

The measurement of health in nursing research

Health, a concept central to the discipline of nursing, was investigated to determine how it is operationalized in the nursing research literature. It was found that, in spite of extensive admonitions in most theoretical guides (which otherwise vary) not to do so, nurse researchers most often characterize health in research as the absence of illness, disability, or symptoms, and they frequently ignore multiple dimensions, eg, physical, mental, or sociological aspects, as well as the reliability and validity of the measures when assessing the health of subjects. Suggestions for advancing research on the concept of health consistent with theoretical beliefs are offered.

Cheryl L. Reynolds, BSN, MS
Associate Professor
Teacher/Planner
Clinical Nurse Specialist Program
Department of Nursing
Northern Michigan University
Marquette, Michigan

HEALTH HOLDS A central position in the discipline of nursing. While there is a broad consensus that it is one of the key metaparadigm concepts,¹⁻³ there is little agreement about the meaning of the concept.³⁻⁸ Keller⁷ has presented and analyzed more than 40 different definitions of health, and other writers have sought to group like definitions of the concept.

Pender⁴ has proposed that views of health can be classified as two types: those that focus on stability and those that focus on actualization. Kim⁵ also concludes that health has been addressed primarily in two ways, but identifies these as the structural and the functional orientations. For Tripp-Reimer, the construct of health is understood primarily in three ways: as a dichotomous variable, as a continuum, and as a "more inclusive holistic state."^{6(p101)} Smith³ proposes four typologies: a clinical model of health, a role-function model, an adaptive model, and a eudaemonistic model. Smith's characterization is hierarchical,

with the clinical model the least inclusive and the eudaemonistic the most.

Given the proliferation of concepts, definitions, and models, a review of the literature focusing on the manner in which nurses have addressed health in research may be useful. For this purpose, all issues of the following nursing journals published between 1977 and 1987 were reviewed for articles that described completed research in which health was a major variable: *Advances in Nursing Science*, *Nursing Research*, *Research in Nursing and Health*, and the *Western Journal of Nursing Research*. Ganong provides a rationale for focusing on these journals in such an integrative review of nursing research: "They are refereed, focus on nursing research and theory, and contain research on a range of clinical, situational, and developmental areas."^{9(p2)} The decade between 1977 and 1987 was chosen to provide sufficient articles on this topic, to reflect current trends in conceptualizations of health, and to determine the progress since Batey's¹⁰ admonitions regarding the state of conceptualizations guiding nursing research.

The premise underlying this study is that, through operationalization nurse researchers reveal their understanding of theoretical concepts. The following questions guided this review: What are the characteristics of the empirical indicators nurses most frequently choose to represent the health of subjects? Which theoretical orientation is most often reflected in the operationalizations?

The articles reviewed included only those reports of quantitative research in which the concept of health was clearly operationalized as either a dependent or

independent variable. As a result, most of the articles considered incorporated the term "health" in their titles. The articles were reviewed first to determine the manner in which "health" was operationalized, followed by an assessment of the reliability and validity of these operationalizations.

Qualitative reports were excluded from the review because a priori operationalization of concepts is not consistent with the paradigm underlying this mode of inquiry.¹¹ Articles reporting instrument development studies were also excluded.

CHARACTERISTICS OF THE HEALTH MEASURES

This review of the nursing literature revealed few articles concerned with researching the concept of health. In the past ten years, only 20 articles¹²⁻³¹ using a quantitative research methodology incorporated "health" and investigated it as an independent or dependent variable. This is not to say that the word "health" was not used frequently in the titles of research reports. Numerous research studies were found that examined health-related concepts, such as health beliefs, health behaviors, health value, health locus of control, health care professionals, health problems, and health needs.

Of the 20 articles in which an operational definition of health was provided, three were eliminated. One characterization was too vague to be useful;²⁶ another report focused only on diastolic blood pressure;¹² and the third was a review of mental health studies.³² This left 17 articles for further evaluation.

