 18, and 20, in the post-RN student sample, items 1, 4, 7, 8, 9, and 11, and in the registered practical nurse sample, items 1 and 8). These items were retained, however, because they fell within the desired range in at least one other group and were felt to be of conceptual importance as they addressed critical concepts in palliative care nursing.

Given that nursing knowledge is both generated from instruction and grounded in practice (Benner 1984), it had been anticipated that registered nurses, while not necessarily specialists in palliative care nursing, would achieve a higher percentage of correct responses than students. Indeed, responses were as predicted. Registered nurses achieved the highest scores in response to the PCQN. In addition, post-RN students, who had more years of schooling and experience, scored higher than generic students and registered practical nurses. Dieckmann et al. (1988) reported similar patterns of knowledge for the Alzheimer’s disease knowledge test.

Despite the higher scores for RNS, given the variation in
### Table 1 Palliative care quiz item difficulty breakdown by group

<table>
<thead>
<tr>
<th>Item</th>
<th>Generic students (n = 147)</th>
<th>Post-RN students (n = 53)</th>
<th>Registered nurses (n = 155)</th>
<th>Registered practical nurses (n = 41)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Response (%)</td>
<td>Item difficulty</td>
<td>Response (%)</td>
<td>Item difficulty</td>
</tr>
<tr>
<td>1 Palliative care is appropriate only in situations where there is evidence of a downhill trajectory or deterioration</td>
<td>T 19 0</td>
<td>5 7</td>
<td>12 3</td>
<td>12 2</td>
</tr>
<tr>
<td></td>
<td>DK 13 6</td>
<td>3 8</td>
<td>0 6</td>
<td>0 0</td>
</tr>
<tr>
<td>2 Morphine is the standard used to compare the analgesic effect of other opioids</td>
<td>T* 38 1</td>
<td>0 38</td>
<td>49 1</td>
<td>0 49</td>
</tr>
<tr>
<td></td>
<td>F 4 8</td>
<td>9 4</td>
<td>3 2</td>
<td>9 8</td>
</tr>
<tr>
<td>3 The extent of the disease determines the method of pain treatment</td>
<td>T 51 7</td>
<td>30 2</td>
<td>32 3</td>
<td>43 9</td>
</tr>
<tr>
<td></td>
<td>DK 8 8</td>
<td>7 5</td>
<td>3 2</td>
<td>2 4</td>
</tr>
<tr>
<td>4 Adjuvant therapies are important in managing pain</td>
<td>T* 48 3</td>
<td>0 48</td>
<td>84 9</td>
<td>0 85</td>
</tr>
<tr>
<td></td>
<td>F 51 7</td>
<td>3 8</td>
<td>1 9</td>
<td>24 4</td>
</tr>
<tr>
<td>5 It is crucial for family members to remain at the bedside until death occurs</td>
<td>T 32 0</td>
<td>20 8</td>
<td>14 8</td>
<td>29 3</td>
</tr>
<tr>
<td></td>
<td>DK 18 4</td>
<td>11 3</td>
<td>7 1</td>
<td>7 3</td>
</tr>
<tr>
<td>6 During the last days of life, the drowsiness associated with electrolyte imbalance may decrease the need for sedation</td>
<td>T* 26 5</td>
<td>0 27</td>
<td>37 7</td>
<td>0 38</td>
</tr>
<tr>
<td></td>
<td>F 23 1</td>
<td>35 8</td>
<td>29 7</td>
<td>41 5</td>
</tr>
<tr>
<td>7 Drug addiction is a major problem when morphine is used on a long-term basis for the management of pain</td>
