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The Canadian Journal of Nursing Research
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IN HONOUR AND MEMORY OF DR. RAE CHITTICK

Dr. Rae Chittick was an Emeritus Professor in the School of Nursing, at McGill University, until her recent death on January 25th, 1992. She had been the Director of the School from 1953 until 1963, when she retired from McGill. Many of you had the privilege of knowing her personally, and many more of you knew of her significant national and international contributions to the development of Nursing as a profession and a discipline. I would like to reflect briefly on some of her contributions; however, this editorial will by no means serve as the "last word" on Dr. Chittick. I encourage some of our colleagues, whose expertise lies in historical research, to examine the breadth and depth of her many contributions; indeed, they could constitute an entire volume.

Dr. Chittick was born in May 1898, and completed her elementary and high school education in Calgary, Alberta. In 1916, she graduated from the Calgary Normal School, with a First-Class Teacher's Certificate. In 1922, she received her Nursing Diploma from the Johns Hopkins' Hospital School of Nursing. She went on to receive a Bachelor of Science in Public Health Nursing degree from Columbia University in 1931, a Master's Degree, majoring in Education from Stanford University in 1942, and a Master of Public Health from Harvard University in 1951. She was awarded an Honourary Doctor of Laws from the University of Alberta in 1954, the Order of Canada (C.M.) in 1975, and an Honourary Doctor of Science from McGill University in 1976. In 1977, she received the Award of Merit of the Canadian Nurses Association.

Her work experience took her to many parts of Canada and abroad. She worked as a VON nurse in Sannich, B.C., a public health nurse in Saskatchewan, an instructor in health education at the Calgary Normal School, an Assistant Professor and, later, Associate Professor of Education at the University of Alberta in Calgary. From there, she came to Montreal to serve as Director, of what was then called the School for Graduate Nurses, at McGill University, where she became the first Flora Madeline Shaw Professor. Following her retirement, she was a consultant in nursing education for WHO, and established a School of Nursing at the University of Ghana. She then went on to act as consultant with PAHO, and established a School of Nursing at the University of West Indies. Up until 1969, she consulted for both PAHO and WHO, in Guatemala and in Australia. She held a number of senior offices in professional organizations in Canada: she was President of the Alberta Association of Registered Nurses from 1938-1940, President of

the Canadian Nurses Association from 1946-1948, and Second Vice-President of the Association of Nurses of the Province of Quebec from 1957-1959.

Dr. Chittick was a true educator and thinker. She made major contributions to the development of curricula for schools of nursing, and was particularly concerned that Nursing curricula include an adequate number of liberal arts courses, in order to provide a breadth of knowledge. She was part of the Planning Committee to devise a study of Schools of Nursing in Canada, which was later conducted by Dr. Helen Mussalem. In describing the Planning Committee Meeting, Dr. Chittick observed: "With the list of all the schools in Canada, and a less than firm knowledge of sampling techniques, we set to work. It was then I realized how many different kinds of schools we had - big schools, little schools, catholic schools, protestant schools, two-in-one schools, psychiatric schools, university schools, etc., plus the added problem of considering geographic distribution." In 1992, we may know a little more about sampling techniques but, surely, we have as many types of schools today. "Plus ça change, plus ça reste même."

Dr. Chittick also appears to have had a generous sense of humour, which, undoubtedly, helped place issues in a healthy perspective. In her acceptance speech for the Award of Merit from CNA, in 1977, she refers to a "heated discussion" at what I will assume to be the Board Meeting of CNA. During the course of the discussion, someone passed her a note, asking, "How do we get out of this mess?" She glanced at Kathleen Russell, who was their semaphore and who was holding her head with pain. She scribbled down a suggestion: "Set up a committee." She then goes on to say "In the land of Royal Commissions, there seemed no other way out. Looking back now, I am aware, indeed, of Piet Heyn's saying 'Man is that animal who draws the lines he himself stumbles over'." Dr. Chittick correctly observed that we, as a profession, have done a lot of stumbling.

In that same speech, her own humility was evident. She said, "I am proud to receive this outstanding honour, but I accept the distinction with sincere humility, for I recognize that my contribution is a very small part, indeed, of the many contributions that have advanced the Nursing Profession in Canada. Every human achievement is submerged in the general flood of things, and perhaps that is the way it should be, for it is by the collected works of all that man advances.

The collected works of Rae Chittick truly represent the advancement of Nursing. She has left us with a legacy of scholarship.

Mary Ellen Jeans

LA MÉMOIRE DE RAE CHITTICK

Mme Chittick était professeur émérite à l'École des sciences infirmières de l'Université McGill quand elle s'est éteinte le 25 janvier dernier. Elle avait présidé aux destinées de l'École de 1953 jusqu'à sa retraite en 1963. Vous êtes nombreux à l'avoir connue personnellement et vous êtes encore bien plus nombreux à apprécier ses réalisations à l'échelle nationale et internationale ainsi que ses contributions au développement des sciences infirmières et à l'essor de notre profession. Sans prétendre brosser un tableau complet d'une si riche carrière, j'aimerais évoquer brièvement quelques-unes de ses importantes contributions. J'aimerais par la même occasion inviter mes collègues spécialisés en recherche historique à étudier l'étendue et la profondeur de son oeuvre, ce qui pourrait donner lieu à la rédaction d'un volume complet.

Mme Chittick est née en mai 1898 et a fait ses études primaires et secondaires à Calgary (Alberta). En 1916, elle obtient son diplôme d'enseignante avec mention à l'École normale de Calgary. En 1922, elle reçoit son diplôme d'infirmière à l'École des sciences infirmières du Johns Hopkins Hospital. Poursuivant ses études en santé publique, elle obtiendra successivement un baccalauréat ès sciences à l'Université Columbia (1931), une maîtrise en sciences de l'éducation à l'Université Stanford (1942) et enfin une maîtrise en santé publique à Harvard (1951). En 1954, l'université d'Alberta lui confère un doctorat en droit honoris causa. Elle est décorée de l'Ordre du Canada (médaille du courage) en 1975 et en 1976, l'Université McGill l'honore à son tour en lui décernant un doctorat ès sciences honoris causa. L'Association des infirmières et infirmiers du Canada lui décerne son prix d'excellence en 1977.

Dans le cadre de ses activités professionnelles, Mme Chittick parcourt le Canada et de nombreux pays. Elle sera tour à tour infirmière de l'Ordre de Victoria du Canada à Sannich en Colombie-Britannique, infirmière hygiéniste en Saskatchewan et professeur d'éducation sanitaire à l'École normale de Calgary, professeur adjoint puis professeur agrégé de sciences de l'éducation à l'Université d'Alberta à Calgary avant de venir s'établir à Montréal où elle occupera le poste de directrice de ce qu'on appelait alors l'École supérieure d'infirmières de l'Université McGill. Elle devient alors la première titulaire de la chaire Madeline Shaw de sciences infirmières à McGill. Après sa retraite, elle sera consultante en enseignement infirmier pour l'OMS, participera à la création de l'école de sciences infirmières de l'Université du Ghana, sera consultante auprès de l'Organisation pan-

américaine de la santé et fondera l'école des sciences infirmières de la University of the West Indies. Jusqu'en 1969, elle poursuivra ses travaux de consultation auprès de l'Organisation panaméricaine de la santé et de l'OMS, notamment au Guatemala et en Australie.

Mme Chittick a fait partie du conseil d'administration de différentes associations professionnelles du Canada. C'est ainsi qu'elle a été présidente de l'Alberta Association of Registered Nurses de 1938 à 1940, présidente de l'Association des infirmières et infirmiers du Canada de 1946 à 1948 et seconde vice-présidente de l'Ordre des infirmières et infirmiers de la province de Québec de 1957 à 1959.

Pédagogue au vrai sens du terme, Mme Chittick a contribué à la conception des programmes de sciences infirmières. Elle a tenu notamment à ce que l'enseignement infirmier comporte un nombre suffisant de cours de culture générale pour donner une assise solide à la somme de connaissances des étudiantes. Elle a participé aux travaux du comité de planification chargé d'une étude sur les écoles de sciences infirmières au Canada, laquelle a été réalisée par Mme Helen Mussalem. Évoquant une réunion du comité de planification, Mme Chittick a tenu ces propos: "Armées de la liste de toutes les écoles du Canada et de connaissances plutôt sommaires sur les techniques d'échantillonnage, nous nous sommes attelées à la tâche. C'est alors que je me suis rendu compte de la grande diversité des écoles existant au Canada (petites, grandes, catholiques, protestantes, mixtes, psychiatriques, universitaires, etc.) sans parler de la complexité inhérente à leur étalement géographique". En 1992, nous maîtrisons peut-être un peu mieux les techniques d'échantillonnage, mais nos écoles sont tout aussi diverses: "Plus ça change, plus c'est la même chose".

Mme Chittick semblait par ailleurs douée d'un grand sens de l'humour qui l'a incontestablement aidé à mettre les choses en perspective. Dans son discours d'acceptation du prix d'excellence de l'AIIC en 1977, elle fait état d'une discussion animée qui a eu lieu si je ne m'abuse lors d'une réunion du conseil de l'AIIC. En réponse à un billet qu'on lui a transmis et qui dit "Comment nous sortir de cette impasse?", elle jette un coup d'oeil du côté de Kathleen Russell chargée de relayer les messages et qui a l'air bien songeuse et lui gribouille en guise de conseil: "Il faut créer un comité". Rae Chittick ajoutera qu'au "pays des commissions royales d'enquête, il ne semble pas y avoir d'autre solution". Avec le recul, je comprends mieux les mots de Piet Heyn: "L'homme est cet animal qui dresse lui-même les obstacles sur lesquels il trébuchera". Comme l'a si justement fait remarquer Chittick, l'histoire de la profession infirmière est jalonnée d'embûches.

Ce même discours fait également ressortir son humilité: "J'accepte cet honneur" déclare-t-elle "avec sincère humilité, car je sais que mon apport aux

sciences infirmières ne constitue vraiment qu'une toute petite part des nombreuses contributions qui ont permis à la profession de prendre son essor au Canada. Toute réalisation humaine finit par se fondre dans la masse des événements, et sans doute est-il préférable qu'il en soit ainsi puisque c'est grâce à l'ensemble des actions de chacun que l'humanité progresse."

L'oeuvre de Rae Chittick reflète bien l'essor de la profession infirmière. Elle nous a légué un patrimoine d'érudition.

Mary Ellen Jeans

BOOK REVIEW

Resources for Nursing Research: An annotated bibliography, by Cynthia G.L. Clamp, with contributions from Marie P. Ballard and Stephen Cough. Library Association Publishing: London, 1991, 366pp: ISBN 1-85604-028-3.

This is the first edition of this resource book for nursing research methodology. The format consists of three major parts entitled "Sources of Literature" (three chapters), "Methods of Inquiry" (seven chapters) and, "Background to Research in Nursing" (15 chapters). A table of contents, forward by Lisabeth Hockey, introduction, section on how to use the book, extensive reference list, five appendices and a subject and author index are included.

Each chapter is divided into several sections - each presenting a single topic. The topic is briefly defined, followed by an annotated bibliography. There are 1,300 annotations throughout the book, and most of the literature is post 1980. Many sections also include a list of suggested textbook readings.

The number of topics covered is impressive, ranging from various mechanisms for researching the literature, through the various steps of the research process. The section on background to nursing research covers the historical development from an international perspective, as well as a variety of other topics.

I think this book will be of most value to educators in the nursing research area. The authors have attempted to appeal to an international, English-speaking audience. I found the cross-referencing system a bit cumbersome to follow initially, and part three somewhat disjointed. However, as an educator in nursing research, I found myself putting asterisks beside various articles as I read through the text. Overall, I would recommend this book to nursing research educators as a useful resource.

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THE EFFECT OF ROUTINE VS. P.R.N. POST-OPERATIVE ANALGESIA ON PULMONARY COMPLICATIONS: A MULTICENTER TRIAL

W.H. Barnes, M.M. Pennock, G.B. Browne, W. Taylor, D. Sackett, R. Weir, D. McLoughlin and D. Heritz

Significant pulmonary complications have been estimated to occur in 20 percent to 70 percent of patients following abdominal surgery (Lattimer, Dickman, Day, Gunn Schmidt, 1971). Atelectasis is the most frequent pulmonary complication occurring during the first 48 hours (Bartlett, Brennan, Gazzaniga & Hanson, 1973; Rigg, 1981; Wightman, 1968). The belief that the pathogenesis of atelectasis and pneumonia are the same (Coryllos and Birnbaum, 1929) and that unresolved atelectasis leads to lung infection (Guis, 1966; Henderson, 1929) suggests that any degree of atelectasis renders the patient at risk to develop further pulmonary pathology and an extended hospital stay. Herein lies the importance of the prevention of atelectasis in post-operative patients.

A number of demographic, disease, life-style and treatment variables have been shown to influence the rate of development of atelectasis (Rigg, 1981). Any influence that improves underventilation in dependent lung regions is shown to increase this tendency. Hence, when the discomfort of an abdominal or thoracic incision inhibits inspiration, the abdominal pain induces voluntary and reflex muscle spasm, affecting primarily the abdominal muscles and the diaphragm. This leads to more rapid but shallow respirations, poorly expanding the lower lobes of the lungs (Pflug & Bonica, 1977). Secretions accumulate and when the entering gas does not exceed the closing volume of the alveoli, the alveoli begin to collapse. Paradoxically, excessive analgesic control of abdominal pain may also lead to hypoventilation and predispose the patient to pulmonary complications (Rigg, Vedig & Isley, 1981). A variety of medication regimes and routes of administration of medication have been studied in the attempt to resolve this dilemma (Egbert

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& Bendixen, 1964; Jayr, et al., 1988; Nayman, 1979; Rutter, Murphy & Dudley, 1980; Rybro, 1982).

The most common form of pain control is p.r.n. intramuscular injections, whereby patients receive medication at their request, within the limits of the existing protocol, commonly every three to four hours as necessary. It is possible, however, that by the time a patient is in enough pain to ask for medication, the adaptive response to pain, such as muscle splinting and anxiety which create low lung volumes and impaired clearance of mucous, has already begun. These sequelae could be averted by preventing the pain from reaching that intensity through the use of a regular schedule of pain medication in the first 48 hours following surgery (Austen, Stupelton & Mather, 1980; Graves et al., 1983). The efficacy of pain control rather than pain relief requires further investigation.

This interpretation is consistent with the results of studies found in the literature (Egbert & Bendixen, 1984; Nayman, 1979), which noted fewer pulmonary complications in patients with adequate pain control from continuous intravenous infusion of morphine. It is possible that a reduction in post-operative pulmonary complications could be obtained with a regular, timed intramuscular medication regime. In so far as intramuscular injection, rather than intravenous infusion, is the conventional route for the administration of pain medication after surgery, this is an important issue from the perspective of treatment.