Table 1, detailing the characteristics of health measures, displays these categoriza-

Table 1. Characteristics of the health measures

Authors	Measures	Characteristics					
		Obj	Sub	Phy	Men	Sin	Com
Valanis and Yeaworth ¹³	Selected questions from Duke University Older Americans' Resources and Services, Multidimensional Functional Assessment Questionnaire, interviewer rating of physical health, medications prescribed by a physician for regular use, subjective rating of mental health, Zung Self-Rating Depression Scale	X	X	X	X		X
Fontes ¹⁵	Portions of Personal Information Tool, Personal Orientation Inventory		X	X	X		X
Thomas and Hooper ¹⁴	Medical history and physical examination; no chronic illnesses, no prescription medications; score of greater than 25 out of 30 on a mental status test	X	X	X	X		X
Murphy ¹⁶	An index of six items in a self-assessment of physical health constructed by the author; Depression Subscale of the Hopkins Symptom Checklist (HSCL) 90-R, Somatization Subscale of HSCL		X	X	X		X
Ritchie, Caty, and Ellerton ¹⁷	Teacher judgment of normal cognitive development; no history of severe emotional disturbance	X			X		
Engel ¹⁸	Perceived Health Status Questionnaire: Health Perceptions Questionnaire, Affect Balance Scale, Life Satisfaction Index		X	X	X		X
Engle ¹⁹	Self-assessment of health		X	X		X	
Engle ²⁰	Scaled Outcome Criteria		X	X		X	
Miles ²¹	Bereavement Health Assessment Scale		X	X		X	
Woods ²²	Cornell Medical Index MR Scale		X		X	X	
Brown ²³	Health Responses Scale		X	X	X	X	
Brown and McCreedy ²⁴	Health Status Index		X	X		X	
Murphy ²⁵	One-question 9-point scale: As of right now, how do you rate your health? HSCL 90-R, Somatization and Depression Subscales, Global Severity Index		X	X	X		X
Browner ²⁷	Cornell Medical Index		X	X		X	
Gass ²⁹	Sickness Impact Profile Physical Subscale, Psychosocial Subscale		X	X	X	X	

Table 1 (continued)

Authors	Measures	Characteristics					
		Obj	Sub	Phy	Men	Sin	Com
Herman ³⁰	Healthy volunteers over the age of 18; persons taking medications that affect cardiovascular system or autonomic nervous system excluded		X	X			
Snyder-Halpern and Verran ³¹	Negative health history: No history of sleep or seizure disorder, of brain damage, of chronic use of hypnotics, sedatives, tranquilizers, or alcohol; no history of chronic sleep difficulties or headache on morning awakening		X	X		X	

Key: Obj = objective; Sub = subjective; Phy = physical; Men = mental; Sin = single; Com = combination

tions along several dimensions: (1) objective and/or subjective (self-reporting) dimensions; (2) physical and/or mental components; and (3) single or multiple measures.

Physical measures of health were the most widely used: 16 of the reports studied employed this dimension. Mental health measures were employed in eight reports. Ten researchers relied on a single measure to define health in their studies, while seven reports used multiple measures of health. Subjective or self-report indicators of health were also widely used, with 14 of the studies including this type of measure, as compared to only three using the judgment of a professional as an assessment of the subject's health.

The method or measurement technique was clearly stated in all but one of the articles studied. The measures appeared to be related to the research questions, but there was little consistency of measurement technique across studies (see Table 1). One may conclude, therefore, that there

is little consensus among nurses regarding which measures most adequately operationalize the concept of health. What consensus does exist lies in the utilization by researchers of some measure of illness, disability, or symptoms as indicators of health. This practice runs counter to a great deal of the nursing literature, which urges that health be seen as more than the absence of disease, and it leaves nursing research largely within the clinical model of health, as described by Smith³ and Kim,³ and the stability model of health, as described by Pender.⁴ Only one researcher clearly identified functional health as the conceptual dimension most important to the measures chosen to operationalize health.²⁰ Another identified holistic health as the basis for the measures chosen,¹⁸ while yet another identified eudaemonistic health as the concept guiding the choice of empirical measures.¹⁵

Few researchers acknowledged the methodological and/or conceptual limitations of their proposed empirical indicators

Few researchers acknowledged the methodological and/or conceptual limitations of their proposed empirical indicators of health.

of health. Even those focusing on illness or using only one indicator of health presented their operationalizations as wholly adequate to the study of health. These findings are congruent with the now decade-old contention of Batey¹⁰ that one of the weakest links in nursing research is the conceptual dimension.

