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EDITORIAL

The Future in Nursing vs. Nursing in the Future

When one thinks of any process or activity in some future dimension, one might be inclined to see the focal image unchanged in itself, but in a different context. Different environmental attributes such as electronic gear and video telephones form the mental picture, but one is unlikely to envision any great modification of the activity or behaviour. Such imaging merely becomes an unchanged process carried out on a changed stage.

We have had, in the recent past, frequent exposure to crystal ball gazers. Some of them have even developed a thriving business of conducting "futures workshops". Participants have a fine time identifying what they would like to happen and predicting what they believe will happen. This is not to denigrate the exercise. It is useful. It cuts away some cobwebs and sometimes even forces us to confront and challenge the sacrosanct. In all probability images of the future of both the investigative and the nursing process will still be clothed in the same raiment (fuzzy or precise) but carried out under different circumstances with some equipment modification. Such is Nursing in the Future.

What in Nursing Now is antecedent? What seeds or seedlings does it contain that will develop into a future?

Aside from our ambivalence about emulating successful disciplines as opposed to the independent pursuit of our own science according to our perception of societal requisites, we know we must develop methods of validating the theoretical constructs of nursing practice. There are modest and courageous efforts of a few universally scattered scholars. They are working to supply the empirical evidence of concept identity, of confirmation of concept linkage and explanation of prediction and of prescription that is Nursing. Silva's (1986) observations reported in ANS are not too surprising. Nine of 62 studies met criteria that addressed the mandate of validation.

As a discipline, we are making progress (slow for some, too fast for others) and as a discipline we must be prepared to counter and challenge reviewer bias that obstructs methodological investigations and proposals for testing theory. Such rejections are not the only means of science control. Trivialization and ridicule is a very effective vehicle for discipline

suppression. Avoidance and indifference to the development and validation of theoretical constructs for nursing practice is to trivialize the future in Nursing.

Marian McGee

ÉDITORIAL

L'avenir des sciences infirmières et les sciences infirmières de l'avenir

Lorsqu'on réfléchit à ce que sera dans l'avenir un mécanisme ou une activité, on a tendance à s'en faire une image qui reste foncièrement inchangée, mais que l'on situe dans un contexte différent. Divers éléments de décor, appareils électroniques et vidéotéléphones, servent de cadre à cette image mentale, mais il est peu probable que l'on puisse imaginer une profonde modification de l'activité ou du comportement. Ce genre d'imagerie devient un processus inchangé qui se déroule dans un autre milieu.

Depuis quelque temps des futurologues se plaisent à nous exposer leurs prévisions. Certains d'entre eux sont aujourd'hui à la tête d'entreprises très prospères qui organisent des "ateliers de futurologie". Les participants s'amusent beaucoup à identifier ce qu'ils aimeraient qu'il arrive et à prédire ce qu'ils croient qu'il arrivera. Nous ne cherchons nullement à dénigrer cet exercice qui peut être utile. Il élimine des imbroglios et nous oblige même parfois à remettre en question certaines idées sacro-saintes. Selon toute probabilité, les images du devenir de la recherche et des soins infirmiers seront toujours présentées dans les mêmes structures (aux contours flous ou précis) mais ces tâches seront cependant exécutées dans des conditions différentes à l'aide d'appareils différents. Telles seront les sciences infirmières de demain.

Quels sont dans les sciences infirmières d'aujourd'hui les éléments embryonnaires de l'avenir?

A part notre hésitation à imiter les disciplines solidement établies, au lieu de nous lancer dans la poursuite indépendante de notre propre science selon la perception que nous avons des conditions sociales, nous savons qu'il nous faut élaborer des méthodes capables de valider les structures théoriques de la pratique des soins infirmiers. Nous connaissons bien les efforts modestes et courageux de quelques chercheurs disséminés de par le monde. Ceux-ci

s'efforcent de fournir la preuve empirique de l'identité conceptuelle, de la confirmation du lien et de l'explication du concept, de la prédiction et de la prescription de ce qu'est le nursing. Les remarques de Silva (1986) parues dans ANS n'ont rien de très étonnant. Neuf des 62 études respectaient les critères relatifs au mandat de validation.

Dans la discipline, nous faisons des progrès (lents pour certains, trop rapides pour d'autres) et nous devons être prêts à contrer et à contester le parti pris de critiques qui bloquent l'enquête méthodologique et les projets de mise à l'épreuve de la théorie. Ce type de rejet n'est pas le seul obstacle à l'évolution de la science. La banalisation et le ridicule sont des moyens très efficaces de supprimer une discipline. Or, ne pas tenir compte de notre travail de formulation et de validation des structures théoriques de la pratique infirmière, ou y rester indifférent, c'est banaliser l'avenir des sciences infirmières.

Marian McGee

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Silva, M.C. (1986). Research testing nursing theory: State of the art. *Advances in Nursing Science*, 9(1), 1-11.

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LEARNING PROJECTS OF MOTHERS OF PRETERM AND LOW BIRTH WEIGHT INFANTS

Yvonne Brown

Parenthood is a stage of adult development that involves extensive learning. In anticipation of impending parenthood, many adults deliberately prepare themselves by attending structured parent education classes and through books, films, friends, and relatives. After the arrival of the infant, parents learn to cope with new responsibilities, new developmental tasks, and new situations. When an infant is premature, there may be additional learning efforts that are related to the birth and subsequent care of the child.

This study was designed to examine the deliberate learning projects undertaken by adult mothers of preterm or low birth weight infants. The objectives were to identify and describe specific characteristics of each learning project that was related to the birth and care of these infants.

Definitions

Adult mother: one who has reached the age of 18 years at the time of her infant's birth.

Deliberate learning: major efforts to change oneself; efforts in which the desire to learn or change is stronger than all one's other motivation (Tough, 1979).

Learning episode: a period of time devoted to a cluster or sequence of related activities. Each episode has a definite beginning and ending in time, and a definite focus or intent (Tough, 1979).

Learning project: a series of related learning episodes adding up to at least seven hours; a sustained and highly deliberate effort to learn (Tough, 1979).

Low birth weight infant: one whose birth weight is less than 2500 grams (Crosse, 1975).

Preterm infant: one born before 37 completed weeks of gestation (Crosse, 1975).

Prematurity: gestation of less than 37 completed weeks and/or birth weight less than 2500 grams (Crosse, 1975).

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Literature Review

Adult education

Although it has long been recognized that adults do learn, there has been little research about adult learning until recent years. In the mid-1920s, Lindeman pioneered the concept of learning that results from adjustment to situations (1961). His key assumptions about adult learners have been supported by later research and have constituted "the foundation stones of modern adult learning theory" (Knowles, 1978, p. 31). Carl Rogers (1951) contributed to adult learning theory by developing five basic hypotheses that emphasized a learner-centered approach to education.

In 1961, Houle categorized learners as being either goal oriented, activity oriented, or learning oriented. In more recent years, Tough (1979), building on Houle's research, began to focus on the study of the "deliberate" learning in which adults engage.

Premature infants

Premature infants represent a significant concern for the health system and for parents for several reasons: the incidence of birth of such infants, survival rate, morbidity, short-term and long-term prognoses. In 1982, there were approximately 21,000 premature infants born in Canada (Statistics Canada, 1984). The increasing number of these infants who survive each year (Stewart, Reynolds, & Lipscomb, 1981) has implications for the health care system because premature infants are frequently the recipients of intensive levels of care, often in neonatal intensive care units. In the short term they are at greater risk for infection, hypoglycemia, hyperbilirubinemia, respiratory distress, central nervous system disorders, and gastrointestinal disturbances (Peacock & Hirata, 1981). The long-term prognosis may include anomalous physical, psychomotor, behavioral, and/or social development (Fitzhardinge, 1976). Disorders of parenting have also been postulated as risks for these children (Klaus & Kennell, 1970).

The birth of a premature baby is usually an unanticipated event for a parent. It has been described as a crisis (Caplan, 1960) and can be accompanied by acute emotional disorders (Kaplan & Mason, 1960). High levels of anxiety have been identified in parents of such children (Jeffcoate, Humphrey, & Lloyd, 1979). Coping behaviors and psychological tasks of adjustment of parents of premature infants have been investigated by Kaplan and Mason (1960) and Guess (1981).

Parental concerns regarding physical and behavioral development were studied by Brown (1981). Specific concerns identified by DuHamel, Lin,

Skelton, & Hantke (1974) included: the reason for premature birth, feelings of guilt about the birth, infant development, the equipment used in the hospital care of the baby, the possibility of cessation of breathing, and a feeling of incompetence in caring for the baby at home.

No research was found that studied learning or learning needs of parents of prematures, although some authors alluded to these needs.

Method

Subjects

Thirty-three English speaking women, aged 19 to 43, residents of an urban center in Saskatchewan, were interviewed by the researcher. These women had given birth to premature infants who were six to twelve months of age at the time of the interviews. Additional criteria included: the women were over the age of 18 at the time of birth of their infants; the infants were singlets with no major identifiable congenital anomalies; and the infants were living with their mothers and were assessed by their mothers as being in good health at the time of the interviews.

The records of an urban hospital and a community health unit were used to locate women for interviews. All women who met the above criteria were eligible for the sample. For several reasons the researcher was unable to interview all the eligible subjects: many of the potential subjects had moved without leaving forwarding addresses, and several telephone numbers had been disconnected; some women were on vacation during the months in which the interviews were scheduled; and three women did not wish to participate in the study.

Instrument

A semi-structured interview schedule and probe sheets were used during the interviews. This schedule, modeled after Tough's original (1968) design, has been extensively used in adult education research (Fair, 1973; McCatty, 1974; Wickett, 1977), although it has not undergone psychometric testing. To establish face validity of the instrument, a review was carried out by four professionals in the field of adult education. No changes were made on the basis of this review. The interview schedule was also pilot tested with two women who met the criteria for sample selection. As a result of this testing, minor changes were made in the wording of questions and probes for increased clarity. The interview schedule was found to elicit the desired responses from the subjects.

Data collection

Tape-recorded interviews were conducted, by appointment, in the mothers' homes. The average length of the interviews was two hours.

Each interview began with a general introduction to the purpose of the study and to aspects of deliberate learning. The mother was then asked to list verbally any learning she had engaged in since the birth of her infant. Learning that occurred prior to the birth of the baby was not included. Once this initial list was established, the mother was asked to identify those learning efforts that she assessed as being related to the birth, care, or understanding of her premature infant. The learning efforts thus identified were explored in detail in order to select those that qualified as learning projects, i.e., had a definite focus and consumed more than seven hours. Each learning project was then examined for the following characteristics:

1. Circumstances that stimulated the learning project,
2. Planner of the learning project,
3. Resources used for learning, including accessibility and value,
4. Hindrances or obstacles to learning,
5. Amount of skill, knowledge, or understanding gained (self-rated by mother),
6. Benefits to self as a result of the learning project,
7. Others who benefited from the learning project,
8. Estimate of the time spent in each learning project,
9. Selection of the most important project.

Demographic data included: name, age, educational background, marital status of mother; name, age, sex, birthweight and gestational age of infant; length of time infant was hospitalized, any rehospitalizations; general health of mother and infant; number of children in family; previous premature births; specific support person since infant's birth.

Data Analysis

The demographic data were analyzed using mean, median, and range measures. Substantive data were analyzed by grouping of responses into categories; these categories were developed by the researcher after the data had been collected. The learning projects were grouped according to commonalities in their themes or topics. For example, when a mother described a learning project in which she had learned about the normal milestones for a three month old infant, that was considered to be "learning about development."

An independent reviewer assessed all of the written data and a sample of two tapes from the interviews. There was a high degree (>95%) of inter-rater agreement with regard to the categories developed.

Data related to other aspects of the learning projects were analyzed by frequency of response.

Findings and Discussion

The mothers interviewed had formal educational backgrounds varying from grade eight to a master's degree. Thirty-one of the mothers were married, one was in a common-law relationship, and one was a single parent living alone with her infant. There were one to four children in their families, with a median of two. Eight mothers had previously given birth to a premature infant; for three mothers, this was the third such baby. Two mothers had previously experienced the death of an infant, and one mother had an older child (also preterm) with cerebral palsy.

The infants (16 girls and 17 boys) were six to twelve months of age. The period of gestation ranged from 26 to 41 weeks, with a mean of 35.2 weeks. Birth weights ranged from 770 to 2990 grams, with a mean of 2154 grams. Because of the definition of prematurity adopted for this study, there were some infants included whose gestational age was beyond 37 weeks but who weighed less than 2500 grams at birth. Similarly, some infants were included who weighed more than 2500 grams but were of less than 37 weeks gestation. The infants' initial hospital stay was from two days to three months. One infant had been rehospitalized three times, three were rehospitalized once, and seven had been taken to emergency departments for health problems or minor surgical procedures.

Learning projects identified

The deliberate learning engaged in by the mothers appeared to be extensive, with a mean of 5.8 learning projects related to the birth, care, and understanding of their infants. The topics of the 193 learning projects were grouped by the researcher into ten categories.

1. Infant development (26 projects). These projects included such concerns as normal developmental stages and milestones, developmental delays, catch-up time, behavioral and intellectual development, possibility of brain damage, eruption of teeth, and stimulation to improve development.

2. Changes in lifestyle (23 projects). These projects were related to rearranging lifestyles, adjusting time, combining work and motherhood, combining school and motherhood, and adjusting to staying at home.

3. Hospital care of infant (23 projects). Projects were related to jaundice and phototherapy, intravenous infusions, use of incubator and ventilator, diagnostic tests, gavage feeds, monitors, bradycardia and apnea, infections and antibiotics, separation from infant.

4. Learning about "self" (21 projects). This included projects related to developing patience, seeking reasons for the premature birth, coping with guilt feelings, seeking the meaning of motherhood, being on her own with the children, adjusting to the suddenness of the birth.

5. Coping with the premature infant at home (21 projects). This category included learning about the characteristics and habits of a premature infant (sleeping, breathing, appearance, personality), adjusting to the care of a small baby, treating the child as a "survivor" and not overprotecting.

6. Basic infant care (19 projects). These projects included either learning for the first time or "brushing up" on infant care.

7. Infant feeding (18 projects). This area of learning was given so much emphasis by the mothers that it appeared to have importance apart from the topic of basic infant care. Mothers described learning about breastfeeding, expressing and saving breast milk, infant's weight gain, allergies and food additives, addition of solids, feeding problems (sleepy baby, choking, inability to suck, regurgitation, frequent feedings).

8. Family relationships (18 projects). Projects were related to sibling rivalry, discipline, relationships with the husband, and birth control.

9. Infant's health (15 projects). Projects were related to concerns ranging from relatively minor problems such as colds, allergies, cradle cap, fevers, and immunization to more major problems such as pneumonia, meningitis, patent ductus arteriosus, and pulmonary stenosis. Other concerns included eye and ear problems, foot deformities, colic, diarrhea, circumcision, and asthma.

10. Cesarean birth (3 projects). Six mothers had experienced a cesarean delivery, but only three described this as a learning project.

Six projects did not fit into the above categories. These were projects related to the search for a new physician (2 projects), sudden infant death syndrome, preparation of a written account to share the cesarean birth experience, working with a single parents' group, and disturbances in a pet's health as a manifestation of jealousy of the baby.

Because this study was not designed to be a comparative one, it cannot be concluded that the topics of the learning projects were specific to mothers of premature infants. Some projects did appear to be closely related to the premature birth, for example: rearrangement of lifestyle to accommodate several months of visiting the baby in hospital; learning about specific medical and nursing procedures; coping with the stresses, anxieties, and guilt feelings associated with the birth; and the meaning of motherhood as related to the precariousness of this child's survival.

Characteristics of the learning projects

The topics of the learning projects as described by the mothers in this study were similar to parental concerns reported in other studies (Adams, 1963; DuHamel et al., 1974; Gruis, 1977; Jeffcoate et al., 1979; Kaplan & Mason, 1960; Lissenden & Ryan, 1982).

Circumstances or events which stimulated the learning projects varied according to the nature of the projects. For example, mothers who described projects related to infant development cited such circumstances as: the child was smaller or slower than the other children had been; or a previous premature child in the family had cerebral palsy. It appeared that the mothers most frequently undertook learning projects in direct response to life events and a need to cope with the situation.

In 80.8% of the learning projects the learner was the sole planner. When projects were included where the learner was co-planner, the percentage of learner-planned projects rose to 94.8%. This finding is compatible with results from other researchers in adult education (Fair, 1973; Tough, 1979).

Resources for learning were categorized as: professional (nurses, doctors, nutritionists, child care workers); non-professionals (husbands, friends, relatives); print (books, newspapers, pamphlets, magazines); internal (inner resources that learners availed themselves of by means of meditation, reflection, prayer); other (films, television, infant's hospital chart). Figure 1 depicts the utilization of resources by the mothers in their learning projects.

It would appear from this study that the mothers interviewed had access to a variety of learning resources. For some of the learning projects (such as infant development, hospital care of the infant, basic infant care, infant feeding, infant health, cesarean birth), most mothers indicated that resources were easily accessible and were valuable. Some mothers, however, did indicate that resources related to infant feeding and infant health were of limited value. In the areas of changes in lifestyle, learning about self, family relationships, and coping with the infant at home, resources were assessed as being difficult to find and use. Although professional and print resources

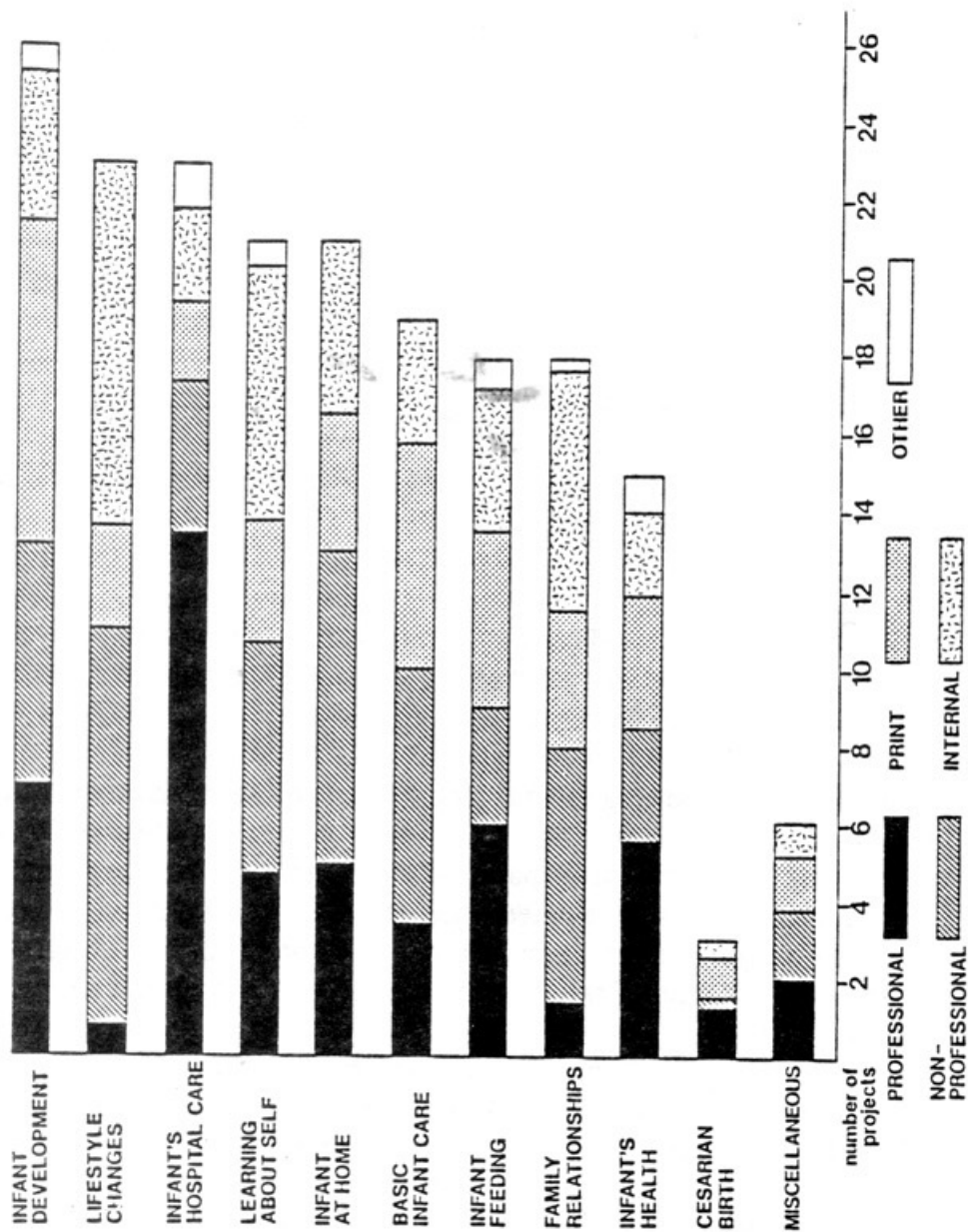


Figure 1: Learning resource utilization

were used by many mothers, there was a strong reliance on friends and relatives as resources for learning. It was of interest to note that, although the fathers were identified most frequently as major sources of support and assistance, they were not identified as major resources for learning.

Most mothers indicated that they had encountered some obstacles or hindrances to their learning. These were categorized by the researcher as being related to either internal or external factors. The most common internal obstacles were anxiety, fear, insecurity, anger, frustration, and guilt. External obstacles, although not numerous, included unsatisfactory responses from professionals; lack of someone to talk to about problems; inaccessibility of appropriate print resources related to development of the premature infant, to feeding and breastfeeding, and to allergies in infants. Other obstacles included inconsistent recommendations regarding infant feeding and sibling rivalry. Some mothers expressed difficulty in understanding medical terminology.

Most frequently identified benefits of the learning projects were an improved ability to cope with the situation and an ability to use the learning immediately or in future situations. Other benefits were reassurance, increased confidence and understanding, and internal satisfaction. Others who benefited from the learning projects were the husband, the baby, friends, extended family, and other mothers of premature babies. Mothers indicated that they had shared their learning with others and that their families were also better able to cope with the situation.

The responses to the questions regarding the amount of learning and change varied according to the nature of the learning projects. In the projects related to infant development, to lifestyle changes, to knowledge of self, and to family relations most of the mothers indicated that they had learned or changed a large amount. In projects involving infant care, coping with the infant at home, infant feeding and health, and cesarean birth half of the mothers indicated a large amount of learning or change. Many verbalized a need for more learning in the areas of infant health and care of the infant in hospital.

Estimation of time involvement in learning projects was difficult for the mothers. Although they could identify that they had spent more than seven hours in each project, most mothers could not provide an estimate of time spent in learning. Variations existed in the ability of mothers to recall past events and to identify learning related to these events.

When each mother identified her most important learning project, it was found that the majority of these (24) occurred in the following categories: knowledge of self (7), lifestyle changes (6), hospital care of infant (6), and

infant development (5). These projects were selected because the mothers perceived them as having resulted in large amounts of change or because they were very difficult learning experiences.

Implications for Practice and Research

The results of the study indicated that deliberate learning occurred as a response to crisis situations and that learning helped these mothers and families to cope with the situations. It is important that health care workers recognize the value of learning tasks and that they attempt to facilitate such learning. Since the majority of projects were planned by the learners themselves, health care professionals can be most effective as resource persons. Nurses, whether in hospital or community, should be aware of potential learning needs of mothers of premature infants and be sensitive to factors such as readiness to learn and possible hindrances to learning. In order to assist learning, nurses should be familiar with those topics that were cited as learning projects by the mothers in this study.

It was noted that mothers experienced difficulty in mobilizing their inner resources in the learning projects involving knowledge of self, lifestyle changes, and family relationships. If nurses anticipate this situation, they can assist mothers by being available to them for reassurance and by directing them toward appropriate counseling or learning resources.

Health professionals were frequently cited as resources in the areas of hospital care of the infant, infant health and infant nutrition. Nurses should continue to focus on these topics when teaching. Dissatisfaction expressed by mothers with regard to conflicting information, particularly in relation to nutrition and health problems of premature infants, may be decreased if health care professionals work toward greater consistency in recommendations and information.

Several mothers indicated the need for printed material relating specifically to premature infants and their care. This type of information should be available in the form of booklets which can be taken home from the hospital. Public access to current information regarding premature infants (developmental expectations, health, care and feeding, stresses of having a high risk newborn) should be improved. Many books and articles have been written for nurses and physicians, but very little exists for the lay public.

Although many of the mothers interviewed indicated a high degree of reliance on friends or neighbours for support and information, some mothers lacked these support systems. Early postnatal home visits by a community health nurse would be of value in assessing the mother's need for such

support. Where a parent-to-parent support network does not already exist for these mothers, it would be valuable to establish such a group. This network, in the form of meetings or telephone contact, would be helpful not only during the period of hospitalization, but also after return to the community.

Further research is needed to compare learning projects for different groups of mothers such as primigravidas/multiparas, mothers of full-term infants/mothers of premature infants, rural/urban mothers.

As a result of the concerns expressed by mothers regarding support systems, the researcher also recommends further exploration of the effectiveness of parent-to-parent support groups. In addition, because infant development was the most frequently cited topic for learning projects, continued research is needed in the area of development of and prognosis for premature infants.

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RÉSUMÉ

Projets d'apprentissage de mères d'enfants prématurés et d'enfants de faible poids à la naissance

Cette étude descriptive avait pour but d'étudier les caractéristiques spécifiques des projets d'apprentissage d'un groupe choisi de 33 mères d'enfants prématurés. Les mères, dont les enfants étaient âgés de six à douze mois, ont identifié 193 projets d'apprentissage. Le chercheur avait classifié les sujets en dix catégories. Les projets d'apprentissage étaient, pour la plupart, conçus par les mères, et les ressources d'apprentissage qu'elles ont utilisées variaient selon la nature du projet. Bien que les ressources furent, en général, jugées facilement accessibles et valables relativement à l'apprentissage, des obstacles ont été identifiés. Des recommandations basées sur les résultats de cette étude ont été faites. Ces recommandations sont importantes pour les professionnels de la santé qui oeuvrent dans le domaine de la maternité et des soins aux nouveau-nés.

PERCEPTIONS OF STAFF NURSES' PERINATAL CONTINUING EDUCATION NEEDS

Barbara L. Calder

The objective of continuing nursing education is competence and, ultimately, safe, effective patient care. To meet this objective, program planners must be aware of the continuing education needs of the nurses for whom their programs are designed.

The importance of needs assessment that involves input from a number of sources is acknowledged. (American Nurses' Association, 1974; Knowles, 1980). There is, as a result, a potential for discrepancies among the needs that are identified by different groups (Bell, 1978; Griffith, 1978). The consequences of this possibility increase in importance when one considers that, in continuing nursing education, programs are often based on the needs that are identified by supervisors and advisory committees, and not by the staff nurses for whom they are intended. Not only are learners more conscientious and enthusiastic if they perceive that their needs are being met, but "readiness and willingness to participate in a learning situation is directly related to what they (learners) perceive as an interest or need" (Puetz & Peters, 1981, p. 5).

A review of the nursing literature revealed little information on needs assessment in general, and still less that deals with possible differences in the perception of needs. The small amount of nursing literature that is available is divided as to whether or not such differences actually exist. Few writers have dealt with the degree or direction this discrepancy might take. Although accounts of perinatal continuing education programs are found in the literature, there is little description of the needs assessment processes used.

The purpose of this study was, therefore, to compare staff nurses' perinatal continuing education needs as they are perceived by directors of nursing and by the staff nurses themselves, and to determine the degree and direction of any differences identified.

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Literature Review

Those writing in continuing education generally agree that a need may be defined as a gap between an existing situation or outcome and a desired or required situation or outcome (Kaufman, 1976; Knowles, 1980; Witkin, 1976). The term need is further refined by the adjectives that are attached to it. A felt need is "something regarded as necessary by the person or persons concerned" (Atwood & Ellis, 1971, p. 212), but felt needs are not necessarily real needs. Real needs are deficiencies that can be demonstrated to exist, as opposed to those that are merely thought or felt to exist (Atwood & Ellis, 1971; Monette, 1977). Although it would be inadvisable to base an entire continuing education program on felt needs, without ascertaining whether or not they were real needs, it is wise to begin program planning at this point (Knowles, 1980). Continuing education programs, of course, deal only with deficiencies that can be relieved by an educational process (Lawson, 1979).

Needs are determined by needs assessment. Definitions of this process abound, with many describing it as a "systematic" process or procedure that, as Monette (1979) says, "gathers information about where a learner or learning group would like to be or should be currently and the discrepancy between where they are and want to be or should be" (p.84).

Many tools for operationalizing needs assessment are found in the literature. Bell (1978), alone, describes eighteen. Questionnaires and interviews are two of the most commonly suggested. Marshall, DeJarnette, Caldwell, and McKee (1982) describe a study that found that informal interviews yield information specific to the individual, but in more detail than is necessary in planning for a group, while formal questionnaires provide general information, more suited to group planning, but not as useful for individualizing programs.

Since early in the adult education movement, writers such as Houle (1973) have advocated basing programs on the needs of learners. Learners, however, are not the only source of information for program planners. Others, including experts, supervisors, and the community, should also be consulted, and the possibility that the needs that are identified by these various sources may differ then arises (Griffith, 1978; Nowlen, 1980).

Needs assessment in continuing nursing education

Although the importance of considering the felt needs of the learners is also emphasized in the literature in continuing nursing education (Dutton, 1977; Puetz & Peters, 1981), it is also recommended that information for needs assessment should be gleaned from several sources. The American

Nurses' Association (1974) identifies individual nurses, administrators, and program faculty as all having responsibility in this area.

Educational needs arise from roles, responsibilities, and functions (Koonz, 1978). The introduction of new treatments, medications, and technology often necessitates further education of nurses (Clark, 1979; Cooper, 1983). In addition, as del Bueno (1978) points out, skills that are not used frequently are lost and must be re-learned.

As has been previously suggested, when doing a needs assessment it is wise to consult a number of sources. The studies to be described here deal with one of the potential problems in this process - the possibility of lack of congruence between learning needs identified by the learners themselves and those identified by others.

In 1973, Thomas and Heick reported a study designed to assess the continuing education needs of registered nurses in Iowa. Responses were solicited from faculty at a university college of nursing and from registered nurses. The authors describe the results as revealing "more areas of agreement than disagreement between the two groups," with six of 31 items common to the top third of both groups, and seven common to the bottom third. However, when chi-square was used to test the observed variations in the rankings of the two groups, eighteen items exhibited significant differences. Of these, only two, both process-oriented, were ranked more highly by the educators.