The primary purpose of this study was to test the hypothesis that regularly timed pain medication, rather than p.r.n. schedules, would reduce the incidence of post-operative complications when intramuscular injection was the route of choice. There is some evidence in the literature that obesity (Naimark & Cherniak, 1960; Rawal et al., 1984; Thoren, 1954) and the habit of smoking (Finley & Ladman, 1972; Morton, 1944; Pearce & Jones, 1984; Wightman, 1968) predispose patients to developing pulmonary complications following surgery; as such, control of these variables, as well as the effect of attention, was required.

In summary, the existing literature, while limited by small samples or weak designs, nevertheless suggests that inadequate ventilation may be an important causal factor in the development of atelectasis. Patients who are obese or who smoke may be at greater risk. Decreased ventilation in post-operative patients may be attributable to a number of inhibiting effects. While abdominal pain and its treatment have been implicated as mediating factors in the development of pulmonary complication (Pflug, 1974; Spence & Smith, 1971) some more recent studies have been unable to demonstrate the superiority of any analgesic method in this regard (Jayr, et al. 1988; Raval, et al. 1984). Consequently, the essential argument involves two opposing per-

spectives relative to post-operative pain control in the prevention of pulmonary complications. These perspectives, are either that 1) scheduled analgesics are better than p.r.n. because of improved pain control and hence reduced complications; or 2) that p.r.n. analgesics are superior because scheduled analgesics improve pain control at the cost of increased complications. This study will attempt to address this controversy.

Methods

Three hundred and forty elective abdominal surgical patients, 16 to 70 years of age, from the practices of six surgeons at three general hospitals, were initially identified as candidates for study. Thirty-one of these patients were excluded because of physical impairment that could affect pulmonary outcomes or because of language difficulty; six were missed and twenty-five refused to give consent for chest x-ray. The remaining 278 consenting and eligible patients were stratified according to surgeon, smoking habit and obesity. Patients in each strata were randomly allocated to one of three study groups and, for the first 48 hours post-operation, were to receive either analgesia every three hours; or p.r.n. analgesia; or p.r.n. analgesia plus vital signs monitoring every three hours. The third group was an attention placebo group to control for the regular attention that accompanied regularly scheduled analgesia administration. The study group allocation was done using a blocked randomization procedure established by a person external to the investigating group.

The type of intramuscular analgesia used in all three study groups was predominantly Demerol, although occasionally Morphine 10 mg. was used. The dosage of Demerol varied between 50-100 mg. in all three study groups, largely as a function of the size and age of the patient. Thus, the principle difference in study groups was one of a regular versus p.r.n. schedule of administering the analgesia.

After subjects were allocated to study groups, thirty subjects received co-interventions that could affect outcome or did not have a post-operative chest x-ray. A further sixty-eight subjects were not maintained on the appropriate study regimen. Because of these events, the following three separate studies emerged.

The "management trial" (N=278) assessed the effects of regular or p.r.n. pain medication regimes on subjects allocated to the three study groups. In the real clinical world, these subjects might also have received other interventions which could have affected outcome. The "effectiveness trial" (N=248) assessed the effects of regular or p.r.n. pain medication regimes on subjects who did not receive additional interventions that could have affected outcome. The "efficacy trial" (N=180) assessed the effects of regular or

p.r.n. pain medication regimes and also attention on subjects who were maintained on the appropriate regimen.

The comparability of the three study groups was reassessed following the exclusion of the thirty patients who had received co-intervention, and again following the exclusion of the sixty-eight patients who had not been maintained on the appropriate study regimen. In the "effectiveness trial" (N=248), the three analgesia study groups were comparable in all sociodemographic, biological and clinical variables, except for the frequency of heavy smokers and nasogastric tubes. The group with regular analgesia orders had more heavy smokers than the group with p.r.n. analgesia orders (2-tailed Fisher's exact p=.02), and more than the group with p.r.n. analgesia/regular vital signs (2-tailed Fisher's exact p=.06). The group with p.r.n. analgesia/regular vital signs monitoring regimen had the smallest proportion of subjects with nasogastric tubes with the major difference between this group and the p.r.n. group (1-tailed Fisher's exact p=.05).

When the three study groups were assessed following the exclusion of subjects who were not adequately maintained on the appropriate regimen ("efficacy trial"), they were found to be comparable from a statistical perspective. However, the proportion of heavy smokers was greater in the regular analgesia group (10.6%), compared with 2.8% in the p.r.n. analgesia group and 4.6% in the p.r.n. analgesia/regular vital signs "attention" group. Further, the proportion of subjects under the age of 60 years was greatest in the p.r.n./regular vital signs group (27.9%), followed by the regular analgesia groups (16.7%) and the p.r.n. analgesia group (14.4%). Also, secondary surgical procedures were reported for a greater proportion of the p.r.n./regular vital signs groups (34.9%) than for the regular analgesia group (33.7%) or the p.r.n. group (18.3%). These differences between study groups may be relevant in terms of post-operative pulmonary outcomes or length of stay.

The principle outcome measure or "gold standard" for pulmonary pathology was evidence of lung pathology on a chest x-ray taken on the fourth day after surgery, with the day of surgery counted as day one. For study purposes, one research radiologist interpreted all available chest x-rays and was masked to the previous clinical and radiological interpretations, the nature of the study and had no access to the patient's clinical data. Inter- and intra-rater agreement substudies were done and Fleiss generalized kappa's ranged between .61 and .83, respectively. A further measure of pulmonary status was created by having the research radiologist make a judgement on the severity of lung pathology from pre- to post-operative x-ray. A clinically important progression in lung pathology was defined as an advance of two or more categories on a five-category scale of severity. The highest temperature recorded each day, for the first four days after surgery, was obtained as a

secondary measure of pulmonary pathology. However, temperature was found to be of little diagnostic value when the sensitivity, specificity, positive and negative predictive values of this test were calculated (Roberts, Barnes, Pennock & Browne, 1988).

Results

As indicated in Figure 1, there were no statistically significant or clinically important differences in the presence of lung pathology on the fourth day after surgery among subjects receiving three regimes of analgesia within the Management Trial (X^2_2=2.43,NS); or the Effectiveness Trial (X^2_2=3.12,NS); or the Efficacy Trial (X^2_2=3.12,NS).

In addition, across the three trials, there were no statistically significant differences in a clinically important progression of lung pathology by the fourth day of surgery among the analgesia treatment groups (Management: X^2_2=3.66,NS; Effectiveness: X^2_2=3.42,NS; Efficacy: X^2_2=3.267,NS). The results are illustrated in Figure 2.

The direction of the differences between the analgesia groups, however, remained the same across all three trials. Surprisingly, the lowest rate of post-operative lung pathology and clinically meaningful progression in lung pathology was found in the p.r.n./regular vital signs group followed by the regular analgesia group and then by the p.r.n. analgesia group which had the highest rate of lung pathology.

There was a statistically significant difference among the three randomized analgesia groups in the mean number of doses of analgesia given over the first 48 hours (ANOVA $F_{2.245}$=47.9, $p<.001$). The regular analgesia group received more doses than either of the other two groups (Scheffe $p<.05$). The expected difference between the p.r.n. analgesia group and the p.r.n./regular vital signs group was not found. The results are shown in Table 1.

In an attempt to determine the factors that were associated with a pre- to post-operative clinically important increase in lung pathology a discriminant function analysis was conducted on those subjects with a lung change score. Standardized canonical discriminant function co-efficients for the variables, listed in order of their ability to distinguish between subjects with and without a clinically meaningful progression in lung pathology after surgery, included age (.7359) and gender (.5996). Older males were the two factors that correctly classified 65.18% of the 163 subjects who had been maintained on the appropriate study regimen. Increased age was the main factor.

FIGURE 1

The Effect of Analgesia Regimes on Lung Pathology in the Management, Effectiveness and Efficacy Trials

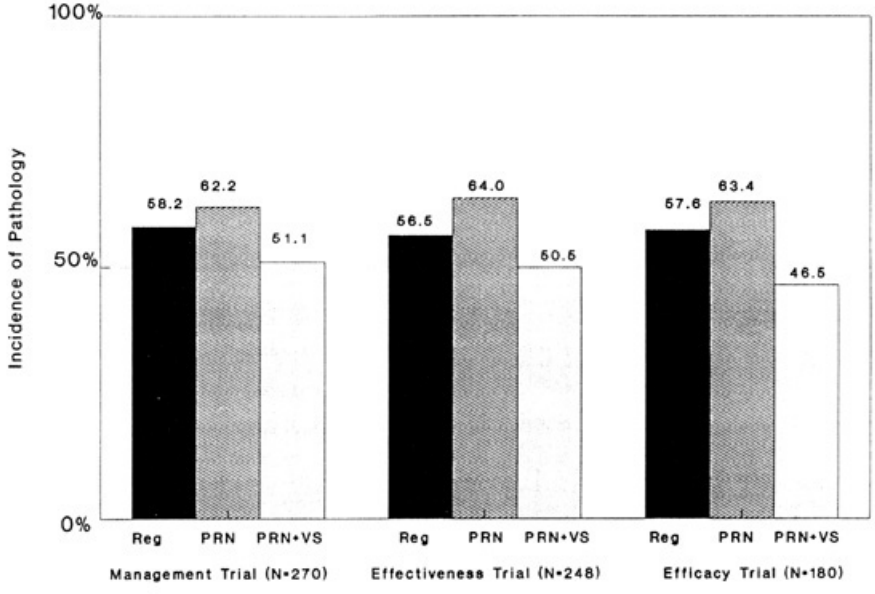

FIGURE 2

The Effect of Analgesia Regimes on the Incidence of a Clinically Important Progression of Lung Pathology in the Management, Effectiveness, and Efficacy Trials

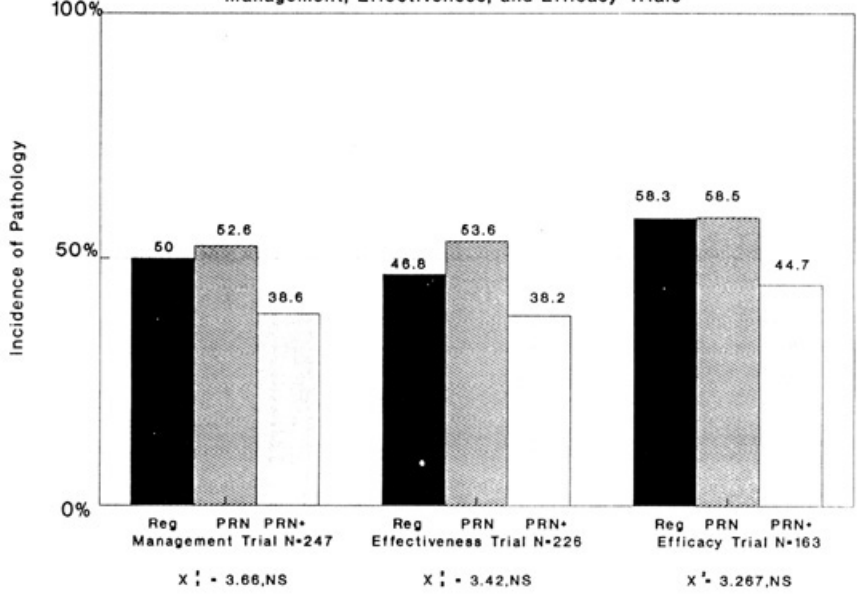

Table 1

Comparison of Mean Number of Analgesic Doses Administered in First 48 Post Operative Hours Under Three Schedules of Prescription

	Regular Analgesia Group	PRN Analgesia Group	PRN/Regular Vs Analgesia Group
Number of Doses of Demerol equivalents	x (SD)	x (SD)	x (SD)
	13.86 (3.2)	9.93 (2.8)	9.77 (3.12)

*** ANOVA, $F_{2,245} = 47.9, p < 001$**

The relative risk of developing a clinically important progression of lung pathology following surgery was assessed with the 163 subjects who had been maintained on the appropriate analgesia regimen. The Woolfe Relative Risk Analysis was conducted, with the subjects separated into five age groups. Comparisons were done with pairs of analgesia study groups, (i.e., regular versus p.r.n.; p.r.n. vs vital signs; regular vs vital signs). The results are shown in Tables 2, 3 and 4. The overall risk of developing a clinically important progression of lung pathology was essentially the same for those patients who received p.r.n. medications as compared to those who received the regular pain medication regimen (1:14). The main differences were noticed among 30-49-year-old subjects where the risk of developing lung pathology was 1.61 to 1.75 times greater if these subjects were in the p.r.n. group versus the regularly scheduled group (Table 2).

When subjects receiving p.r.n. medication were compared to those receiving regular vital signs and p.r.n. medication, the overall risk of developing a meaningful progression in lung pathology was *twice as great in the p.r.n. medication group* as in the regular vital signs/p.r.n. medication group. The main differences were in subjects over 50 years of age, particularly those subjects aged 50 to 59 years where the risk was 4.5 times greater if the subject was a member of the p.r.n. medication group versus the vital signs/p.r.n. group (Table 3).

The risk of developing a clinically important progression in lung pathology post-surgery was 6.67 times greater again for those subjects aged 50-59 years who received pain medication on a regular 3-to 4-hour regimen, versus p.r.n. medication with regular vital signs monitoring. For subjects aged 30-49 years, the risk was slightly less for the regular pain medication group but, overall, the risk was twice as great in that group versus the regular vital signs group (Table 4).

In summary, the risk of developing a clinically important progression in lung pathology after surgery was lowest overall for subjects who had received scheduled vital signs monitoring along with a p.r.n. medication regimen, as compared to either the scheduled analgesia or p.r.n. analgesia regimen. This difference in risk was pronounced in subjects over 50 years of age and in those less than 30 years of age when they received a regularly scheduled analgesic rather than scheduled vital signs with p.r.n. medications. There was some benefit in receiving regular pain medication if subjects were between 30 and 50 years of age.