<td>T 51 7</td>
<td>1 9</td>
<td>5 8</td>
<td>14 6</td>
</tr>
<tr>
<td></td>
<td>DK 8 2</td>
<td>3 8</td>
<td>1 3</td>
<td>0 0</td>
</tr>
<tr>
<td>8 Individuals who are taking opioids should also follow a bowel regime</td>
<td>T* 59 9</td>
<td>0 60</td>
<td>83 0</td>
<td>0 83</td>
</tr>
<tr>
<td></td>
<td>F 2 7</td>
<td>1 9</td>
<td>2 6</td>
<td>4 9</td>
</tr>
<tr>
<td>9 The provision of palliative care requires emotional detachment</td>
<td>T 21 1</td>
<td>5 7</td>
<td>11 0</td>
<td>17 1</td>
</tr>
<tr>
<td></td>
<td>DK 11 6</td>
<td>1 9</td>
<td>4 5</td>
<td>7 3</td>
</tr>
<tr>
<td>10 During the terminal stages of an illness, drugs that can cause respiratory depression are appropriate for the treatment of severe dyspnoea</td>
<td>T* 12 9</td>
<td>0 13</td>
<td>42 5</td>
<td>0 42</td>
</tr>
<tr>
<td></td>
<td>F 53 1</td>
<td>30 2</td>
<td>28 4</td>
<td>39 0</td>
</tr>
<tr>
<td>11 Men generally reconcile their grief more quickly than women</td>
<td>T 12 2</td>
<td>5 7</td>
<td>5 8</td>
<td>7 3</td>
</tr>
<tr>
<td></td>
<td>DK 27 2</td>
<td>11 3</td>
<td>15 5</td>
<td>26 8</td>
</tr>
<tr>
<td>12 The philosophy of palliative care is compatible with that of aggressive treatment</td>
<td>T* 24 5</td>
<td>0 25</td>
<td>37 7</td>
<td>0 38</td>
</tr>
<tr>
<td></td>
<td>F 37 4</td>
<td>47 2</td>
<td>45 2</td>
<td>48 8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Item</th>
<th>Generic students (n = 147)</th>
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<tr>
<td></td>
<td>Response (%)</td>
<td>Item difficulty</td>
<td>Response (%)</td>
<td>Item difficulty</td>
</tr>
<tr>
<td>13</td>
<td>The use of placebos is appropriate in the treatment of some types of pain</td>
<td>42 9 28 3</td>
<td>19 4 36 6</td>
<td>24 25 0 52 3</td>
</tr>
<tr>
<td>14</td>
<td>In high doses, codeine causes more nausea and vomiting than morphine</td>
<td>24 0 32 1</td>
<td>47 1 31 7</td>
<td>76 0 0 26 3</td>
</tr>
<tr>
<td>15</td>
<td>Suffering and physical pain are synonymous</td>
<td>11 6 28 3</td>
<td>17 4 36 6</td>
<td>76 0 67 9</td>
</tr>
<tr>
<td>16</td>
<td>Demerol is not an effective analgesic in the control of chronic pain</td>
<td>34 0 34 0</td>
<td>58 5 92 3</td>
<td>32 0 22 6</td>
</tr>
<tr>
<td>17</td>
<td>The accumulation of losses renders burnout inevitable for those who seek work in palliative care</td>
<td>24 5 30 2</td>
<td>16 8 39 0</td>
<td>53 1 0 53 0</td>
</tr>
<tr>
<td>18</td>
<td>Manifestations of chronic pain are different from those of acute pain</td>
<td>65 3 75 5</td>
<td>73 2 75 6</td>
<td>75 5 76 7</td>
</tr>
<tr>
<td>19</td>
<td>The loss of a distant or contentious relationship is easier to resolve than the loss of one that is close or intimate</td>
<td>55 1 34 0</td>
<td>43 2 31 7</td>
<td>39 5 0 40 0</td>
</tr>
<tr>
<td>20</td>
<td>The pain threshold is lowered by anxiety or fatigue</td>
<td>64 4 73 6</td>
<td>86 5 63 4</td>
<td>17 0 18 9</td>
</tr>
</tbody>
</table>

Note: *indicates correct response to item. T = true, F = false, DK = don't know.

