

THE ROLE OF COMPLEX EQUIPMENT IN NURSES' WORK: TOWARD THE DEVELOPMENT OF A MEASURE

Sharon Campbell • Peggy Leatt

One result of recent advances in medical science has been a phenomenal increase in the availability of sophisticated equipment with which to diagnose, monitor and treat disease conditions. This has been a major factor in altering the work environment of nursing staff as nurses are called upon more and more frequently to monitor and operate sophisticated equipment and to use mechanical devices in their practice (Lenihan, 1977). In some nursing speciality areas, such as ICU's, CCU's, and renal units, reliance on equipment is an important factor in treatment.

Most discussion to date has entered upon nursing roles in relation to technological change (Henderson, 1978; Peplau, 1977). Few attempts have been made to measure, define or even classify the levels and/or types of equipment which may be employed in giving nursing care. Definition of equipment technology seems particularly imperative at this point in order to scientifically examine the impact that increased use of equipment has on work environments and on nursing care.

The purpose of this research was to obtain a measure of nursing technology in different nursing units. Specific research objectives were: 1) to develop a measure of equipment technology that would measure the impact and use of equipment and differentiate between nursing speciality units; 2) to explore nurses' perceptions of the technological dimensions "uncertainty", "instability" and "variability" in selected nursing units; and 3) to examine the relationships between the above named technological dimensions and the measure of equipment technology. It was expected that nurses working in units with a high degree of equipment technology would hold low uncertainty, high instability and high variability perceptions.

Sharon Campbell, M.N., is Supervisor of Special Projects, W. W. Cross Cancer Institute, Edmonton, Alberta.

Peggy Leatt, R.N., Ph.D., is Associate Professor, Department of Health Administration, Faculty of Medicine, University of Toronto, Toronto, Ontario.

LITERATURE REVIEW

Nursing Technology

Generally studies of nursing technology have focused on delineating tasks, functions, procedures, and technical skills in relation to hospital nursing practice (Ellis, 1977). Farmer (1978) in a descriptive study of nursing activities relative to technology asked nurses in different hospital units to identify technical objects (instruments and machines) in their work area, and to count the average number of contacts per hour. Nurses working in units with many mechanical supports were subsequently ranked as having the highest technical activity. Leonard and Rogers (1978) surveyed 40 graduate and student nurses to find out the extent to which nursing functions were evaluated in terms of traditional or technical skills. Traditional skills were defined as those providing physical and emotional support for patients; technical skills were those utilizing mechanical equipment to provide care.

Ogonowski (cited in Birckhead, 1978) looked at nursing time spent in computer related activities, patient teaching activities and bedside care activities in the psychiatric and surgical units of a large hospital. Nurses (N = 49) spent 22.6% of their time giving basic nursing care, 15.6% performing computer related activities and 5.1% teaching, counselling or socializing with patients. Ogonowski concluded that computer technology did not necessarily allow for increased nurse-patient contact.

Lewandowski and Kramer (1980) rank ordered four types of nursing units on the a priori assumption of specialized nursing knowledge and skills. Special care units were ranked most technical, followed by parent child units, medical-surgical speciality units, and medical-surgical units. This study recommended that an empirical measure of nursing technology be developed that could be used to differentiate between nursing speciality units.

Organizational Technology

At an organizational level, technology has been defined by Perrow as those actions performed by an individual to bring about changes in the raw material (Perrow, 1967), and included the conditions of work, the type of raw material and the degree of routineness or non-routineness. Variability of work referred to the number of exceptional cases encountered and analyzability of search behaviors referred to the extent that knowledge about raw materials was known and available to bring about the desired change. Kovner (1966) measured two aspects of technology; the variability and predictability of work in relation to decision making and communication skills. Overton,

Schneck and Hazlett (1977) utilized Perrow's framework to describe three technological dimensions: uncertainty, instability, and variability; and differentiated between seven types of nursing subunits (N = 71). Intensive care subunits had a distinct technology while auxiliary and psychiatric subunits had similar technologies with pediatric, obstetrical, rehabilitative and surgical units being of similar type.

Leatt and Schneck (1981) replicated the Overton et al. study using nine different nursing units (N = 157) to establish reliability and validity of the tool. The same dimensions of technology emerged and nursing units showed the same pattern of differentiation. Given the increasing use of equipment in health care systems, it would seem appropriate to continue toward developing a measure of technology in order to study the impact of such on nurses and nursing.

METHOD

The main purpose of this study was to describe and examine the relationships between four variables of technology. The variables examined in this study were organizational technology — specifically uncertainty, instability and variability; and equipment technology. The following theoretical and operational definitions of these variables were used.

- 1) *Equipment Technology*: the degree to which the machinery was used to assist or replace some or all aspects of human functioning (Amber & Amber, 1962). Operationally this referred to the type, function, and use of equipment in providing patient care (life support, monitoring); the physical features (alarms); prominence in patient care areas; and degree to which nurses needed specialized knowledge.
- 2) *Organization Technology*:
 - a) *Degree of Uncertainty*: the degree to which there was insufficient knowledge about the nature of raw materials and the probability of success when different techniques were applied. This was measured by the number of patients with multi-diagnoses presenting complex nursing problems; and the extent to which nursing techniques were complex, relied on nurses' intuition and feedback from patients (Overton et al.).
 - b) *Degree of Instability*: the degree to which there were fluctuations in raw materials and techniques as measured by the number of emergencies and the number of patients requiring technical monitoring, frequent nursing observations and attendance (Overton et al.).
 - c) *Degree of Variability*: the degree to which there are variations among the raw materials and techniques. The number of pa-

tients who presented a wide variety of health problems and the extent to which nursing techniques varied for each patient (Overton et al.).

The study population consisted of 89 full time nurses employed on four distinct, randomly selected, nursing units in one acute care hospital in Edmonton, Alberta; 14 nurses from the renal unit, 16 from the medical unit, 26 from the psychiatric units and 33 from the intensive care unit. These types of nursing units were chosen based on the results of Overton et al. and Leatt and Schneck. Participation was voluntary and anonymity of responses assured.

A 25 item questionnaire (Appendix) was used to collect the data. Nine items, three from each technological dimension were randomly selected from Leatt and Schneck. Items 19, 24 and 25 provided a measure of variability, items 20, 22 and 23 measured uncertainty and items 15, 18 and 21 instability. The wording of the questions, the range of possible responses and the scoring of responses were identical. Items were measured on a five point scale of percentages ranging from 0-5%, 6-25%, 26-50%, 51-75% to 76-100%. The 5 point response scale was considered conceptually equidistant and for analysis purposes the points were given numerical values ranging from 1 to 5. Based on the literature and personal experience of the author 16 items were generated to measure equipment technology. Five items (Nos. 7, 8, 10, 12, 14) were intended to describe certain features of the equipment, two items to give a measure of the purpose for which equipment was used (Nos. 1, 2), and nine items (Nos. 3, 4, 5, 6, 9, 11, 13, 16, 17), the use of equipment in performing nursing care. Eleven of the 16 items were measured on a four point Likert type scale, identical to that used by Leatt and Schneck, with a range of numerical values from 1 to 4; three questions relating to nursing time used a five point percentage scale, and two questions required dichotomous yes-no answers.

Face validity of these 16 items was established through review by 14 nurses with clinical and teaching experience. All items received agreement from at least 12 of the 14 experts.

The questionnaire was administered to individual nurses over a period of one month in the spring of 1980 and there was a 97.8% response rate.

RESULTS

Nursing Organization Technology

Composite scores were calculated for each dimension by adding nurses' responses to items measuring the same technological variables, and analysis performed on these results. It was anticipated that the

three dimensions of organization technology, uncertainty, instability and variability, would discriminate between nurses on different types of nursing units and this was confirmed (Table 1). Rank ordered mean scores indicated that nurses in the intensive care unit perceived their patients to be highly unstable physiologically, while psychiatric nurses, also with a high score, perceived their patients to be psychologically unstable. The medical and renal nurses had lower scores. Uncertainty which largely measured psychosocial needs, was ranked highest by psychiatric nurses, then renal nurses, medical and intensive care nurses. When variability of patients' diagnoses and nursing tasks was examined, medical nurses and psychiatric nurses ranked highest. Nurses working in the intensive care unit and the renal unit reported lower variability scores.