Table 2

The Relative Risk By Age Group of Developing a Clinically Important Progression of Lung Pathology From Pre Operation To Post Operation (Day 4) with P.R.N. Medication or With Regular Pain Medication

	Analgesia Study Regimen				
	PRN Medication		Regular Medication		Relative Risk
Age Group	Clinically Important Increase in Pathology				
	Yes N	No N	Yes N	No N	
16-29 years	1	8	2	9	.56
30-39 years	10	8	7	9	1.61
40-40 years	7	8	4	8	1.75
50-59 years	9	4	10	3	.68
60-70 years	7	3	6	2	.78
Total	34	31	29	31	1.17

Woolfe Analysis adjusted relative risk = 1.14

Table 3

The Relative Risk By Age Group of Developing a Clinically Important Progression in Lung Pathology From Pre Operation to Post Operation (Day 4) With P.R.N. Medication or With Regular Vital Signs Plus P.R.N. Medication

	Analgesia Study Regimen				
	PRN Medication		Regular Vital Signs		Relative Risk
Age Group	Clinically Important Increase in Pathology				
	Yes N	No N	Yes N	No N	
16-29 years	1	8	1	9	1.13
30-39 years	10	8	2	2	1.25
40-40 years	7	8	2	3	1.31
50-59 years	9	4	3	6	4.50
60-70 years	7	3	5	5	2.30
Total	34	31	13	25	2.11

Woolfe Analysis Adjusted Relative Risk = 2.04

Table 4

The Relative Risk by Age Group of Developing A Clinically Important Progression In Lung Pathology From Pre Operation to Post Operation (Day 4) With Regular Pain Medication or With Regular Vital Signs plus P.R.N. Medication

	Analgesia Study Regimen				
	PRN Medication		Regular Medication		Relative Risk
Age Group	Clinically Important Increase in Pathology				
	Yes N	No N	Yes N	No N	
16-29 years	2	9	1	9	2.00
30-39 years	7	9	2	2	.78
40-40 years	4	8	2	3	.75
50-59 years	10	3	3	6	6.67
60-70 years	6	2	5	18	3.00
Total	29	31	13	25	1.80

Woolfe Analysis Adjusted Relative Risk = 2.05

Discussion

The main purpose of this study was to determine the efficacy of regularly scheduled analgesia versus p.r.n. regimen in reducing the incidence or severity of pulmonary atelectasis, or both. Across the three trials (management, effectiveness and efficacy) regularly scheduled analgesia as a post operative regime was not superior to a p.r.n. regime in preventing atelectasis or in delaying the progression of pulmonary pathology following surgery. Surprisingly, the study group that received p.r.n. medication with a regularly scheduled vital signs regimen (attention placebo) had the lowest clinical rate of post operative pulmonary complications, while the p.r.n. group without the regular attention had the highest rate. Interestingly, these groups did not differ in the mean number of analgesic doses administered within the first 48 hours post operatively.

The relative high-risk analysis indicated that the analgesia regime most beneficial in reducing the risk of post operative lung pathology depended on the age group of the subjects. Regular medication was a benefit only in the 30 to 49 year group. P.R.N. medication plus regular vital signs was the most beneficial regimen overall and in particular with the over 50 year old subjects.

The variables that were found to discriminate between subjects with clinically important progression in lung pathology were age and gender. Male subjects who were older were more likely to have an important progression in pathology. Further, males who smoked were more likely to develop atelectasis and have a clinically important progression of lung pathology after surgery than females who smoked.

The direction of these results suggest that there are multiple variables that interact in order to produce post operative pulmonary complications. When risk reduction analyses were used instead of statistical analyses, the minimal movement group that accompanied the regular attention of vital signs along with p.r.n. pain medication, resulted in 35% risk reduction in the development of a clinically important progression of lung pathology, compared to the risk among patients receiving p.r.n. medication alone. On the other hand, regular pain medication reduced the risk by 8% when compared to the p.r.n. medication group which was in the predicted direction but not statistically significant.

The effect of gender on the study results is obvious for a number of variables. It was an important prognostic factor in post operative atelectasis and increased the incidence of atelectasis among smokers. In addition, being male was a predictor of analgesic doses given in the first 48 hours within the regular medication group (Weir et al., 1990).

These unpredicted findings suggest that analgesic dosing (p.r.n.) and clinical treatment (such as the presence of nasogastric tubes and taking vital signs on a regular schedule) interacted with position and movement (especially freedom to move) to reduce pulmonary complications in younger (under 60 years) non-heavy-smoking, males. Because there are no data on the patients' response to the administered analgesic, it is not possible to identify the role that pain control had in this multidimensional equation. It is apparent that post operative pain management must consider more variables than the schedule of analgesic administration in light of the potential to reduce the risk of pulmonary complications.

Future studies of post operative pulmonary complications should test the effect of levels of pain control coupled with levels of ventilatory change (through types of pulmonary management) among men and women of different ages. In addition, in future studies, the necessity for stratifying subjects according to age, prior to study group allocation, should be apparent, given the influence that age has in affecting pulmonary outcomes post operatively.

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RÉSUMÉ

Étude multicentre de l'effet sur les complications pulmonaires de l'administration post-opératoire systématique c. prn d'analgésiques

L'efficacité comparative d'un mode de prescription d'analgésiques régulier c. prn dans la prévention de l'atélectasie post- opératoire a été évaluée sur 278 sujets, dans le cadre d'une étude randomisée tenant compte de l'effet du tabagisme, de l'obésité, de l'attention régulièrement prodiguée et de la comparabilité des groupes d'étude par rapport aux variables parasites.

Les patients à qui on faisait subir des changements de position minimes et qui recevaient donc un "placebo d'attention" et des analgésiques prn avaient 35 % de chances en moins de complications pulmonaires cliniquement importantes. De plus, les patients recevant des analgésiques à intervalles réguliers avaient 8 % de chances en moins d'être atteints de ces mêmes complications que les patients recevant des analgésiques prn. Les répercussions de ces résultats sur la conception et la conduite d'études ultérieures sont analysées.

APPROACHES TO KNOWLEDGE DEVELOPMENT IN NURSING

Jacqueline Fawcett

Considerable progress in the development of nursing knowledge has been made in the past several years. Yet areas of confusion remain, especially with regard to our understanding of the relationships between conceptual models, theories and empirical indicators. This article starts with an overview of the components of conceptual-theoretical-empirical structures and continues with a description of three approaches to nursing knowledge development. The article concludes with a discussion of the advantages and disadvantages of each approach.

Conceptual-Theoretical-Empirical Structures

The content of this article is based on three philosophic assumptions about nursing knowledge development. First, that knowledge development encompasses the articulation of conceptual models, the generation of middle-range theories and the testing of these theories. Secondly, that all empirical inquiry, that is, research, is directed toward the development of knowledge. The third assumption is that discernible levels of abstraction exist in the knowledge development enterprise and that these levels are conceptual models, middle-range theories and empirical indicators.

Conceptual models

The three components of conceptual-theoretical-empirical structures are conceptual models, middle-range theories and empirical indicators (Fawcett & Downs, 1986). Conceptual models, which are also called conceptual frameworks, conceptual systems, paradigms and disciplinary matrices, are the most abstract component of a conceptual-theoretical-empirical structure.

The concepts of a conceptual model are highly abstract and general. Thus, they are not directly observed in the real world nor are they limited to any specific individual, group, situation or event. Client system stability is an example of a conceptual model concept (Neuman, 1989). It can refer to various types of systems that encounter all sorts of situations and events.

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The propositions that describe or link conceptual model concepts are also very abstract and general. Therefore, they are not amenable to direct empirical observation or test. An example of a conceptual model proposition is: Changes in environmental stimuli are associated with changes in adaptation level (Roy & Andrews, 1991). Here, specific stimuli are not identified nor are dimensions of adaptation specified.

Examples of contemporary nursing knowledge that fit the description of a conceptual model include Dorothy Johnson's (1980) *Behavioral System Model*, Imogene King's (1981) *Interacting Systems Framework*, Myra Levine's (1973) *Conservation Model*, Betty Neuman's (1989) *Systems Model*, Dorothea Orem's (1991) *Self-Care Framework*, Martha Rogers's (1990) *Science of Unitary Human Beings* and *Callista Roy'sAdaptation Model* (Roy & Anderson, 1984).

Middle-range theories

Middle-range theories are the intermediate component of conceptual-theoretical-empirical structures. Middle-range theories are less abstract than conceptual models, but more abstract than empirical indicators.

A middle-range theory addresses phenomena with much greater specificity than does a conceptual model. The specificity of a middle-range theory requires that its concepts be more specific and concrete than those of a conceptual model. The concepts of a middle-range theory, then, are tied more closely to particular individuals, groups, situations or events and are amenable to direct observation. Examples of such concepts are oxygen tension, Type A behaviour, social support and health-related hardiness.

The propositions of a middle-range theory also are more specific than those of a conceptual model and, therefore, can be empirically observed and tested. An example is: Depression is inversely related to family functioning (Mercer & Ferketich, 1990).

Empirical indicators

Empirical indicators are the most concrete component of conceptual-theoretical-empirical structures. Empirical indicators are the real world representatives of middle-range theory concepts. More specifically, they are the actual instruments, procedures or experimental conditions that are used to observe or measure the concepts of a middle-range theory. Empirical indicators are identified by the operational definitions of the concepts. For example, the *Health-Related Hardiness Scale* (Pollock & Duffy, 1990) is the empirical indicator for the concept of health-related hardiness in the theory of human responses to chronic illness (Pollock, 1986; Pollock & Duffy,

1990). Similarly, the Feetham Family Functioning Survey (Roberts & Feetham, 1982) is the empirical indicator for family functioning in the theory of the effects of antepartum stress (Mercer & Ferketich, 1990).

Conceptual models, theories and empirical indicators

In summary, a conceptual model, which is a set of abstract and general concepts and the propositions that integrate them into a meaningful configuration (Nye & Berardo, 1981), is the most abstract component of a conceptual-theoretical-empirical structure. A middle-range theory, which is a set of relatively specific and concrete concepts and propositions "that purports to account for or characterize some phenomenon" (Barnum, 1990, p. 1), is the intermediate component in the structure. Finally, an empirical indicator, which is the real-world referent for a concept, is the most concrete component of the structure.

Generating and Testing Theories from Explicit Conceptual Models

With the preceding in mind, three approaches to the development of nursing knowledge will be described. These three approaches focus on the place of conceptual models of nursing in theory development. They are not meant to be exhaustive of all strategies for theory construction. In fact, Meleis (1991) and Walker and Avant (1988) have discussed several other particularly salient approaches.

Explicit conceptual models and middle-range theory development

The first approach to be discussed is the generation and testing of middle-range theories from explicit conceptual models. The use of an explicit conceptual model means that researchers "make overt the knowledge base [that] will guide each of their research decisions" (Batey, 1986, p. 543).

Each conceptual model is a separate school of thought about nursing that "guides and dictates how we see nursing and how we act in the world" (Meleis, 1991, p.185). Each model provides rules for research, including statements about what phenomena make up the domain of inquiry, as well as epistemic and methodological directives about how the domain is to be investigated, how theories are to be generated and tested, how data are to be collected, how those data are to be analyzed and how results are to be interpreted (Laudan, 1981).

The influence of a conceptual model on research has been addressed by Batey (1986). She pointed out that although two investigators may observe the same real world situation or event, "their notions of why it occurs, their conceptual organization about the problem, [and] the knowledge base they

select for studying that problem, may differ" (p. 543). In other words, each investigator views the world through a particular lens or frame of reference, which is capsulized by a conceptual model.

Pragmatics of middle-range theory generation from an explicit conceptual model. When a middle-range theory is generated from an explicit conceptual model, the conceptual model identifies the phenomena to be studied and helps the investigator to focus on particular problems. The methodological rules of the conceptual model facilitate selection of research methods for the discovery of new theories. Thus, theory generation proceeds from the conceptual model directly to the empirical indicators. The data obtained from the empirical indicators are then analyzed, again following the methodological rules of the conceptual model, and a new middle-range theory emerges.

Germain's (1984) study of residents of a shelter for abused women and children is an example of middle-range theory generation using an explicit conceptual model of nursing. The four adaptive modes of the Roy Adaptation Model (physiological, self-concept, role function and interdependence) guided Germain's observations and helped her to focus on problems that are amenable to nursing intervention. The end result of the study was a descriptive middle-range theory of common health situations experienced by shelter residents.

Pragmatics of middle-range theory testing from an explicit conceptual model. When middle-range theory-testing is based on an explicit conceptual model, the theory is derived from one or more concepts and propositions of the conceptual model. It then is empirically tested using a research design, subjects, setting, instruments and procedures that are in keeping with the methodological rules of the conceptual model. Thus, theory testing proceeds deductively from the conceptual model to the theory and then to the empirical indicators. The data obtained from the empirical indicators are analyzed, again following the methodological rules of the conceptual model, and the middle-range theory is supported or refuted. The results of theory-testing, in turn, are used to assess the credibility of the conceptual model (Fawcett, 1989a).

An example of theory testing from an explicit conceptual model is Fawcett's (1989b) program of research dealing with similarities in wives' and husbands' pregnancy-related experiences. An extension of Martha Rogers' (1970) Life Process Model was used to derive a theory of similarities in spouses' pregnancy-related experiences. The conceptual model concepts used for theory derivation were open family system, pattern and organization, and mutual and simultaneous interaction. Middle-range theory concepts representing the more abstract conceptual model concepts were pregnant and

postpartal women and their husbands; pregnancy-related experiences, including body image and physical and psychological symptoms; and strength of identification, respectively. The middle-range theory propositions were derived directly from propositions of the conceptual model and stated that wives and husbands have similar pregnancy-related experiences, and that the similarities in spouses' pregnancy-related experiences are positively related to the strength of their identification. Research designed to test the middle-range theory used measures of body image (Topographic Device, Figure Drawing Test, Body Attitude Scale) and of physical and psychological symptoms (Symptoms Checklist, Beck Depression Inventory) as the empirical indicators for pregnancy-related experiences. The *Identification Scale* was the empirical indicator used to measure spouses' strength of identification. Finally, married childbearing couples were the empirical indicators for pregnant and postpartal women and their husbands. A total of five studies tested the middle-range theory propositions. Taken together, the findings from the five studies provided minimal support for the theory and, therefore, raised serious questions about the credibility of the conceptual model.

Implicit Conceptual Models and Middle-range Theory Development

The second approach to nursing knowledge development is middle-range theory generation and testing from implicit conceptual models. In this approach, the conceptual model upon which middle-range theory generation or testing was based is not identified. The conceptual model is implicit.

The use of the term implicit indicates that a conceptual model has been used for theory generation and testing, but that it has not been identified. Some conceptual model has, however, guided the middle-range theory development effort. Indeed, the label, theory development from an implicit conceptual model, reflects the philosophic premise that it is impossible to exist in this world without some guiding perspective. In fact, philosophers have pointed out that it is impossible to exist in the world at large without a frame of reference (Toulmin, cited in Cull-Wilby & Pepin, 1987). How, for example, could we look into the sky and understand the relationship of other planets and the stars to our own planet without a frame of reference? Researchers, too, have noted that theory development never proceeds without a guiding frame of reference, that is, a conceptual model. The concepts and propositions of a theory are, therefore, formulated within the context of some perspective (Babbie, 1989). As Johnson (1987) explained, "It is important to note that some kind of implicit framework is used by every . . . nurse, for we cannot observe, see or describe, nor can we prescribe anything for which we do not already have some kind of mental image or concept" (p. 195). Nurses may use their very own implicit, private images of nursing or they may use an explicit, fully articulated perspective, but each of us does use some conceptual model as a guide for our theory development efforts.

Implicit conceptual models and middle-range theory generation. When the conceptual model is implicit, theory generation proceeds directly from analysis of data obtained by the empirical indicators to the statement of the middle-range theory. The conceptual model is not identified.

An example of middle-range theory generation from an implicit conceptual model is Mishel and Murdaugh's (1987) study of family members' responses to heart transplantation. They used participant observation in support groups to obtain data from which they generated a middle-range theory called redesigning the dream. The theory is made up of three concepts, the dimensions of each concept and the definitional propositions for the concepts and their dimensions. The concepts are immersion, passage and negotiation. The three dimensions of immersion are freeing self, symbiosis and trading places. The three dimensions of passage are catharsis, vacillation and awareness. Finally, the four dimensions of negotiation are recognizing the risks versus second chance, back to normal versus recognizing the risk, smelling the roses versus life as it used to be, and life together versus time for self. No mention was ever made of an underlying conceptual model in Mishel and Murdaugh's research report.