Responses by group according to experience and schooling, and the fact that the majority of items attained optimal item difficulties and item discrimination indices for all groups, the goal of creating one quiz for various categories of nursing personnel appears to have been achieved.

**Item to total correlations**

A desirable characteristic of items is that performance on the item is predictive of performance on the total test (Nunally 1978). Thus, if individuals give the correct response to an item, it is expected that their score on the test will be higher than if they give the incorrect response to that item. This condition is reflected by a positive item to total correlation coefficient. All item to total item correlations, i.e., the correlation of the response to an individual item with the total score based on the remaining 19 items, were positive and above 0.20. Furthermore, all items had a statistically significant relationship with the total score. Consequently, these findings provide evidence that each item relates to the total test and the total score on the PCQN is reflective of an individual's level of knowledge about palliative care nursing.

**Internal consistency**

Data from respondents were combined and the Kuder Richardson formula 20 (KR-20) used to assess the internal consistency of the PCQN. The KR-20 formula is appropriate for dichotomous true/false items (1 = right,
0=wrong/don't know) on knowledge tests (Fitz-Gibbon & Morris 1987) The internal consistency of the 20-item quiz was 0.78, indicating high internal consistency or homogeneity for the quiz (Nunally 1978)

Test-retest reliability
A direct assessment of consistency was made by comparing students' mean scores at a first writing with those achieved at a second writing 3 weeks later. This period of time was judged sufficient to preclude remembering exact responses to questions from the first writing. Therefore, test scores should be satisfactorily independent and related primarily in terms of knowledge levels rather than proximity of testing sessions. In addition, students had not been provided with sufficient new information during this time to significantly influence their results on the second writing. The correlation coefficient between time 1 and time 2 was 0.56. There were also no statistically significant or meaningful differences in scores at first writing when compared with scores at second writing ($t=0.19$, $d.f.=27$, $P=0.99$).

Mean score comparisons
A desirable quality of a test of knowledge is that it distinguishes among respondents with specific characteristics relative to that knowledge. An analysis of variance comparing registered nurses, registered practical nurses, generic students and post-RN students on the basis of mean number of correct items was computed. As anticipated, significant differences were identified, with registered nurses scoring higher than students and registered practical nurses ($F=93.8$, $d.f.=3$, $P=0.000$). The Scheffe's procedure indicated that registered nurses and post-RN students scored significantly higher than generic students or registered practical nurses.

It was also anticipated that novice students would achieve higher scores than more senior students. Consequently, an analysis of variance was also conducted comparing mean scores achieved by generic students according to years of schooling. Findings confirmed that the more senior the student, the higher the mean score ($F=21.3$, $d.f.=3$, $P=0.000$). Scheffe's procedure further indicated that third- and fourth-year students scored significantly higher than students at lower levels.

These findings present further evidence of the validity of the PCQN as a measure of knowledge since it can be anticipated that as students progress through a 4-year baccalaureate programme in nursing, they can be expected to be increasingly exposed to both content related to palliative care and to clinical experience with palliative care patients, and consequently to be increasingly knowledgeable about palliative care.

When summary descriptive statistics were examined by group according to practice area, work setting, years of experience and employment status of practising nurses, no meaningful differences emerged. This finding may be partially explained by the fact that no matter what the practice area, work setting or employment status, there was little difference with respect to their involvement with patients receiving palliative care. Indeed, only a small number of nurses reported a caseload comprised primarily of patients receiving palliative care. The vast majority, whether hospital or community based, reported a caseload that included only a small number of individuals who were receiving palliative care.

Given the expectation that those with formal education in palliative care would do better on the PCQN than those without such education, data were also grouped according to whether or not respondents had received any formal education in palliative care. Analysis revealed that those who had received palliative care education scored significantly higher than those who had not ($t=2.9$, $d.f.=153$, $P=0.00$).