Recognition that "learning is maximized when it is based on the individual's own perceived needs and goals " (p. 19) led Chatham (1979) to study the educational needs of nurses in North Carolina, as perceived both by the nurses themselves and by their supervisors. Her prediction was that there would be a difference in perceptions with factually-oriented programs likely to be identified as important needs more frequently by the registered nurses and process-oriented programs likely to be identified more frequently by the administrators. To operationalize this study, 150 questionnaires were randomly distributed to the staff nurses in six hospitals where directors of nursing had previously responded to an educational needs assessment of their staff. Results indicated that only three of the top nine needs that were identified by each group coincided. Furthermore, the directors of nursing identified more process-oriented topics as high priority for the staff nurses while the staff nurses themselves identified more factually-oriented topics as high priority.

Beach (1982) studied the total population of community health nurses and supervisors in Michigan, using a lengthy pre-tested, self-administered mail questionnaire to assess perceptions of learning needs of staff nurses. Of the

17 needs identified six were identified by supervisors only, three by the staff nurses only, and eight were shared by both groups.

This review of the literature revealed few other studies dealing with assessment of learning needs in continuing nursing education. Those found dealt either with specific groups of nurses looking at their own needs or with continuing education needs of nurses in general, from their individual perspectives. There were no studies of the continuing education needs of staff nurses in the area of obstetric and newborn care.

Data Collection

In the fall of 1983 a study was undertaken to compare the perinatal continuing education needs of staff nurses in small Saskatchewan hospitals, as perceived by directors of nursing and by the staff nurses themselves.

Instruments used

A pre-tested, self-administered mail questionnaire was used for data collection. This design was chosen in order to reach a large and widely dispersed population. The instruments were designed by the researcher and were assessed for face and content validity by two content experts.

The questionnaire was divided into three sections. The first was a list of 37 potential perinatal program topics that were identified in the literature and by content experts and practitioners. These were divided into five topic areas: antepartum, intrapartum, postpartum, newborn, and other unclassified topics. Space was provided for respondents to add additional topics. For each topic, respondents used a six-point Likert scale to indicate the degree of need that they perceived for themselves, or, in the case of directors of nursing, for staff nurses at their hospital. In the second section of the questionnaire, respondents ranked the five topics that they felt were of highest priority. The third section collected demographic data, as it was hypothesized that such variables might have an effect on learning needs. All respondents were asked to provide the following information about themselves: age; type of basic preparation; length of time since graduation; highest level of education attained; whether full or part-time employment; length of time in present position; and number of deliveries per year in their hospital.

Distribution of questionnaires

Letters describing the study and requesting participation and assistance were sent to the 62 directors of nursing in Saskatchewan hospitals that met

the criteria for the study. They also received a letter from the Director of Continuing Nursing Education, at the College of Nursing, University of Saskatchewan, introducing the research and the researcher. Hospitals included had 50 beds or less, admitted obstetric patients, and had not had a perinatal education program in the year immediately preceding the study. Only hospitals of 50 beds or less were considered because hospitals with a greater number tend to be departmentalized. Nurses in such hospitals are usually assigned to a particular clinical area, and they do not provide care for as wide a range of patients as do nurses in smaller centers. In addition, except in emergency situations, nurses in smaller hospitals care for patients who require less complex care. Patients, including obstetric and newborn patients, with more complicated conditions, are transferred to larger centers where more specialized care is available.

Those directors agreeing to participate were asked to fill out a form indicating the numbers of full-time and part-time staff nurses at their hospital. Directors not responding by the cut-off date were contacted by telephone. Fifty agreed to take part, generating a potential staff nurse population of 507. Nine hospitals no longer admitted obstetric patients, two refused to participate, and the researcher, after several attempts, was unable to contact one hospital.

Each participating director of nursing was sent a package containing a cover letter and questionnaire for herself, and individual envelopes containing cover letters and questionnaires for each staff nurse. The Director of Nursing completed her own questionnaire and distributed the envelopes. When the nurses had completed their questionnaires, each was replaced in its own envelope, sealed, and returned to the Director of Nursing, who then sent her questionnaire and the sealed envelopes from the staff nurses to the researcher.

Questionnaires were returned by 43 directors of nursing (86%) and by 335 (66%), staff nurses. Interestingly, three directors of nursing returned questionnaires from the staff nurses, but did not return their own questionnaires.

Analysis

For the purposes of analysis, the respondents were categorized as directors of nursing and staff nurses. Where it was deemed useful, the staff nurse group was further subdivided into full-time and part-time staff nurses. Programs from the Statistical Package for Social Sciences (SPSS) were used to determine frequencies. Crosstabulations were done to assess the effect of demographic variables. Comments were analyzed separately by the researcher.

Results and Discussion

While the demographic variables gave an interesting profile of nurses working in small Saskatchewan hospitals, none proved significant in the analysis of data. Data dealing with types of basic preparation were not analyzed because none of the directors of nursing had basic baccalaureate education; only slightly more than three percent of staff nurses had this type of preparation.

The results indicated no significant difference in perceptions of continuing education needs of staff nurses as identified by directors of nursing and by staff nurses themselves, with the exception of one topic - electronic fetal monitoring. This topic was rated as a greater need by staff nurses than by directors. Data generated by this study were examined as aggregates. That is, the data for each group - staff nurses and directors of nursing - were examined as a whole, without considering each hospital individually. This may have skewed the result for this topic because hospitals that have the equipment necessary to perform electronic fetal monitoring tend to be larger than those that do not. While such hospitals have only one director of nursing, the number of staff nurses employed is larger. Directors of nursing tend to be older than staff nurses, most of them having graduated more than fifteen years ago. Because of this, most staff nurses have trained at a time of high technology while most directors of nursing did not. Because younger nurses are more familiar with the technology, they may be more interested in and eager to use equipment that older nurses may find threatening.

When respondents ranked the five program topics for which staff nurses had the greatest degree of need, the three topics ranked first most frequently - assessment during labor, resuscitation of the newborn, and obstetric emergencies - were the same for directors of nursing, for full-time staff nurses, and for part-time staff nurses. However, there were slight differences in the ordering of the topics (see Table 1).

Unlike the findings in Chatham's 1979 study, there was considerable congruence in the top-ranked needs that were identified by staff nurses and directors of nursing. When compared with the total staff nurse group, only three of the top ten needs were not shared. This was also true when the directors and the full-time staff nurses were compared. Only two needs were not shared when the directors and the part-time nurses were compared. This is congruent with Thomas and Heick's (1973) findings that there were "more areas of agreement than disagreement" in their study of staff nurses and nurse educators.

Table 1

Weighted Ranking of Perinatal Continuing Education Topics by Directors of Nursing, Full-time Staff Nurses and Part-time Staff Nurses

Rank	Directors of Nursing	Full-time Staff Nurses	Part-time Staff Nurses
1.	Assessment in labour	Resuscitation of the newborn	Resuscitation of the newborn
2.	Resuscitation of the newborn	Obstetric emergencies	Obstetric emergencies
3.	Obstetric emergencies	Emergency delivery	Assessment in labour
4.	Emergency delivery*	Respiratory distress syndrome*	Emergency delivery
5.	Stabilization for transport (newborn)*	Assessment in labour*	Respiratory distress syndrome

*Same weighted rank.

Although differences between program categories were small, the "newborn" category was consistently identified as being most needed. Of the ten top ranked program topics, two in this category – resuscitation of the newborn and stabilization for transport – were identified by all three groups. Directors of nursing also selected newborn assessment, as did the staff nurses as a group; closer examination revealed that it was selected only by part-time staff nurses.

It was also found that there were no significant differences in the needs that were identified by directors of nursing and staff nurses employed full-time and staff nurses employed part-time. Although differences were not significant, there was a consistent tendency for both directors and full-time staff nurses to rate most topics more highly than did part-time nurses. This could be because a nurse working part-time might not have had to take as much responsibility as one working full-time. The Director of Nursing has the ultimate responsibility for the care provided in the hospital, and may, therefore, be inclined to rate needs highly.

Table 2

Comparison of Mean Values of Potential Perinatal Continuing Education Topics as Prioritized by Directors of Nursing, Full-time Staff Nurses and Part-time Staff Nurses

Topic	Directors of Nursing	Full-time Nurses	Part-time Nurses
1. Prenatal assessment*	3.1	2.8	3.2
2. Prenatal care	3.2	3.0	3.4
3. Prenatal teaching*	3.2	2.9	3.4
4. Identification of high risk pregnancy*	2.3	2.3	2.6
5. Management of high risk pregnancy*	2.7	2.3	2.5
6. Hypertension in pregnancy	2.7	2.6	2.7
7. Diabetes in pregnancy	2.6	2.7	2.9
8. Antepartum hemorrhage	2.0	2.2	2.3
9. Premature labour	2.0	2.2	2.4
10. Rh disease	2.9	3.0	3.0
12. Assessment during labour*	1.8	2.0	2.1
13. Care during labour	2.0	2.3	2.4
14. Sterile vaginal exams	2.4	2.6	2.7
15. Electronic fetal monitoring	4.7***†	3.7**	3.6†
16. Induction of labour	3.6	3.9	3.1
17. Pain relief during labour*	2.6	3.0	2.8
19. Postpartum assessment*	2.5	2.8	2.8
20. Postpartum care	2.7	2.9	3.0
21. Postpartum hemorrhage	2.1	2.0	2.2
22. Postpartum teaching*	2.3	2.5	2.8
24. Assessment of the newborn*	1.9	2.1	2.1
25. Care of the newborn	2.3	2.7	2.6
26. Low birthweight infants*	2.5	2.4	2.5
27. Respiratory distress syndrome	2.0	1.8	2.0
28. Resuscitation of the newborn	1.6	1.6	1.6
29. Thermoregulation	2.4	2.4	2.4
30. Hyperbilirubinemia	2.7	2.4	2.4
31. Stabilization for transport	1.7	2.1	2.0
32. Breastfeeding*	2.8	2.9	3.2
34. Infection control*	2.7	2.9	3.1
35. Parent-infant bonding*	3.1	3.1	3.4
36. Fetal alcohol syndrome	3.0	2.8	3.1
37. Dealing with unexpected pregnancy outcomes*	2.5	2.5	2.6
38. Adolescent pregnancy*	2.8	2.6	2.9
39. Obstetric emergencies*	1.5	1.6	1.7
40. Emergency delivery	1.7	1.7	1.8
41. Family-centered care*	3.2	3.4	3.6

Note: Lower scores indicate greater need.

* indicates process-oriented topic.

***† significant with χ^2 set at .05 level of significance.

Data were examined to identify any differences in rating of process-oriented topics (those dealing mainly with principles, creative problem solving, and evaluation, such as family centered care) and factually-oriented topics (those dealing with content, such as Rh disease).

None of the observed differences (except as previously noted) was significant, but the findings are nonetheless interesting. The data (see Table 2) revealed that when compared to full-time staff nurses only, directors of nursing specified greater need for the majority of topics and were equally likely to identify process-oriented and factually-oriented topics as being more needed than did full-time staff nurses. Full-time staff nurses, however, were more likely to identify factually-oriented topics as being more needed. Even greater difference was noted when directors of nursing and part-time staff nurses were compared. The directors indicated greater need for 75% of topics than did part-time nurses. In addition, almost 90% of the process-oriented topics and 70% of the factually-oriented topics were given high ratings by directors of nursing.

The results became even more interesting when all three groups were compared. Directors of nursing rated just over half of the total items more highly than did the two staff nurse groups. They identified greater need for more topics in both process-oriented and factually-oriented categories than did the other two groups. The proportion of process-oriented and factually-oriented items identified by directors and full-time staff nurses was very similar to the proportions found when the data from the whole group of staff nurses was examined. Of the 37 program topics listed, part-time nurses indicated greatest need for only two, both factually-oriented. Part-time staff nurses indicated greatest need for none of the process-oriented items.

Although the differences found in this study were small, they were consistent. The finding that directors of nursing were more likely than staff nurses to identify process-oriented topics is consistent with the findings of Chatham (1979). This may reflect differing perceptions of the role of staff nurses. Beach (1982) found that activities performed by nurses on the job were significantly related to perceived educational needs. Perhaps directors of nursing see problem-solving and evaluation as a larger part of the staff nurses' role than do the staff nurses themselves. Puetz and Peters (1981) contend that nurses are most interested in continuing education programs that relate directly to their work situation. Staff nurses may perceive factually-oriented topics as being more immediately work-related than process-oriented topics. There was considerable congruence, however, between topics identified by directors of nursing and full-time staff nurses. The differences were greater, although still small for individual topics, between directors of nursing and part-time staff nurses and between full-time and part-time staff nurses.

A possible explanation for what appears to be part-time nurses' disinclination to rate process-oriented topics highly may be that, because of their part-time status, they have even less opportunity to practise their perinatal nursing skills than do full-time staff nurses and, hence, feel less secure in their basic knowledge. An understanding of process contributes to adaptability and flexibility, particularly in unfamiliar situations. Because they have less current experience than do other nurses, part-time nurses might be more likely to turn to the Director of Nursing for assistance in unfamiliar situations, such as labor and delivery.

Other findings of this study are worthy of note. All perinatal continuing education topics were rated as at least moderately important by the majority of respondents. Both directors of nursing and staff nurses commented on the lack of experience of staff nurses. They also described difficulties in maintaining and developing skills in perinatal nursing. del Bueno (1978) discussed this concern in her examination of learning needs arising because an individual never learned or has little opportunity to use a particular knowledge or skill. Probably because of this deficiency in staff nurses' knowledge and skills, several directors of nursing reported that they were called whenever an obstetric patient was admitted to the hospital.

Although they were not asked about the difficulties that they experienced in attending perinatal continuing education programs, a number of nurses commented in this regard. Many cited distance as a major deterrent to attendance.

Recommendations

The following recommendations arise from the findings of the study.

1. Both the directors of nursing and the staff nurses should have input during program planning. It is usually good practice to begin such programming with learner-identified needs, and this should include the possibility of assisting learners to recognize needs of which they may not have been previously aware. It is essential that directors of nursing be consulted during program planning, as their support of programs is essential if nurses are to be able to attend.

2. Perinatal continuing education programs should focus on newborn program topics. Particular emphasis should be placed on assessment of the newborn, resuscitation of the newborn, and stabilization for transport. However, continuing education needs change as needs are met and new needs arise. It is also recognized that an adequate assessment of the mother and fetus prenatally and during labour helps to identify those at risk. Prudent

management in these instances reduces the necessity for nurses to deal with resuscitation and stabilization for transport of the newborn.

3. Because lack of perinatal nursing experience is difficult to remedy in small hospitals, the current amount of experience that student nurses receive in obstetric and newborn care should be maintained and, wherever possible, increased.

4. Wherever possible, nurses employed in small hospitals should have prior obstetric and newborn experience and have already developed the skills necessary in these areas.

5. Because it is so difficult for nurses in small rural hospitals to develop and maintain their skills in obstetric and newborn care, opportunities should be provided for nurses to spend sufficient time, perhaps on an exchange basis, in larger centers so that they may develop and improve their skills and knowledge.

6. Because it is difficult for caregivers to maintain seldom-used skills, consideration should be given to establishing a minimum number of deliveries that would be necessary for a hospital to continue admitting obstetric patients.

7. Directors of nursing should consider approaching Continuing Nursing Education to request a program that is specifically designed to meet the needs of their group. Although the focus of this research has been the perinatal continuing education needs of staff nurses, many directors of nursing are called whenever a patient in labor is admitted.

8. Regional programs should continue to be provided throughout the province, in addition to other programs in larger centers. Distance and time away from work appear to be reasons nurses are unable to attend continuing education programs. Programs in the nurses' vicinity may help to alleviate both of these problems.