Implicit conceptual models and middle-range theory testing. Similarly, when the conceptual model is implicit, middle-range theory-testing proceeds directly from the statement of the middle-range theory to selection and use of empirical indicators. Again, the conceptual model is not identified.

An example of middle-range theory-testing with an implicit conceptual model is the Metzger and Therrien (1990) report of their test of the theory of the effect of position on cardiovascular response during the Valsalva maneuver, which did not include a description of any conceptual model. The theory was made up of the concepts of body position; cardiovascular responses, including heart rate and systolic blood pressure; and Valsalva strain. The theory proposed that changes in body position are associated with changes in heart rate and systolic blood pressure during Valsalva strain. The empirical indicators for body position were lateral recumbent or sidelying, supine or flat, head elevated and up-in-chair. Cardiovascular responses were measured by cardiac monitor readings of heart beats per minute and sphygmomanometer values for systolic blood pressure. The empirical indicator for the Valsalva maneuver was intraoral strain pressure of 40 mm Hg, maintained for ten seconds, obtained by asking subjects to blow into a mouthpiece connected to a pressure-gauge manometer. The study findings provided conflicting evidence with regard to the validity of the theory, inasmuch as systolic blood pressure varied with body position (the most intense changes in systolic blood pressure occurred in the head elevated and chair positions), but heart rate was not affected by position.

Inducing Conceptual Models from Middle-range Theories

The third approach to nursing knowledge development is induction of conceptual models from middle-range theories. This approach starts with an existing middle-range theory and proceeds to the induction of a parent conceptual model. In this case, the middle-range theory may or may not have been tested empirically at the time of model induction.

The North American Nursing Diagnosis Association (NANDA) taxonomy of nursing diagnoses is an example of a middle-range descriptive theory in search of its parent conceptual model. This theory identifies and describes problems experienced by health care consumers that are of particular interest to nursing. The conceptual model that guided this theory development effort has not yet been identified. To their credit, the NANDA members recognized the need for an umbrella conceptual model and charged a group of nurse theorists with inducing a conceptual model from the middle-range theory of nursing diagnoses (Kim & Moritz, 1982). Unfortunately, the resultant conceptual model of unitary man is *not* logically congruent with the theory of nursing diagnoses (Fawcett, 1986). What is needed, then, is a concerted effort to induce a logically congruent conceptual model from the middle-range theory of nursing diagnosis. The conceptual model could be induced from data obtained by surveying the NANDA membership, who may be considered experts in nursing diagnosis. The survey should be designed to determine these experts' views of the phenomena of interest to nursing, including the recipient of nursing care, the environment and health, as well as the social mission of nursing. The result would be a public articulation of the private images of nursing held by the nursing diagnosis experts. These images could then be examined to determine areas of agreement and disagreement. It is likely that differences in opinions about what phenomena should be included in the theory of nursing diagnoses could be traced to different perspectives of the phenomena of interest to nursing. Once the various perspectives, that is, the various conceptual models, of the experts are identified, the choices are to reach a consensus on a common conceptual model or to go separate ways. Regardless of the choice, the next step would be to examine the current nursing diagnoses and to determine which ones are logically connected with a given conceptual model and which ones do not fit with the model. Those that do not fit would have to be discarded or reformulated so that a logical connection is evident.

The strategy suggested for induction of a conceptual model from the theory of nursing diagnosis can be readily adapted to other situations. Thus, the investigators who are working with a particular theory could be interviewed to determine their perspectives, and a common conceptual model could be induced from their responses.

Advantages and Disadvantages of the Three Approaches to Theory Development

There are both advantages and disadvantages of each of the three approaches to nursing knowledge development. Generation and testing of theories from explicit conceptual models has an advantage over the other two approaches in that the entire conceptual-theoretical-empirical is specified from the beginning of the knowledge development effort. Proponents of this approach maintain that the delineation of an explicit conceptual model is "the first and most crucial step in scientific theory-building" (Christensen, 1967, p. 622) that "introduce[s] an element of orderliness into the research process and findings" and, therefore, expedites "sound and accumulative development of theory" (Nye & Berardo, 1966, pp. 2, 6). The primary benefit of an explicit conceptual model, according to Suppe (1982), "is to sensitize the researcher to potentially important variables to include in one's ... middle-range testable theories" (p. 13). In short, the proponents of explicit conceptual models for theory generation and testing maintain that conceptual models are "necessary for good research and ... good research is, in turn, necessary for the development of valid theory" (Nye & Berardo, 1966, p. 6).

Another advantage of using an explicit conceptual model is that results of theory-testing may be used to determine the credibility of the model (Fawcett, 1989a). Credibility determination is necessary to avoid the danger of the use of a conceptual model as unquestioned ideology: this must be avoided if nursing is to continue its evolution as a respected discipline. Credibility of a conceptual model is determined by comparing the findings from tests of a middle-range theory with the propositions of the conceptual model that were used to deduce the theory propositions. If the findings conform to expectations established by the conceptual model, the model may be considered credible. If, however, the findings do not conform to those expectations, the credibility of the conceptual model must be questioned. Credibility determination, then, may not render a conceptual model free of ideology, but that ideology will have been scrutinized.

One disadvantage of use of explicit conceptual models is the effort required to comprehend fully the distinctive perspective and content of the conceptual model, as well as to identify and operationalize its rules for nursing research. Considerable time must be taken to study the original works by the author of the conceptual model, and to critique the questions asked and methods used by researchers who have already used the model to guide their studies. Considerable time also must be taken to learn how to prepare a narrative description of the conceptual-theoretical-empirical structure that can be comprehended by readers who are not familiar with the model. This is especially important if grant applications are to be funded and if research reports are to

be published with a description of the full conceptual-theoretical-empirical structure.

Another disadvantage is that a focus on conceptual models may actually hinder theory development "by encouraging sterile efforts to identify new conceptual [models] or to reconceptualize old ones" (Rodman, 1980, p. 439), rather than moving forward with middle-range theory generation and testing. Thus, the lack of an explicit conceptual model might speed theory development efforts by avoiding the risk of becoming distracted from theory generation or testing by the intricacies of the model. The disadvantages of an explicit conceptual model, then, become the advantages of an implicit conceptual model.

The use of implicit conceptual models has, however, created difficulties in categorizing nursing research in any theoretically meaningful way. Thus, the disadvantage of an implicit conceptual model is an advantage of an explicit model.

The advantages of the third approach to nursing knowledge development, that is, inducing a conceptual model from an existing theory, also are the advantages of using an explicit conceptual model, namely, the specification of all three components of the conceptual-theoretical-empirical structure and a clear understanding of the perspective that guided theory development. The disadvantages of this approach are the difficulties associated with identifying, contacting and interviewing all investigators working with a particular theory and the time required to induce the conceptual model.

Conclusion

It is likely that proponents of qualitative methods, such as grounded theory and phenomenology, will not agree that a conceptual model guides their theory development efforts. These investigators, however, fail to take into account that the method they use, along with its underlying philosophical position, represent a frame of reference, that is, a conceptual model. For example, phenomenologists seek to identify the lived experiences of human beings and assert that this is accomplished through qualitative methods such as open-ended interviews. Grounded theorists also use open-ended interviews to identify basic social problems and basic social processes. In both instances, the phenomena of interest (lived experiences or basic social problems and processes) and the appropriate method (interviews) are specified prior to the empirical theory development endeavor, and constitute a frame of reference that fits the definition of a conceptual model. To deny that this is so is to refute the previously stated philosophical premise that it is impossible to exist without a guiding perspective.

Furthermore, although some readers may equate the approaches to knowledge development presented in this paper with logical positivism, the position taken here with regard to conceptual models as explicit or implicit guiding perspectives is in keeping with a postpositivist world view. More specifically, the claim that conceptual models always guide empirical research is consistent with the postpositivist claim that "all descriptions of 'reality' are recognized as inherently theory-laden" (Lavee & Dollahite, 1991, p. 361).

In conclusion, all three approaches to knowledge development are evident in the nursing literature. All of these efforts have done much to increase recognition of nursing as a professional discipline. Scholars are now urged to consider the advantages and disadvantages of each approach and to select the one they believe will advance nursing science and yield a systematic body of nursing knowledge.

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RÉSUMÉ

Méthodes d'étoffement des connaissances en sciences infirmières

Cet article offre un aperçu des éléments des structures empirico-théorico-conceptuelles et du rôle de chacun dans l'étoffement des connaissances en sciences infirmières. Trois méthodes y sont décrites, soit : 1) la formulation et la vérification de théories à partir de modèles conceptuels explicites; 2) la formulation et la vérification de théories à partir de modèles conceptuels implicites; 3) la déduction de modèles conceptuels à partir des théories. Les avantages et les inconvénients de chaque méthode sont analysés.

PREFACING KNOWLEDGE DEVELOPMENT IN NURSING: TELLING STORIES

Laura Cox Dzurec

In the preceding article, *Approaches to Knowledge Development in Nursing*, Jacqueline Fawcett addressed relationships among conceptual models, theories and empirical indicators, with regard to three approaches to nursing knowledge development. The three approaches--generation and testing of theories from explicit conceptual models; generation and testing of theories from implicit conceptual models; and induction of conceptual models from existing theories--all are evident in the nursing literature. The approaches are intended to build conceptual-theoretical-empirical structures (CTE structures) to guide nursing knowledge development.

As Fawcett attests, separately and in conjunction, these three approaches to knowledge development, along with others, have contributed to the evolution of nursing knowledge. The approaches have made available to the nursing community, middle-range theories and general conceptual models. Through these theories and models, outcomes relevant to nursing can be described or predicted. Conceptual models and theoretical frameworks are the stuff of generalizable nursing knowledge.

In the context of a given CTE structure, when empirical research findings provide limited support for proposed theories and conceptual models, serious questions are raised about the credibility of those theories and models, regardless of the approach used in their development.

Fawcett encourages nursing scholars, cognizant of the advantages and disadvantages inherent in each approach to nursing knowledge development, to select approaches to further the development of nursing knowledge. Through this process, she argued, nurse scholars will advance nursing science and yield a systematic body of nursing knowledge. However, as she discussed the advantages and disadvantages of each approach to knowledge development, Fawcett implicitly encouraged nurse scholars to examine the complexity of the language they use to develop CTE structures. Such examination renders CTE structures valid. It is the validity--not the choice--of CTE structures that will increase nursing's body of knowledge.

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The Issue

As Fawcett noted, the three levels of abstraction in CTE structures are to be linked. The concepts and propositions of conceptual models are highly abstract and general, not amenable to direct empirical observation or test. These concepts and propositions are tied to the lived world by means of middle-range theories.

Middle-range theories are relatively more specific, referring to particular circumstances, "individuals, groups, situations or events" (Fawcett, 1991, p. xx). The propositions involving the concepts in middle-range theories are empirically observable and testable. They are reflective of the methodological rules and speculative assumptions of the conceptual model. Yet, middle-range theories are best tested by means of specific indicators.

The specific indicators of middle-range theories are empirical data - the concrete representations of the conceptual model and middle-range theory offered in a given CTE structure. These data (indicators) are identified by operational definitions in some research traditions (for example, empiricism), and in terms of emergent themes in other research traditions (for example, phenomenology).

Optimal knowledge is based in CTE structures that demonstrate logical correspondence across these levels of abstraction. CTE structures demonstrating logical correspondence are said to be valid - to represent what they say they represent. When correspondence is good, the theoretical and methodological correlation among specific, empirical data; intermediate, testable middle-range theories; and abstract, general, conceptual models is strong. What can be observed empirically makes sense in terms of what would be predicted theoretically or in terms of what would be expected conceptually. Valid CTE structures look to be worthy of testing through research.

Problems arise when there is limited correspondence across the levels of abstraction in a CTE structure, that is, when the CTE structure appears invalid. Fawcett identified two invalidating problems as: the occurrence of conflicting evidence in support of the inherent theories and conceptual model; and, the absence of support for the inherent theories and conceptual model. The outcome of either of these problems, or of any problems reflecting absent correspondence, is rejection of the proposed conceptual models or middle-range theories. Rejected, theories and conceptual models offer nothing to the body of nursing knowledge.

Thus, the development of CTE structures is heavily dependent on correspondence across levels of abstraction. Such correspondence manifests itself as validity; it is a function of the articulation of selected empirical

indicators and of the concepts and propositions in the inherent and developed middle-range theories and conceptual models. The proposed articulation is a function of language.

At this juncture, ensuring correspondence across levels of abstraction in a CTE structure, a seemingly logical process, becomes irrational and complex. Correspondence, expression of logical links, is accomplished through language, an irrational and complex mechanism.

Problems of Conveying Knowledge through Language

That language is composed of words is probably its most obvious characteristic. The nature of those words, however, is more obscure. The words that constitute language reflect not only obvious facts, but also values, beliefs and assumptions (Wilson, 1988). Words, in and of themselves, are emotion-laden. When they are combined through language to constitute ideas, for example, when they are used to compose CTE structures, their emotion-ladenness increases.

Ideas are synergistic in nature: they do not represent the sum of the emotion-ladenness of their constitutive words. Instead, they represent an exponential increase in the emotion-ladenness of their inherent words. Using language, one is making reference not to reality, as it exists, but to an agreed-upon, emotional, value-laden interpretation of that reality; to a shared, but not universal, conception.

The words that compose a CTE structure, optimally, will fit together well, if the structure is to suggest a useful theory or conceptual model. Yet, this discussion begs the question: who is in control of CTE structure development? Do the words themselves as they are combined in language, dictate the correspondence across levels of abstraction in CTE structures? Or are the people selecting and using the words, the language, in control?

Human Control Despite Language Complexity

Using language to create or test components of CTE structures, astute nurse scholars will recognize that they must say what they mean; that they are in control of orchestrating the correspondence among the levels of abstraction. The CTE structure is an interpretation of reality, not an identity with reality. A valid CTE structure expresses the meaning of its author(s) consistently across its levels of abstraction, as it describes reality.

Proponents of different schools of philosophy would assign different degrees of importance to CTE structures. The diversity of views is demonstrated by two opposing schools of thought. Structuralist philosophers

would hold that truth, meaning and understanding are functions of the rules governing language usage (Saussure, 1974), and hence, CTE structure usage. Thus, CTE structures would take on important proportions in describing reality and creating reality. Post-structuralist philosophers, on the other hand, would hold that truth, meaning and understanding, are ultimately, impossible (Derrida, 1982; Foucault, 1986). Hence, truth, language and meaning, are uninterpretable as phenomena in and of themselves, regardless of their expression through CTE structures. Thus, for post-structuralists, CTE structures would represent nothing more than expressions of the political stance of the scholars who wrote them.