Identification of most frequent misconceptions
One of the goals for the development of the quiz was to identify the most frequently held misconceptions about palliative care nursing. Therefore, a rank ordering of the percentage of errors by item and group was performed and Kendall's coefficient of concordance calculated to compare the rank orderings of the various groups (Table 2).

Although there was no statistically significant concordance among groups ($W=0.17$, $d.f.=3$, $P=0.55$), there were meaningful differences with respect to the rank order of the items missed. That is, when scores on individual items were ranked within groups and these rankings compared, the items were not found to be in the same relative position compared to all other items for the groups. For example, item 16 was the 8th (post-RN students), 18th (RNs) and 12th (RPNs) most frequently missed item in the respective groups. This finding presents further evidence that level of education and experience in nursing influences knowledge of palliative care. It appears that the PCQN is useful for identifying misconceptions within groups and that the rank order of frequency with which these errors are made differs among groups, depending on level of education.

DISCUSSION
The effective measurement of knowledge is an important component of both nursing education and nursing practice. Such measurement can serve a variety of purposes including the assessment of learning needs and evaluation of programmes and services. Given the growing influence of palliative care services in providing compassionate and competent care to an increasing proportion of health care consumers, it is crucial that educators and administrators...
Table 2 Rank order of items missed by group (lower numbers indicate most frequently missed items)

<table>
<thead>
<tr>
<th>Item</th>
<th>Generic students</th>
<th>Post-RN students</th>
<th>Registered nurses</th>
<th>Registered practical nurses</th>
<th>W</th>
<th>d.f</th>
<th>P</th>
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<tr>
<td>1</td>
<td>19</td>
<td>18</td>
<td>16</td>
<td>20</td>
<td>0</td>
<td>1750</td>
<td>0 55</td>
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have at their hands a method of measuring the learning needs of providers of care, providing instruction to learners, and determining the outcomes of educational programmes aimed at increasing knowledge of palliative care practice.

The process used in the development of the PCQN was participatory, consultative and comprehensive in nature and involved those most knowledgeable about palliative care nursing at all phases of development. Such a process may have utility for other settings and content areas by increasing the likelihood that knowledge assessment tools reflect the content area to be tested. Prominent features of this process are (a) the convening of an advisory committee to provide direction at all phases of development, (b) a wide process of consultation beyond the advisory group, (c) the development of a conceptual framework, (d) determination of format, (e) the development of a pool of items, (f) pre-testing of items, (g) piloting of the items, and (h) further testing of items.

The palliative care quiz for nursing is a 20-item true, false and don't know test of knowledge that takes approximately 20 minutes to administer and is quickly and easily scored. It was developed with several purposes in mind. First, it was intended to measure knowledge of palliative care nursing. Respondents varied in their responses to the PCQN according to level of education and experience. Those with higher levels of education and more years of experience achieved the highest scores in response to the PCQN. In addition, those with specialized training in palliative care achieved higher scores than those without such training. These findings provide evidence of the validity of the PCQN as a measure of knowledge.

Secondly, the PCQN was developed to stimulate discussion about palliative care nursing. Though admittedly subjective, assessment of the quiz for stimulating group discussion, at least among nurses and students of nursing, was positive. The PCQN was administered to generic students, post-RN students, registered nurses and registered practical nurses. Participants responded favourably to taking the quiz and were acutely interested in the correct answers. Although not quantified, their verbatim responses regarding the usefulness of the quiz suggest that the PCQN is thought-provoking and eye-opening. Further testing, however, is required to determine whether use of the quiz prior to a period of instruction would result in greater willingness to contribute to discussion and a general heightened receptivity to the instruction that follows.