Table 1
Ordering of Nurses from Different Types of Units on
Mean Scores for Technology Variables

Variability					
High	MED NURSES	PSYCH NURSES	ICU NURSES	RENAL NURSES	Low
	9.13	8.36	7.34	4.21	
Uncertainty					
High	PSYCH NURSES	RENAL NURSES	MED NURSES	ICU NURSES	Low
	11.40	8.00	7.50	7.25	
Instability					
High	ICU NURSES	PSYCH NURSES	MED NURSES	RENAL NURSES	Low
	10.06	8.50	7.88	7.86	

Equipment Technology

Factor analyses were performed on all responses for the 16 items and a three factor orthogonal solution with varimax rotation was found to be the most interpretable (Table 2). One item was eliminated and the remaining 15 items accounted for 59.6% of the total variance.

Table 2
Factor Analysis Orthogonal Solution Varimax Rotation

Item Number*	Item Content	Communities	Critical		
			Care Equipment	Diagnostic Equipment	Equipment Apprehension
01	Use of monitoring equipment	0.765	<u>0.578</u>	<u>0.584</u>	0.015
02	Use of life support equipment	0.890	<u>0.921</u>	0.203	-0.004
03	Nurse frequently operates equipment	0.836	<u>0.874</u>	0.178	-0.201
04	Nurse repairs equipment	0.345	<u>0.573</u>	0.122	-0.030
06	Equipment alarms	0.781	<u>0.817</u>	0.326	0.086
07	Equipment noisy	0.601	<u>0.762</u>	0.047	0.134
11	Assembling equipment	0.492	<u>0.604</u>	-0.041	0.354
12	Equipment in bedside area	0.667	<u>0.804</u>	0.112	0.085
14	Extensive training required	0.499	0.664	-0.140	0.197
13	Assist others who use equipment	0.608	0.324	<u>0.650</u>	0.285
17	Work load decreased	0.734	0.053	- <u>0.835</u>	0.185
05	Patient care delayed	0.465	0.126	0.148	0.572
08	Frustration with equipment	0.416	0.373	0.208	<u>0.527</u>
09	Apprehension re: operating equipment	0.487	-0.240	-0.097	<u>0.648</u>
16	Time with patient decreased	0.496	-0.061	0.357	- <u>0.604</u>
		8.936	5.818	1.858	1.260

* The items have been re-ordered from the original (Appendix) for ease of viewing loadings of .50 and greater on each factor. Loadings of .50 and greater are underlined.

The first factor, critical care equipment, accounted for 38.8% of the total variance. This factor indicated that nurses were frequently responsible for the use and/or operation of monitoring or life support equipment (items 1, 2, 3, 4, 11) in performing nursing care. Complexity of equipment was measured by nurses' frequent response to alarms (items 7, 16) and expressed need for extensive training (item 14). A large proportion of the patients' bedside area was reported taken up by equipment (item 12) suggesting the predominance of technical equipment.

Diagnostic equipment accounted for 12.4% of the total variance. Nurses were frequently required to assist other health professionals using monitoring equipment (items 1, 13) thereby increasing nurses' perception of their workload (item 17). The monitoring equipment was likely used for diagnostic or investigational procedures and required much task oriented nursing time.

Equipment apprehension, the third factor accounted for 8.4% of the variance. The infrequent use of equipment (items 1, 2) caused nurses to be apprehensive (item 9) and frustrated (item 8). Nurses reported they spent more time at the bedside (item 16), probably due to the unfamiliar equipment or delayed patient treatments because needed equipment was not available (item 5).

Table 3
Ordering of Nurses from Different Types of Units on
Mean Factor Scores

Factor I: Critical Care Equipment					
High	RENAL NURSES	ICU NURSES	MED NURSES	PSYCH NURSES	Low
	1.25	0.52	-0.62	-1.24	
Factor II: Diagnostic Equipment					
High	ICU NURSES	PSYCH NURSES	MED NURSES	RENAL NURSES	Low
	0.65	0.48	-0.02	-0.75	
Factor III: Equipment Apprehension					
High	MED NURSES	RENAL NURSES	ICU NURSES	PSYCH NURSES	Low
	0.32	0.14	-0.11	-0.20	

DIFFERENCES IN FACTOR SCORES BETWEEN NURSES

In order to discriminate between nurses working on different nursing units for the three equipment technology factors, factor scores were calculated with a mean of 0 and a standard deviation of 1 (Table 3).