The rich and diverse work of many philosophers--structuralists, post-structuralists and others--notwithstanding, what seems apparent is this: with regard to developing CTE structures, human beings are "language using" and "message producing" (Ellis, 1991, p. 221). Regardless of the philosophical stance through which one attributes meaning or significance to CTE structures, these structures are human creations, human translations, human renderings. Humans compose the rules by which these structures are made and by which they are used to generate further knowledge and further structures. Humans, therefore, ultimately have responsibility for creating and interpreting valid CTE structures and for their use in the service of further knowledge development. This responsibility entails careful analysis of the complex words: that is, the language, used in the construction of CTE structures. In the absence of such responsible development, CTE structures are useless, empty fabrications, reflecting nothing.

Orchestrating Correspondence Across Levels of Abstraction

Ironically, it is the plaguing complexity of language that is the basis for orchestrating correspondence across the levels of abstraction of CTE structures. Theoretical and conceptual structures are grounded in multiple, complex ideas, themselves composed of facts, values and attitudes intended to describe reality. If the language used to describe reality were simple, composed only of objective facts, there would be no reason to develop CTE structures, at all. Every facet of reality would be objectively, factually accessible. Language is not simple; as such, the scholar is empowered to create conceptual-theoretical structures. Concomitantly, the scholar is constrained by the multivocity, that is, potential for multiple interpretations, of the language used to fabricate those structures. By virtue of the multivocity of the words and ideas in a CTE structure, these structures require careful conceptual analysis prior to formal testing of their inherent theories or conceptual models.

The conduct of a conceptual analysis of a CTE structure is a hermeneutic endeavor. Through that endeavor, scholars clarify the meanings they inter-

pret (in the case of testing established conceptual models or theories) or impose (in the case of generating conceptual models or theories) in the context of the CTE structure, at *each level of abstraction*. The more grounded in broadly shared "reality" are the scholar's interpreted or intended meanings, and the more apparent the legitimacy of the CTE structure to others, the more valid the CTE structure appears.

When valid CTE structures are developed by generating middle-range theories from explicit conceptual models, or when conceptual models are induced from existing theories, the scholar will understand and closely replicate the intended meaning of the explicit models and theories. The scholar will then convey the intention of the models to the nursing community.

Alternatively, in the context of an implicit conceptual model, a scholar is relatively less constrained by the need to describe existing structure adequately, in a way both comprehensible to the general public and consistent with the original author's intent. However, the implicit nature of the conceptual model demands that the scholar tell the inherent story clearly, in his or her own terms. Again, credibility of the theory generated is a function of the story offered by the theoretical-empirical framework. As Fawcett noted, the conceptual model is, indeed, already in the CTE structure, even though implicit; as such, the astute scholar will endeavor to make the conceptual model understood. Otherwise, the story is incomplete.

Meanings--intended or interpreted--are inherent in CTE structures. Yet, within the linguistic, political, clinical and logical norms surrounding the reality described by the CTE structure, the scholar has some liberty to define terms as he or she sees fit, providing that those definitions are clearly conveyed to readers. The readers, themselves, then, can decide whether the CTE structure--valid and meaningfully conveyed--is worthy of investigation in support of its credibility. The scholar is, therefore, at liberty to orchestrate correspondence across the levels of the CTE structure. Careful analysis of the ideas expressed in a CTE structure, with the resultant establishment of its validity, yields a CTE structure that is amenable to test. An example will demonstrate.

Citing Germain's (1984) study of the residents of a shelter for abused women and children, Fawcett (1991) illustrated middle-range theory generation in the context of an explicit conceptual model of nursing. Empirical findings from Germain's work resulted in a descriptive theory of common health situations experienced by shelter residents. Germain carefully described and differentiated the terms "abused" and "battered" in her research report. She reported the history of battering across cultural groups, describing some of the assumptions surrounding the occurrence of these phenomena in lower socio-economic groups. In her research, Germain ana-

lyzed the words used at every level of the CTE structure--conceptual model, theory and empirical indicators. Then she presented an overview of what she saw in a shelter for battered women and children. Germain's testing supported the theory inherent in the CTE network.

As Fawcett noted, determining the credibility of a proposed theory is accomplished through comparison of empirical findings generated by theory testing with the propositions of the conceptual model. Such determination is at the hands of the scholar who has interpreted the conceptual and theoretical components of the CTE structure and then, in light of that interpretation, selected empirical components and a research approach to test it. In short, the test of a credible theory is a test of the scholar's story. The theory is credible if, in the presence of empirical data, the story it offers holds up. Clearly, the proposed theory in a CTE structure is nothing more than the story told by the scholar who wrote it.

How does one clearly present the story to be told by a CTE structure? Wilson (1988) offered suggestions. Wilson's techniques have been summarized by Muller and Dzurec (1991) under review) with regard to their relevance for naming nursing phenomena.

Optimally, in developing the CTE story, the scholar will recognize the seriousness of the endeavor, without taking it too seriously. Then, in a questioning frame of mind, the scholar will isolate questions of concept, as they are embedded in the language of the CTE structure, from questions of fact, value, politics, or attitude. Each of these aspects of the language used in the CTE structure should be carefully considered, and modifications in language made as necessary.

The scholar will describe the social contexts for which the concepts, and hence the entire CTE structure, are relevant. Establishing the practical significance of the major inherent concepts and of the CTE structure as a whole is essential. From this practical perspective, and recognizing the complexity of language, the scholar will identify psychological and political implications of the choice of terms and ideas used in the CTE structure. These implications will be considered with regard to the nursing community, the individuals described in the CTE structure and the community at large. From this perspective, the scholar is prepared to describe conditions under which concepts embedded in the CTE structure will occur and, thus, situations when the CTE structure might describe reality. Only at this point is a CTE structure reflective enough of a shared "reality"--that is, valid enough--to be tested.

Next, the scholar begins to test the CTE structure to see if the story it offers holds up. Beginning with informal testing, the scholar can identify cases that

provide instances of the CTE structure and publish the results of this effort. The sharing of informal information about the reality encompassed by the CTE structure and about the choice of language used to convey that reality grounds the CTE structure for formal testing.

Through the process of generating CTE structures and testing their inherent theories, the scholar will remember that, no matter how well the structure actually describes reality, the testing of that structure is just that--testing of the *Structure*. It has nothing to do with testing *Reality*. The composition of the CTE structure, itself--not the composition of reality--is at issue, as scholars consider the utility of CTE structures. If the generated theories and conceptual models serve the nursing community well, they can become the basis of nursing knowledge. If they do not serve the nursing community well, they can be discarded. Reality goes on with or without them.

As Fawcett noted, when empirical research findings provide limited support for proposed theories and conceptual models, serious questions are raised about the credibility of those theories and models. These questions arise, however, regardless of the approach used in their development; they are a function of the validity of the CTE structure across the inherent levels of abstraction. Questions of credibility are a function of the scholar's failure to identify the inherent values and attitudes, potential emotional responses and political interpretations of the words used in the CTE structure. Such questions signal a need for reworking of the theories or conceptual models.

Philosophically, we cannot know whether the science of nursing alters reality or even describes it. But continuing its development is nursing's best hope for having any bearing on the well-being of human kind. Telling valid stories supports the development of CTE structures that are the fabric of the science of nursing.

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RÉSUMÉ

Mise en contexte de l'avancement des connaissances en sciences infirmières

Étant donné l'importante fonction sociale des sciences infirmières et les bienfaits qu'elles apportent aux gens, il importe de pouvoir formuler des connaissances généralisables, c'est-à-dire des théories et des modèles conceptuels crédibles. La conception et la vérification de structures CTE valables contribuera à l'avancement des connaissances en sciences infirmières. L'examen de la complexité de la langue inhérente aux structures CTE est essentiel à la formulation et à la vérification exacte de ces structures. Comme Fawcett le fait implicitement remarquer dans Approaches to Nursing Knowledge Development, de tels efforts sont nécessaires à l'avancement des sciences infirmières.

STRIKE BY NURSES: PERCEPTIONS OF COLLEAGUES COPING WITH THE FALLOUT

Judith M. Hibberd and Judy Norris

The strike weapon has been a troublesome concept for nurses ever since they adopted collective bargaining in the 1940s. They have usually exercised their right to strike with reluctance. Studies of nurses' attitudes towards the strike as a bargaining tactic generally reveal deep divisions among them as to whether it is right for members of an essential service and a caring profession to refuse to work. The illegal strike by members of the United Nurses of Alberta (UNA) in 1988 provided the stimulus to study the experiences and perceptions of nurses who continued to work throughout the 19-day labour dispute.

The strike affected 98 hospitals and nursing homes, and thus placed the major responsibility for critical care and emergency services on the hospital in which this study took place; nurses there were represented by a different union. As the only tertiary care centre in the province to remain in full operation during the strike, it received many transfer patients, as well as new cases of trauma and life-threatening conditions. Indeed, maternity cases rose by 350% during this period. Measures of severity of illness and workload rose significantly and put the hospital under great operational strain. The steady influx of seriously ill patients necessitated rapid organizational responses not unlike those required when dealing with disasters. The study objective was to discover how nurses coped with extraordinary workloads, how they felt about this particular strike, and about nurses' strikes in general. There have been five province-wide strikes in Canada since the one reported in this paper, and the provision of essential and emergency services during such disputes is a matter of public interest and professional concern. The experiences of nurses in coping with the workload is reported elsewhere (Hibberd & Norris, In press). The focus of this paper is on the nurses' perceptions of a strike by colleagues in another union, and on strikes by nurses in general.

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Method

A search of the literature revealed very little relevant research. Such case studies of particular strikes as those by Grand (1971), Hibberd (1987) and Manning (1982) do not provide a theoretical basis for explaining the attitudes of nurses in one union toward the labour disputes of colleagues elsewhere. Attitudinal surveys have shown that, although nurses generally support the use of collective bargaining, they tend to be divided on the question of the appropriateness of strike as a bargaining tactic (Alutto & Belasco, 1973; Bloom, O'Reilly & Parlette, 1979; Ponak & Haridas, 1979). In view of the unusual circumstances that precipitated this study, and in the absence of similar research, grounded theory was selected as the research approach (Chenitz & Swanson, 1986; Glaser & Strauss, 1967).

A non-random sample of 32 nursing personnel who worked at the hospital during the strike was obtained by placing posters on nursing unit bulletin boards: it requested volunteers to participate in anonymous tape-recorded telephone interviews. The researchers anticipated that nurses would want to remain anonymous when discussing the sensitive labour relations situation, but few were concerned about revealing their names. All respondents who left messages on a telephone answering machine were contacted. The study's objective was explained, confidentiality and anonymity were promised, respondents' consent to participate was obtained and telephone appointments were set up for the interviews.

The sample of 32 nurses was self-selected. It was not representative of the entire population of 2300 nurses employed by the hospital because nine of the 32 participants (more than one quarter) were managerial nurses who were not members of the nurses' union. The average length of nursing experience was 16 years; 24 (77%) were full-time employees who worked 15 or more of the 19 days of the strike, and often stayed on duty for extended overtime. Most of the nurses (two of whom were male) held a diploma in nursing, seven held baccalaureate degrees and five, master's degrees. Two were Registered Nursing Assistants and one was a student nurse. They worked in a variety of services including emergency, intensive care, operating rooms, maternity, psychiatry, medicine, surgery, nursing education and research.

The researchers began each interview by requesting demographic information, then asking the participant to relate his or her experiences during the strike. The interviews were unstructured which allowed ideas to be articulated, and emerging themes to be pursued. Finally, if they had not already mentioned it, nurses were asked how they felt about the strike, and about nurses' strikes in general. Interviews ranged from five to 80 minutes in length and all were transcribed verbatim. The data were analysed according to the conventions of grounded theory; that is, data collection continued dur-

ing data analysis. The constant comparative method (Glaser, 1978; Glaser & Strauss, 1967) was used, first, to compare incident to incident for uniformity and concept formation, and second, to compare concepts to further incidents. Thus, elements of theory having validity for this group of informants emerged from the data.

Nurses's attitudes towards strikes

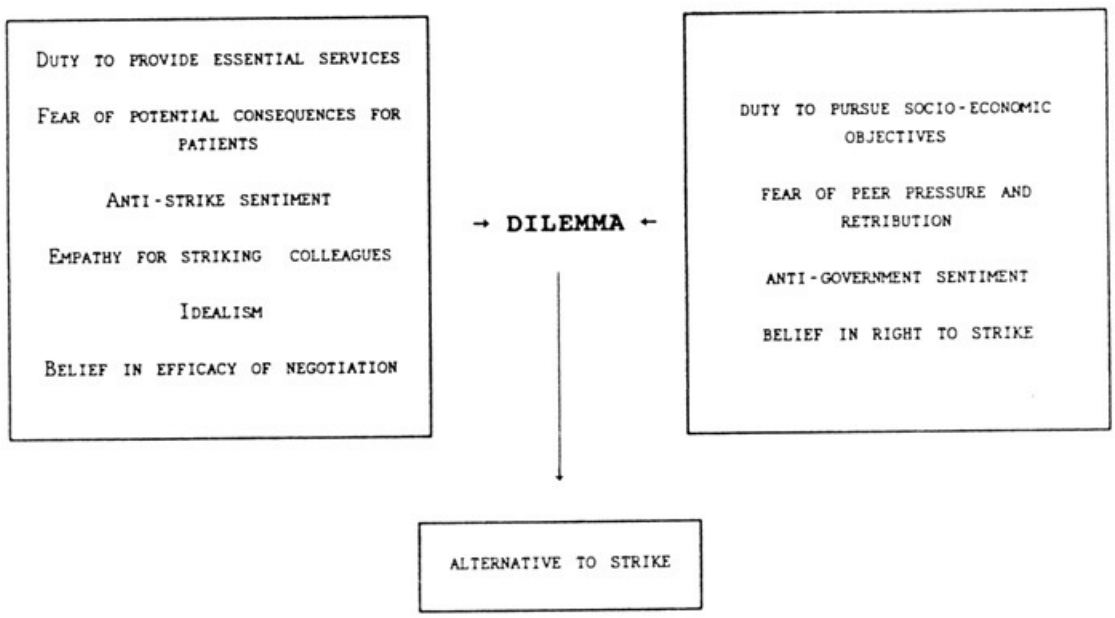
In considering these nurses' attitudes one must bear in mind that they contended with extraordinary workloads throughout the strike. Their major priority was providing safe care in an environment characterized by a constant influx of critically ill patients, uncertainty and disruptions in normal work groups and familiar work technologies. Nurses worked long hours under constant pressure, and battled fatigue and frustration. As the strike continued with no apparent resolution in sight, nurses considered ways and means of ending their ordeal (Hibberd & Norris, In press). One such strategy was to launch their own strike. Indeed, there were rumours that union leaders would call for a strike at the hospital but, in fact, the call never came. Nurses reflected on what they would have done had they been asked to vote on strike action and to support a "yes" decision.