Thirdly, the PCQN was intended to identify misconceptions about palliative care nursing. Although there were differences among groups with respect to misconceptions, there were also notable similarities. One such example lies in the similarity among groups with respect to the misconception that palliative care is not compatible with the provision of aggressive treatment. This was the second most frequent misconception among registered nurses and post-RN students, the third among generic students and the fifth among registered practical nurses. The quiz can, therefore, serve as an educational needs assessment tool.
by providing data about the level of knowledge already possessed by potential participants and allow educators to focus instruction on the issues of greatest need.

This finding also suggests that educational programmes in palliative care should be targeted for specific audiences with specific learning needs. Nevertheless, given the similarities in misconceptions across groups, there is a need for all levels of nurses to upgrade their level of knowledge of the concepts of palliative care and their application in clinical practice. The PCQN can be useful in identifying and correcting their misconceptions about palliative care nursing.

Finally, the quiz can also be used as a tool for instruction itself or as the primary focus for a period of instruction without any pre- or post-testing. In this way, the PCQN can be used to encourage students to be active participants in their learning by stimulating discussion of issues related to palliative care nursing.

Limitations

Despite its potential use, the PCQN has several limitations. It is not designed to provide a comprehensive assessment of knowledge of palliative care or palliative care nursing. Brevity and simplicity of administration and scoring makes the quiz useful for many educators but limits its value with respect to the comprehensive assessment of higher levels of knowledge associated with expertise in palliative care practice. Therefore, it is not appropriate for the assessment of knowledge levels of expert practitioners. Rather, the quiz focuses on the basic type of information required for entry to practice that would normally be found in introductory courses, workshops, and programmes.

The predictive validity of the quiz has not been assessed and therefore it is not known to what degree knowledge as measured by the PCQN is related to actual behaviour. Further research should examine this issue as well as the issue of whether the quiz is useful for assessing change in knowledge resulting from instruction. In addition, the sample with whom the quiz was developed was not fully representative of the broad range of nursing personnel with whom the quiz might eventually be used. Pilot testing with a more representative sample of registered nurses, registered practical nurses, and other categories of nursing personnel, would be wise to assure that the reading levels and content associated with the PCQN are appropriate.

Although the psychometric properties of the PCQN could be improved by eliminating some of the items, especially those with an item difficulty of over 0.80 for registered nurses, a decision was made to retain these items in order to add to the edumetric properties of the quiz. The quiz is designed to yield measurements that are directly interpretable in terms of specific performance standards (Glaser & Mitko 1971). The specified performance standard in this case is the ability to answer all 20 items correctly. Given this standard, it is not crucial that all items have a high discriminatory power or high item-total correlation. An individual who can answer the item correctly has more information than an individual who cannot.

Other edumetric properties include the ability to identify misconceptions and to stimulate discussion about palliative care nursing. These properties would not have been improved by attending too stringently to the criteria of item difficulty and item discrimination. Such criteria, while central to the psychometric properties of a test, are not necessarily central to its edumetric properties. Thus, by retaining items that have not attained optimal psychometric properties for one group of respondents, but that are conceptually important, it is expected that the edumetric properties of the quiz are enhanced.

Conclusion

In conclusion, the palliative care quiz for nursing appears to be a promising tool with utility for assessing knowledge, stimulating discussion and identifying misconceptions. The quiz can be used for assessing learning needs and may be useful as a teaching tool and for contributing to the evaluation of educational programmes related to the provision of palliative care. The development of the palliative care quiz for nursing helps to fill the gap in instrumentation available for teaching and research initiatives aimed at improving the quality of education received by health care providers and ultimately the quality of palliative care received by those who are dying and their families.

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APPENDIX THE PALLIATIVE CARE QUIZ FOR NURSING

1 Palliative care is only appropriate in situations where there is evidence of a downhill trajectory or deterioration False

According to the palliative care services guidelines published by Health and Welfare Canada (1969), individuals receiving aggressive treatment, such as those with chronic disease, AIDS and certain types of cancer where there is no hope for cure, may receive the supportive aspect of palliative care, beginning at the time of diagnosis. Such care may lessen as treatment is successful and a reasonably stable quality of life is attained. Doyle et al (1993) further note that the goal of palliative care is achievement of the best quality of life for patients and their families. Many aspects of palliative care are also applicable earlier in the course of the illness in conjunction with anti-cancer treatment.