Limitations of the research

There are a number of limitations to this study. First, only nurses in hospitals in Saskatchewan that have 50 beds or fewer were included in this study. It is possible that perinatal continuing education needs of nurses in larger hospitals or hospitals in other areas may differ. This reduces the possible degree of generalization to other populations.

Secondly, it is not known if those questionnaires returned represent actual proportions of full-time and part-time staff nurses. Based on numbers

reported by the directors of nursing, the response rate of staff nurses was 66%. It is possible that more part-time nurses did not return the questionnaires because they did not receive them. Several directors of nursing stated that they were unable to distribute questionnaires to all part-time nurses because they were not working during the study. If this is the case, differences in the needs that were identified by directors of nursing and staff nurses as a group and part-time nurses in particular may be greater than the findings of this study suggest. Differences could also be greater between full-time and part-time staff nurses. As well, it is possible that there may have been greater discrepancies in the continuing education needs that were identified by directors of nursing and by the staff nurses themselves than have been identified in this study. The instruments used may not have been sensitive enough to detect further discrepancies.

Recommendations for further study

The following are recommendations for further study.

More thorough testing of the instruments used in this study is needed. Because no instruments were available, those used were constructed by the researcher. Similar studies should be conducted using populations of nurses in larger hospitals, as well as in other clinical areas, to determine whether or not the results are consistent.

Further research should be carried out and published in order to determine the most valid and reliable means of assessing needs in continuing nursing education. The results of this study indicate that full-time and part-time staff nurses may have different educational needs. As well, little research has been done to determine whether these perceived continuing nursing education needs are real needs. These are both areas that require further investigation.

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RÉSUMÉ

Besoins de formation continue en périnatalogie du personnel infirmier

Les enseignants chargés de l'éducation permanente voient habituellement dans l'évaluation des besoins la première étape de la planification d'un programme; cette démarche s'appuie sur des données qui proviennent d'un certain nombre de sources différentes. Il peut donc arriver que l'on observe des différences au niveau des besoins identifiés. Les écrits en sciences infirmières ne renferment que peu de renseignements sur l'évaluation des besoins de formation continue en périnatalogie. La présente étude avait donc pour objectif de comparer les besoins d'éducation permanente en périnatalogie des infirmières et infirmiers tels que les perçoivent les directeurs des services infirmiers et les infirmiers eux-mêmes.

L'étude a été élaborée autour d'un questionnaire auto-administré que les participants ont reçu par la poste. Pour chacun des 37 sujets de programme figurant au questionnaire, les participants ont utilisé une échelle de type Likert en 6 points pour indiquer le niveau de leurs besoins de formation, tel qu'ils le percevaient pour eux-mêmes ou, dans le cas des directeurs, pour les infirmiers de leur hôpital. Cette étape était suivie de sections dans lesquelles les participants devaient classifier les sujets par ordre de priorité et d'une section de données démographiques. Quarante-trois directeurs et 335 infirmiers de petits hôpitaux de la Saskatchewan ont répondu au questionnaire.

Pour effectuer l'analyse, on s'est servi de fréquences et de tabulations recoupées. La moitié des participants ont identifié tous les sujets, à une exception près, comme étant au moins moyennement importants. Même si aucune des différences observées entre les directeurs et le personnel infirmier n'était importante, on a cependant noté chez les directeurs une plus grande tendance à valoriser les sujets de programme que chez les infirmiers. Les directeurs accordaient également une plus grande priorité aux sujets axés sur des démarches. Les commentaires, qui ont été analysés séparément, ont indiqué que l'inexpérience du personnel infirmier et le manque d'occasions qu'il a de se servir de ses techniques, préoccupent tout autant les directeurs que les infirmiers eux-mêmes. Les résultats de l'étude ont entraîné la formulation de recommandations au sujet de la formation, de l'éducation permanente et de l'exercice de la profession d'infirmier.

HOW PARENTS COPE WITH A CHILD WITH CYSTIC FIBROSIS

Cheryl H. Gibson

A major problem confronting the health-care system today is the effect of chronic illness on the family (MacVicar & Archibold, 1976). If the family member with the chronic illness is a child, the impact is enormous when superimposed on the complex dynamics of the family in general (Zamerowski, 1982). The most critical influences on the adaptation of the family to the illness as well as on the growth and development of all its members are the responses of the parents. Therefore, an understanding of the parents' responses to chronic illness in their child is vital.

The case of cystic fibrosis (CF) in a child was chosen to demonstrate the impact of chronic illness on the family. Although sound medical treatment is necessary for management of this disease, the successful care of a CF child depends upon the parents' willingness to modify family life in response to a complex, time-consuming regimen of daily therapy (McCubbin et al., 1983).

Review of the Literature

Previous research studies related to the psychological aspects of CF have generally focused on maladaptation and the dysfunctional aspects of family coping (Lawler, Nakielny, & Wright, 1966; Meyerowitz & Kaplan, 1967; Tropauer, Franz, & Dilgard, 1970; Turk, 1964). Gayton, Friedman, Tavormina, and Tucker (1977) note the dearth of literature on coping with CF and suggest that future research would benefit from a focus on the strengths and resilience of children with CF and their families. As well, Tavormina, Boll, Dunn, Luscomb, and Taylor (1981) point out that parental and family functioning with physically ill or handicapped children have rarely been evaluated.

Only one study was found that identified parental coping behaviours that facilitated family adaptation to CF in a child. Venters' (1981) study revealed two coping strategies that minimized the illness-related hardships: familial sharing of the burdens created by the disease, and endowing the illness with a

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personally significant meaning. Tavormina *et al.*'s (1981) study of coping strategies employed by parents of children with asthma, CF, diabetes, and a hearing impairment used a battery of measures to sample areas of personality functioning, parental attitudes, and parental reports of problems with the child's behaviour. Although findings suggested that the sample was essentially a normal group, coping strategies were not identified and one cannot assume that the normative scores on the study's instruments are synonymous with positive coping strategies. Lewis and Khaw (1982) found that healthy adjustment in the CF child was more dependent upon family functioning than on the presence of disease. However, the coping behaviours of mothers – and the perspectives of the fathers – in contributing to family functioning were not explored. Because of the dearth of literature on how parents cope to meet the demands on the family unit associated with having a child with CF, further study was indicated.

Research Questions

Adaptations of Lazarus and Launier's (1978) cognitive-phenomenological theory of stress and coping and Moos and Tsu's (1977) theory of the crisis of physical illness constituted the conceptual framework that guided the study. In this paper the following questions are addressed:

1. What is the parent's appraisal of coping with a child with CF?
2. What are the reported parental coping behaviours used and found most helpful in coping with a child with CF?
3. What is the relationship between selected family characteristics and parental coping behaviours?

Method

The sample

The convenience sample consisted of 56 parents whose children were diagnosed with CF and aged 10 years or under. The upper age limit of 10 years was selected to avoid the effects of confounding variables related to the developmental stage of adolescence on family relationships. A convenience sample was used because institution policies required that potential subjects be selected and approached by a clinic nurse. Consequently, 25 percent of the potential population was excluded from the study. Therefore, the findings are restricted to the study population.

Procedures and instruments

Parents were approached in the clinic waiting room of a metropolitan children's hospital at the time of their child's routinely scheduled clinic appointment. All of the parents who were approached were willing to

participate in the study. Following an explanation of the research protocol as well as subject rights, the parents provided written consent. Then, they completed a series of questionnaires, which included the following, in order of administration:

The Family Profile was a questionnaire designed to obtain demographic information on the parents, family situation, and child with CF.

The Parent's Perception of Coping (PPC) was a 100 mm. linear analogue that measured the parent's evaluation of his coping efforts. One end of the analogue represented "not coping" while the other end represented "coping very well." This instrument was adapted from Brailey's (personal communication, February 23, 1983) study of coping strategies used by mothers of preschool children. Not only was the wording of Brailey's question modified for this study, but also the format of the response was changed from a closed-ended Likert-scaled response to a linear analogue in order to achieve a higher level of measurement for data analysis. In Brailey's study, the test-retest reliability of the overall instrument was .78.

The Parent's Perception of the Most Difficult and Helpful Factors of Coping with a Child with CF (PPMDHF) questionnaire consisted of three open-ended questions: (a) what has been the most difficult thing for you in having a child with CF? (b) what has helped you most in managing the illness in your child?, and (c) what would be helpful to you in managing the illness in your child? To analyse the data elicited by these questions, the responses were coded at a nominal level of measurement. A categorization scheme was, then, formulated by the investigator so that the categories were mutually exclusive and collectively exhaustive (Polit & Hungler, 1978, p. 310). Two nurses who were experienced in the parent-child nursing field also independently categorized the data using the same coding scheme. The overall index of interrater reliability achieved was .95. Those items that did not attain consensus were discussed between the raters, individually, and categorized once agreement had been reached. Both the PPC and the PPMDHF operationalized the parent's appraisal of coping (Research Question #1)

The Coping-Health Inventory for Parents (CHIP) was a 45-item questionnaire developed by McCubbin, McCubbin, Nevin, and Cauble (1981) that rated as "extremely helpful" to "not helpful", using a four-point Likert scale, the parents' perceptions of their coping behaviours when they have a chronically ill child. The items were categorized into three coping patterns (CP): (a) CPI – maintaining family integration, cooperation, and an optimistic definition of the situation; (b) CPII – maintaining social support, self-esteem and psychological stability; and (c) CPIII – understanding the medical situation through communication with other parents and

consultation with medical staff. The internal consistency reliabilities for each coping pattern, respectively, using Cronbach's alpha were (a) .79, (b) .79, and (c) .71.

Results

The Statistical Analysis System (Freund & Littell, 1981) was used for descriptive and inferential statistics. Both parametric (Pearson r) and non-parametric (Kendall's Tau) tests were used depending on the level and distribution of the data. The Point Biserial Correlation Coefficient (r_{pbi}) was used to measure the degree of association between two variables when one variable was continuous and the other was dichotomous (Roscoe, 1975, p. 113).

A total of 56 parents (46 mothers and 10 fathers) participated in the study, representing 53 families with 56 children with CF. The mean age of the parents was 32 years ($SD=5.5$) while the ages of the children ranged from 11 months to 10.75 years with a mean of 5.75 years ($SD=3.2$ years). In less than one-third of the families, the affected child was the only child ($n=16$). Selected characteristics of the sample are noteworthy. The parents were well educated – 71 percent had at least a high school education. The level of family income was favourable – 71 percent reported an income greater than \$20,000. The marital status of the parents was remarkably stable – 91 percent were married or living in a couple relationship and only 14 percent had experienced a change in marital status. The majority of children (83.5 percent) had CF in a mild stage and the majority of children were diagnosed at a young age (56.5 percent were diagnosed before six months of age). Such characteristics may not be representative of all families with a CF child.

Parent's appraisal of coping

Parent's perception of coping. An analysis of the scores from the 100 mm. linear analogue suggested that the majority of parents perceived themselves as coping very well. Over 75 percent of the parents placed an "X" beyond the 75 mm. mark. The mean score was 84.6 ($SD=12.57$); the median was 90. The scores ranged from 45 to 100.

Parent's perceptions of the most difficult and helpful factors of coping with a child with CF. Factors ($N=64$) the parents perceived as being most helpful in managing the illness in their child fell into three discrete categories: (a) social support (59%) – which was broadly defined as the resources provided by other persons (Cohen & Syme, 1985); (b) an ability to focus on the positive aspects of the situation (25%) and (c) internal strengths (16%). (Some parents cited several factors; therefore the frequencies refer to the number of factors identified by the parent, and not the number of parents.)

Although the factors ($N=64$) the parents perceived as being most difficult in managing the illness in their child fell into only two categories, the coding was complex because several themes and sub-themes emerged that were frequently interrelated. Both categories clearly related to the disease – (a) difficulty accepting/adjusting to the changes caused by the disease (56%) and (b) problems with carrying out the prescribed regimens and the management of problems attendant on carrying out the regimens (44%).

For the 29 parents (52%) who responded to the question that asked them to identify what would be helpful to them in managing the illness in their child, the responses ($N=33$) fell into four categories. These included: (a) social support (37%) – continued support from the family, the clinic, or other parents of CF children; (b) relief (33%); (c) a cure (18%); and (d) modification or alterations in the treatment regimen (12%).

Parent's coping behaviours

Parental coping behaviours measured by CHIP were compared with data from a sample of 308 mothers and fathers of children with cystic fibrosis, myelomeningocele, or cerebral palsy (J. Patterson, personal communication, July 17, 1984). Results indicated that the means of the parents' scores for each coping pattern closely approximated the comparative means (see Table 1).

An item-by-item analysis of the coping behaviours in CHIP indicated that the majority of extremely helpful behaviours were represented in CPI, which focused on doing things as a family unit, strengthening family relationships, and maintaining a positive outlook on life (see Table 2). The behaviour identified as being most helpful was "Believing that my child is getting the best medical care possible." The second most frequently reported extremely helpful coping behaviour was "Being sure prescribed medical treatments for the child(ren) are carried out at home on a daily basis." This latter behaviour fell within Coping Pattern III which focused on understanding the medical aspects of care. The most frequently reported behaviour in Coping Pattern II, which focused on efforts directed toward self, was "Being able to get away from the home care tasks and responsibilities for some relief;" yet among coping behaviours reported as extremely helpful, it stood eleventh.

Significant relationships between the sex of the parent and Coping Patterns I and II were found that suggest that mothers directed more effort toward maintaining family integration ($r_{\text{pbi}} = -.27, p < .05$) and strengthening themselves $r_{\text{pbi}} = -.33, p < .01$) than fathers. As well, findings suggested that single parents made lesser efforts at maintaining family integration ($r_{\text{pbi}} = .28, p < .05$), that increased family size facilitated

mothers in making greater efforts toward strengthening themselves as individuals ($T = .28$, $p < .02$), and that mothers made greater efforts toward understanding the medical situation when the child was diagnosed at a younger age ($T = -.24$, $p < .03$).

Table 1

A Profile of Fathers' and Mothers' Coping Patterns in the Coping-Health Inventory for Parents (CHIP)

No. of Parents		Sample Mean (SD)	Comparative Mean	Sample Range	Comparative Range
Coping Pattern I Maintaining Family Integration, Cooperation, and an Optimistic Definition of the Situation					
Fathers	9	35.11(7.59)	36	24-46	16-56
Mothers	44	42.07(9.49)	40	15-55	25-55
Coping Pattern II Maintaining Social Support, Self-Esteem and Psychological Stability					
Fathers	9	21.33(11.60)	25	1-39	10-41
Mothers	44	30.34(09.21)	28	2-48	16-40
Coping Pattern III Understanding the Medical Situation Through Communication with Other Parents and Consultation with Medical Staff					
Fathers	9	13.67(05.85)	12	4-20	4-19
Mothers	44	16.34(04.93)	15	3-24	8-22

Note: $N=53$. One father and two mothers did not complete CHIP.

Table 2***Frequency of Coping Behaviours in CHIP Identified by Parents as Being Extremely Helpful***

Coping Behaviour	Coping Pattern	Frequency	%
Believing that my child is getting the best medical care possible.	I	41	76%
Being sure prescribed medical treatments for child(ren) are carried out at home on a daily basis.	III	40	74%
Doing things with my child(ren)	I	38	70%
Having my child with the medical condition seen at the clinic/hospital on a regular basis.	I	36	67%
Doing things together as a family (involving all family members).	I	36	67%
Trusting my spouse (or former spouse) to help support me and my children	I	35	65%
Believing that the medical centre/hospital has my family's best interest in mind.	I	33	61%
Building a closer relationship with my spouse.	I	31	57%
Talking over personal feelings and concerns with my spouse.	I	31	57%
Talking with medical staff (nurses, social workers, etc.) when we visit the medical clinic.	III	30	56%
Being able to get away from the home care tasks and responsibilities for some relief.	II	28	52%

Note: $N=54$. Two parents (from the same family) did not complete this questionnaire.