The strike dilemma

Interviews with these nurses revealed a profound ambivalence towards strike as a bargaining strategy. Had they been asked by their union to take a strike vote, the decision would have created a serious dilemma for them. Time and time again, they weighed the arguments for and against taking strike action, and they speculated about what they would have done if called upon to withdraw their services at the hospital. A large majority of the nurses expressed many fears about the consequences of choosing one decision over another, as well as uncertainty about what they would actually have done had the time come to make a commitment to strike or not to strike. Most of the nurses agonized over this "crisis of conscience" as one nurse put it, but a small minority had no difficulty explaining what they would have done in the event of a strike at the hospital. The principal concept to emerge from the interviews is that, under the circumstances experienced by these nurses, the decision to strike was viewed as a dilemma. Figure 1 is a graphic representation of this phenomenon.

Arguments against strikes. Several nurses declared that, regardless of the circumstances, they would not strike and they were prepared to cross the picket lines if necessary. One or two nurses commented that they chose to work at this hospital because strikes were prohibited under the relevant public sector labour legislation and no strike had ever occurred there. Opposition to strike was linked to personal philosophies. For example, one nurse said: "I

refuse to carry a union card and that [is] that. I won't go on strike," and others mentioned economic reasons for not engaging in strikes. However, the predominant reason given for rejecting the idea of strike was linked to patient care concerns.



Note: Nurses expressed mixed feelings about strike as a bargaining strategy, and were torn between conflicting duties, beliefs, attitudes, and fears. They suggested that an alternative to the strike weapon should be found as a solution to their dilemma.

Figure 1

Nurses' ambivalence towards the strike weapon

Nurses expressed anxiety about the possible consequences of a strike for patients, in view of the severity of their conditions and their dependency on nurses for care. As one nurse said:

> As far as I'm concerned, I could never, ever just watch everybody walk out the door and leave these patients here. I can quite honestly tell you that the patients that came to [this unit] would have died if we had not been there. That's all there is to it.

Another nurse estimated "at least ninety percent...of nurses that I worked with in that department just absolutely would *not* have walked out." This nurse went on to say:

> I think looking at the volume and the acuity of the patients that we were seeing, it really became a moral issue and the comments that were around when the talk of [the union] calling for a strike vote, they may as well have not wasted their time. Nurses in this hospital are *not* going to walk out...forget it!

Most of the nurses did not question the fact that essential services must be provided during any strike by hospital workers. Indeed, one nurse suggested that providing essential services during a strike was her contribution to the strike effort. The participants in this study felt that, by reason of the essential nature of their work, they should not have to resort to threats of withdrawal of service to attract the attention of policy makers, and that there ought to be more civilized approaches to the resolution of labour disputes. Thus, there was an underlying theme of idealism in the arguments advanced by the participants on the question of strikes. They viewed strikes as appropriate for blue collar workers but not for people like themselves who were playing such a critical role in the provision of essential health services. As professionals, they felt they ought not to have to resort to activities that might punish the people they served or cause them hardship.

Idealism about collective bargaining and the belief that a strike is not an appropriate way of resolving disputes is illustrated in the following excerpt from the data:

> Why can't they [employers] bargain? If we're such an essential service, why do we have to pull teeth to try and get anything out of anybody....There has got to be a better way because...a good employer will say: 'Well now, inflation has gone up, cost of living has gone up. What are your concerns, nurses? Let's sit down and talk about it. What can we do to improve things around here? Let's sit down and try to negotiate and be positive and try to--' you know, they've got the money, why can't they make a little effort to make things better?

Nurses reported that it had been difficult to convince authorities of the value of their work. They suggested that many of the problems nurses were attempting to resolve through collective bargaining remained despite a series of earlier strikes in the province. One nurse said:

> I don't think you accomplish anything, nor is your image...improved by striking. I think there [are] better ways of doing it, by sitting down and negotiating, you know, not going 'out' because everybody suffers in a strike. You suffer financially, emotionally [and] some people lose good friends over a strike.

Others expressed the view that, although they had no quarrel with the goals of their union leaders, they sometimes disagreed with their tactics. For example, one nurse felt that the leaders tended to take rather "inflammatory" stands on some of the issues that did not seem to represent the views of the rank and file members.

Despite revealing negative attitudes towards strikes, nurses expressed support for their striking colleagues. Many indicated that they shared the same bargaining goals, and that the dispute was one and the same struggle for all nurses. They expressed empathy for their colleagues walking the picket lines, and some demonstrated support by walking alongside their friends. If nurses were concerned or had opinions about the illegal nature of the strike, they did not mention them.

Arguments for strike. Most nurses were able to articulate arguments for and against strikes, hence their dilemma. However, none made a strong argument *for* strikes, even though three of them stated unequivocally that they would support a majority decision to strike. One said:

> If it came to a strike, I would walk out too. I don't like it, but I think sometimes it is the only way you're going to get something.

In speculating on the possibility of their own strike, nurses suggested reasons why they might feel compelled to support a particular strike, implying that if they agreed to strike, it would be a necessary but unpleasant course of action. One nurse who had participated in an earlier strike said: "I felt very uncomfortable being on strike...it was a humiliating experience." Nurses clearly believed that it was important for them to have the legal right to strike, and they were embittered by the fact that the Progressive Conservative government had abrogated that right in 1983 following a series of strikes by the UNA (Hibberd, 1988). One nurse noted:

> There is just something in me that feels strikes are so wrong, and yet when you really know the inside story...the government...took away

the position of a legal strike...they had no business taking that right away.

Nurses were convinced they ought to have the legal right to strike as part of an arsenal of tactics with which to bolster their bargaining position at the negotiating table:

> My personal feeling is that I don't think...anybody should take the right to strike away from people because, I think doing that just takes away their final ammunition if you wish to call it that in bargaining, but what I do think about it is that probably what should happen is that they should be allowed to keep that right and hopefully never have to exercise it.

There was also the perception that the government had "cornered" the nurses into taking strike action. As their opening position at the negotiations with the UNA, employers had sought to roll back salaries of nurses by three percent. Nurses were angered and offended by what they perceived to be a manifest declaration of the devaluation of their services, and they reported that negotiations never really recovered from that point forward. Although the same negotiating tactic was not attempted at the hospital where these nurses worked, they nevertheless harboured resentment on behalf of all nurses in the province. Many of them expressed the opinion that, under the circumstances, their colleagues had no option but to take strike action. Although the government is not represented at the negotiating table in Alberta, it funds hospitals and thus becomes an obvious target for union hostility during collective bargaining, especially in times of economic restraint.

There was no question that nurses felt they had an obligation to prevent the erosion of their socio-economic status and to continue making improvements to their collective agreement, regardless of the state of the provincial economy at the time. Several nurses recognized the disadvantages of belonging to a predominantly female work force. Some remarked that because nurses had taken a stand by striking, it had drawn the attention of both the public and the government to the problems of nurses as a predominantly female workforce. For example:

> I don't like strikes by nurses. I don't like them at all but I firmly believe that if we in Alberta had never gone on strike that we would never be at the level that we are at now, not ever, because I believe so strongly that we are fighting a 'woman' thing, and we are fighting a 'nurse' thing, and if we don't do something to get their attention we're never going to get anything.

Yet, a sense of frustration prevailed among the respondents as they contemplated the pursuit of their bargaining goals. They variously said that strikes were inappropriate, unprofessional and even unethical, but that they were sometimes inevitable.

Belief in the right to strike, anti-government sentiment and duty to pursue socio-economic objectives were important themes emerging from the interviews, but they were not regarded as sufficient reasons to justify strike action. A more compelling reason for joining a strike was fear of peer pressure and possible retribution, should nurses choose to cross their own picket lines. Nurses feared that ignoring a majority decision to strike would result in adverse personal consequences. For instance, one nurse remarked:

> If you ever cross the picket line, they never let you forget it. The people you work with will never, ever forget that you crossed.

Fear of the disapproval of their peers formed a major theme in the thoughts of nurses as they contemplated what they would have done if a strike had been launched at their hospital.

What would I do? I'd have difficulty if it reached that point whether I'd stay off, or whether I'd go to work....I'd have trouble staying away, but I also wouldn't want to cross a picket line. I'm glad it didn't come to that, so I didn't have to make that decision.

In summary, nurses indicated little inclination to take strike action, and much ambivalence about strikes in general. But, as the strike wore on and people were reaching what they perceived to be the limits of their endurance, calling their own strike was viewed as a means of bringing their ordeal to an end. The more militant nurses were reportedly saying: "We should really be striking too, now. If we walked away, this thing [the strike] would be over tomorrow," implying that the government would either have to capitulate to the nurses' demands, or take some Draconian steps to get them back to work. However, after 19 days, a negotiated settlement was reached and the strike ended.

Discussion

The limitations of this study must be considered in any discussion of the findings. First, the unique situation precludes generalization. As Alutto and Belasco (1973) point out, organizational factors specific to a particular institution may influence the attitudinal militancy of its employees. Neither the hospital nor the nurses in this study were representative of hospitals and nurses in general, and there was little evidence of attitudinal militancy. Secondly, nurses volunteered to participate in the study. They did not say why

they volunteered but, by virtue of their self-selection, the sample may be biased in favour of nurses who were more profoundly troubled by the strike's potential impact on patient care. The informants were engaged in the care of patients who were more critically ill and in greater need of intensive care than would normally have been the case. These circumstances, combined with nurses' preoccupation with safety issues, may well have influenced their attitudes towards this particular strike by the U.N.A. and towards strikes in general. Finally, the interviews were conducted five months following the strike, raising a question about the nurses' recall of events. The evidence suggests that they had retained many vivid recollections of those 19 days when the hospital was under siege.

The nurses in this study expressed a number of conflicting beliefs, attitudes and fears about strikes. The prospect of having to join a strike would have placed most of the informants on the horns of a dilemma. They argued that patients needed their services to survive and that they had a duty to provide the necessary care but, conversely, they felt that nurses had a responsibility to pursue their socio-economic interests.

Nurses may actually have an obligation to withdraw their services under certain circumstances (Kluge, 1982; Muyskens, 1982). But according to the arguments, the critical or essential nature of the services required by the patients in this situation precluded any such obligation among the nurses. In discussing the ethical dimensions of nurses' strikes, Muyskens (1982) and Kluge (1982) both note that a system of binding arbitration would be a practical means of resolving the problem of labour disputes in nursing. Although the nurses in this study did not mention specific alternatives to the strike weapon, many of them suggested that there ought to be a better way to resolve their labour disputes. They identified the need for more experienced negotiators and expressed confidence in the efficacy of negotiation for resolving labour disputes.

There is much evidence to suggest that nurses believe strikes are damaging both to nursing's public image and to their own self-esteem as professionals, which thereby impedes the process of professionalization. This is counterbalanced by their belief in the responsibility of nurses to pursue socio-economic interests and the improvement of working conditions for patients' long-term benefit. Such patterns of belief are consistent with the concept of professional collectivism described by Grand (1971). Nurses who subscribe to professional collectivism, according to Grand, stress responsibility for high-quality work, recognizing its dependence on satisfactory working conditions and personal job satisfaction; a strike is "conceived not as a strike against patients, but as a way for nurses to gain benefits that will result in more and better care for patients" (p. 294). No evidence of Grand's "Nightingalism" was found (i.e., the belief that the service ideal takes

priority over self-interest, p. 290), or of "employeeism" (i.e., the belief that the employer has the best interests of employees at heart, p. 291). The higher proportion of unionization by Canadian nurses, compared to their American counterparts (Ponak & Haridas, 1979), and the history of labour struggles by nurses in the Province of Alberta (Hibberd, 1988) undoubtedly accounts partly for these findings.

Another facet of their dilemma was the nurses' belief in their fundamental right to withdraw their services, coupled with their belief that they did not really wish to exercise that right. Anti-strike sentiments prevailed during the early years of collective bargaining, and this is one of the reasons that professional nurses' associations prohibited strikes. Nurses bargained without much power under their self-imposed ban on strikes; this led to frustration and disillusionment (Connelly, Evans, Dahlen & Wieker, 1979; Editorial, Canadian Nurse, 1968). Their experiences ultimately led to the rescinding of no-strike policies in both the United States and Canada. The findings of this study suggest that the problem of strikes as a bargaining strategy remains unresolved, despite the recent incidence of strikes by nurses.

The severity of patients' illnesses influenced most of the nurses to reject the idea of a strike at the hospital. Had one been launched, they suggested the same reasons cited by teachers (Robinson & Munton, 1990) for why they might have felt compelled to join such a strike: They recognized the need to support a majority decision by their peers, they did not want to cross picket lines and they feared peer pressure and possible retaliation if they refused to strike. Such fears are understandable in light of the importance nurses attach to compatible working relationships. For example, Attridge and Callahan (1987) found that nurses ranked supportive and competent colleagues as the single most important ingredient in a quality work environment.

Conclusion

The main finding confirms what has commonly been understood, that to strike places nurses in the dilemma of having to choose between loyalty to patients in providing uninterrupted services, and loyalty to peers in collectively pursuing improvements in working conditions and socio-economic status. Although nurses caring for seriously ill patients may prefer not to strike, there are certain circumstances, including the fear of peer alienation, which might compel them to take strike action.

The implications of this research are limited because the situation which precipitated this study was unusual. Nurses were preoccupied with safety issues while caring for a seriously ill patient population during the strike, and this is the most likely explanation for their antipathy towards any strike of

their own, and towards strikes in general. Their desire for an alternative dispute resolution mechanism, and their preference for negotiation, merits further research. For example, as a predominantly female workforce, do nurses prefer negotiation because it is a more conciliatory means of resolving disputes than the strike weapon with its inherent aggression and hostility? If nurses prefer means other than the strike weapon to resolve labour disputes, they have the power and autonomy within their unions to investigate acceptable alternatives and to secure the cooperation of employers in such an endeavour.

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RÉSUMÉ

Perceptions des collègues qui doivent faire face à un surcroît de travail lors d'une grève du personnel infirmier

Cette étude visait à analyser les sentiments d'infirmiers et infirmières face au déclenchement d'un mouvement de grève par des collègues d'un autre syndicat et face aux grèves en général. La grève en question, qui était illégale, a frappé 98 hôpitaux albertains en 1988. L'étude réalisée était de type exploratoire; on a retenu la théorie à base empirique comme méthode de recherche. Trente-deux infirmiers et infirmières ont volontairement pris part à un entretien téléphonique libre. Les répondants travaillaient dans un grand hôpital d'enseignement, qui a fait fonction de centre d'accueil pour les soins d'urgence et les soins critiques pendant les dix-neuf jours de la grève; la plupart étaient membres d'un syndicat indépendant. Principal constat: pour ces infirmiers et infirmières, la décision de faire la grève représentait un profond dilemme. S'ils avaient eu à décider par scrutin de se mettre en grève eux aussi, ils auraient été tiraillés entre leur solidarité pour les patients qui dépendent d'eux et leur solidarité pour leurs collègues, avec qui ils partagent des objectifs socio-économiques. Ces infirmiers et infirmières préfèrent ne pas faire la grève; ils croient dans l'efficacité de la négociation et estiment qu'il faut trouver une solution de rechange à la grève.

WELL ELDERLY PERCEPTIONS OF THE MEANING OF HEALTH AND THEIR HEALTH PROMOTION PRACTICES

Gloria Viverais-Dresler and Heather Richardson

In Canada, life expectancy is increasing (Health and Welfare, 1989; Palmore, 1986). According to the 1986 Census, 10.6% (2.7 million) of the Canadian population was 65 years and over (Statistics Canada, 1989), but, a predicted shift in demographics projects that, by the year 2020, 20% of the population will be 65 years of age and older (Health & Welfare, 1989). Consequently, a primary interest among health care planners and health professionals is the identification of strategies to optimize the health of the elderly (Ploeg & Faux, 1989).

In the past, studies of the aged population have been directed toward negative factors of decline, deterioration and disease (van Mannen, 1988). However, this study was founded on the positive aspects of the aging process. The underlying belief being that many elderly are independent and active, and enjoy positive gains during this maturational period despite adjustments required by chronic illnesses. We hypothesized that well elderly persons who live and function independently practise health promotion behaviours to maintain and optimize their health status and well-being. They therefore have valuable information to share with nurses about their health-related perceptions.

Conceptual Perspective

Pender's Health Promotion Model (1987), a multivariate paradigm, provided a conceptual context for the study. Because it synthesises research findings on health promotion and wellness to date, this model is known as a wellness-oriented framework. Its original intent was to make predictions and explain the health-promoting component of lifestyle (Pender 1990). However, in this study, the model was used solely to explore selected health-related variates specific to the model (refer to Figure 1 dotted line areas) and to describe the sampling.

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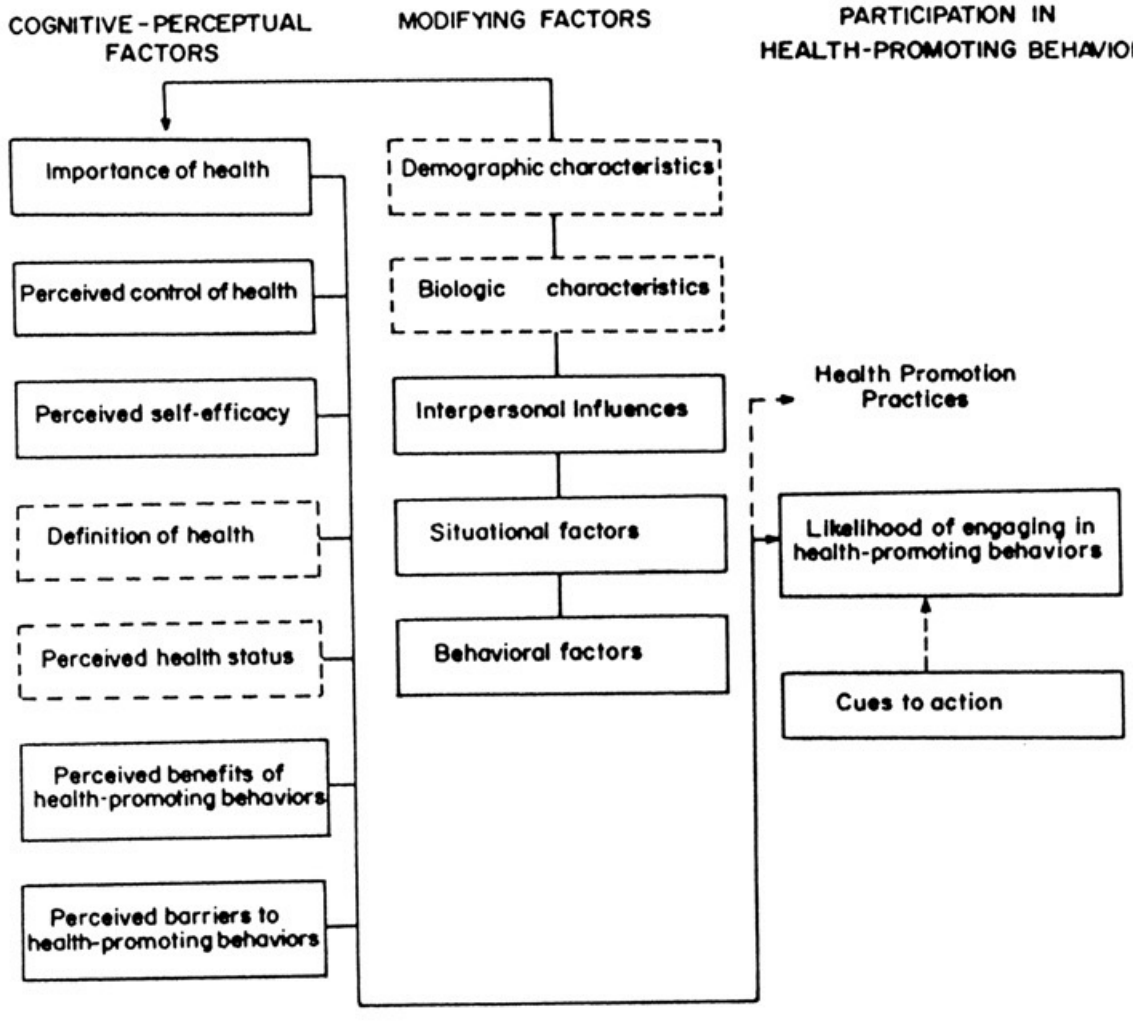

Figure 1

Pender's Health Promotion Model

The following two features in Pender's Health Promotion Model (1987) were germane to the contextual base of this study. First, Cognitive-Perceptual Factors: the definition of an individual's health and his or her perceived health status may be motivational mechanisms to participation in health-promoting behaviours. Hence, this study examined health-promoting behaviours within the context of the perceptions of the well elderly of their health status, and their definition of health.

Secondly five Modifying Factors may indirectly influence patterns of health behaviour (Pender, 1987). In this study, two Modifying Factors were selected to describe the sample: demographic and biologic. The demographic characteristics were age, sex, nationality, ethnicity, education and income (Pender, 1987, p. 66). Then, on the basis of clinical experience in nursing practice with the elderly, biological characteristics selected were the kind and number of chronic illnesses, interferences of illnesses with activities of daily living and type and number of medications taken.

Research Questions

This study investigated an elderly group, residing in a Northeastern Ontario community. The underlying assumptions of the study were that the elderly can communicate their health-related perceptions and their perceptions are unique, but some commonalities exist. Research questions addressed were:

1. How do the well elderly perceive their health status?
2. How do the well elderly perceive health?
3. What are the perceptions of the well elderly of their daily health promotion practices?

Review of the Literature

Demographic characteristics

The results of studies seeking to identify demographic variables as determinants of health status, health and health promotion behaviours are conflicting. In a sample of Canadian male employees Coburg and Pope (1974) found that socioeconomic status, specifically education and income, were associated with preventative health practices. Brown and McCreedy (1986) in their study with an elderly sample found that sex had the greatest effect on health behaviour, but age had no effect. Socioeconomic status had the greatest influence on women's health behaviour and marital status was most predictive for men. Associations have been most consistently found among education, income and health promotion practices. While Speake, Cowart and Pellet (1989) found perceived health status was associated with education, age, being female, caucasian and married.

Concept of health

Many definitions of health proliferate the literature; however, MacRae and Johnson (1986) state that "as yet no pragmatic definition has been widely accepted" (p. 51). Most definitions hold that health is more than just the absence of disease (Epp, 1986; Lalonde, 1974; WHO, 1959). Currently, the World Health Organization (WHO) encompasses holism and "well-being" of persons in its notions of health (Woods & Edwards, 1989, p. 661). At the first International Conference on Health Promotion (1986) in Ottawa, health was defined in the subsequent Charter as "a resource for everyday life, not the objective of living...a positive concept emphasizing social and personal resources, as well as physical capabilities" (*Canadian Journal of Public Health*, 1986, p.426).

Kozier and Erb (1987) suggest that "health is a highly individual perception" (p.50). Most definitions of health have been developed by society and health professionals. Few studies were found that explored the definitions of health from the perspective of the elderly. The Canada Health Survey (Health & Welfare, 1981) suggests qualitative exploratory studies may facilitate a better understanding of the meaning of health for the elderly group. One qualitative study, (van Mannen, 1988) examined the self-defined health and health practices of a sample of community-based, healthy elderly, residing in the United States and a sample of ill British elderly, living temporarily in a community rehabilitation hospital. She found that, as age increased, the healthy elderly defined health more as a "state of mind" rather than the absence of disease. She also reported that "the healthy elderly indicated a need for nursing care based on adequate information, participation and self-direction" (p. 708). These findings suggest a need for further studies investigating elders' perceptions. Minkler and Pasick (1986) contended that ultimately, "for health promotion to address adequately the needs of the elderly, the concept of health itself must be recast" (p. 51).

Concept of health promotion

Health promotion has been defined as "the process of enabling people to increase control over, and to improve, their health...health promotion is not just the responsibility of the health sector, but goes beyond healthy lifestyles to well-being (*Canadian Journal of Public Health*, 1986, p.426). In addition, Minkler and Pasick (1986) asserted that there is a need to refine and broaden the concept of health promotion and its relevance to the health of elderly.

Miller (1991) stated that health promotion and wellness activities, in relation to the elderly, are similar to other age groups. They include "safety, nutrition, exercise and monitoring drug use" (p. 43). She pointed out nevertheless that these activities must be organized with the age-specific

needs of the elderly clearly in mind. Bausell (1986), in comparing the health-seeking behaviours of the elderly with those of younger adults, found a high degree of compliance among the elderly in such preventative practices as avoidance of salt and cholesterol, consumption of sufficient fibre and moderate or no use of alcohol.

Few studies have investigated the health promotion practices of the elderly from their perspectives. However, van Mannen (1988) reported that a sample of healthy American elderly valued health promotion behaviours such as "balanced nutrition...exercise...activity...and intergenerational contacts" as contributors to their health (p.708).

In an ethnographic study, Miller (1991) found that an elderly sample perceived involvement in activities, and the community along with a supportive social network contributed to their "vibrant wellness state" (p. 49). Ploeg and Faux (1989) found that elderly persons with higher levels of perceived social support demonstrated more positive lifestyle behaviours.

A recent study by Speake, Cowart and Pellet (1989) utilized Pender's Health Promotion Model (1987) to examine the relationships between selected demographic factors, health perceptions and health practices of the well elderly. This quantitative study investigated these factors as predictors of elderly health promotion practices. Major findings were that perceived health status and perceived control of health were significant predictors.

Method

A descriptive, exploratory design was used to answer the research questions. Both qualitative (audiotaped and open-ended questions) and quantitative (single-item Likert-type question of perceived health status) methods were employed. In-depth interviews were conducted in participant homes during Fall, 1989 and Winter, 1990, utilizing a questionnaire developed by the investigators.

Sample

Convenience sampling was used to obtain participants for this study. The sample consisted of twenty-eight English speaking females and males, 65 years of age and older, residing in their own homes or apartment buildings (excluding senior citizen apartment buildings). The small, non-random, convenience sample limits the representativeness and generalizability of the findings.

Instrument

A four-part interview questionnaire was developed by the investigators. Part A consisted of structured and semi-structured questions to elicit demographic and biological data. Part B consisted of one Likert-type question; "How would you describe your present health? excellent (1), good (2), fair (3), or poor (4)". According to the literature, self-reported health is a valid and reliable indicator of health status among elderly adults (Speake, Coward & Pellet, 1989). Part C consisted of the following questions to obtain participants' perceptions of the meaning of health: "In your own words, what does health mean to you? Some people find as they age their thoughts about health change. Have your thoughts changed? In what way?" Part D consisted of open-ended and semi-structured questions to elicit perceptions of their daily health promotion practices. The first question, an open-ended one, was "What do you do on a daily basis to keep healthy?" Then, additional questions followed to determine health promotion perceptions pertaining to each of Gordon's (1987) Functional Health Patterns. For example, to elicit perceptions related to the nutritional-metabolic pattern, the following questions were included: "What do you do on a daily basis regarding your diet to keep healthy?", "Describe a typical day's diet from the time you rise in the morning until bedtime."

Gordon's (1987) nursing focused, health-oriented framework provided bio-psycho-social assessment categories to explore health promotion practices of the elderly in depth. The following assumptions implicit to the framework were instrumental to the development of Part D:

1. The subjective data relative to 11 Functional Health Patterns are an expression of health-related practices.

2. The 11 Functional Health Patterns facilitate a holistic approach to assessment.

3. The 11 Functional Health Patterns are: health-perception-health-management; nutritional-metabolic; elimination; activity-exercise; sleep-rest; cognitive-perceptual; self-perception-self-concept; role-relationship; sexuality-reproductive; coping-stress tolerance; and, value-belief patterns.

4. The expression of health-related patterns are contingent to the interaction that exists between the individual and the environment.

The interview questionnaire was reviewed for content validity by a nurse expert in instrument development. Following this, modifications were implemented, then pre-test interviews were conducted and final revisions were made.

Procedure

The snowballing procedure (Taylor & Bogdan, 1984) was used to recruit the sample (n=28). A network of acquaintances of the investigators suggested possible names of participants. Letters describing the study and the inclusion criteria were then mailed. Interested persons contacted the investigators and were screened for eligibility. Interviews at the participants' place of residence, at a convenient time, were arranged. Data were collected by using the interview questionnaires.

Data analysis

Participant responses were audiotaped and verbatim transcriptions of all data were compiled (Roberts & Burke, 1989). Frequency counts were done for demographic and biological data. Raw data of participant perceptions of the meaning of health were analyzed first, several general themes were identified, from which biophysical, psychosocial and process categories emerged. Descriptors pertaining to participant perceptions were coded simultaneously. Two expert nurses were asked to rate each participant's response to the meaning of health independently, in accordance with the health definition categories identified by the investigators. An interrater reliability was obtained, with 85% agreement. Data descriptors of participant perceptions of their daily health promotion practices were coded in accord with Gordon's bio-psycho-social functional pattern categories.

Definitions

Well elderly: Persons 65 years of age and older who are living independently in their own homes or in apartment buildings (excluding senior citizen apartment buildings).
Biophysical health definition category: An expression of biophysical functioning in nutritional-metabolic, elimination, activity-exercise and sleep-rest patterns (Gordon,1987).
Psychosocial health definition category: An expression of psychosocial functioning, related to patterns of role-relationship, self-perception and self-concept, coping-stress tolerance, value and belief (Gordon, 1987).
Bio-psycho-social health definition category: An expression of functioning within the context of both biophysical and psychosocial patterns (Gordon, 1987).
Process health definition category: An expression of facilitating behaviours that maintain or promote health.
Health promotion practices: An expression of bio-psycho-social health seeking behaviours that maintain or optimize health (Gordon, 1987).

Findings

Frequency counts, percentages and sample quotes are used to present findings. The findings will be presented in relation to the selected concepts from Pender's Model (1987) and Gordon's (1987) categories of Functional Health Patterns.

Table 1

Demographic Characteristics (n=28)

	Number	Percentages
Gender		
Female	20	71%
Male	8	29%
Age (in years)		
65-74	14	50%
75-84	12	43%
85-94	2	7%
Marital status		
Married	14	50%
Single	3	11%
Widowed	11	39%
Retired		
Yes	28	100%
Previous employment		
Professional	9	32%
Non-professional	19	68%
Religious affiliation		
Protestant	13	46%
Roman Catholic	14	50%
Level of education		
Primary	5	18%
Secondary	11	39%
College	8	29%
University	4	14%
Annual income ($)		
5,000 - 10,000	1	5%
10,100 - 15,000	3	11%
15,100 - 20,000	7	25%
20,100 - 30,000	11	39%
30,100 and over	6	21%

Note. Professional occupations include teachers, bankers, nurses. Non-professional occupations include miners, housewives, clerks, bookkeepers.

Demographic and biological characteristics

Demographic characteristics of the sample are presented in Table 1. The majority were female; therefore findings are discussed in generalities rather than sex specific. There was an equal distribution of young-old, middle-old and old-old elders. Numbers of participants who were married and living with their spouses and of those single or widowed and living alone, were also evenly distributed. Most were Canadian born, of varying ethnic origins.

Biological characteristics are displayed in Table 2. The majority reported one or two chronic illnesses. Cardiovascular, arthritic and endocrine problems were frequently identified. Many participants claimed that chronic illnesses did not interfere with their daily activities. Participants were knowledgeable about the types, dosages and uses of their medications; very few took sedatives, while none took tranquilizers.

Table 2
Biological characteristics (n=28)

	Number	Percentages
Chronic illness		
Yes	26	93%
No	2	7%
Number of chronic illnesses		
None	2	7%
One-two	22	79%
Three-five	4	14%
Interference of illnesses with ADL		
Yes	7	25%
No	13	46%
Medications taken for chronic illness (es)		
Yes	22	79%
No	6	21%
Number of medications taken		
One-three	13	46%
Four-eight	9	32%
Sedatives taken		
Yes	2	7%
No	26	93%
Tranquillizer use		
Yes	0	0%
No	28	100%

Note: ADL refers to activities of daily living.

Perceptions of health status

Perceived health status was described, using a self-rating health scale. The majority rated health status as excellent or good, despite the presence of chronic illness (see Figure 2).

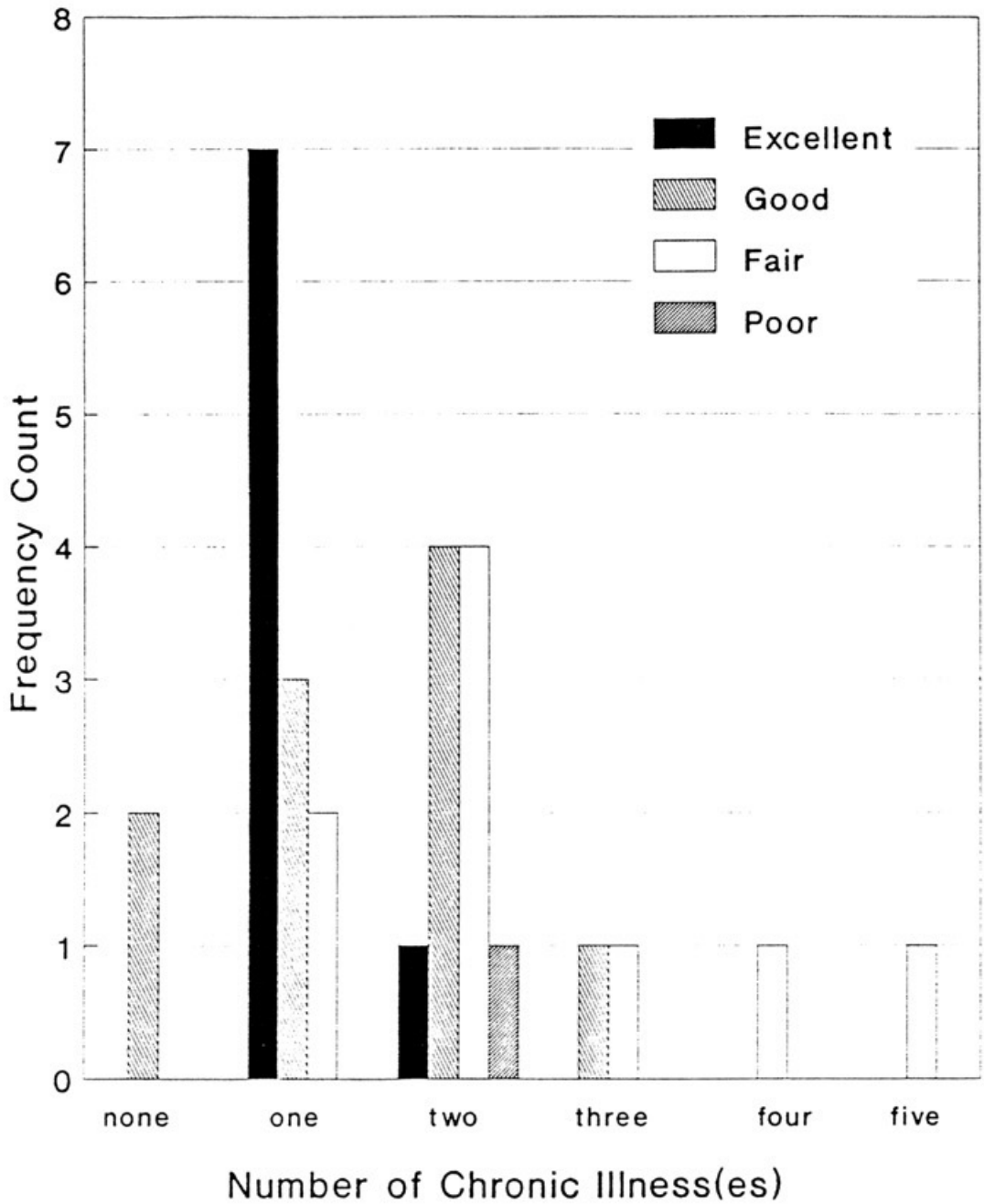

Figure 2

Perceived Health Status as a function of number of Chronic Illnesses

Perceptions of the meaning of health

Four health definition categories emerged from the analysis of the raw data. Sample quotes, typical of perceptions expressed, are presented for each category. Thirteen (46%) defined health in a bio-psycho-social context. For example, one participant stated, "It's physical well-being in the sense of feeling good and enjoying life. Being able to do the things that are important to me." Nine (32%) defined health in a biophysical context; for example, one stated, "Health is the ability to do what you want to do, when you want to do it and be able to do it." Three (11%) viewed health within the context of all bio-psycho-social and process; for example one participant said:

> "It's keeping your body in good shape; I keep my meals regular and get as much nutrition out of it as I can, I don't buy anything packaged. I do all my own cooking. Also, I think it's keeping a positive attitude really and keeping lots of love in your heart."

Two (7%) defined health in a psychosocial context. One participant said, "I think it's feeling good within yourself and about yourself. It means having a sound mind along with the aches and pains." One (4%) defined health in a psychosocial and process context. This participant stated, "I think to be healthy you've got to be content with your lot; you've got to be yourself and to try to have a moral life...and if you live within your means and don't have worries it prolongs your life."

Perceptions of health promotion practices

For the purpose of this paper, findings of the perceptions of well elderly of their health promotion practices, for five of the eleven functional health patterns, are illustrated in Table 3.

Activity - exercise pattern

Many participants exercised on a daily basis, with walking as the most common form of exercise. Other physical activities included swimming, bowling and curling. Leisure activities frequently mentioned were reading, knitting and gardening. Many of these elders participated regularly in community volunteer work.

One said, "You have to keep moving to stay healthy. Another participant stated:

> When I started taking lectures at the university, they had exercises in between breaks. Just doing these warm-up exercises helped me to get rid of the cramps in my legs, so I kept on doing them. Now I do

exercises on my back before getting out of bed, and I do warm-up exercises throughout the day. It helps you to keep mobile.

Another reported, "I walk on a daily basis. Most days in the winter it's three miles; in the summer it's usually six miles. I do aerobic exercises with the TV program daily. Also, in the summer I use my three-speed bike." Of note, many participants maintained exceedingly busy daily schedules, to the extent that it was often difficult to arrange interviews with them.

Table 3

Self-reported Health Promotion Practices Based on Gordon's (1987) Functional Health Patterns

Patterns and practices	Number	Percentages
Activity-exercise		
Participated in leisure activities	22	79%
Participated in regular exercise	19	68%
Participated in volunteer work	17	61%
Nutritional-metabolic		
Planned nutritious meals	25	89%
Planned high fibre diet	20	71%
Minimized fat intake	16	57%
Minimized intake of red meat substituted by chicken and fish	14	50%
Minimized eggs and butter intake	5	19%
Minimized coffee intake	21	75%
Planned intake of water and juice	14	50%
Role-relationship		
Confidant available	28	100%
Family as support	27	96%
Grandchildren as support	5	19%
Friend(s) as support	14	50%
Neighbour(s) as support	11	39%
Support to others	23	82%
Coping-stress tolerance		
Use of diversional activities	13	46%
Use of support system	9	32%
Use of humour	4	14%
Value-belief		
Turned to religion when difficulties arose	20	71%

Nutritional-metabolic pattern

Most participants' perceptions reflected an informed nutritional knowledge base. For example, several drank four or more glasses of water per day because they believed this promoted elimination; many planned nutritious meals with high fibre, and low fat and cholesterol. A typical sample quote follows.

> I always make sure I eat the required foods. For breakfast I have a fruit, cereal, oat or all-bran with half a banana, toast and coffee or tea. Lunch, I usually have a salad with tuna-turkey-chicken sandwich and a muffin....At supper, I have chicken or fish and fresh vegetables and once in a while I'll have lean steak. I try not to eat late at night.

Role-relationship pattern

A variety of support persons facilitated the physical and psychosocial well-being of the sample. Family members most frequently mentioned were children and grandchildren. Notably, the majority saw themselves as support persons to others and that this helper role maintained and promoted their health. One participant stated, "It keeps me on my feet and keeps me active." Another said, "It makes you feel helpful and needed." One of the elders replied, "It (the support role) keeps you active, it takes your mind off yourself and it's emotionally satisfying. It takes you out of the family unit." Another said, "Exercise and companionship are the things that help you to stay healthy. I've been in this same area for 43 years, so I have good friends."

Coping-stress tolerance with value and belief patterns

Many participants perceived that they coped in a positive healthy way with problems and stress by having strong religious beliefs. Several identified religion as a strength that helped them deal with difficulties. For example, one 84-year-old participant stated "It has everything to do with your well-being because it helps you when difficulties arise." Diversional activities (such as walking, reading and gardening), discussion of their concerns and difficulties with someone in their support system and use of humour were perceived coping mechanisms for stress.

Discussion and Implications for Nursing

In this study, although the majority of elderly had one or two chronic illnesses, they, nevertheless, rated their health as "excellent" or "good". The literature generally supports this finding of perceived healthfulness by the elderly (Health & Welfare, 1989; Speake et al., 1989).

The first major finding in this study was that nearly 50% of the participants perceived health as a bio-psycho-social construct. This finding is congruent with current emerging themes in the literature that health is a mind-body-spirit concept which includes notions of wellness (Dunn,1959; Miller, 1991). It is also similar to the definition of health expressed by the elderly American participants in van Mannen's (1988) study. Dunn (1959) postulated that there is a progressive integration or maturation of wellness or health as one moves through the developmental stages (cited in Pender, 1987). Could this integrated perception of health be indicative of the maturational stage of the sample?

This elderly sample identified many different types of health promoting practices within each of the five health promotion pattern categories (refer to Table 3); most were found within the activity-exercise and nutritional-metabolic patterns. Studies have found that frequent exercising is a part of the daily activities of many elderly (Brown & McCreedy, 1986; Health & Welfare, 1989; Miller, 1991). Clemen-Stone, Eigsti and McGuire (1991) have written that there is increasing evidence of the benefits of flexibility, strength, fitness and general well-being when the elderly exercise regularly. Among the participants, cardiovascular and arthritic problems were the most commonly experienced. Therefore, the investigators postulate that exercise and nutritional health practices may be related to required self-management of their chronic illness. Questions arise. In this sample, what factors motivated the participants to follow these health promotion practices consistently? Were lifestyle practices modified to control illness symptoms or to optimize their level of wellness?

In addition, the findings illustrate that a variety of bio-psycho-social health promotion behaviours were practised in the biophysical areas of activity-exercise and nutritional-metabolic patterns, as well as the psychosocial areas of role-relationship, coping-stress tolerance and value-belief in order to improve health and well-being. This is not a surprising finding given that nearly 50% had a bio-psycho-social health orientation. These findings raise questions regarding the relationship between health definitions and health promotion practices of elderly.

For nurses to assist the elderly in adopting health promotion patterns, it is critical to be continually cognizant of the mind-body-spirit elements attributed to health by many elderly, to ensure an integrated approach to health promotion practices. Gerontological nurses who are health promotion oriented in their practices can continue to build on knowledge of workable health promotion strategies, defined by the elderly themselves, that best maintain and optimize their health. For example, in this sample volunteerism was identified as a health-promoting strategy. Nurses must increase public awareness in order to facilitate involvement of the elderly as a resource at

the community level. Finally, additional knowledge of what motivates the elderly to practise healthy lifestyles consistently would be of benefit to nurses in their practices.

Future research

We recommend a replication of this study using Pender's model, with a larger well elderly sample, using random sampling methods with equal numbers of males and females. More studies are needed to examine motivating factors amongst well elderly that influence health promotion practices, particularly type and severity of chronic illnesses and social support (especially grandchildren). Studies should also be undertaken to explore the relationships between health orientation and health promotion practices of the well elderly.

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RÉSUMÉ

Importance de la santé aux yeux des personnes âgées et influence de cette perception sur leur mode de vie

Cette étude préliminaire avait pour objectif de décrire les perceptions que les personnes âgées ont de leur état de santé, de l'importance de la santé et de leurs habitudes quotidiennes pour se maintenir en bonne santé. L'étude est axée sur le modèle de promotion de la santé de Pender (1987). Les auteurs ont utilisé les modèles de santé fonctionnels de Gordon, qui sont une grille d'évaluation infirmière, pour mieux cerner la façon dont les personnes âgées perçoivent leurs habitudes en matière de promotion de la santé. L'échantillon de commodité était constitué de 28 hommes et femmes anglophones âgés de 65 ans et plus. Les données ont été recueillies dans le cadre d'entretiens approfondis. Quoique affligés de troubles chroniques, la majorité des participants jugeaient leur santé bonne ou excellente. On a effectué l'analyse du contenu de données qualitatives enregistrées sur bande sonore. Cette analyse a fait ressortir quatre définitions de la santé; près de la moitié des sujets ont vu dans la santé une notion biopsychosociale. L'étude fait également ressortir les pratiques visant à promouvoir la santé qui s'apparentent aux cinq modèles de santé fonctionnels de Gordon (1987) (activité-exercice, nutritionnel-métabolique, rôle des relations, tolérance au stress et valeurs-croyances). L'étude analyse les effets de ces observations sur les sciences et les soins infirmiers.

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