

THE MEASUREMENT AND MEANING OF PATIENT SATISFACTION:  
A REVIEW OF THE LITERATURE

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## THE MEASUREMENT AND MEANING OF PATIENT SATISFACTION:

### A REVIEW OF THE LITERATURE

#### BACKGROUND

Emphasis on patient satisfaction with health and medical care services is on the increase, as evidenced by the greater frequency of empirical and theoretical publications regarding satisfaction in recent years. This emphasis is consistent with a broader trend toward holding those who control and provide essential services more accountable to their consumers in ways other than the ones that commonly operate in the marketplace. A notable example of this emphasis from the medical care field is found in Donabedian's discussion of quality of care assessment (a major tool in the accountability movement), where he argues that the ultimate validator of the quality of care is its effectiveness in "achieving or producing health *and satisfaction*" (Donabedian, 1966; italics added).

Surveys of patient satisfaction have usually been fielded for one of two purposes. First, the data have been used as dependent variables to evaluate provider services and facilities, on the assumption that patient satisfaction is an indicator of the structure, process, and outcomes of care. Second, satisfaction data have been used as independent variables to predict consumer behavior (e.g., use of services), on the assumption that differences in satisfaction influence what people do.

Underlying both uses of satisfaction data is the assumption that satisfaction questionnaires reliably and validly measure patient satisfaction. Unfortunately, many studies of patient satisfaction have been fielded without regard for the state of the art of measurement practices. Most published studies focus on the levels of satisfaction expressed by respondents; few deal with the quality of data obtained from satisfaction surveys. Thus, there is little basis for determining how successful these surveys have been in actually measuring patient satisfaction.

Over 100 articles and reports on patient satisfaction were easily identified in the published literature of the past 25 years, attesting

to a belief that patient satisfaction is an important concept. It is not safe to draw conclusions from published results about the usefulness of the concept in health and medical care research, however, without taking into account how well satisfaction has actually been measured.

We have therefore reviewed the literature on patient satisfaction with the following goals in mind: (1) to define the concept of patient satisfaction and identify its major dimensions from the content of available survey instruments; (2) to evaluate the state of the art of measuring patient satisfaction, focusing particularly on the reliability and validity of reported measures; and (3) to assess the usefulness of the patient satisfaction concept as an independent and dependent variable in health and medical care research. Our review was based on 111 theoretical and empirical articles published during the 25 years prior to 1976. All articles described or referred to satisfaction variables and were selected for more thorough review on the basis of the information they contained.<sup>1</sup>

Nearly three-fourths of the publications (81 of 111) were empirical, i.e., included previously unreported analyses of satisfaction data. Trained interviewers were used to gather data in 46 studies; questionnaires were self-administered in 21 studies; two studies used both methods; data-gathering methods could not be determined from the information provided in the remaining articles. In 51 studies, single-item measures of satisfaction were used; 30 defined satisfaction by combining one or more scores into a scale.<sup>2</sup> In most cases, the number of satisfaction dimensions defined tended to be small, or could not be determined from the information provided. One third (11 of 30) of those

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<sup>1</sup>These articles were reviewed using a standardized abstraction form that focused on: (1) whether original data were reported; (2) the intended use of the measures; (3) the labels used by authors to describe their measures; (4) methods used to gather data; (5) whether verbatim questionnaire items were published or described; (6) the number of independent scores that were computed; (7) whether variables were defined as single-item or scale scores; (8) type of scale construction methods used, if any; (9) whether reliability data were reported; (10) whether data relevant to validity were reported; (11) variables that were studied in relation to satisfaction scores; and (12) major findings.

<sup>2</sup>Both single-item and scale measures were analyzed in some studies.

constructing scales computed only one score; the remainder computed from two to twenty scores. Those who computed scores from single-item measures tended to compute several; 16 of the 51 articles based on single-item measures reported using five or more satisfaction scores. In all instances where only single-item measures were analyzed, correlations among satisfaction scores were not taken into account or were not reported.

#### TAXONOMY OF PATIENT SATISFACTION

A taxonomy of patient satisfaction identifies and defines the major characteristics of providers and health and medical care services that influence patient satisfaction. Such a taxonomy serves as the basis for grouping published results in terms of the dimensions of satisfaction studied and as a standard against which to judge the comprehensiveness of a given questionnaire.

The taxonomy of patient satisfaction proposed in this review was based on logic and the few empirical studies of relationships among satisfaction measures. Similarities and dissimilarities in manifest content of items served as a logical basis for defining major dimensions of satisfaction and for grouping published measures. The assumption that items measured the same or substantially related dimensions was also examined in light of evidence derived from the work of the few investigators who examined relationships among items while testing scaling assumptions (see discussion of scaling that follows).

Dimensions that should be included in the taxonomy were identified from an indepth content analysis of questionnaire items in the published literature,<sup>1</sup> and from the content of responses to open-ended questions fielded in surveys of general populations.<sup>2</sup> The resulting taxonomy includes eight distinguishable dimensions, which constitute the major

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<sup>1</sup>The content analysis, which contains over 200 items from published satisfaction questionnaires, is available upon request.

<sup>2</sup>The content of over 700 responses to open-ended questions that describe sources of satisfaction and dissatisfaction with care was analyzed by the senior author and Mary K. Snyder and W. Russell Wright during research conducted at the Southern Illinois University School of Medicine.

sources of satisfaction and dissatisfaction with care: art of care, technical quality of care, accessibility/convenience, finances, physical environment, availability, continuity, and efficacy/outcomes of care. Figure 1 identifies investigators who measured one or more patient satisfaction variables in each of these dimensions.<sup>1</sup>

### Definitions of Major Satisfaction Dimensions

Art of Care. The most frequently measured dimension of satisfaction pertains to the amount of "caring" shown toward patients, which is one aspect of provider conduct. On the positive end of this satisfaction continuum, questionnaire items focus on such provider characteristics as concern, consideration, friendliness, patience, and sincerity. On the negative end, satisfaction with art of care is measured in terms of abruptness, disrespect, and the extent to which providers embarrass, hurt, insult, or unnecessarily worry their patients.

Technical Quality of Care. This dimension, which also pertains to provider conduct, focuses on the competence of providers and their adherence to high standards of diagnosis and treatment. Items assess patient perceptions regarding technical quality in terms of skills and abilities of providers and technical soundness and modernness of equip-

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<sup>1</sup>Inconsistencies in the labeling of satisfaction constructs prevail in the published literature. Hence, categorization of constructs in Figure 1 does not agree in every instance with the labels used by these investigators or the interpretations they adopted. Furthermore, not all investigators cited in Figure 1 explicitly asked about "satisfaction" with characteristics of providers and services studied; some used terms such as "attitudes," "beliefs," and "perceptions" to describe their measures. What makes their work relevant to the issues at hand is the fact that an *evaluation* of those characteristics was discernible from the information obtained in every instance. Of course, some methods of measuring the dimensions in this taxonomy assess satisfaction more directly than others. For example, asking people about the distance (in miles) or the amount of time involved in getting to the place where care is received is very predictive of their satisfaction. However, a *rating* (in evaluative terms) of the effort, time, or distance involved more directly reflects patient satisfaction with access to care because the evaluative domain is more explicit.



ment and facilities. On the positive end of the continuum, questionnaire items refer to ability, accuracy, experience, thoroughness, and training of providers as well as the extent to which they pay attention to details, avoid mistakes, give good examinations, and clearly explain what is expected of their patients. In addition to many of the plausible opposites of these characteristics, the negative end of the continuum is also defined in terms of defects in equipment and facilities, overprescribing, outdated regimens, and the tendency to take unnecessary risks.

Accessibility/Convenience. Included in this dimension are all of the factors involved in arranging to receive medical care. Among the more frequently studied accessibility/convenience variables are time and effort required to get an appointment, distance or proximity to site of care, time and effort required to get to the place where care is delivered, convenience of location, hours during which care can be obtained, waiting time at the place where care is received, whether help is available over the telephone, and whether care can be obtained at home.

Finances. Ability to pay for services or to arrange for payment is an important factor in the receipt of care. Financial aspects of access to care are a separate dimension of patient satisfaction, and are defined as the dollar costs of treatment (fees in the fee-for-service system and amount of premiums in prepaid health care), flexibility of payment mechanisms (e.g., arranging delayed payments, credit card acceptance), and the comprehensiveness of insurance coverage. Opportunity costs are viewed as nonfinancial aspects of access (see definition of Accessibility/Convenience above).

Physical Environment. Satisfaction with the physical environment in which care is delivered has usually been studied in inpatient settings. This dimension can also be measured with regard to outpatient care if particular facilities and services are specified. Sources of satisfaction with the environment of care include general pleasantness of the atmosphere, comfort of seating, attractiveness of waiting rooms, clarity of signs and directions, good lighting, quiet, and clean, neat, and orderly facilities and equipment.

Availability. Satisfaction with availability of health and medical care services and providers has rarely been measured in published surveys. Measures of this dimension usually focus on whether there are enough physicians, nurses, and other providers, and such facilities as clinics and hospitals in the area.

Continuity of Care. Continuity of care, or regularity of care source, is another infrequently measured dimension of patient satisfaction. It is generally defined in terms of regularity of care from the same facility, location, or provider, or (least frequently) in terms of availability of a continuous medical record on all visits for care.

Efficacy/Outcomes of Care. Satisfaction with efficacy and outcomes of care is measured in terms of perceptions regarding the usefulness or helpfulness of medical care providers and specific treatment regimens in improving or maintaining health status. In "locus of control" terminology (Rotter, 1954), a favorable perception regarding efficacy indicates a belief that desirable health status outcomes are under the control and influence of providers, e.g., that doctors help their patients by curing them, relieving suffering, and/or preventing disease. This dimension has been infrequently measured in patient satisfaction surveys.

#### Support for the Proposed Taxonomy

Other than the logic of face validity--that items appearing to measure the same or different dimensions of patient satisfaction actually do so--what evidence is there to support the assumptions underlying this taxonomy? The taxonomy assumes that characteristics of providers and services within each major dimension are logically and empirically interrelated. Additional dimensions have been added to the taxonomy when they contribute unique information about satisfaction and dissatisfaction. Thus, the second assumption is that the major dimensions are not redundant. In empirical terms, associations among measures of the same dimension should be stronger than associations with measures of different dimensions, and the dimensions should not overlap completely with each other. Some investigators fielded multiple measures of

different dimensions in the same survey, and reported data that support these assumptions (Bice and Kalimo, 1971; Snyder and Ware, 1974; Aday and Andersen, 1975; Ware, Wright, Snyder, et al., 1975; Ware and Snyder, 1975). The best test of these assumptions would be to evaluate the results of a survey that measured all the dimensions in the proposed taxonomy; however, such a comprehensive questionnaire has not yet been fielded.

Most well documented of the assumptions underlying the taxonomy is the distinction between the accessibility/convenience and provider conduct (art and technical quality) dimensions. In fact, there is no doubt that these dimensions can be measured separately. Studies published by Ware and Snyder (1975) and Ware, Wright, Snyder, et al. (1975) further indicate that item and scale measures of availability, continuity, and financial aspects of access can be distinguished from accessibility and from the two provider conduct dimensions defined in the taxonomy. Their research also supports the distinction between the art and technical quality dimensions of provider conduct. Studies of relationships among scales (as opposed to items within scales) reported by Hulka and her colleagues (Hulka, Zyzanski, Cassel, et al., 1970; Zyzanski, Hulka, and Cassel, 1974) also support distinctions among art of care, technical quality of care, and accessibility/convenience. In general, however, empirical evidence regarding the success of attempts to distinguish between art and technical quality of care is much less convincing than it is for the other distinctions in the taxonomy (e.g., provider conduct versus access).

The proposed taxonomy of satisfaction dimensions is comprehensive in relation to the content of questionnaires described in the published literature. A question that remains to be answered is the extent to which the published literature reflects all important satisfaction dimensions. The comprehensiveness of the literature and the proposed taxonomy should be studied further in diverse populations using open-ended questions that would facilitate definition of any unidentified satisfaction dimensions.

## THE MEASUREMENT OF PATIENT SATISFACTION

Before evaluating the state of the art of measuring patient satisfaction, it is useful to describe briefly the characteristics of a good measure. The goal of measurement is to capture the information necessary for purposes of hypothesis testing. To achieve this goal, a measure must be acceptable to respondents and must yield scores that are both reliable and valid. A reliable score contains a substantial amount of information, as opposed to random error.<sup>1</sup> A valid score contains information about the variable of interest. By focusing on validity, one distinguishes between any information and the desired information.<sup>2</sup> Furthermore, to be useful in hypothesis testing, a measure must be sensitive to whatever differences in satisfaction exist for population groups being studied.

### Construction of Scales

Properly constructed multi-item measures (i.e., scales) generally yield more score variability and higher reliability and validity than single-item measures. Despite these well-documented advantages of scales, about two-thirds of the empirical satisfaction studies relied on single-item measures to test hypotheses. Thirty publications reported studies of one or more scales to measure patient

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<sup>1</sup>Reliability is estimated by correlating scores from two forms of the same measure (alternate-forms reliability) or scores for the same measure at two points in time (test-retest reliability), or by examining correlations among items measuring the same construct (internal-consistency reliability). In all instances, reliability estimates range from 0.0 to 1.0 and are interpreted as proportions indicating the amount of measured variability that is "true score" (as opposed to random error).

<sup>2</sup>It is difficult to summarize methods of studying validity; there are many and some are complicated. The goal of validity research is to determine the correlation between scores computed from a measure and true scores on the variable of interest. Results from many studies, including correlational and experimental, are usually synthesized in estimating validity. A useful reference on the subject is Standards for Educational and Psychological Tests, published by the American Psychological Association in 1974.

satisfaction.<sup>1</sup> A variety of techniques have been used to construct satisfaction scales, including the Method of Equal-Appearing Intervals (Thurstone and Chave, 1929), the Method of Summated Ratings (Likert, 1932), Scalogram Analysis (Guttman, 1944), and factor scaling (Armor, 1974).

The scales described in five publications are best viewed as general satisfaction measures, because two or more of the less related dimensions in the patient satisfaction taxonomy were represented by items in the same scale (Abdellah and Levine, 1958; Franklin and McLemore, 1967, 1970; Rojek, Clemente, and Summers, 1975; Tessler and Mechanic, 1975). Others constructed scales that combined highly related dimensions, such as art and technical quality of care (Suchman, 1964, 1965; Berkanovic, Reeder, Marcus, et al., 1974).

The most comprehensive batteries of scale measures, in terms of including one scale to measure each of several dimensions, include: Guttman scales constructed by Andersen (1968) to measure attitude toward doctors and efficacy of care; factor scales constructed by Aday and Andersen (1975) to measure accessibility/convenience and art and technical quality of care; factor scores derived by Bice and Kalimo (1971) to measure accessibility/convenience, technical quality and outcomes, and other health care perceptions (e.g., tendency to use services) in studies of seven countries; Thurstone scales constructed by Hulka and colleagues (Hulka, Zyzanski, Cassel, et al., 1970; Zyzanski, Hulka, and Cassel, 1974) to measure art of care, technical quality, and accessibility/convenience; summated ratings scales constructed by Nelson, Jacobs, and Johnson (1974) to measure art of care, technical

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<sup>1</sup> Souelem (1955); Klopfer and Wylie (1956); Abdellah and Levine (1958); Suchman (1964, 1965); Apostle and Oder (1967); Franklin and McLemore (1967, 1970); Andersen (1968); Conforti (1969); Hulka, Zyzanski, Cassel, et al. (1970); Bice and Kalimo (1971); Hulka, Zyzanski, Cassel, et al. (1971); Rickels, Lipman, Park, et al. (1971); Bice, Eichhorn, and Fox (1972); Fabrega and Roberts (1972); Houston and Pasanen (1972); Berkanovic and Reeder (1973); Ware, Miller, and Snyder (1973); Berkanovic, Reeder, Marcus, et al. (1974); