CJNR 2006, Vol. 38 N° 4, 174–190

Résumé

Qualité des soins infirmiers : le rapport entre processus et résultats

Naomi E. Ervin, Shu-Pi Chen et Harry S. Upshaw

L'étude propose un examen, à la lumière d'une analyse transversale et corrélationnelle, des rapports entre les variables d'un modèle conçu dans le but d'évaluer la qualité des soins infirmiers dispensés à domicile. À l'aide d'instruments mis au point pour tester les sept variables du modèle, on a interrogé chez eux 60 patients ayant reçu leur congé d'une agence de soins à domicile. Selon l'hypothèse avancée ici, la prestation des soins infirmiers touche trois aspects du processus interpersonnel, soit le soutien affectif, la justesse de l'information sur la santé et le pouvoir de décision, auxquels se rattachent trois résultats : l'adhérence, les symptômes et le bien-être. Les résultats confirment l'existence de liens entre les dimensions techniques et interpersonnelles. Ils révèlent notamment un rapport significatif entre la justesse de l'information sur la santé et l'adhérence, ainsi qu'entre le pouvoir de décision et le bien-être. En perfectionnant le modèle, concluent les auteurs, on contribuera à l'établissement d'une assise solide pour l'étude et la prestation de soins infirmiers de qualité.

Mots clés : qualité des soins infirmiers, processus et résultats

CJNR 2006, Vol. 38 N° 4, 174–190

Nursing Care Quality: Process and Outcome Relationships

Naomi E. Ervin, Shu-Pi Chen, and Harry S. Upshaw

The relationships between variables in a proposed model for the quality of nursing care provided in the home were examined using a cross-sectional correlational design. Sixty patients discharged from a home-care agency were interviewed in their homes using instruments to measure the model's 7 variables. It was proposed that nursing care provided is related to 3 aspects of the interpersonal process — affective support, health information adequacy, and decisional control — and that these 3 variables are related to 3 outcomes — adherence, symptoms, and well-being. The findings support relationships between technical and interpersonal process components. Significant relationships were found between health information adequacy and adherence and between decisional control and well-being. The authors conclude that further refinement of the model will help to build a stronger foundation for the study and provision of quality nursing care.

Keywords: Nursing care quality, nurse-sensitive outcomes, process and outcomes

Many researchers have examined the quality of care provided by nurses in patients' homes. Studies of care in the home by home-care nurses, public health nurses, community health nurses, and advanced practice nurses have shown improvement in patient outcomes in some cases. These findings have given us confidence that nursing care provided in the home can be beneficial in several areas — for example, in pregnancy outcomes, prevention of child abuse and neglect, and cost savings (Brooten et al., 1994, 1995, 1986; Naylor et al., 1999; Olds, Henderson, Chamberlin, & Tatelbaum, 1986; Olds, Henderson, Tatelbaum, & Chamberlin, 1986; York et al., 1997) — in addition to its long-term benefits (Olds et al., 1997, 1998, 2004). However, findings thus far are inconsistent regarding the effectiveness of home-care nursing in some areas — for example, functional status, physical functioning, and preventing re-hospitalization (Brooten et al., 1994; Naylor et al.).

For the most part, studies on home-care nursing have not been guided by theoretical frameworks that link patient needs with nursing activities (process) and nurse-sensitive patient outcomes (e.g., Brooten et al., 1994, 1995, 1986; Olds, Henderson, Chamberlin, et al., 1986; Olds, Henderson, Tatelbaum, et al., 1986). The need for theory use and building in the area of nursing-care quality is recognized by nurse researchers (Sidani, Doran, & Mitchell, 2004). Lamb, Jennings, Mitchell,

Figure 1 *Community Nursing Care Quality Model*

and Lang (2004) point out that the lack of systematic theory-building has hampered the implementation of quality of care research. With a view to developing a theoretical framework for home-care nursing that links nursing processes to nurse-sensitive patient outcomes, a model was drawn up. This article reports the results of testing the relationships between model process and outcome variables in a home-care setting. We hope the model will be helpful to other researchers in developing a theoretical foundation for the quality of nursing care provided in the home.