2 Morphine is the standard used to compare the analgesic effect of other opioids True

The equianalgesic chart uses morphine as the standard against which comparisons are made among opioid analgesics with respect to dosage and duration of action (Crane et al 1990). Haviley et al (1992) advise nurses to refer to the equianalgesic chart when changing from oral route to continuous intravenous infusion for narcotics.

3 The extent of the disease determines the method of pain treatment False

According to Coyle et al (1990), the severity of the pain determines the dosage of the drug and route of administration is determined by the patient’s ability to swallow, presence of bowel obstruction, inability to handle oral opioids or grossly inadequate analgesia that is achieved by the oral route.

4 Adjuvant therapies are important in managing pain True

The Oncology Nursing Society (1990) emphasizes the importance of using adjuvant analgesics (antidepressants, antiemetics) and non-drug adjuvant measures such as patient education and relaxation in the management and control of pain. In addition, non-pharmacologic techniques are likely to increase the efficacy of pain management in combination with one another and with analgesics (Degner & Berkwell 1991).

5 It is crucial for family members to remain at the bedside until death occurs False

One cannot generalize about the necessity of remaining at the bedside. Keeping a vigil can become exhausting. Family members may need permission not to be there (Kaye 1990). It may be helpful to suggest a schedule of visiting so that some keep watch while others rest. It is difficult to judge how long a semi-conscious patient may live

6 During the last days of life, drowsiness associated with electrolyte imbalance may decrease the need for sedation True

According to Fansinger & Bruera (1991), decreased fluids and electrolyte imbalance act as a natural anaesthetic for the central nervous system resulting in a decreased level of consciousness, decreased suffering and consequently a decreased need for sedation.

7 Drug addiction is a major problem when morphine is used on a long-term basis for the management of pain False

Patients with chronic pain do not and cannot get addicted to morphine (Kaye 1990). This author reports that when pain is abolished, even with high doses of morphine used for several months, the use of morphine can be stopped with no withdrawal effects. In addition, patients who are terminally ill can be reassured that when morphine is correctly used, addiction will not happen. These views are substantiated by Twycross & Lack (1983), McCaffery et al (1990) and Haviley et al (1992).

8 Individuals who are taking opioids should also follow a bowel regime True

Crane et al (1990) recommend that all patients receiving opioid analgesics should begin a bowel regime. Reasons include the...
beyond action of narcotics to receptors in the gastrointestinal tract which causes peristalsis and secretions to decrease (Havliley et al 1992). In the Canadian palliative care curriculum, MacDonald (1991) states that 'the hand that writes the narcotic order should, unless there is a contra-indication, write a laxative order'.

9 The provision of palliative care requires emotional detachment. False

There is substantial evidence that nurses, patients and families consider good quality care to include both technical and expressive expertise (Bowers 1987, 1988). Nurses value highly spending time with patients, listening to them, and talking with them. The provision of support, counsel and encouragement is an integral and valued component of nursing and one that cannot be carried out effectively in a context of emotional detachment.

10 During the terminal stages of an illness, drugs that can cause respiratory depression are appropriate for the treatment of severe dyspnoea. True

Morphine reduces the inappropriate and excessive respiratory drive which is a feature of dyspnoea (Kaye 1990). According to MacDonald (1991), dyspnoea should be treated with opiates in a similar fashion to the way opiates are used in pain control. Twycross & Lack (1983) also report that oral morphine sulphate is a safe analgesic for chronic cancer pain, even in those with pre-existing respiratory disease.