Discussion

Parent's appraisal of coping

The parents in this study have provided insight into the challenges that a chronic illness, such as CF, in a child bring to them. As well, they have provided an indication of the resources that have enabled them to manage. Although the parents perceived themselves as coping very well, all the parents experienced a degree of illness-related stress. While they recognized that the treatment regimen was necessary for the child, many parents ($n=27$) acknowledged problems related to it. Parents reported feeling "tied down", not having enough time in the day to do all the things they would like to do, and feeling pressured to organize the child's treatment into the family routine. While the parents noted a need for respite from the child's care, they also were hesitant to leave their child. Two parents reported siblings did not understand the extra attention the CF child needed and, consequently, jealousy was another problem with which those parents had to contend. The daily treatment regimen – the medications, inhalation therapy, chest physiotherapy, and the dietary management – are constant reminders to the parents that their child has CF. The parents frankly acknowledged that aspects of the treatment regimen, acceptance of the diagnosis and the prognosis of CF, and living with the uncertainty of what the future may bring all imposed degrees of stress for them.

Nevertheless, the findings suggest that parents were able to maintain or develop functional thought and/or behavioural patterns to meet the illness-related hardships. An examination of the parents' external and internal resources provides insight into how parents cope with the demands of CF.

Social support. Social support was clearly the most frequently identified resource. Folkman, Schaeffer, and Lazarus (1979) have noted that social support serves as a source of emotional support and encouragement as well as information about a situation and how to deal with it. The bases of support for the parents were three-fold.

Parents ($n=22$) most frequently reported that the spouse or family was the source of support that was most helpful. The husband's support would appear to be an important factor in the mother's ability to cope with the many caregiving demands. This study would have been enriched if there had been more mother-father dyads to provide information on the coping behaviours of both parents and, perhaps, how they complement each other, and if the nature of the support given had been determined.

Another support system that 10 parents acknowledged was the services offered by the multidisciplinary CF clinic. Both mothers and fathers

benefited from communication with the clinic in terms of receiving, understanding, and mastering the medical information needed to care for the child. The role of the CF clinic as a source of support for the parents must be underscored since a healthy relationship between the health-care team and the parents promotes successful clinical and psychosocial management of CF. Furthermore, parents acknowledged that continued support from the clinic would be helpful. As others have pointed out, parents of chronically ill children need not only realistic professional support and assurance but also recognition of the extent of their responsibilities in caring for their child (Longo & Bond, 1984; Tavormina *et al.*, 1981).

A third source of support that a few parents ($n=6$) identified as being helpful was their association with the CF Foundation. Parents commented on the value of talking to people in the same situation "because they really understand what it is like". Shapiro (1983) summarizes the value of such support groups as (a) minimizing individual feelings of isolation and differences, (b) demonstrating universality of feelings, thereby diluting their intensity, (c) providing information, emotional expression, and support, and (d) encouraging the formation of friendships and participation in group activities. Gallagher, Beckman, and Cross (1983) have noted that the availability of adequate support for families of handicapped children appears to be an important mediator of stress. Although the majority of parents identified social support as being very helpful, the ability of the parents to accept the available support must not be overlooked. Pearlin and Schooler (1978) have indicated that the conditions under which help from others can be effective is not known.

Focusing on the positive aspects of the situation. Another factor which enabled the parents ($n=15$) to manage the illness in the child was their ability to focus on the positive aspects of the situation. Several categories of parents' responses revealed this ability as indicated by: a positive evaluation of the disease; the recognition of the treatment regimen as being most helpful; and the notation of positive attributes of both the family and the child. The parents appeared to recognize that the situation would be worse if the child was not diagnosed or if there was no treatment. Pearlin and Schooler (1978) would label this thought process "the making of positive comparisons" (p. 6). Furthermore, the notation of the positive attributes of the family and the child appears to enable the parents to draw on their own resources, to feel less overwhelmed, to have a higher morale, and to minimize the awareness of emotionally painful factors that otherwise could be overwhelming.

Strengths within the parent. To a lesser extent, the parents ($n=10$) recognized that their own deep-seated beliefs and attitudes facilitated their coping behaviours. Such personal strengths and other psychological

characteristics can be very helpful in sustaining people facing strains that arise from conditions over which they may have little direct control (Pearlin & Schooler, 1978). Moreover, Lazarus and Launier (1978) note that beliefs, attitudes, and personality characteristics contribute to or prevent certain kinds of stress from ever happening and therefore, influence the coping process. In addition, the parents' beliefs in a cure or miracle also provide hope and serve as encouragement to do one's best to deal with difficulties (Moos & Tsu, 1977; Venters, 1981).

Parent's coping behaviours

The greatest efforts of the parents would appear to be directed toward adhering to the treatment regimen and maintaining family stability. Parents' reported diligence in attending to the medical aspects of care reflects their efforts in controlling the progression of the illness. Such efforts in doing everything possible to contribute to the child's health are potent coping behaviours, since they serve to combat or counteract the threat of the child's condition worsening. These behaviours possibly also give parents a sense of control, in contrast with the feelings of helplessness that could be generated because of the fact that there is no cure for this disease. Parents may also perceive an acute awareness of their parenting role in contributing to the child's well-being which motivates them to adhere to the treatment regimen. Shapiro (1983) notes that a coping goal for parents, who have a chronically ill child, has been conceptualized as maintaining relationships with the child that afford some gratification and at the same time fulfill that child's physical and psychological needs. The parents in this study have clearly made great efforts toward caring for their child and have been rewarded for them.

Parents also made great efforts toward maintaining family stability. Joint family experiences and sharing thoughts and feelings with the spouse were behaviours that parents found particularly helpful in coping. Efforts directed toward the family unit, including the care of the CF child, would appear to surpass the parents' own individual needs. The positive feedback from efforts directed toward the family may have increased the parents' sense of well-being and reinforced their ability to manage the illness-related hardships, and hence, the ability to cope.

The relationship between sex of the parent and coping behaviours

Mothers put forth greater efforts than do fathers to maintain family togetherness and an optimistic outlook as well as to maintain social support, self-esteem, and psychological stability. Although the number of fathers in this study was small, the findings may suggest that either fathers' coping behaviours or their perceptions of coping are different from those of

the mothers. Three of the nine fathers that completed CHIP stated that the coping behaviours constituting CHIP were behaviours they used but not ones they used "to cope". Perhaps, mothers may view coping as daily ongoing efforts which have adaptive consequences whereas fathers may perceive coping as efforts to deal with stress when habitual responses fail. Thus, higher scores for mothers on CHIP may arise because CHIP measured the behaviours used on a day-to-day basis rather than behaviours mobilized in response to managing a particular stressor.

Nevertheless, it is possible that the findings reflect the fact that the mothers were, undoubtedly, the primary caretakers in most of these families and, hence, bore the responsibility for the child's care. Perhaps fathers do feel greater impact of the child's illness in terms of changes in their social lives and time spent with the spouse. Fathers may not experience the positive feedback associated with the caregiving role. Zamerowski (1982) has noted the difficulties fathers find in being fully involved in the child's care. Mothers may reach out and benefit from the support of their husbands while fathers, perhaps, may hesitate to seek emotional support from their wives. They may feel their wives are already overburdened with the responsibility of the child's care overriding other aspects of family life. Possibly, fathers do not care to talk about their feelings. Fathers may also have been experiencing other stressors besides CF, to which the questionnaires in this study were not sensitive. Cummings (1976) has reported that fathers of handicapped children feel intense stress, experience less gratifying relationships with their children, and feel inferior as parents. There is a dearth of literature on fathers' reactions to chronically ill children, and thus, further research in this area is indicated.

The relationship between number of children in the family and parent's coping behaviours

The presence of more than one child in the family tended to foster mothers' coping efforts toward gaining support, maintaining self-esteem, and developing psychological stability. Other researchers have noted that having more than one child has a positive effect on families with a handicapped child (Gallagher *et al.*, 1983; Steinhauer, Mushin, & Rae-Grant, 1974; Murphy, 1982). Healthy siblings may serve as a source of support and a balance for family life. Older siblings may help with the care of the CF child or other responsibilities in the home. In larger families, a healthy climate is likely because the hopes, dreams and burden of care are dispersed among several children (McKeever, 1983). The presence of healthy children may also reinforce the parents' perceptions of their abilities to have normal children which increases their self-esteem as parents.

Implications for Nursing

Findings from the study reinforce the importance of a family-centered approach to health care. Both mothers and fathers should be assessed in terms of how CF in their child has affected them. Parents of younger children, in particular, are in need of information and encouragement from the health care team. Parents should also be encouraged to plan for respite from the child's care. As well, they should be informed about the role of the CF Foundation and encouraged to become involved with the chapter in their community. Parents could also be helped by the acknowledgement of health care providers that the experience with CF is difficult and requires a great deal of their time and energy. They need some positive feedback for their coping efforts and the importance of their role in contributing to the overall health of the child.

Finally, each parent-child-family must be treated individually. Each family situation is unique and each family interprets and responds to the illness situation in its own way. Thus, nurses ought to assess not only the problems but also the parents' coping behaviours, and they should assist the parents to cope in ways that are functional for them. Successful coping should be evaluated in terms of the particular stressors and of the parents' abilities to use their internal and external resources.

Although specific areas for further research have been noted in the discussion, providing all subjects in the target population an equal opportunity to participate in a research study is imperative. The sample in this study was biased toward those parents who were perceived to be coping well and, consequently, would not be threatened by the questions in the questionnaires. In such a study of parental coping with any chronic illness in a child, the parent may not only contribute valuable information that could be useful in planning nursing interventions or in directing further research, but also may indirectly benefit from being given an opportunity to communicate his or her thoughts and feelings and, perhaps, gain further insight into the situation.

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RÉSUMÉ

Les modes d'adaptation des parents aux prises avec un enfant atteint de fibrose kystique

Le diagnostic d'une maladie chronique au long cours, telle que la fibrose kystique (FK), chez un enfant et le régime de soins accaparants dont il a besoin ont de nombreuses répercussions sur la famille. Parmi les influences critiques qui jouent sur l'adaptation de la famille à la maladie de même que sur la croissance et le développement de tous ses membres, mentionnons les réactions des parents. Cette étude avait pour principal objectif d'étudier comment les parents font face à la FK de leur enfant et à tous les problèmes qu'elle suscite. Un échantillon pratique de 56 parents dont les enfants étaient âgés de 10 ans ou moins, ont répondu à une série de questionnaires lors de la visite médicale de suivi de leur enfant.

Bien que les observations indiquent que les parents ressentent un certain stress, ces derniers ont fait preuve d'une capacité de maintenir ou de développer des schèmes de pensée et de comportement fonctionnels leur permettant de faire face aux difficultés suscitées par la maladie. Les parents ont identifié différentes ressources qui les ont aidés à s'adapter: a) l'appui de leur famille, de la clinique pour les enfants atteints de FK et de la Fondation de la FK; b) une aptitude à voir les aspects positifs de leur situation et c) leur force de caractère. La rétroaction positive des efforts dirigés vers la famille, et notamment les soins dispensés à l'enfant atteint de fibrose kystique, semblent influencer favorablement sur la situation et contribuer au caractère positif de l'ensemble des observations.

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ARTICULATION AND BACCALAUREATE ENTRY TO PRACTICE: THE CANADIAN CONTEXT

Sharon Richardson

This is a response to the article "Articulation and Baccalaureate Entry to Practice" by Ruth Gallop, in the Winter 1984 issue of *Nursing Papers*. In the article, she succinctly presented a case against articulation even as a temporary educational alternative for the preparation of a baccalaureate registered nurse, and she concluded that articulation may undermine the very concept of a professional discipline approach. She further asserted that, "In an articulated program the curriculum design would reflect diploma values at the first level" (p. 61) and that, "Articulation is a means by which nursing looks over its shoulder and tries to make up for past mistakes" (p. 61).

The purpose of this paper is to present a case for articulation as one mechanism for achieving baccalaureate entry to practice, with specific reference to the Canadian context. As noted by Gallop (1984), debate about the quality and validity of articulated programs has primarily been carried on in the American nursing literature. Stevens (1981) stated that the battle over whether or not American associate degree nursing programs should articulate with baccalaureate programs has raged for almost twenty years without resolution. The development of anti- and pro-articulation camps has made American nursing vulnerable to charges of disorganization and has weakened it as a political body, "since others see us as unable to reach, let alone enact, a single political decision" (Stevens, 1981, p. 706).

Canadian Nursing Education Articulation

Until recently, articulation of diploma and baccalaureate nursing education has not been as controversial in Canada as it has been in the United States. Canadian post-R.N. baccalaureate programs, particularly in Alberta and British Columbia, have existed specifically to accommodate diploma program graduates. Progress of students from diploma to post-R.N. baccalaureate programs, without loss of time or credit, has been facilitated, at the

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University of Alberta for example, by the elimination of on-campus residency requirement, the elimination of one year's work experience for admission, the availability of part-time learning, the provision for credit by challenge examination, and the granting of transfer credit for both support and nursing courses. During the past seven years in Alberta, the number of nurses enrolling in, and graduating from, post-R.N. baccalaureate programs has increased by almost two hundred and fifty percent, as is shown by Table 1.

Table 1

Numbers of Enrollees and Graduates of Alberta Post-R.N. Baccalaureate Nursing Education Programs, 1978-79 to 1984-85

Academic Year	1978-79	1979-80	1980-81	1981-82	1982-83	1983-84	1984-85
Enrollments:							
First Year	100	102	197	213	179	229	295
Second Year	108	119	109	176	208	175	215
Total	208	221	306	389	387	404	510
Graduates	77	98	100	148	182	161	186

Source: Alberta Advanced Education (1983 & 1985)

Articulation attempts in Alberta

Although little attempt has been made to articulate diploma and basic or generic baccalaureate nursing programs in Canada (Shantz, 1985), two notable exceptions have both taken place in Alberta. These exceptions were the University of Alberta's Nursing Education Articulation Project, undertaken in 1980-81 and funded by the Interpresidential Committee, and the University of Calgary's Articulation Pilot Project, funded in 1983 for a two-year period by Alberta Advanced Education.

In June, 1980, the Joint University of Alberta/University of Alberta Hospitals Committee (composed of the Presidents of the two institutions and frequently referred to as the Interpresidential Committee) endorsed a feasibility study with respect to possible articulation arrangements between the Faculty of Nursing and the University of Alberta Hospitals School of Nursing. A major recommendation of the project team selected by the Interpresidential Committee was that a third route to the baccalaureate degree in nursing, other than the existing post-R.N. and generic programs, be

created. This third route would be developed and implemented jointly by the Faculty of Nursing and the University of Alberta Hospitals School of Nursing. It would be available only to students admitted simultaneously to the Faculty and the School. This program would not exceed four years, and would provide the student with an exit and re-entry option prior to completion of degree requirements that would only be available after a minimum of 24 months of enrollment. The intent, however, was that all students entering the third program route would complete a baccalaureate degree in nursing. Although the institutions decided, at that time, not to proceed with development of this third route for articulation, the Faculty of Nursing has continued to encourage closer program articulation between Alberta diploma programs and its post-R.N. baccalaureate degree program.

The University of Calgary's Articulation Pilot Project evolved from interests expressed by members of the faculty and by those responsible for diploma programs at Mount Royal College and Foothills Hospital School of Nursing. The goal of the resultant project "included studying the feasibility of articulation through existing mechanisms as one means of achieving and increasing the proportion of actively registered nurses in Alberta with educational preparation at the baccalaureate level" (The University of Calgary, 1985, p. v). From a detailed comparison of participant program curricula in both diploma programs, it was determined that articulation was feasible at the end of Year One, but not at the end of Year Two. Subsequently, a group of five students from Foothills Hospital School of Nursing was admitted to the Faculty of Nursing during Spring Session, 1985. These students all successfully completed a required science credit course in which they were deemed deficient as well as a non-credit nursing course that was designed to "bridge" the gap between programs and to provide an orientation to the baccalaureate program.

Although the University of Calgary's Articulation Pilot Project was deemed successful in developing a prototype pattern for assessing comparability between diploma and generic programs and successful in identifying a means by which students from one educational institution could enter a different program without excessive loss of time or academic credit, in view of existing enrollment constraints in the baccalaureate programs the process required was not considered cost effective. Baccalaureate program attrition determined the number of diploma students who could be articulated. The Final Report recommended that "Alternative approaches to inter-institutional collaboration and transfer credit warrant comparable careful examination as potential avenues for increasing access to baccalaureate education in nursing in Alberta" (The University of Calgary, 1985, p. ix).

Canadian Post-Secondary Education Systems

Existing articulation of diploma and post-R.N. baccalaureate nursing programs and attempts at articulating diploma and basic or generic baccalaureate programs in Alberta, in particular, emphasize features of some Canadian post-secondary educational systems that facilitate nursing education program articulation. In all provinces, nursing education is a component of the larger provincial post-secondary system; therefore, program changes, such as baccalaureate entry to practice, affect and are affected by these post-secondary systems.

The categorizations developed by Shantz (1985) to describe the overall structure of provincial post-secondary education and the resultant interinstitutional transfer of academic credit are relevant to discussion of nursing education articulation in Canada. She identified three Canadian post-secondary systems: unitary, binary, and ternary.

Shantz's categorizations

The unitary system, found only in Quebec, is a four-tiered educational system composed of primary and secondary schools, the Collèges d'enseignement général et professionnel (CEGEPs), and the universities. The CEGEPs provide both university transfer courses and terminal technical/vocational courses. There are currently forty-two diploma nursing programs in the CEGEPs. Students entering Quebec's university degree nursing programs may do so either after completing grade eleven in the secondary schools and completing their beginning general education courses in the CEGEP system, or after completion of diploma nursing programming offered by the CEGEPs. They then proceed to professional education in the university system. Three years of university study are required for a basic or generic baccalaureate degree in nursing (Shantz, 1985, pp. 94-95).

The binary system of post-secondary education is found in the Atlantic provinces, Ontario, and Manitoba and is characterized by separation of university and non-university sectors. In Ontario, for example, the Colleges of Applied Arts and Technology (CAATs) provide non-university education and there is virtually no transfer of academic credit between the CAATs and Ontario universities. All Ontario diploma nursing education programs, except Ryerson's, are presently centred in the CAATs. Ryerson Polytechnical Institute is now a degree granting institution that sponsors both diploma and post-R.N. degree programs. It intends to convert its diploma program to a basic degree program in 1988 (Shantz, 1985, p. 92). Hospital diploma schools of nursing in the Atlantic provinces and Manitoba, similarly, do not offer transfer credits to the universities.

In the ternary system, in Saskatchewan, Alberta, and British Columbia, post-secondary education is made up of three overlapping components: universities, colleges, and technical or vocational institutes. Colleges tend to combine university-oriented education with other types. In all three of these provinces, transfer of credit for courses taken at a college (and in particular at regional colleges) is encouraged. Transfer of credit is coordinated by the Alberta Council on Admissions and Transfer and, in British Columbia, by the Articulation Committee. Saskatchewan's community college system operates on a brokerage basis; however, these colleges have no fixed campuses, facilities, or on-going programs. Diploma nursing education in Saskatchewan is sponsored by the technical institutes – a situation similar to that of the CAATs in Ontario. In comparison to Saskatchewan, diploma nursing students from colleges in Alberta and British Columbia may be eligible for transfer of credit to university programs within the same province. Additionally, in Alberta, some transfer of hospital diploma nursing course credit to the post-R.N. program at the University of Alberta is possible. Hospital program courses that are eligible for university transfer credit are taught by university or university-approved faculty as an 'off-campus' course.

Figure 1 on the next page describes Shantz's (1985) categorization of Canadian post-secondary educational systems.

Downward planning

Quebec's unitary post-secondary system and the ternary system found in Alberta and British Columbia provide evidence that it is theoretically and practically possible to design college nursing programs that articulate with baccalaureate nursing programs. Such downward planning has been described by Stevens (1981) who demonstrated that diploma programs can be planned so that graduates are prepared to meet the constraints of the baccalaureate program to which they aspire. In downward planning, the focus is on what can be done in the lower-level program to prepare the student for advancement to the higher-level program, not on what accommodation the higher-level program must make to accept the student from the lower-level program. Downward planning allows functional curriculum planning in all articulated programs. Its advantages include avoiding superficial information in early programs, espousing antithetical philosophies, and admitting students who are incapable of higher-level advancement (Stevens, 1981, p. 705).

Technical and professional nursing

Another uniquely Canadian factor that facilitates articulated baccalaureate nursing education is the absence of any clear-cut distinction between so-

Unitary System: eg. Quebec



Binary System: eg. Ontario



Ternary System: eg. Alberta

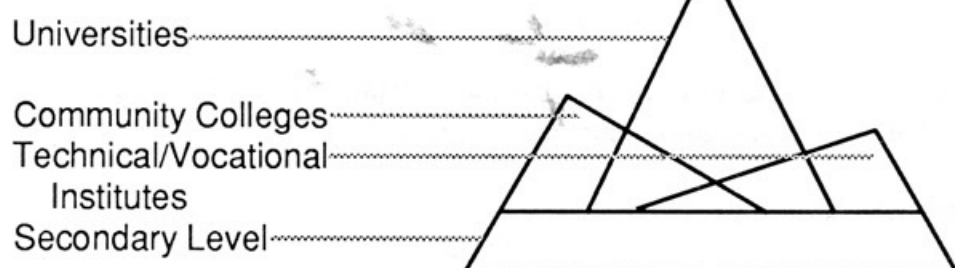


Figure 1: Canadian Post-Secondary Education Systems

Reproduced with permission from the author (Shantz, 1985).

called 'professional' and 'technical' nursing practice. The American Nurses' Association's 1965 and 1978 position statements on entry to practice drew a clear distinction between such practices. Technical nurses were to be prepared in associate degree (diploma) programs and professional nurses in baccalaureate programs (American Nurses' Association, 1980). Further, in 1978 the ANA adopted a resolution calling for the establishment of a mechanism for deriving a comprehensive statement of competencies for these two categories of nursing practice by 1980 as well as a resolution that ANA ensure that the two categories of nursing practice be clearly identified and titled by that year (American Nurses' Association, 1980). This formal distinction polarized American nurses. Articulation opponents perceived associate degree nursing education as being unique, terminal, and different from baccalaureate nursing education (Kramer, 1981; Montag,

1980). Pro-articulation forces expressed belief in the need for career progression for nurses (Church, Brian, & Searight, 1980). Stevens (1981) commented that the history of articulation in American nursing is one of politics disguised as facts!

Baccalaureate Entry to Practice in Alberta

Implementation of the Canadian Nurses' Association resolution that the baccalaureate degree be the minimum entry to practice in nursing by the year 2000 has promoted consideration of articulated baccalaureate programs as a planned educational change in some Canadian provinces. In Alberta, collaboration among directors and deans of Alberta's prelicensure nursing education programs, with respect to increased cooperative offerings for diploma and generic baccalaureate programs, is presently the concern of the Alberta Nursing Education Administrators Group. Members of the Faculty of Nursing have recently been asked by the diploma nursing program of Red Deer College to consider a collaborative approach to development of an articulated baccalaureate program that would be jointly sponsored by both Red Deer College and the University of Alberta. Such collaboration may eventually see diploma nursing programs becoming affiliates of the universities.

If a workable model of collaborative programming, or articulation, that 'meshes' current diploma resources and baccalaureate programs in some way can be developed, achieving provincial government approval of baccalaureate entry to practice could become a reality. In its November, 1977 *Position Paper on Nursing Education*, the Alberta government expressed disagreement with making a baccalaureate in nursing mandatory for practice. However, it did recommend an increase in the number of baccalaureate prepared nurses and subsequently provided a significant increase in funding to both generic and post-R.N. degree programs.

Presently, Alberta has a total of eleven diploma nursing programs, two generic baccalaureate programs, two supplementary programs to enable registered psychiatric nurses to upgrade to registered nurse status, and three post-R.N. baccalaureate programs. Of the eleven diploma programs, four are hospital-based and seven are sponsored by colleges. A comparison of numbers of enrollees and graduates from Alberta hospital diploma programs, college diploma programs and generic baccalaureate programs is presented in Table 2.

Between 1977 and 1985, enrollees in Alberta hospital diploma, college diploma, and university generic baccalaureate programs increased proportionately 36%, 82%, and 33%, respectively. For the same time period, graduates from Alberta hospital diploma programs decreased

proportionately by 4%, while those from college diploma and generic baccalaureate programs increased proportionately by 39% and 20%, respectively. During the early 1980s, based on proportionate increases in numbers of both enrollees and graduates, diploma programs sponsored by colleges constituted the fastest growing segment of Alberta's prelicensure nursing education system. This rapid growth was attributable to the significant increase in funding and placements made possible through government actions. Since 1983, there has been a levelling out of numbers of enrollees in college and hospital sponsored diploma programs.

Table 2

Numbers of Enrollees and Graduates of Alberta Prelicensure Nursing Education Programs, 1977 to 1985, by Type of Program

Academic Year	Enrollees			Graduates		
	Hospital Diploma	College Diploma	University Baccalaureate	Hospital Diploma	College Diploma	University Baccalaureate
1977/78	401	278	115	406	221	80
1978/79	417	302	112	345	204	62
1979/80	411	291	114	287	188	78
1980/81	386	318	116	314	157	62
1981/82	422	333	124	308	196	84
1982/83	520	440	143	286	230	92
1983/84	546	511	170	311	259	82
1984/85	546	506	171	388	308	96

Source: Alberta Health and Social Services Disciplines Committee (1981), and Alberta Advanced Education (1985).

In terms of absolute numbers of enrollees and graduates, Alberta hospital diploma programs are still slightly ahead of college diploma programs and both types of diploma programs are far ahead of the generic baccalaureate programs. For each generic baccalaureate program enrollee in 1984-85, there were three hospital diploma program enrollees and three college diploma program enrollees; for each generic baccalaureate graduate in Alberta, there were four hospital diploma graduates and three college diploma graduates. As shown in Table 3, the ratio of generic baccalaureate enrollees and graduates to diploma enrollees and graduates in Alberta has not improved during the past eight years.

Table 3

Ratio of First Year Enrollees and Final Year Graduates from Diploma Programs to First Year Enrollees and Final Year Graduates from Generic Baccalaureate Programs in Alberta, 1977 to 1985

Academic Year	Baccalaureate Enrollees	Diploma Enrollees	Ratio	Baccalaureate Graduates	Diploma Graduates	Ratio
1977/78	115	679	1:6	80	627	1:8
1978/79	112	719	1:6	62	549	1:9
1979/80	114	702	1:6	78	475	1:6
1980/81	116	704	1:6	62	471	1:8
1981/82	124	755	1:6	84	504	1:6
1982/83	143	960	1:7	92	516	1:6
1983/84	170	1048	1:6	82	570	1:7
1984/85	171	1052	1:2	96	696	1:7

Source: Alberta Health and Social Services Disciplines Committee (1981, 1984 & 1985) & Alberta Advanced Education (1985)

Planned Nursing Education Articulation

Data presented in Tables 2 and 3 clearly support the assertion that progress to date toward implementing baccalaureate entry to practice in Alberta has been minimal (Richardson, 1986). It is likely that the situation is similar in other Canadian provinces, for, as Shantz's 1985 national survey concluded, planning for the expansion of generic baccalaureate degree programs was at a very early stage in the spring of 1985, and the immediate pressure for most degree programs came from the increased demand for post-R.N. degree placements. Unfortunately, increasing post-R.N. baccalaureate program capacities will not alleviate the pressing need for expansion of generic baccalaureate programs to permit baccalaureate entry to practice. Presently, about 12% of Canadian nurses have baccalaureate preparation in nursing and in Alberta this proportion is no more than 16% (Statistics Canada, 1985).

The present educational, financial, and political reality in all Canadian provinces is not only that diploma nursing programs exist, but that each year they continue to prepare a significant proportion of the nurses who become eligible for licensure. Diploma nursing programs are neither likely to 'fade away' gradually from a deficit of applicants, nor are provincial governments likely to 'legislate them out of existence' in the near future.

Economically speaking, and in terms of current licensure, a nurse-is-a-nurse-is-a-nurse. Generic baccalaureate graduates must pass the same national examination as diploma graduates and usually begin their nursing careers in the same kinds of practice environments. Provincial governments fund all nursing education programs and are cognizant that, from a manpower point of view, diploma prepared nurses enter the labour force in half the time required by generic baccalaureate nurses and at probably half the cost.

In several Canadian provinces articulated baccalaureate nursing education programming is one viable mechanism for working toward baccalaureate entry to practice. Downward program planning for articulation can ensure quality of education in articulated baccalaureate programs. Post-secondary education systems in several provinces – notably Alberta and British Columbia – have been planned and developed to facilitate transfer of credit between colleges and universities. An environment supportive of articulated baccalaureate nursing education already exists in these provinces.

Additionally, articulated baccalaureate nursing education need not be synonymous with the so-called 'two plus two' approach that is philosophically opposed by many university nursing faculty. Replacing diploma programming with university transfer programming constitutes a broader approach to articulation. Replacement programming is a significantly different way of thinking about articulation as no diploma exit is involved; that is to say, the first two years do not stand alone as a distinct and complete program and there is no 'graduate' to receive a diploma or enter nursing practice. Conceptually, this type of articulation might be described as 'collaborative' or 'decentralized' baccalaureate programming. Hospital or independent diploma programs, as well as those offered by colleges, could become directly affiliated with universities and serve as off-campus locations for decentralized baccalaureate programs. Such articulation could occur in the Atlantic provinces, Manitoba, Alberta, and British Columbia. University transfer of credit is fundamental to any conceptualization of articulated baccalaureate nursing education. Innovative solutions are required in Ontario and Saskatchewan, where diploma programs are entrenched in technical institutions that have no mechanism and no mandate for credit transfer. In Quebec, Alberta, and British Columbia, where inter-institutional transferability is already well established, a broad interpretation of articulation opens up many programming possibilities.

As Stevens (1981) aptly noted, "Faculty must remember that articulation (or the lack of it) is a design decision, not a universal truth" (p. 706). Articulation need not be an attempt to correct nursing's past errors in the educational process, but rather a planned educational change that takes into account economic, political, and post-secondary education realities in Canadian provinces.