The Community Nursing Care Quality Model is based on the work of Cox (1982) and Donabedian (1966) and has two components: process and outcomes (see Figure 1). The third component of Donabedian's model, structure, is not addressed in this model because it concerns the nurse-patient relationship in the home, or what has been labelled the micro patient level (Mitchell, Ferketich, & Jennings, 1998). The process component consists of the technical and interpersonal aspects of care. The technical aspect is the application of the health sciences to the management and prevention of personal health problems and to health promotion. The interpersonal aspect is the management of social and psychological interactions between patient and provider (Donabedian, 1980). Outcomes refers to any "change in a patient's current and future health status that can be attributed to antecedent health care" (Donabedian, 1980, pp. 82–83).

Nursing care makes up the technical aspect of care quality. Three variables derived from the Interaction Model of Client Health Behavior (IMCHB) (patient-perceived affective support, patient-perceived health information adequacy, and patient-perceived decisional control) (Cox, 1984) define the interpersonal aspects. The IMCHB comprises three elements: client singularity, client-community health nurse interaction, and health outcomes. Assumptions upon which the IMCHB are based are that clients are able to make choices about their health behaviour and that these choices are influenced by the client's singularity (characteristics) and the client-nurse relationship (Cox, 1984). The Community Nursing Care Quality Model is based on the notion that the technical (nursing) aspect of care is related to the three interpersonal variables and that these three variables are related to three outcomes, which are also specified conceptually in the IMCHB: adherence, symptoms, and well-being (see Figure 1).

Starting at the right-hand side of the model, the three outcomes of interest — patient adherence to nursing and medical recommendations, presence or absence of symptoms, and general well-being — are interrelated. Further, these outcomes are influenced directly by the interpersonal process components — affective support, health information adequacy, and decisional control.

In addition, if patients perceive affective support, have adequate health information for their condition(s), and participate in decision-making regarding their care, they are more likely to adhere to the prescribed regimen, have fewer and/or less severe symptoms, and experience greater well-being (Cox, 1982, 1984; Cox, Miller, & Mull, 1987).

There are multiple interrelationships among the interpersonal process variables (Cox, 1982; Cox & Kaeser, 1986). Having decisional control over one's health care is a manifestation of affective support and assumes active acquisition and use of adequate health information. According to previous studies (Cox, 1982; Cox & Kaeser), these relationships are bidirectional. Finally, the left-hand side of the model indicates that the nursing care provided has a direct effect on the interpersonal processes: the patient's perceptions of affective support, health information adequacy, and decisional control (Cox, 1984).

The purpose of this study was to examine the relationships between the model's variables by testing four propositions: (1) *The technical (nursing) aspect of care is related to the three interpersonal variables: patient perceived affective support, patient perceived health information adequacy, and patient perceived decisional control.* (2) *The three interpersonal variables are related to the three outcome variables: adherence, symptoms, and well-being.* (3) *There are multiple interrelationships between the three interpersonal variables.* (4) *The three outcome variables are interrelated.*

Method

The relationships between the model's variables were examined by means of a cross-sectional correlational study. The project was approved by the university's Institutional Review Board before the commencement of data collection.

Sample

For this exploratory study, the convenience sample comprised 60 patients discharged from a large Medicare-certified home-health-care agency in a large Midwestern city in the United States. The sample size was based on recommendations that it be as large as resources allow, provided it include at least five cases for each observed variable (Brink & Wood, 1994; Tabachnick & Fidell, 1989). Individuals whose names were supplied by the agency and who met the following criteria were invited to participate: the interview could be conducted within 6 weeks of discharge from the agency; maximum service benefit achieved as defined by third-party reimbursement criteria (i.e., based on assessment by the nurse and the physician, the patient could not improve with continued care); and participant spoke English, was at least 18 years of age, and was able to

respond competently and provide informed consent. Data were collected during in-home face-to-face interviews arranged at the convenience of the participant.

The sample consisted of 76.7% females and 23.3% males with a mean age of 65.6 years (*SD* = 16.7) and an age range of 18 to 89 years. Just under 32% were widowed, 26.7% were married, 20% had never been married, and 21.6% did not report their marital status. Education level ranged from less than grade school to master's degree. The sample was almost evenly divided between White (48.3%) and Black participants (48.3%). All but two participants had multiple medical diagnoses. The most common diagnoses were congestive heart failure, cancer, diabetes, and gangrene. The number of completed home visits ranged from 2 to 74, with a mean of 12.7 (*SD* = 11.3).