11 Men generally reconcile their grief more quickly than women. False

The severity of grief depends on the degree of disruption. Although it may seem that women are more vulnerable than men, because their lives are conventionally more bound up in personal relationships, this characteristic of relationship embeddedness may serve to their advantage during a period of grief. Grief resolution is a gender neutral process which includes the need to re-establish continuity and to work out an interpretation of oneself and the world which preserves the thread of meaning (Marris 1974). It is also reported that factors other than gender, such as the nature of the relationship, age, health and coping style, are important in determining outcomes following bereavement (McHorney & Mor 1988).

12 The philosophy of palliative care is compatible with that of aggressive treatment. True

The provision of palliative care is not necessarily incompatible with the aggressive treatment. Given that the goal of palliative care is the best possible quality of life for the patient and the family (MacDonald 1991), the control of pain and other symptoms and the management of psychological, social and spiritual problems are paramount (Doyle et al 1993). Pain and symptom control may require measures that go beyond the more supportive measures usually associated with palliative care. For example, aspects of palliative care can be initiated early in the course of the illness in conjunction with anti-cancer treatments.

13 The use of placebos is appropriate in the treatment of some types of pain. False

There is substantial support in the literature regarding the inappropriateness of using placebos in the treatment of pain (McCaffery & Beebe 1990, Twycross & Lack 1983).

14 In high doses codeine causes more nausea and vomiting than morphine. True

McCaffery & Beebe (1990) note that codeine is relatively more toxic in high doses than morphine, causing more nausea and vomiting and considerable constipation.

15 Suffering and physical pain are synonymous. False

It is important to keep in mind that suffering is linked to the impact of all symptoms being experienced, not just the presence of pain and other dimensions of living with an illness, whether the illness is terminal or not (Twycross & Lack 1983).

16 Demerol is not an effective analgesic for the control of chronic pain. False

Cran et al (1990) caution never to use demerol to control chronic pain because of its short duration of action and build-up of toxic metabolite normeperidine. Furthermore, it is too irritating to use in continuous subcutaneous infusion (Kaye 1990). In addition, the Oncology Nursing Society (1990) notes that normeperidine's metabolite, normeperidine, is associated with a high risk of renal toxicity, especially if used for more than 3 days.

17 The accumulation of losses renders burnout inevitable for those who work in palliative care. False

Numerous studies document that it is the diffusion, differentiation, and tensions within nursing that contribute to problems of burnout and high turnover (Grove 1991). Rather than the accumulation of losses associated with providing care to those who are dying, the problems of burnout in palliative care are more realistically situated within the context of a work-related environment that increasingly embraces an ideology of productivity, efficiency and cost-effectiveness (Baines et al 1991). Such an ideology is not easily married with an ideal and ethical care that permeates the professional lives of nurses.

18 Manifestations of chronic pain are different from those of acute pain. True

Acute and chronic pain are distinct entities (Twycross & Lack 1983). Acute pain is accompanied by a 'flight or fight' response. In chronic pain, vegetative features tend to predominate. Chronic pain has the greatest potential for impact on the psychological well-being of the patient (Dicks 1990).

19 The loss of a distant or contentious relationship is easier to resolve than the loss of one that is close or intimate. False

It is difficult to predict the outcomes of loss as the working out of bereavement, represents, as a personal crisis, a general principle of adaptation to life. However, the severity of grief resulting from the loss of a relationship can at least crudely be predicted by the emphasis which society places upon different relationships. According to Marris (1974), the death of a husband or wife, child, parent, brother or sister or friend roughly represents a declining order in the severity of bereavement. McHorney & Mor (1988) reported that consanguinity, age, poor prior physical and mental health, family tension, and survivor dissatisfaction with caretaking abilities during the terminal phase were the most important determinants of poor outcomes following bereavement.

20 Pain threshold is lowered by fatigue or anxiety. True

There are cautions in the literature regarding attending to factors that modulate pain sensitivity such as anxiety and fatigue (Twycross & Lack 1983, Kaye 1990).

Palliative care quiz for nursing: scientific references

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