Few researchers derived their measures of health from theory, and it was evident that most of the studies were based on what Kim⁹ calls "microtheory," or more narrow concepts of health. The emphasis on microtheory leaves work to be done toward researching the phenomenon of health from mid-range and grand-level theoretical perspectives. This difference in scope between the popular theoretical health writings and the theory-guided research reports may contribute to the apparent inconsistencies between purely theoretical understandings and the more ordinary operationalizations of health.

The vast body of theoretical literature on the conceptualization of health concurs that health has both mental and physical dimensions (as well as others). In the articles reviewed, seven researchers employed both physical and mental measures of health. However, sociological, cultural, and/or spiritual dimensions of the health measures were lacking in these studies.

Table 2 provides summary data on the validity and reliability of the report. Seven

Table 2. Validity and reliability reports

Type reported	Frequency
Validity	
Face validity	2
Content validity	5
Construct validity	2
Known groups validity	2
No report	7
Reliability	
Internal consistency	7
Interrater	2
Test-retest	5
None	4

researchers offered no evidence on which to conclude that their measures were valid indicators of health. Only two researchers presented evidence of construct validity and known groups or concurrent validity. Content validity was reported by five researchers. When validity was reported, it was sometimes reported for only one section of a scale or one measure in a group of measures chosen as indicators of health.

For reliability, the results are similar. Four researchers present little or no evidence regarding the reliability of their measures. The most frequently reported reliability coefficient was alpha, the test of internal consistency (seven researchers). Interrater reliability and test-retest reliability were the only other reports.

The conclusion to be reached from these studies is that, if confidence is to be based on the reports of reliability and validity presented by nurse researchers, one can place little confidence in many of the measures thus far used as health indicators. These findings are consistent with the results of a study by Strickland and Waltz.³² They concluded that, since the research reports they studied entirely

lacked or did not report the reliability and validity of measures employed, "nurse researchers are not adequately attuned to the need to rigorously assess measures to operationalize variables."^{32(p88)} It is possible, of course, that for some instruments or techniques, the reliability and validity data exist, but were unreported by the researchers.

THE UNDERSTANDING OF HEALTH

The literature examined did not support the plethora of ideas of health to which so many nurses claim to subscribe, nor did it reflect a holistic stance. It showed instead that nurses tend to choose empirical indicators of health deriving from a clinical model. Despite literature urging the contrary, it appears that health continues to be understood by nurse researchers mainly in the context of a polar opposite (illness).

One might argue that the measures of health based on an illness orientation were chosen primarily because of utility or feasibility, and this may partially explain the focus on reports of symptoms or observations of pathology, which are readily identifiable. The choice of an operation based primarily on the ease of measurement, however, leaves much to be desired in the quest to capture the many dimensions of health espoused by nurse theorists.

Much remains to be done in reaching a consensus on an acceptable concept of health and its operationalization, if indeed this is an agreeable goal. For those who doubt the value of this endeavor, favoring instead theoretical pluralism, this study has shown that there is a distinct lack of operational pluralism that would corre-

spond to the diversity of conceptual viewpoints commonly found in nursing literature.

Fawcett and Downs write that "the function of research is to generate or test theory."^{33(p4)} Operationalizations of the concept of health can serve to assist in the formalization of theory or theory substruction. This review of the literature has shown that the type of theory that nurses have chosen to formalize is one in which health is understood as a lack of problems, illness, and/or deviations. On the other hand, this author is aware of no published nursing theory that admits solely to such a conceptualization.

FUTURE CONSIDERATIONS

The chasm between the characteristics of health as emphasized in theories popular among nurses and the concept of health as operationalized in most research reports is striking. More research attention needs to be devoted to that outlook most agreed on in the theoretical literature, ie, the holistic emphasis on health as much more than the absence of disease or disability. To further an understanding of health congruent with theoretical writings, as well as to support or refute these beliefs, nurse researchers would do well to consider a number of issues when investigating health as a dependent or independent variable.

It is hoped that many more researchers will base their operationalizations of health on theoretical literature, with careful attention to whether the empirical indicators chosen adequately represent the theoretical descriptions. Using a typology of health definitions, such as those developed by Smith,³ Pender,⁴ or Kim,⁵ may help the

researcher to analyze a desired theoretical portrayal of health to determine which characteristics are most emphasized from a particular perspective. This analysis will assist in the identification of empirical indicators congruent with such a view. Researchers may wish to consult with theoreticians in the selection of measures that do not violate the assumptions of the grand or mid-range theory of choice. When the research report is written, the theoretical-operational connection should be clearly stated.

Theory-driven research with a holistic orientation will employ measures of the concept of health in a manner that does not emphasize one aspect of health over others, eg, the physical more than the mental, social, or spiritual. Its operationalizations will also better represent the multi-dimensional nature of the concept, but this does not mean that nurses currently agree on an exhaustive list of variables that serve as direct measures of health. As Pender put it, "There are as yet no valid and reliable measures for holistic health."^{4(p23)} Nurses can move forward in this endeavor with more extensive instrument development, but this is no small undertaking. Some broadened indicators of health currently in use are the Personality Orientation Inventory, which measures eudaemonistic health,¹⁵ and instruments such as the Perceived Health Status questionnaire.¹⁸

Pender⁴ has proposed 14 criteria for evaluating health, and they are broad in scope. Shaver³⁴ calls for an integration of the biological, psychological, and social views of health and cites one advantage, the increased range of clinical indicators for greater diagnostic decision making. An argument can also be made that the bio-

psychosocial view of health will increase the range of empirical indicators from which to choose operationalizations of the concept of health for research. Writings such as these can guide the development of instruments that will allow more holistic considerations in health measurement.

Not all research, of course, needs to be devoted to exhaustive, multivariable measures of health. There is room for the study of more specific components of health preferably based on broader theory, especially if there is evidence that some aspects of health weigh more heavily than others as an independent or dependent variable in a specific health problem. More limited definitions of health may also be appropriate in evaluation research or health policy analyses, and a rationale for the narrowed focus should be clearly presented in the research reports (and preferably reflected in the title of the report as well).

When measures are found that satisfy the conceptual criteria and are also methodologically sound, researchers should use those measures to increase information as to reliability and validity. The research reports reviewed here indicate that nurses were not satisfied with any one existing measure of health and instead developed their own measures, with the result that cumulative progress is slowed. This lack of progress hinders the researchers' ability to propose hypotheses regarding the trait and/or state dimensions of the concept, as well as to accumulate information as to which dimensions of health are most important to each stage in the life cycle.

Researchers must also be cautious in determining when it is appropriate to rely solely on either objective or subjective measures as representative of the health of

Researchers must be cautious in determining when it is appropriate to rely solely on either objective or subjective measures as representative of the health of subjects.

subjects. The theoretical framework, the research question, and the type of inquiry should direct the selection of objective, subjective, or combination measures of health. Different foci and theoretical stances will emphasize the elicitation of information in different ways.

This literature review indicates that interesting findings may come from studying what nurses believe about the concept of health. Considering the differences between most nurses' theoretical views regarding health and the research operationalizations reported here, as well as the researchers' apparent dissatisfaction with any one measure as a good representation of the health of subjects, future investigators may wish to undertake qualitative research to examine the characteristics of health in a particular setting or group of subjects. To date, published reports of

qualitative research investigating the concept of health are rare.

• • •

There is a distinct gap between health as represented in theoretical writings and health as operationalized in nursing research. What the members of the nursing research discipline do about this gap will depend on any number of factors, eg, type of research, problems of interest, nature of inquiry, and conceptualizations guiding research, but it is obvious that there is much room for improvement in the development and selection of health measures.

The nursing research literature reviewed here indicates that operational definitions are generally not based on broad theory but derive from a microtheoretical perspective. This may have fostered the development of more clinical measures of health than measures reflective of other orientations. Whatever the cause, it is clear that few operationalizations do not rely primarily on the lack of illness, symptoms, or disability as indicative of health. Given that health is a phenomenon central to the discipline of nursing research, what better area is there to focus energies to strengthen nursing's knowledge base?

REFERENCES

1. Flaskerud JH, Halloran EJ: Areas of agreement in nursing theory development. *Adv Nurs Sci* 1980;3(1):1-7.
2. Fawcett J: The metaparadigm of nursing: Current status and future refinements. *Image* 1984;16:84-87.
3. Smith J: *The Idea of Health*. New York, McGraw-Hill, 1983.
4. Pender NJ: *Health Promotion in Nursing Practice*. Norwalk, Conn, Appleton & Lange, 1987.
5. Kim SH: *The Nature of Theoretical Thinking in Nursing*. Norwalk, Conn, Appleton-Century-Crofts, 1983.
6. Tripp-Reimer T: Reconceptualizing the construct of health: Integrating emic and etic perspectives. *Res Nurs Health* 1984;7:101-109.
7. Keller MJ: Toward a definition of health. *Adv Nurs Sci* 1981;4(3):43-64.
8. Winstead-Fry P: The scientific method and its impact on holistic health. *Adv Nurs Sci* 1980;2(4):1-7.
9. Ganong LH: Integrative reviews of nursing research. *Res Nurs Health* 1987;10:1-11.
10. Batey MV: Conceptualization: Knowledge and logic guiding empirical research. *Nurs Res* 1977;26(5):324-329.

11. Lincoln YS, Guba EG: *Naturalistic Inquiry*. Beverly Hills, Calif, Sage, 1985.
12. Given CW, Given BA, Simoni LE: The association of knowledge and perception of medications with compliance and health states among hypertension patients: A prospective study. *Res Nurs Health* 1978;1(2):76-84.
13. Valanis BG, Yeaworth R: Ratings of physical and mental health in the older bereaved. *Res Nurs Health* 1982;5:137-146.
14. Thomas PD, Hooper EM: Healthy elderly: Social bonds and locus of control. *Res Nurs Health* 1983;6:11-16.
15. Fontes HM: An exploration of the relationships between cognitive style, interpersonal needs, and the eudaemonistic model of health. *Nurs Res* 1983;32(2):92-96.
16. Murphy SA: Stress levels and health status of victims of a natural disaster. *Res Nurs Health* 1984;7:205-215.
17. Ritchie JA, Caty S, Ellerton ML: Concerns of acutely ill, chronically ill, and healthy preschool children. *Res Nurs Health* 1984;7:265-274.
18. Engel NS: On the vicissitudes of health appraisal. *Adv Nurs Sci* 1984;7(1):12-23.
19. Engle V: Newman's conceptual framework and the measurement of older adults' health. *Adv Nurs Sci* 1984;7(1):24-35.
20. Engle V: Mental status and functional health four days after relocation to a nursing home. *Res Nurs Health* 1985;8:355-361.
21. Miles MS: Emotional symptoms and physical health in bereaved patients. *Nurs Res* 1985;34(2):76-81.
22. Woods NF: Employment, family roles, and mental ill health in young married women. *Nurs Res* 1985;35(1):4-10.
23. Brown MA: Social support, stress, and health: A comparison of expectant mothers and fathers. *Nurs Res* 1986;35(2):72-76.
24. Brown JS, McCreedy M: The hale elderly: Health behavior and its correlates. *Res Nurs Health* 1986;9:317-329.
25. Murphy SA: Status of natural disaster victims' health and recovery 1 and 3 years later. *Res Nurs Health* 1986;9:331-340.
26. Reed PG: Religiousness among terminally ill and healthy adults. *Res Nurs Health* 1986;9:35-41.
27. Browner CH: Job stress and health: The role of social support at work. *Res Nurs Health* 1987;10:93-100.
28. Burckhardt CS: The effect of therapy on the mental health of the elderly. *Res Nurs Health* 1987;10:277-285.
29. Gass KA: The health of conjugally bereaved older widows: The role of appraisal, coping, & resources. *Res Nurs Health* 1987;10:39-47.
30. Herman JA: The effect of progressive relaxation on valsava response in healthy adults. *Res Nurs Health* 1987;10:171-176.
31. Snyder-Halpern R, Veran JA: Instrumentation to describe subjective sleep characteristics in healthy subjects. *Res Nurs Health* 1987;10:155-164.
32. Strickland OL, Waltz CF: The measurement of research variables in nursing, in Chinn PL (ed): *Nursing Research Methodology*. Rockville, Md, Aspen Publishers, 1986.
33. Fawcett J, Downs F: The relationship of theory and research. Norwalk, Conn, Appleton-Century-Crofts, 1986.
34. Shaver JF: A biopsychosocial view of human health. *Nurs Outlook* 1985;33(4):186-191.