Nurses from the renal unit ranked highest for critical care equipment, because of the complexity and predominance of dialysis machines, followed by nurses in the intensive care unit, and then medical nurses and psychiatric nurses. Intensive care nurses had the highest mean score for diagnostic equipment since this type of patient usually required many tests and procedures. Renal unit nurses had the lowest mean score with nurses working in psychiatry and medicine between these two. Mean scores for equipment apprehension showed, not surprisingly, that medical nurses were highest and renal nurses were next highest, probably because equipment failure delayed patient care. Psychiatric and intensive care nurses had the lowest ranked scores.

RELATIONSHIPS BETWEEN SUBUNIT TECHNOLOGY AND EQUIPMENT TECHNOLOGY

The nature and magnitude of the relationships between subunit technology and equipment technology were measured using the Pearson product-moment correlation coefficient (Table 4).

Table 4
Pearson Correlation Coefficient Relationships Among Measures of Instrumentation and Subunit Technology

	Instability	Uncertainty	Variability
Instability			
Uncertainty	0.08		
Variability	0	0.07	
Critical Care Equipment	0.16	<u>-0.44</u>	<u>-0.54</u>
Diagnostic Equipment	<u>0.39</u>	-0.19	0.21
Equipment Apprehension	0.10	-0.03	-0.04

Note: If it is assumed that these nurses were randomly sampled from a larger population a Pearson correlation coefficient of 0.25 or greater would be significant at 0.05 level.

Critical care equipment was negatively correlated with variability (-0.54) and uncertainty (-0.44), suggesting that the greater the use of complex equipment the less variation there was in patients and nursing tasks and the more certainty there was in applying successful nursing techniques. There was a positive correlation between the instability factor and diagnostic equipment (0.39). Fluctuations in patients' conditions were associated with a need for many diagnostic procedures, and collaboration with other health professionals (task interdependence) and subsequent increased workload. No other strong relationships were found among the other factors.

DISCUSSION

Overall nurses' scores for these factors seemed logically related to each type of nursing unit when patient characteristics and nursing tasks and responsibilities were considered. Although the correlation coefficients were not high, the mean scores were in the predicted direction, suggesting that nurses' speciality units were consistent.

It was not surprising to find a positive relationship between the instability dimension of subunit technology and the factor diagnostic equipment. Nurses working in areas where patients' physiological condition fluctuated unpredictably and emergencies frequently occurred were also involved in assisting with diagnostic procedures. Rank ordering of the different units were in the same order for both measures, with intensive care nurses being highest and renal nurses lowest.

The majority of patients in the intensive care unit required technical monitoring of physiological instabilities, frequent nursing observations and many diagnostic tests. Nurses worked closely with other health professionals, particularly physicians, in responding to emergencies and changes in patients' conditions. Renal nurses cared for patients with chronic, stable conditions who experienced few emergencies. Patients with end stage renal failure were treated on an outpatient basis and seldom required diagnostic tests or procedures that involved these nurses.

The negative correlation between critical care equipment and uncertainty implied that the greater involvement nurses had with the operation of complex equipment, and the greater technical training and skills required, the more likely nurses were to be certain about what nursing techniques would be successful. Patients had similar health problems, required the same type of nursing care. Nurses working in units with low uncertainty and high critical care equipment (intensive care and renal) relied on feedback from equipment monitoring systems. Psychiatric nurses, on the other hand often had insufficient

knowledge about patients' conditions and about the likelihood of being successful in providing patient care. Nurses relied on patient input, nursing intuition and independent decision making in planning care.

There was a negative correlation between critical care equipment and variability, suggesting that in nursing units where complex equipment was a major factor in treatment plans, patients were likely to have similar diagnoses and there was little diversity in nursing techniques that could be successfully applied. Although patients in the intensive care unit were seriously ill, all had "multi-system failure" and required sophisticated but somewhat routine nursing care. Nurses working in medicine however, dealt with a variety of patients but had little contact with life support or monitoring equipment. Individualized patient care planning and attention to the psychosocial needs of the patient and family were major factors inherent in the uncertainty variable, and were evident on the medical unit.