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RÉSUMÉ

Articulation et admission à l'exercice de la profession après le baccalauréat dans un contexte canadien

Cet article est une réponse à celui de Ruth Gallop, "Articulation et admission à l'exercice de la profession après le baccalauréat", qui a paru dans le numéro d'hiver 1984 de *Perspectives en nursing*. Le but de cet article est de présenter des arguments en faveur de l'articulation comme mécanisme visant l'admission à l'exercice de la profession après le baccalauréat, particulièrement en ce qui concerne le contexte canadien. On y met en lumière l'articulation actuelle diplôme-baccalauréat de la formation des infirmières en Alberta et on y discute la portée du nombre d'inscriptions et de diplômées dans les différents programmes de formation des infirmières en Alberta. L'auteur identifie les systèmes éducationnels post-secondaires dans les provinces canadiennes, qui facilitent l'articulation des programmes et le transfert de crédits universitaires entre les établissements. Elle y souligne l'importance du concept de Stevens (1981) de nivellement par la base pour l'articulation. Le présent article conclut que la formation des infirmières dans des programmes articulés de baccalauréat constitue, dans plusieurs provinces canadiennes, un mécanisme viable vers l'admission à l'exercice de la profession après le baccalauréat.

PERCEPTUAL AND BEHAVIOURAL EFFECTS OF IMMOBILITY AND SOCIAL ISOLATION IN HOSPITALIZED ORTHOPEDIC PATIENTS

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Although psychological consequences have been attributed to situations where patients are immobilized or isolated, the evidence to date does not provide a clear basis to guide nursing intervention. Both laboratory (Zubek, Aftanas, Kovach, Wilgosh, & Winocur, 1963) and clinical studies (Bolin, 1974; Jackson, 1969; Johnson, 1976) have provided explanations of psychological changes in terms of "sensory deprivation". On the other hand, Suedfeld (1979), who prefers the more accurate term "restricted environmental stimulation", suggests that the critical variable leading to psychological effects in immobile orthopedic patients may be response restriction as opposed to reduced stimuli. To further complicate the picture, recent evidence (Stewart, 1984) suggests that perceptual changes (imagery) are linked to both immobilization and to overload of dimensions of social stimulation in a hospital setting. Interpretations of stimulus restriction, stimulus overload, and response restriction have different, and even opposing, implications for nursing intervention.

The literature on social isolation in hospital situations also leaves conflicting bases for intervention. In a study of 77 medical-surgical patients aged 21-86 years, Wood (1977) found that patients in a private room had more cognitive and perceptual changes than those in two-bed rooms. By contrast, Williams et al. (1979) found, in a sample of 91 elderly orthopedic patients, that there was less cognitive disturbance in a private room. Clearly, the problem with making a clinical decision on whether a private room has deleterious or beneficial effects stems from the fact that the hospital environment is a multivariate situation, with numerous confounding variables that may be uncontrolled or uncontrollable in a particular study. The laboratory research on monotonous environments has moved from evidence for negative (Heron, 1957) to positive (Suedfeld, 1975) effects because of changes in intervening variables such as the subject's expectations in a given environment.

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Perceptual changes, which have been linked to both immobility and social isolation, are unusual senses such as vivid imagery (Zuckerman, 1969 a) and altered time perception (Pollard, Uhr, & Jackson, 1963; Smith, 1975). Clinical research from an earlier era when eye surgery patients were confined to bedrest with bilateral eye patches (Ziskind, Jones, Filante, & Goldberg, 1960), provides evidence for both perceptual (imagery) and behavioural changes, particularly during hypnagogic periods of reduced awareness. The behavioural changes found were noncompliant behaviours such as sitting up (80% of sample) and removing eye patches (90%). The striking aspect of this finding was that patients had been warned that such behaviour could jeopardize their eyesight. The observations of Ziskind et al. suggest that this type of noncompliance was based on acting out vivid dreams or hypnagogic imagery in an involuntary way, despite motivation to the contrary. Bolin (1974) found comparable results in immobilized orthopedic patients who exhibited noncompliant behaviour, such as trying to remove traction or get out of bed, during periods of apparent dreaming. Immobile patients may demonstrate voluntary as well as involuntary noncompliance. Putnam and Yager (1978) use the term "traction intolerance syndrome" to describe behavioural changes in patients with a fractured femur. These changes include angry threats to staff and noncompliance with instructions during periods of normal awareness. These data suggest that noncompliant behaviour may be either voluntary or involuntary in association with imagery that occurs in an altered state of consciousness.

Theoretical Framework

Perceptual changes in environments with nonoptimal stimulation can be accounted for by Zuckerman's optimal level of stimulation theory (Zuckerman, 1969 b). According to this perspective, extremely restricted or excessive stimulation can lead to unusual visual or auditory sensations. These sensations have been labelled imagery rather than hallucinations for present purposes because they rarely meet criteria, such as apparent reality, that would be necessary to classify them as hallucinations (Suedfeld & Vernon, 1964). For example, visual sensations such as the appearance of bizarre, geometric designs on the ceiling of the room may be extremely vivid and yet the patient knows that the designs are not part of objective reality. By contrast, true hallucinations are perceived as real.

Laboratory research provides support for the relationship of imagery to nonoptimal environments. Zuckerman, Persky, Link, and Basu (1968) found that eight hours of restricted stimulation combined with uncertainty, led to "primary-process" effects such as dreams and images. Restriction of movement increased these effects. In a nursing laboratory study, which examined the effect of confinement to bed on the experience of time, Smith

(1975) reported that 23 of 180 subjects (7.83%) experienced unusual visual, auditory, olfactory and tactile sensations after two and one-half hours of bedrest.

Newman's model of health (Engle, 1983; Newman, 1983) includes the concepts of movement, time, space, and consciousness. The study of altered time perception in relation to immobility in a hospital setting can be examined from this framework. Research on the relationship of movement tempo (Newman, 1976) and movement restriction (Tompkins, 1980) to the experience of time suggests that altered mobility leads to altered time experience. As Newman (1976, p. 273) points out, although physiological effects of immobility have been extensively studied, there has been relatively little research on perceptual effects of immobility and concomitant stress reactions.

Noncompliant behaviour associated with immobilization could be explained in terms of Brehm's (1966) description of psychological reactance in which a person is aware of reduced freedom of choice and reacts in a manner aimed at regaining freedom. When noncompliance is an involuntary result of acting out vivid imagery or dreams, the explanation for the imagery (e.g., nonoptimal stimulation according to Zuckerman's theory) applies to both the perceptual and behavioural changes.

Measurement of time perception

The literature on time estimation is particularly confusing because of use of varied terminology and lack of clarity in the description of methods, with the result that some studies cannot be interpreted. For present purposes, the definitions of Bindra and Waksberg (1956) will be used. They describe three methods that have been used in time estimation research: verbal estimation, production, and reproduction. In both estimation and reproduction methods, the experimenter provides an objective (clock time) interval and asks the subject to estimate verbally or to reproduce objectively the interval or standard. In the production method, by contrast, the interval is stated by the experimenter (e.g., 15 seconds) and the subject is asked to produce this interval objectively, such as by marking off the time with a stopwatch turned face down to give a blind reading.

Much of the literature has used the terms underestimation and overestimation to describe the direction of distortion of time perception from the standard (objective time). For example, if the subject is asked to produce an interval of 15 seconds on a stopwatch (i.e., production method) and the subject marks off more than 15 seconds, this indicates that the subjective temporal units are larger than objective units (internal clock slower than external clock) and hence the subject has *underestimated* the actual time that

has elapsed. Conversely, judgments smaller than the standard provide evidence for *overestimation* of elapsed time. Using the verbal estimation method, by contrast, the opposite interpretation would be made (judgments smaller than the standard would indicate underestimation of elapsed time).

A number of studies of restricted stimulation environments have reported that subjects underestimate elapsed time (Banks & Cappon, 1962; Pollard et al., 1963; Schulman, Ricklin, & Weinstein, 1967). In other words, the internal biological clock was slower than objective time on the external clock. Ludwig (1971, 1975) found that sensory overload and sensory restriction tend to act in opposite ways on time estimation. Excessive stimulation leads to overestimation of elapsed time (internal clock faster than external clock), whereas stimulus restriction is associated with underestimation of elapsed time (internal clock slower than external clock).

The production method of time estimation has been used in the majority of nursing studies reported to date (Fitzpatrick & Donovan, 1978; Newman, 1972, 1976, 1982; Smith, 1975, 1979, 1984; Tompkins, 1980). Some of these studies also used a second method for comparison purposes. The standard used in the above nursing research conducted in laboratory settings has been set at 40 seconds. The procedure for production of the interval is to use a stopwatch with a button which the subject controls to start timing, to stop the hands on the clock and to return to zero.

In an acute care orthopedic setting, where patients may have just experienced trauma or surgery, the method of time estimation needs to be as simple as possible. The method chosen for the present study was the production method, in line with other nursing studies. However, the standard was 15 seconds, as opposed to the 40 second interval used in the laboratory studies of healthy individuals, because the orthopedic sample may be distressed and use of a shorter standard was believed to be less taxing on the patients. Examination of average time estimation scores using the production method in relatively short (2-1/2 hours) laboratory studies of bed-confined healthy subjects (Smith, 1975) reveals that subjects consistently produced judgments larger than the standard and hence underestimated elapsed time, consistent with the results of sensory deprivation studies.

Hypotheses

It was predicted that immobility, social isolation, or the interaction of these two variables would lead to:

1. Increased underestimation of elapsed time (the internal clock will become slower relative to the external clock) in the production of a 15-second interval.
2. Increased reports of perceptual distortions ("hallucination-like experiences") when interviewed.
3. Increased reports of vivid or unusual dreams on interview.
4. Increased noncompliant behaviour (such as trying to remove traction or get out of bed) during hypnagogic states as reported by nurses on interview or recorded in the chart.

Method

The research design

This study used a quasi-experimental factorial design. The three factors in the 2 x 2 x 2 analysis of variance (ANOVA) with repeated measures were: immobility (IM) versus mobility (MO), isolation (IS) versus no isolation (NI), and test (T1) versus retest(T2). The study investigated the effects of naturally occurring immobility and social isolation on perceptual and behavioural changes in hospitalized orthopedic patients.

Immobility was defined as seven or more consecutive days of complete bedrest from admission to the end of the experimental period (T2); mobile patients had four or fewer days of bedrest during this period. The first testing (T1) was done 48-72 hours after admission or surgery to allow for initial adjustment to hospitalization. The second testing (T2) was completed one week after T1.

The definition of social isolation was private room assignment for the majority of the time in the one-week interval between T1 and T2. The patient group that was not isolated was assigned to a semi-private (2-bed) or public (3-4 bed) ward, where one or more of the other beds was occupied. That is, the room was shared by at least two and at most four patients for the majority of the time between the two data collection times. The definition of conditions was arbitrary and reflected relative immobility and isolation because neither variable could be controlled in the hospital settings.

The sample

The patients were selected from the orthopedic wards of two hospitals in a midwestern city. The sample criteria included: 15-65 years old, minimum of grade eight education, no neurological deficit and no sensory defects. All patients admitted were candidates for the study if they met the criteria. Prior to data collection, written informed consent was obtained from each of the 39 patients. An attempt was made to achieve equal cell size for the ANOVA and, after eight months of data collection, only 24 of 39 patients included met the criteria and completed both testings. This gave six patients in each of four groups: immobile-isolated (IM-IS), mobile-isolated (MO-IS), immobile-not isolated (IM-NI), and mobile-not isolated (MO-NI). Data from the additional 15 patients were handled descriptively using frequency counts with no statistical analysis.

The sample included patients with a major orthopedic problem involving the tibia, fibula, femur, pelvis, hip, or spine. Both emergency and elective cases were included in the sample. Unfortunately, these two types of admission were not evenly distributed across cells. In the extreme cases, all patients in the IM-IS group were emergencies (accidents) whereas five of six patients in the MO-NI group were admitted for elective surgery. Type of admission was evenly distributed over the other two cells. Age and sex were also unevenly distributed across cells. Of 24 patients, 71% were male. Most of the immobile patients had been involved in work or motor vehicle accidents. Of these, 92% were male. Ages ranged from 17 to 64 years, with 92% of immobile patients under 40 years and only 17% of mobile patients in that age range. These sampling problems and the small n/cell make the data reported tentative, but nevertheless a basis for future research.

Instruments

Interview. The format for the patient interview was adapted from previous research examining sensory deprivation effects in immobilized orthopedic patients (Bolin, 1974). The questions used are listed in the original report of this study (Stewart, 1977, p. 103). Interviews were tape recorded with the consent of each patient and transcribed verbatim. All interviews were conducted in the patient's room between 9:30 a.m. and 12:30 p.m. Most interviews commenced at approximately 11:00 a.m. with a typical duration of approximately 30 minutes. Content analysis of transcripts was used to determine the frequency of reported perceptual and behavioural changes.

Time estimation task. The production method was used because it was brief, easy to control and it could be administered in a hospital setting without difficulty. Patients were asked to produce an interval of 15 seconds,

without counting, using a stopwatch. Prior to the initiation of the task, the experimenter demonstrated use of the stopwatch. The instructions which followed were given consistently to all patients:

Without looking at the face of the watch, I'd like you to press the button to start the watch and then press it again when you think 15 seconds have passed. Then hand me the watch without looking at the face of the watch. Try not to count or use any mechanical means to mark off the time.

Nurse reports. Noncompliant behaviour was recorded through a frequency count of nursing reports in the progress notes of patients' charts. Informal, retrospective interviews with nurses were also conducted to provide additional exploratory data on the dependent variables of interest here.

For descriptive purposes, data were obtained from the chart on demographic and treatment information, such as medications. Sensory deficits and neurological status were noted, as well as on-going medical problems or complications (see Stewart, 1977, for details).

Procedure

The experimenter. Because of financial constraints, this study was a single blind study, as opposed to double blind. That is, the nurses on the ward, other than administrative nurses who approved the study, were unaware of the purpose of the study. However, the experimenter, who was a graduate student at the time, was aware of the patient group assignment and research hypotheses.

All negotiations with hospital staff, data collection and coding were carried out by the experimenter. While in hospital, the experimenter wore street clothes and a lab coat. Although she identified herself as both a nurse and a graduate student, she dissociated herself from the patient's clinical care. If a problem unrelated to the interview arose, the experimenter terminated the interview and called a staff member. None of the interviews led to extreme emotional reactions that would necessitate intervention. If such a reaction had occurred, the plan was to terminate the interview, provide therapeutic support, notify the staff and exclude the patient from the study.

Results and Discussion

The statistical analysis (ANOVA) was used for time estimation scores only. Reports of other perceptual changes and noncompliant behaviour were

examined descriptively as frequency data. Chi-square analysis was not used because of the problem of low frequencies per cell.

In support of Hypothesis 1, analysis of time estimation data revealed a three-way interaction effect, $F_{1,20} = 6.91$, $p < .05$, as indicated on Table 2. Subsequent simple effects analysis showed significant changes over time for immobile patients, $F_{1,20} = 8.61$, $p < .01$, and for socially isolated patients, $F_{1,20} = 9.95$, $p < .01$, but not for mobile patients, $F_{1,20} = 1.09$, NS, nor for patients who were not isolated, $F < 1$.

The mean change over time for patients who were both isolated and immobile (Table 1) was also significant on simple effects analysis, $F_{1,20} = 17.76$, $p < .01$. The other three groups had no significant change over time.

Consistent with the interaction effect predicted in Hypothesis 2, the interview data revealed a variety of perceptual distortions that were most frequent and dramatic in patients who were both immobile and isolated. Three patients of 24 experienced either visual or auditory "hallucination-like experiences". Two of these three were in the IM-IS group. An additional four of the 24 patients reported other types of perceptual distortions such as intensification of sounds, perceived movement (kinesthetic imagery) of the bed in the room, and the appearance of a "crooked" room when mobilized to the vertical position.

In the original report of these data (Stewart, 1977) the term "hallucination-like experiences" was used to indicate that the perceptual changes reported did not meet such criteria for hallucinations as apparent reality. The present re-examination of the 1977 data will use the term "imagery" to refer to unusual perceptions and vivid dreams, to be consistent with the language of recent work in this area (Stewart, 1984). This terminology reflects the perspective that altered perceptions in immobile patients stem from a normal adaptation to nonoptimal environments rather than signs of psychopathology.

Overall, 57% of reported distortions were from patients in the IM-IS group, 29% were IM-NI and 14% were MO-IS. No patients in the MO-NI group reported perceptual distortions. Data from the additional 15 patients who were not included in the statistical analysis followed the same pattern. Seven of the 15 reported visual, auditory, tactual or kinesthetic experiences. All of those reporting kinesthetic imagery and 60% of those reporting visual, auditory and tactual imagery were from the IM-IS group. These data suggest an interactive effect of immobilization and social isolation, in support of Hypothesis 2.

Table 1

Mean Time Estimation Scores: Production Method

	<u>n</u>	TEST	RETEST
Isolated			
Immobile	6		
<u>M</u>		5.62	10.90
<u>SD</u>		2.12	5.58
Mobile	6		
<u>M</u>		7.82	8.13
<u>SD</u>		3.05	2.38
Not Isolated			
Immobile	6		
<u>M</u>		9.40	9.32
<u>SD</u>		3.49	2.79
Mobile	6		
<u>M</u>		6.43	7.97
<u>SD</u>		2.29	2.87

Note: In the production method used for the time estimation task, subjects were asked to produce an interval of 15 seconds. Mean values in Table 1 are in seconds relative to the 15-second standard. All mean judgments are smaller than the standard indicating that subjects overestimated elapsed time. The lower the score, the greater the overestimation of elapsed time (internal clock faster than external clock).

The retest period was one week after the initial testing which was conducted 48-72 hours after admission or surgery.

Table 2

Analysis of Variance of Time Estimation

SOURCE	df	MS	F
Between Subjects			
Mobilization (M)	1	17.89	1.10
Isolation (I)	1	.32	< 1
M x I	1	10.55	< 1
Error	20	16.31	
Within Subjects			
Test-Retest (T)	1	37.28	7.92*
M x T	1	8.42	1.79
I x T	1	12.92	2.75
M x I x T	1	32.50	6.91*
Error	20	4.71	

* $p < .05$

Hypothesis 3 stated that immobility, social isolation, or the interaction of these two variables would lead to increased reports of vivid or unusual dreams. Support for the isolation hypothesis was obtained from the original 24 patients. Overall, 71% of reports of unusual or vivid dreams were from the isolated groups. However, some patients in all groups reported unusual ("weird", "wild") or vivid dreams which were similar to the "hallucination-like experiences." Twelve of the 24 patients (50%) reported increased frequency of dreams (not necessarily vivid), while one patient reported a decrease. Seven of the 12 (29% of the total group) reported unusual dreams, with 43% of these being particularly vivid. Only one patient reported recurrent dreams related to the accident leading to admission. Twenty-five percent of patients reported waking up from dreams with a jerk or start; this could be myoclonic jerks associated with sleep disturbance.

Data from the additional 15 patients supported the interaction effect predicted in Hypothesis 3. Forty percent of the increased vivid or unusual dreams were from the IM-IS group. Very few of the 39 patients interviewed could remember the content of their dreams.

Although both voluntary and involuntary noncompliance have been identified in immobile patients (Stewart, 1984), the present study only examined involuntary noncompliant behaviour during hypnagogic states. In support of Hypothesis 4, the two patients of the 24 who demonstrated hypnagogic noncompliance were from the IM-IS group. To lend further support to this hypothesis, two of the additional 15 patients who tried to remove traction or to get out of bed during periods of altered consciousness were both immobile and isolated. Of the four patients cited above, three were in cervical traction which was the most restrictive type of immobility in the study.

Discussion

These data suggest that both perceptual and behavioural consequences may occur when patients are immobilized and socially isolated in a private room. Predicted changes in time perception (Hypothesis 1) were evident through statistical analysis. Hypotheses 2 to 4, which predicted greater imagery, dreams, and noncompliant behaviour for immobile, isolated patients received preliminary support from frequency data.

Although the time estimation data reveal a change in the direction of underestimation of elapsed time, which would suggest support of Hypothesis 1, the absolute mean values reported in Table 2 have a consistent pattern of overestimation of time because all judgments are shorter than the 15-second standard. An alternative to the interpretation of support for Hypothesis 1 (Stewart, 1977), is to interpret these data as evidence for reduced overestimation as opposed to increased underestimation because none of the means fall on the underestimation side of the standard. In terms of environmental stimulation, the underestimation interpretation would support a restricted stimulation hypothesis, with greater restriction over time. The overestimation interpretation, on the other hand, indicates a pattern of sensory overload that is greatest for the IM-IS group, and is reduced over time.

In a laboratory research program on the effects of confinement on duration experience, Smith (1979, p. 139) reports on her earlier findings in which one group overestimated duration relative to another group. However, examination of the original means (Smith, 1975, p. 96) reveals a consistent pattern of judgments longer than the standard or underestimation of elapsed time (the smallest mean was 42.25 for a 40 second standard). These data have relevance to the present study for two reasons. First, the issue of relative versus absolute scores shows that relative scores support one hypothesis while absolute scores support the opposite hypothesis. Secondly, the problem of generalizability of laboratory studies to a hospital

setting is raised. Results of the laboratory simulation of confinement are different from those for hospital confinement. Using the production method, the laboratory confinement led to underestimation of elapsed time (Smith, 1975) consistent with restricted stimulation studies cited earlier. However, hospital confinement in the present study led to overestimation of elapsed time for all patients in both testings, suggesting a sensory overload interpretation. The ANOVA results merely indicate a trend toward greater underestimation over time but no scores actually moved into the absolute range for underestimation.

Because of the problem of absolute versus relative scores, the data presented here (Tables 1 & 2) do not provide clear support for Hypothesis 1. In light of later research with orthopedic patients (Stewart, 1984) in which nonparticipant observation of the environment yielded data in support of an overload hypothesis, it appears that the time estimation data strengthened the overload interpretation. Furthermore, it is questionable whether the laboratory simulations of confinement to bed have adequate external validity to provide a baseline for the hospital experience of immobility. There are numerous differences between the laboratory and clinical studies such as duration of confinement, use of medications, body temperature, and stress levels.

The imagery data (Hypotheses 2 and 3) had the same pattern as the time estimation results. The combination of immobility and social isolation led to both overestimation of elapsed time and increased imagery ("hallucination-like experiences" and vivid or unusual dreams). However, the finding that social isolation (assumed to be restricted environmental stimulation) was associated with vivid and unusual dreams contradicts the overload interpretation of the time estimation data. Either extreme of environmental stimulation could predict perceptual distortions according to Zuckerman's (1969) optimal level of stimulation theory. Whether a private room (defined as social isolation here) represents restricted or excessive stimulation needs to be empirically tested by observational methods.

Findings of hypnagogic noncompliance in immobile, isolated patients must be examined with extreme caution because of the small sample size and low frequencies per cell. However, the clinical significance of these findings is important because the type of noncompliance reported here may interfere with recovery, as the patient is acting against his own self-interest during a period of altered awareness.

Conclusion

Evidence is provided for perceptual and behavioural changes in orthopedic patients who are both immobile and isolated, as predicted. The interaction of these factors (immobility x isolation) was associated with time distortion, imagery, and noncompliant behaviour during periods of altered consciousness. The results must be qualified by two considerations: the small sample size, and a lack of control of confounding variables such as the preponderance of emergency admissions in the immobile, isolated group relative to other groups. With the exception of increased unusual or vivid dreams in the social isolation group, neither immobility nor isolation taken separately predicted the dependent variables.

Results are interpreted to support a stimulus overload hypothesis. However, these preliminary data require substantiation from research that directly examines the stimulation levels in the environment. An earlier interpretation (Stewart, 1977) of time estimation data used relative scores to make a case for stimulus restriction based on a trend toward underestimation of elapsed time after a one week interval in hospital. When absolute scores are examined, however, the data show a clear pattern of overestimation of elapsed time for each group at both testings, which suggests sensory overload. Later studies of immobile patients (Stewart, 1984), which include nonparticipant observation of the environment, also point to an overload interpretation consistent with Zuckerman's (1969 b) optimal level of stimulation theory. These results are the opposite of findings reported by Smith (1975; 1979) in laboratory simulations of short duration confinement of healthy subjects, which challenges the external validity of laboratory research to represent the hospital environment.

The findings presented here provide support for the interrelatedness of the four concepts central to Newman's (1979) model of health. The relationship of time perception to both movement (immobility) and space (private room/social isolation) links three of the concepts, while both perceptual and behavioural changes were associated with the fourth concept, consciousness. Newman (1983, p. 164) defines consciousness as the "informational capacity of the system" that "may be observed in terms of the quantity and quality of responses to stimuli." The perceptual changes reported here may, indeed, be more closely tied to the capacity of the orthopedic patient to process information than to the objective quantity of stimulation in the environment.

The implications for clinical practice stem from the finding that patients who are immobile and isolated may have perceptual and behavioural changes that are related to stimulus overload. Nurses need to assess the environmental and personal variables that contribute to overload and develop

interventions to reduce deleterious consequences. Imagery effects are not necessarily negative effects, but can be frightening for patients, whereas noncompliance has a greater safety risk. Future research should focus on increasing our understanding of the multivariate contributors to stimulus overload in the clinical setting and on testing the effectiveness of nursing interventions that are derived from clinical research data.

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RÉSUMÉ

Malades hospitalisés pour des problèmes orthopédiques: effets de l'immobilisation et de l'isolement sur la perception et le comportement

Cette étude quasi-expérimentale visait à examiner les modifications de la perception du temps, de la visualisation et de la non-compliance hypnagogique chez les malades des services orthopédiques au cours des dix premiers jours d'hospitalisation. La conception de l'étude était la suivante: analyse de variance de mesures répétées 2 (immobile-mobile) x 2 (isolé-non isolé) x 2 (test-retest). Sur les 39 malades interviewés, 24 seulement ont satisfait aux critères d'analyse statistique. Comme prévu, les malades qui étaient à la fois immobiles et isolés ont obtenu des résultats plus élevés sur les mesures de dépendance. Les malades isolés en chambre privée présentaient une incidence accrue de rêves inhabituels et vides. La notion de temps a été mesurée à l'aide de la méthode de production qui est conforme aux autres études de laboratoire sur l'isolement réalisées par d'autres chercheurs en sciences infirmières. Toutefois, les données obtenues sont contraires aux résultats de recherches antérieures, ce qui semble indiquer qu'il existe un problème quant à la validité externe de la simulation en laboratoire de l'isolement du malade à l'hôpital. Les données relatives à la notion de temps sont interprétées comme preuve de surcharge sensitive dans l'échantillon hospitalier. Cet effet était surtout marqué chez les malades immobiles, isolés et s'est atténué dans le temps ($p < 0.5$). Les données sur la visualisation et la non-compliance ont été examinées de manière descriptive à partir de l'analyse du contenu des entrevues. Étant donné le petit échantillon et le problème des variables confondantes, telles que les admissions d'urgence et les admissions prévisibles, les résultats doivent être interprétés avec circonspection. Ces données peuvent être interprétées dans le cadre de la théorie du niveau optimal de stimulation de Zuckerman. Elles appuient les relations réciproques des concepts du modèle de santé de Newman: temps, espace, mouvement et conscience.

CALL FOR INFORMATION

We are compiling an annotated bibliographic listing of research studies in nursing on mentorship from 1977-1987 in the USA and Canada. This listing will include nursing master's theses, nursing doctoral dissertations, post-doctoral nursing studies and studies conducted by nurses in educational and health care settings.

If you are aware of published or unpublished studies in the area of mentorship, please forward the name and address of the investigator to us so that a summary of this work can be included in this project. Thank you.

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INFORMATION FOR AUTHORS

Nursing Papers/Perspectives en nursing welcomes research and scholarly manuscripts of relevance to nursing and health care. Please send manuscripts to *The Editor, Nursing Papers/Perspectives en nursing*, School of Nursing, McGill University, 3506 University Street, Montreal, QC, H3A 2A7, Canada.

Procedure

Please submit three double-spaced copies of the manuscript on 216mm x 279mm paper, using generous margins. Include a covering letter giving the name, address, present affiliation of the author(s). It is understood that articles submitted for consideration have not been simultaneously submitted to any other publication. Please include with your article a statement of ownership and assignment of copyright in the form as follows: "I hereby declare that I am the sole proprietor of all rights to my original article entitled ' _____ ' and that I assign all rights to copyright to the School of Nursing, McGill University, for publication in *Nursing Papers/Perspectives en nursing*. Date _____, Signature _____."

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Acceptable length of a manuscript is between 10 and 15 pages. The article may be written in English or French, and must be accompanied by a 100-200 word abstract (if possible, in the other language). Please submit original diagrams, drawn in India ink and camera-ready. Prospective authors are asked to place references to their own work on a separate sheet and to follow the style and content requirements detailed in the Publication Manual of the American Psychological Association (3rd. ed.), Washington, DC: APA, 1983.

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Manuscripts submitted to *Nursing Papers/Perspectives en nursing* are assessed anonymously by two members of a Review Board, using the following criteria:

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RENSEIGNEMENTS À L'INTENTION DES AUTEURS

La revue *Nursing Papers/Perspectives en nursing* accueille avec plaisir des articles de recherche ayant trait aux sciences infirmières et aux soins de la santé. Veuillez adresser vos manuscrits à la rédactrice en chef, *Nursing Papers/Perspectives en nursing*, Ecole des sciences infirmières, Université McGill, 3506 rue University, Montréal, QC, H3A 2A7.

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Veuillez envoyer trois exemplaires de votre article dactylographié à double interligne sur des feuilles de papier de 216mm x 279mm en respectant des marges généreuses, accompagné d'une lettre qui indiquera le nom, l'adresse et l'affiliation de l'auteur ou des auteurs. Il est entendu que les articles soumis n'ont pas été simultanément présentés à d'autres revues. Veuillez inclure avec votre article une déclaration de propriété et de cession de droit d'auteur conformément à la formule suivante: "Je déclare par la présente que je suis le seul propriétaire de tous droits relatifs à mon article intitulé ' ' et je cède mon droit d'auteur à l'École des sciences infirmières de l'Université McGill, pour fins de publication dans *Nursing Papers/Perspectives en nursing*. Date ____, Signature _____."

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Validité externe: Le problème soulevé présente-t-il un intérêt véritable? Ce problème est-il d'actualité? Existe-t-il des problèmes de divulgation ou de déontologie? Les conclusions de la recherche ou de l'article sont-elles importantes? Ces conclusions ou résultats peuvent-ils s'appliquer à d'autres situations? Est-ce que l'article contribue à l'avancement du savoir dans le domaine des sciences infirmières? De quelle façon?

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A la réception du manuscrit original, l'auteur est avisé que le Comité de rédaction prendra une décision au sujet de la publication de son article dans les six semaines. Lorsqu'un manuscrit est renvoyé à son auteur pour qu'il le remanie, trois exemplaires dudit manuscrit remanié (daté et portant l'inscription "revu et corrigé") doivent être renvoyés à la rédactrice en chef dans les quatre semaines. Les modalités complètes de lecture, de remaniement, d'édition, de composition et d'imprimerie expliquent qu'il s'écoule souvent de six à huit mois avant qu'un article soumis soit publié.

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