Instruments

Nursing care provided was assessed using the Ervin Quality Assessment Measure (EQAM) (Ervin, Chen, & Upshaw, 1989). This 14-item checklist covers four components of the nursing process: assessing, planning, implementing, and evaluating. Sample items are as follows: "data were documented to support identified problems" (assessing); "spacing of home visits was based on care plan" (planning); "nursing interventions were executed for the identified problems" (implementing); "the family was involved in implementation of the nursing care plan" (implementing); and "patient outcomes or progress with plan of care was stated" (evaluating). Completion of the tool requires professional judgement on retrospective chart reviews, to determine whether a criterion of nursing care quality was or was not met and the extent to which it was met on a scale of 1 (*slightly*) to 5 (*totally*). The generalizability coefficient, G, was reported as .55. Generalizability coefficients are calculated from variance estimates (Shavelson & Webb, 1991). Evidence of content validity has been reported as a function of the process used to develop the instrument (Ervin et al., 1989). In this study, the alpha coefficient for the total instrument was .88.

Quality of care on the interpersonal aspects was measured using the Patient Perceived Affective Support (PPAS) instrument, the Patient Perceived Health Information Adequacy (PPHIA) instrument, and the Patient Perceived Decisional Control (PPDC) instrument (Ervin, Walcott-McQuigg, Chen, & Upshaw, 1992). Each instrument consists of 10 sets of items, each measured on a visual analogue scale. Examples of items on each instrument are: caring, supportive, and giving (PPAS); teaching, useful, and informative (PPHIA); and control, competent, and participation (PPDC). Participants record their scores by placing a mark at the point on the 100 mm line that best describes their opinion about

each of the three aspects of care provided (affective support, health information adequacy, and decisional control) over the course of one entire episode of care in the home — that is, from admission to discharge. A score for each scale was calculated by summing the number of millimetres for each visual analogue scale and dividing by 10. Cronbach's alpha coefficients were reported as PPAS, .95; PPHIA, .95; and PPDC, .90. Evidence of content validity has been reported (Ervin et al., 1992). In this study, alpha coefficients were PPAS, .95; PPHIA, .96; and PPDC, .94.

To measure the outcome variables, three previously tested instruments were used. Adherence to the medical and nursing regimens as prescribed was measured on the Compliance Questionnaire (Hilbert, 1988). This measure addresses 11 areas of potential patient adherence: medications, diet, weight loss, physical activity, exercise, stressful situations, smoking, alcohol use, caffeine intake, sexual activity, and work. Each area has 5 to 10 questions that are read to the participant. One item in each of the 11 areas is scored on a Likert-type scale (1 = *none of the time,* 5 = *all of the time*) for both a self-report, the wife's report of her husband's compliance, and an interviewer-judged score. A total score is derived by summing the scores for all applicable recommendations and dividing by the total possible score. Interrater reliability was determined by a second rater listening to the taped interviews. Interrater reliability was reported as .96 for the interrater agreement between the self-reported rating and the wife's rating; .84 was the interrater reliability reported for the judged scores. Content validity was determined by a panel of nurses with expertise in cardiac rehabilitation (Hilbert). In this study, the correlations between participant-reported scores and scores judged by the assistant interviewer ranged from .74 (for medications) to 1.00 (for work, sexual activity, and caffeine intake).

The Symptoms Index (Sullivan & Armignacco, 1979) was used to measure the number and kind of symptoms that might be functionally limiting. It is a 14-item scale of symptoms read to the subject and answered on a four-point Likert-type scale from *never* to *often*. A 15th item, "other," allows the individual to state symptoms not included on the list. The instrument is scored by summing the participant's answers and dividing by the number of applicable items. The unequal-length Spearman-Brown reliability coefficient for the initial use of the scale was reported as .73. In more recent studies with the elderly, alpha levels have ranged between .81 and .88 (Cox & Kaeser, 1986; Cox et al., 1987; Mull, Cox, & Sullivan, 1987). Validity has been demonstrated by an inverse correlation of the measure with health status (Cox & Kaeser). In this study, the Cronbach's alpha coefficient was .65 with all 15 items and .66 with 14 items. Evidence of validity was demonstrated by a statistically significant negative correlation between symptoms and well-being.

The General Well-Being Schedule (GWBS) (Fazio, 1977) was used to measure patient well-being. This 18-item instrument has six subscales that measure health worry, energy level, satisfying-interesting life, depressed-cheerful mood, emotional-behavioural control, and relaxed versus tense-anxious affect. The schedule is administered to subjects by interview and responses are given on a six-point Likert-type scale from 1 to 6, with varying responses according to the item. For example, the scale for "How have you been feeling in general?" is from 1 *(in excellent spirits)* to 6 *(in very low spirits)*. Internal consistency rating is reported as .91 for males and .95 for females. Evidence of validity has been shown through correlations of the GWBS with scales that measure depression and anxiety (Fazio). Cronbach's alpha coefficient for the instrument used with the elderly has been reported as .92 (Himmelfarb, 1984). In this study, the alpha coefficient was .87; evidence of validity was demonstrated by a statistically significant negative correlation between symptoms and well-being.

Procedure and Data Analysis

A large home-health-care agency agreed to participate in the study. Each potential participant who met the study criteria and whose name was supplied by the agency was contacted by telephone and asked to agree to a face-to-face interview. Approximately 75% of the individuals contacted agreed and were scheduled to be interviewed in their homes within the 6-week post-discharge timeframe.

Upon arriving at the participant's home, the interviewer, who was a graduate nursing student, described the study again, answered questions, and obtained the participant's signature on the consent form. One copy of the consent form was left with the participant. No one declined to participate after the study was described. The interviews took about 1 hour to complete. To assess the quality of the technical aspect of care, two registered nurses with community health experience reviewed the participant's clinical chart using the EQAM. The nurses were trained by one of the investigators in how to conduct chart reviews using the EQAM instrument. Relationships between variables were analyzed using Pearson product-moment correlation.

Results

Statistically significant coefficients were found between the technical (nursing) quality of care and all three interpersonal quality variables. Statistically significant relationships were found between all three interpersonal quality variables (PPAS, PPHIA, and PPDC). Among the outcome variables, patient symptoms and patient well-being were signif-

Table 1 *Intercorrelation of Variables*

	Nursing Care	PPAS	PPHIA	PPDC	Adherence	Symptoms	Well-Being
Nursing Care	–						
Interpersonal							
PPAS	.43**	–					
PPHIA	.44**	.54**	–				
PPDC	.38*	.52**	.49**	–			
Outcomes							
Adherence		ns	.27*	ns	–		
Symptoms		ns	ns	ns	ns	–	
Well-Being		ns	ns	.39*	ns	-.45**	–

Note: PPAS = patient-perceived affective support; PPHIA = patient-perceived health information adequacy; PPDC = patient-perceived decisional control.
*$p < .05$; **$p < .01$.

icantly correlated in the negative direction. The relationships between patient symptoms and adherence and between patient well-being and adherence were non-significant (see Table 1).

Analysis of relationships between interpersonal variables and outcome variables showed a significant relationship between health information adequacy and adherence and between decisional control and patient well-being. Patient symptoms were not correlated with any interpersonal variables. The intercorrelations between model variables are displayed in Table 1.

Discussion

In this exploratory study, the relationships between process and nurse-sensitive patient outcomes were examined using a nursing care quality model. Support for some model relationships was found. One limitation of the study was the small size of the convenience sample, which does not permit generalization. Convenience sampling is useful in exploratory studies such as this (Burns & Grove, 2001). It was our intention to explore relationships between the model's variables and encourage related work by other investigators.

Major Findings

The proposition that the technical quality of nursing care is related to the patient's perceptions of affective support, health information adequacy, and decisional control (Cox, 1984) was supported. To our knowledge, this finding has not been reported previously in relation to care provided in the home. Several studies have emphasized the importance of interpersonal aspects of nursing care (process) for home services (Gomby, Culross, & Behrman, 1999; Olds & Kitzman, 1990). This finding provides evidence on what constitutes the nurse-patient interpersonal aspect of care.

The second group of findings concern the relationship of the three interpersonal process variables (PPAS, PPHIA, and PPDC) with the outcome variables. Relationships between health information adequacy and patient adherence and between patient perceived decisional control and well-being were significant. The latter finding has been reported for a number of measures over the last few decades (Langer & Rodin, 1976; Reinardy, 1992). There is a growing body of knowledge on the relationship between decisional control and patient outcomes in other settings. It has been found, for example, that patients differ in their desire for decisional control, whether shared or not shared with the care provider (Degner & Russell, 1988; England & Evans, 1992; Kallio & Sime, 1980). We found no previous studies on the relationship between decisional control and well-being in relation to nursing care provided in the home.

All three interpersonal variables (affective support, health information adequacy, and decisional control) have been reported as positively related to the outcome variable adherence (Harvey & Peet, 1991; Stanton, 1987; Wood & Gray, 2000). In our study, health information adequacy was the only variable of the interpersonal aspect of care that had a statistically significant relationship with adherence.

The third group of findings is the relationships between the interpersonal variables of affective support, health information adequacy, and decisional control. The relationships between these variables were supported in the model. One study that included the interpersonal variables was conducted with mothers and children in a home visit and school intervention developed to address affective support, decisional control, and health information adequacy; it resulted in improved outcomes for mothers and children (Cowell, McNaughton, & Ailey, 2000).

There was a statistically significant negative correlation between patient symptoms and patient general well-being, a result that is compatible with those of previous studies. Cox and Kaeser (1986) found an inverse correlation of the Symptoms Index (Sullivan & Armignacco, 1979) with a measure of health status. The Symptoms Index has a higher score as patients report more symptoms and more severe symptoms.

Future Research

The descriptive cross-sectional design was not intended to explore causal relationships. Establishing the existence of relationships between factors is the first step in the exploration of causality. High correlations between two variables do not indicate causal relationships. However, the possibility of a causal relationship becomes greater as the strength of the correlation increases (Burns & Grove, 2001). As a next step, the model could be tested with other designs; this would allow for the exploration of causality through the use of such techniques as path analysis and structural equation modelling.

The relationships between the outcome variables were mostly not supported. If the relationships between symptoms and adherence and between well-being and adherence are examined in future studies, we may learn how to improve adherence, which is reported to be between 10% and 85% among patients in the United States (Burke & Dunbar-Jacob, 1995; DiMatteo, 1994).

Adherence is a complex behaviour. Many researchers have focused on factors related to adherence and how to improve it, and numerous tools have been used to measure adherence or compliance (Peterson, Takiya, & Finley, 2003; Roter et al., 1998; Williams et al., 1998). The Compliance

Questionnaire (Hilbert, 1988) was chosen for this study because it includes the usual categories of medical and nursing advice, with regard to medications, diet, and exercise, to patients with a variety of diagnoses. The measure has been used with patients who had myocardial infarction (Hilbert), but in this case it may not have been specific enough for nurse-sensitive outcomes; several participants did not report recommendations in some Compliance Questionnaire categories — for example, stressful situations, alcohol use, and caffeine intake.

Longitudinal studies would provide an opportunity to examine the temporal relationship of affective support to health information adequacy and decisional control. Is affective support, as perceived by the patient, a prerequisite to the patient's being able to accept health information and feel comfortable exerting the type and level of decisional control needed to interact with the nurse? The exploration of answers to this question would provide more information about effective nurse-patient relationships.

Theory Development

The Community Nursing Care Quality Model is seen as having two perceptual orientations, that of the nurse and that of the patient. We propose that the nurse's perceptions be elicited through the use of instruments that measure the technical quality of care. A technical quality of care variable could be added to the model to examine care provided by the family. This variable could also be measured by using the nurse's perception. The addition of family care provided would make the model more complete, as much of patient care in the home is provided by family members. Other models that address nursing care quality in acute care settings do not include variables related to care provided by the family (Irvine, Sidani, & Hall, 1998; Yen & Lo, 2004). This unique feature of nursing care in the home merits attention because of the important role played by the family in keeping a family member safely at home. An instrument to measure family care has been developed and tested (Ervin & Chen, 2005). The other six variables should be measured based on the patient's perception. It has been proposed that both perceptions are needed, as they can differ significantly (Lutz & Bowers, 2000; McCauley, Lowery, & Jacobsen, 1992; O'Neill & Sorensen, 1991; Shulka & Turner, 1984).

Investigators have attempted to identify those components of the nurse-client relationship (McNaughton, 2005) and the nurse-patient relationship (Lotzkar & Bottorff, 2001) that lead to better and more consistent outcomes. Instructing nursing students in how to develop evidence-based relationships with patients and clients requires an evidence base. The findings of this study contribute to the research base on what has

been labelled the nursing process "black box," or those aspects of nursing care that result in desirable patient outcomes.

Adherence is only one of three nurse-sensitive patient outcomes included in the model. Other patient outcomes could be added in future testing. Since some studies have shown inconsistent outcomes or have failed to demonstrate the effectiveness of home visiting for some outcomes, further work is needed in exploring the relationship of nursing care to other outcomes. For home health care that involves several professional providers, some outcomes may be more sensitive to an interdisciplinary approach or to interventions by care providers other than registered nurses. Research priority should also be given to patient outcomes that have cost-saving potential — for example, prevention of low birth weight and delay of diabetes complications.

Analyses that explore the relationships among several independent and several dependent variables would be valuable in the very complex situation of the relationship of process to nurse-sensitive outcomes. A tested, mature model of care quality may also include more outcome variables than those tested in the proposed model.

Clinical Significance

In the early development and testing stage of a model, clinical significance is negligible. A tested model that demonstrates the relationships between what the nurse does and patient outcomes would be of great benefit to evidence-based practice. Furthermore, if specific interventions, based on the nursing care provided and interpersonal relationships, proved to be effective with specific types of patients, nursing education and nursing practice could take great steps forward in helping nurses to be more effective.

Establishing effective nurse-client relationships takes time. Community health nursing services should evaluate the cost-effectiveness of providing a limited number of home visits (e.g., one or two) to a client, patient, and/or family (McNaughton, 2005). In order to move nursing knowledge forward, studies should be replicated and findings validated in the practice setting (Chinn & Kramer, 2004). The model presented in this paper may have clinical significance after it is subjected to the rigour of several studies.

The model requires further testing and refining. Because it was developed to examine the nursing care quality of various community nursing services delivered in the home, the model should be tested with public health nursing and other home-visiting services. Intervention studies would be useful for examining its application to nursing practice and making refinements, thus strengthening the foundation of the study and the provision of quality nursing care.

References

Brink, P. J., & Wood, M. J. (1994). *Basic steps in planning nursing research* (4th ed.). Boston: Jones & Bartlett.

Brooten, D., Kumar, S., Brown, L. P., Butts, P., Finkler, S. A., Bakewell-Sachs, S., et al. (1986). A randomized clinical trial of early discharge and home follow-up of very-low-birth-weight infants. *New England Journal of Medicine, 315,* 934–939.

Brooten, D., Naylor, M., York, R., Brown, L., Roncoli, M., Hollingsworth, A., et al. (1995). Effects of nurse specialist transitional care on patient outcomes and cost: Results of five randomized trials. *American Journal of Managed Care, 1*(1), 45–51.

Brooten, D., Roncolt, M., Finkler, S., Arnold, L., Cohen, A., & Mennuti, M. (1994). A randomized trial of early hospital discharge and home follow-up of women having Cesarean birth. *Obstetrics and Gynecology, 84,* 832–838.

Burke, L. E., & Dunbar-Jacob, J. (1995). Adherence to medication, diet, and activity recommendations: From assessment to maintenance. *Journal of Cardiovascular Nursing, 9,* 62–79.

Burns, N., & Grove, S. K. (2001). *The practice of nursing research: Conduct, critique, and utilization* (4th ed.). Philadelphia: Saunders.

Chinn, P. L., & Kramer, M. K. (2004). *Integrated knowledge development in nursing* (6th ed.). St. Louis: Mosby.

Cowell, J. M., McNaughton, D. B., & Ailey, S. (2000). Development and evaluation of a Mexican American family support program. *Journal of School Nursing, 16,* 4–11.

Cox, C. L. (1982). An interaction model of client health behavior: Theoretical prescription for nursing. *Advances in Nursing Science, 5,* 41–56.

Cox, C. L. (1984). Individual as client. In J. A. Sullivan (Ed.), *Directions in community health nursing* (pp. 129–172). Boston: Blackwell.

Cox, C. L., & Kaeser, L. (1986). *Quality of life nursing care: A research and demonstration project.* Final report. Chicago: University of Illinois at Chicago.

Cox, C. L., Miller, E. H., & Mull, C. S. (1987). Motivation in health behavior: Measurement, antecedents and correlates. *Advances in Nursing Science, 9*(4), 1–15.

Degner, L. F., & Russell, C. A. (1988). Preferences for treatment control among adults with cancer. *Research in Nursing and Health, 11,* 367–374.

DiMatteo, M. R. (1994). Enhancing patient adherence to medical recommendations. *Journal of the American Medical Association, 271,* 70–83.

Donabedian, A. (1966). Evaluating the quality of medical care. *Milbank Memorial Fund Quarterly, 44,* 166–203.

Donabedian, A. (1980). *Explorations in quality assessment and monitoring. Vol. 1: The definition of quality and approaches to its assessment.* Ann Arbor, MI: Health Administration Press.

England, S. L., & Evans, J. (1992). Patients' choices and perceptions after an invitation to participate in treatment decisions. *Social Science and Medicine, 34,* 1217–1225.

Ervin, N. E., & Chen, S. C. (2005). Development of an instrument measuring family care. *Journal of Nursing Measurement, 13*(1), 39–50.

Ervin, N. E., Chen, S. C., & Upshaw, H. (1989). Development of a public health nursing quality assessment measure. *Quality Review Bulletin, 15*(5), 138–143.

Ervin, N. E., Walcott-McQuigg, J. A., Chen, S. C., & Upshaw, H. S. (1992). Measuring patients' perceptions of care quality. *Journal of Nursing Care Quality, 6*(4), 25–32.

Fazio, A. (1977). *A concurrent validation study of the NCHS General Well-Being Schedule.* Washington: Department of Health, Education and Welfare.

Gomby, D. S., Culross, P. L., & Behrman, R. E. (1999). Home visiting: Recent program evaluations — analysis and recommendations. *The Future of Children, 9*(1), 4–26.

Harvey, N. S., & Peet, M. (1991). Lithium maintenance: 2 effects of personality and attitude on health information acquisition and compliance. *British Journal of Psychiatry, 158,* 200–204.

Hilbert, G. (1988). The measurement of compliance as a nursing outcome. In C. F. Waltz & O. L. Strickland (Eds.), *Measurement of nursing outcomes. Vol. 1: Measuring client outcomes* (pp. 80–107). New York: Springer.

Himmelfarb, S. (1984). Age and sex differences in mental health of older persons. *Journal of Consulting and Clinical Psychology, 54,* 844–856.

Irvine, D., Sidani, S., & Hall, L. M. (1998). Linking outcomes to nurses' roles in health care. *Nursing Economic$, 16*(2), 58–64, 87.

Kallio, J., & Sime, A. (1980). The effect of induced control on the perception of control, mood state, and quality of nursing care of clients in a critical care unit. *Advances in Nursing Science, 2,* 105–107.

Lamb, G. S., Jennings, B. M., Mitchell, P. H., & Lang, N. M. (2004). Quality agenda: Priorities for action. Recommendations of the American Academy of Nursing conference on health care quality. *Nursing Outlook, 52,* 60–65.

Langer, E. J., & Rodin, J. (1976). The effects of choice and enhanced personal responsibility for the aged: A field experiment in an institutional setting. *Journal of Personality and Social Psychology, 34,* 191–198.

Lotzkar, M., & Bottorff, J. L. (2001). An observational study of the development of a nurse-patient relationship. *Clinical Nursing Research, 10*(3), 275–294.

Lutz, B. J., & Bowers, B. J. (2000). Patient-centered care: Understanding its interpretation and implementation in health care. *Scholarly Inquiry for Nursing Practice: An International Journal, 14,* 165–187.

McCauley, K. M., Lowery, B. J., & Jacobsen, B. S. (1992). A comparison of patient/nurse perceptions about current and future recovery status. *Clinical Nurse Specialist, 6*(3), 148–152.

McNaughton, D. B. (2005). A naturalistic test of Peplau's theory in home visiting. *Public Health Nursing, 22*(5), 429–438.

Mitchell, P. H., Ferketich, S., & Jennings, B. M. (1998). Quality Health Outcomes Model. *Image: Journal of Nursing Scholarship, 30,* 43–46.

Mull, C., Cox, C. L., & Sullivan, J. A. (1987). Religion's role in health and well-being of elders. *Public Health Nursing, 4,* 151–159.

Naylor, M. D., Brooten, D., Campbell, R., Jacobsen, B. S., Mezey, M. D., Pauly, M.V., et al. (1999). Comprehensive discharge planning and home follow-up of hospitalized elders: A randomized clinical trial. *Journal of the American Medical Association, 281,* 613–620.

Olds, D. L., Eckenrode, J., Henderson, C. R., Jr., Kitzman, H., Powers, J., Cole, R., et al. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect: Fifteen-year follow-up of a randomized trial. *Journal of the American Medical Association, 278,* 637–643.

Olds, D. L., Henderson, C. R., Jr., Chamberlin, R., & Tatelbaum, R. (1986). Preventing child abuse and neglect: A randomized trial of nurse home visitation. *Pediatrics, 78*(1), 65–78.

Olds, D. L., Henderson, C. R., Jr., Cole, R., Eckenrode, J., Kitzman, H., Luckey, D., et al. (1998). Long-term effects of nurse home visitation on children's criminal and antisocial behavior. *Journal of the American Medical Association, 280,* 1238–1244.

Olds, D. L., Henderson, C. R., Jr., Tatelbaum, R., & Chamberlin, R. (1986). Improving the delivery of prenatal care and outcomes of pregnancy: A randomized trial of nurse home visitation. *Pediatrics, 77,* 16–28.

Olds, D. L., & Kitzman, H. (1990). Can home visitation improve the health of women and children at environmental risk? *Pediatrics, 86*(1), 108–116.

Olds, D. L., Robinson, J., Pettitt, L., Luckey, D.W., Holmberg, J., Ng, R. K., et al. (2004). Effects of home visits by paraprofessionals and by nurses: Age 4 follow-up results of a randomized trial. *Pediatrics, 114*(6), 1560–1568.

O'Neill, C., & Sorensen, E. S. (1991). Home care of the elderly: A family perspective. *Advances in Nursing Science, 13*(4), 28–37.

Peterson, A. M., Takiya, L., & Finley, R. (2003). Meta-analysis of trials of interventions to improve medication adherence. *American Journal of Health-System Pharmacy, 60,* 657–665.

Reinardy, J. (1992). Decisional control in moving to a nursing home: Post-admission adjustment and well being. *Gerontologist, 32,* 96–103.

Roter, D. L., Hall, J. A., Merisca, R., Nordstrom, B., Cretin, D., & Svarstad, B. (1998). Effectiveness of interventions to promote patient compliance. *Medical Care, 36,* 1138–1161.

Shavelson, R. J., & Webb, N. M. (1991). *Generalizability theory: A primer.* Newbury Park, CA: Sage.

Shulka, R. K., & Turner, W. E., III. (1984). Patients' perception of care under primary and team nursing. *Research in Nursing and Health, 7,* 93–99.

Sidani, S., Doran, D. M., & Mitchell, P. H. (2004). A theory-driven approach to evaluating quality of nursing care. *Journal of Nursing Scholarship, 36*(1), 60–65.

Stanton, A. L. (1987). Determinants of adherence to medical regimens by hypertensive patients. *Journal of Behavioral Medicine, 10,* 377–394.

Sullivan, J. A., & Armignacco, F. (1979). Effectiveness of a comprehensive health program for the well elderly by community health nurses. *Nursing Research, 28,* 70–75.

Tabachnick, B. G., & Fidell, L. S. (1989). *Using multivariate statistics* (2nd ed.). New York: Harper & Row.

Williams, G. C., Rodin, G. C., Ryan, R. M., Grolnick, W. S., & Deci, E. L. (1998). Autonomous regulation and long-term medication adherence in adult outpatients. *Health Psychology, 17,* 269–276.

Wood, W., & Gray, J. (2000, January 14). An integrative review of patient medication compliance from 1990–1998. *Online Journal of Knowledge Synthesis for Nursing,* 7(1). Retrieved July 15, 2003, from http://www.stti.iupui.edu/VirginiaHendersonLibrary/articles/070001.pdf.

Yen, M., & Lo, L.-H. (2004). A model for testing the relationship of nursing care and patient outcomes. *Nursing Economic$, 22*(2), 75–80.

York, R., Brown, L. P., Samuels, P., Finkler, S. A., Jacobsen, B., Persely, C. A., et al. (1997). A randomized trial of early discharge and nurse specialist transitional follow-up care of high risk childbearing woman. *Nursing Research, 46,* 254–261.

Authors' Note

Comments or queries may be directed to Naomi E. Ervin, 29580 Belfast Street, Farmington Hills, Michigan 48336 USA. Telephone: 734-487-6901. Fax: 734-487-6946. E-mail: neervin@hotmail.com

---

Naomi E. Ervin, PhD, RN, APRN, BC, FAAN, is Professor and Director, School of Nursing, Eastern Michigan University, Ypsilanti, Michigan, United States. Shu-Pi Chen, DrPH, RN, is Professor, School of Nursing, St. Xavier University, Chicago, Illinois, United States. Harry S. Upshaw, PhD, is Professor (Retired), University of Illinois at Chicago.