The expected relationships between a high degree of equipment technology and low uncertainty, high variability and high instability were generally met, as seen by scores of the intensive care nurses. Psychiatric nurses were the opposite with high uncertainty and low scores for critical care equipment.

NURSING IMPLICATIONS

Results of this study have implications for both nursing practice and education. The limitations of this study should be kept in mind when reviewing the implications.

Nurses working in intensive care units, because of the emphasis on equipment oriented activities, would benefit from frequent inservice programs focusing on new procedures or equipment. Although much nursing time is spent with equipment, nurses should be encouraged to also spend time attending to the psychosocial comfort of patients and families. The renal nurses had high scores on uncertainty suggesting a strong focus on patients' psychosocial needs. This practice should be supported as the success of treating patients with end stage renal failure is partly dependent on helping them adapt. Since complex equipment is infrequently required on the medical unit, clinical specialists familiar with technical equipment could be available to advise and teach nurses thereby reducing their apprehension and frustration. Psychiatric nurses use very little equipment but do require the effective use of team conferences to discuss and plan appropriate nursing care to meet the psychosocial needs of patients. Education can be directed toward helping nurses plan individualized care.

CONCLUSIONS

Results obtained in this study were similar to those obtained by Overton et al. and Leatt and Schneck suggesting some degree of construct validity. The relationships demonstrated between equipment technology and organization technology were in a logical direction offering further evidence of the concurrent validity of the Leatt and Schneck technology measure.

The findings are limited to the population studied and different results may be obtained with other nurses, types of units, or hospitals. Repeated study is suggested to further establish reliability and validity. The development of a reliable and valid measure of nursing equipment technology will allow other researchers to study impacts of increasing technology on many different aspects of nursing care and nursing behaviors.

REFERENCES

- Amber, G., & Amber, P. *Anatomy of automation*. Englewood Cliffs, New Jersey: Prentice Hall, 1962.
- Birckhead, L. Nursing and the technotronic age. *Journal of Nursing Administration*, 1978, 8 (2), 16-19.
- Ellis, R. Fallibilities, fragments, and frames. *Nursing Research*, 1977, 26 (3), 177-182.
- Farmer, E. The impact of technology on nursing. *Nursing Mirror*, September 28, 1978, pp. 17-20.
- Henderson, V. The concept of nursing. *Journal of Advanced Nursing*, 1978, 3 (2), 113-130.
- Kovner, A. *The nursing unit: a technological perspective*. Unpublished doctoral dissertation, University of Pittsburg, 1966.
- Leatt, P., & Schneck, R. Nursing subunit technology: A replication. *Administrative Science Quarterly*, June 1981.
- Lenihan, J. Technology or TLC: The nurses' dilemma. *Nursing Times*, August 18, 1977, pp. 1266-1267.
- Leonard, A., & Rogers, I. Role imagery: A delicate balance. *Journal of Nursing Education*, 1978, 17 (3), 42-46.
- Lewandowski, L., & Kramer, M. Role transformation of special care unit nurses: A comparative study. *Nursing Research*, 1980, 29 (3), 170-179.
- Overton, P., Schneck, R., & Hazlett, C. B. An empirical study of the technology of nursing subunits. *Administrative Science Quarterly*, 1977, 22, 203-219.
- Peplau, H. The changing view of nursing. *International Nursing Review*, 1977, 24 (2), 43-45.
- Perrow, C. A framework for comparative analysis of organizations. *American Sociological Review*, 1967, 32, 194-208.

APPENDIX

EVEN THOUGH SOME OF THE QUESTIONS ARE COMPLEX WE WOULD APPRECIATE YOUR ANSWERING ALL ITEMS AND GIVING YOUR OPINIONS ABOUT THE QUESTIONS ASKED.

A. ABOUT YOUR WORK ENVIRONMENT

BESIDE EACH OF THE STATEMENTS BELOW, PLEASE INDICATE BY CHECKING (✓) THE ONE ANSWER THAT MOST CLOSELY REPRESENTS YOUR OPINION.

1. HOW MANY OF THE PATIENTS ON YOUR UNIT REQUIRE SOPHISTICATED MONITORING EQUIPMENT (E.G., CARDIAC MONITOR, IVAC IV REGULATOR) AT SOME TIME DURING THEIR STAY ON YOUR UNIT? (CHECK ONE)

_____ ALMOST ALL OR ALL

_____ FEW

_____ MANY

_____ ALMOST NONE OR NONE

2. HOW MANY OF THE PATIENTS ON YOUR UNIT REQUIRE LIFE SUPPORT EQUIPMENT (E.G., VENTILATORS, DIALYSIS MACHINE) AT SOME TIME DURING THEIR STAY ON YOUR UNIT? (CHECK ONE)

_____ ALMOST ALL OR ALL

_____ FEW

_____ MANY

_____ ALMOST NONE OR NONE

3. HOW OFTEN ARE YOU RESPONSIBLE FOR OPERATING MONITORING OR LIFE SUPPORT EQUIPMENT NEEDED FOR PATIENT CARE? (CHECK ONE)

_____ ONCE A WEEK OR LESS OFTEN

_____ ABOUT ONCE EVERY SHIFT

_____ 2 OR 3 TIMES PER WEEK

_____ SEVERAL TIMES PER SHIFT
OR CONTINUOUSLY

4. ON YOUR UNIT HOW OFTEN DO YOU REPAIR OR "TROUBLE SHOOT" EQUIPMENT THAT IS NOT WORKING PROPERLY AND IS NEEDED FOR PATIENT CARE? (CHECK ONE)

_____ ONCE A WEEK OR LESS OFTEN

_____ ABOUT ONCE EVERY 24 HRS.

_____ 2 OR 3 TIMES PER WEEK

_____ SEVERAL TIMES PER SHIFT
OR MORE OFTEN

5. HOW OFTEN IS PATIENT CARE ON YOUR UNIT DELAYED BECAUSE NEEDED TECHNICAL EQUIPMENT (NOT INCLUDING PROCEDURE TRAYS) IS NOT AVAILABLE? (CHECK ONE)

_____ VERY FREQUENTLY

_____ INFREQUENTLY

_____ FREQUENTLY

_____ VERY INFREQUENTLY

6. HOW FREQUENTLY DURING A SHIFT IS IT NECESSARY FOR YOU TO RESPOND TO EQUIPMENT ALARMS, INCLUDING FALSE ALARMS? (CHECK ONE)

_____ VERY FREQUENTLY

_____ INFREQUENTLY

_____ FREQUENTLY

_____ VERY INFREQUENTLY

7. HOW FREQUENTLY DO YOU FIND THE TECHNICAL EQUIPMENT USED ON YOUR NURSING UNIT NOISY? (CHECK ONE)

_____ VERY FREQUENTLY

_____ INFREQUENTLY

_____ FREQUENTLY

_____ VERY INFREQUENTLY

15. ON YOUR UNIT THERE ARE MANY EMERGENCIES WHEN IMMEDIATE NURSING ACTIONS MUST BE TAKEN IN RESPONSE TO CHANGES IN PATIENTS' CONDITIONS. (CHECK ONE)

_____ STRONGLY AGREE

_____ DISAGREE

_____ AGREE

_____ STRONGLY DISAGREE

16. IN GENERAL, DOES THE EQUIPMENT USED ON YOUR UNIT ALLOW YOU TO SPEND MORE TIME GIVING DIRECT PATIENT CARE? (CHECK ONE)

_____ YES

_____ NO

17. IN GENERAL, DOES THE EQUIPMENT USED ON YOUR UNIT DECREASE YOUR WORK LOAD? (CHECK ONE)

_____ YES

_____ NO

BESIDE EACH OF THE FOLLOWING STATEMENTS PLEASE INDICATE YOUR RESPONSE BY CHECKING (✓) ONE.

IN ALL QUESTIONS YOU ARE ASKED TO ESTIMATE A PERCENTAGE.

	PERCENT				
	0-5%	6-25%	26-50%	51-75%	76-100%
18. IN YOUR ESTIMATION, WHAT PERCENTAGE OF PATIENTS ON YOUR UNIT NEED NURSING OBSERVATIONS MORE OFTEN THAN ONCE EVERY HALF HOUR?	()	()	()	()	()
19. WHAT PERCENTAGE OF THE PATIENTS WOULD YOU SAY HAVE SIMILAR HEALTH PROBLEMS (OR DIAGNOSES)?	()	()	()	()	()
20. WHAT PERCENTAGE OF THE PATIENTS ON YOUR UNIT HAVE COMPLEX PROBLEMS THAT ARE NOT WELL UNDERSTOOD?	()	()	()	()	()
21. ON SOME UNITS THERE IS GREATER PRESSURE TO GIVE NURSING CARE QUICKLY BECAUSE OF PATIENTS' CRITICAL CONDITIONS. WHAT PERCENTAGE OF THE TIME IS THERE A GREATER TIME PRESSURE ON YOUR UNIT?	()	()	()	()	()
22. WHAT PERCENTAGE OF THE NURSING CARE ON YOUR UNIT IS DIRECTED AT MEETING PATIENT'S SOCIO-PSYCHOLOGICAL NEEDS (AS OPPOSED TO PHYSICAL NEEDS)?	()	()	()	()	()
23. WHAT PERCENTAGE OF THE NURSING CARE GIVEN RELIES UPON NURSES' INTUITION RATHER THAN ON SET PROCEDURES OR ROUTINES?	()	()	()	()	()
24. WHAT PERCENTAGE OF THE NURSING CARE PROCEDURES ARE SIMILAR FOR MOST OF THE PATIENTS ON YOUR UNIT?	()	()	()	()	()
25. WHAT PERCENTAGE OF THE DECISIONS MADE BY NURSES DURING THEIR WORK ARE REPETITIVE FROM ONE DAY TO THE NEXT?	()	()	()	()	()

RÉSUMÉ

Le rôle de l'équipement complexe dans le travail infirmier: vers la mise au point d'une mesure

Cette étude avait trois objectifs: 1) décrire les techniques de soins infirmiers en termes de facteurs d'organisation; 2) mettre au point une mesure de l'effet et de l'utilisation de l'équipement au sein des unités de soins infirmiers et 3) étudier les rapports entre les techniques d'organisation et les techniques relatives à l'équipement. Bien que l'on reconnaisse généralement l'importance relative de la technologie croissante et de son effet sur les milieux de travail, peu de tentatives visant à établir une mesure de l'équipement qui pourrait être utilisée en pratique infirmière, ont été effectuées.

Des infirmiers de quatre unités spécialisées (médecine, psychiatrie, dialyse rénale et soins intensifs) ont participé à l'étude (N=89). On a administré un questionnaire de 25 points pour lequel on a obtenu un taux de réponse de 97.8%. Les analyses de données ont été réalisées sur le total des résultats des réponses individuelles des infirmiers. Les méthodes statistiques utilisées ont été les analyses factorielles et les coefficients de corrélation de Pearson.

L'analyse factorielle de la mesure de la technologie de l'équipement semble indiquer que trois variables sous-tendent l'utilisation de l'équipement en soins infirmiers: 1) l'utilisation directe d'équipement complexe de survie et (ou) d'équipement de surveillance, 2) l'utilisation de l'équipement d'épreuves diagnostiques qui requiert la participation de l'infirmier dans le cadre d'une tâche spécifique et 3) l'appréhension des infirmiers qui doivent se servir d'un équipement qui ne leur est pas familier. On a tenté de préciser une mesure de la technologie de l'organisation d'après les résultats de l'étude Overton, Schneck et Hazlett (1977). Les trois facteurs mesurés se rapportaient à l'incertitude, la variabilité et l'instabilité de l'état des malades et des tâches des infirmiers chargés des soins aux malades. Les rapports démontrés entre la technologie de l'équipement et la technologie de l'organisation sont compatibles avec les caractéristiques des unités de soins infirmiers et les types de tâches infirmières réalisées. Les observations semblent indiquer que les unités de soins infirmiers présentent différents types de technologie d'équipement et d'organisation qui peuvent dépendre du type de patients et de soins dispensés. Les résultats de cette étude sont surtout de nature descriptive et l'on recommande de poursuivre la recherche dans ce domaine.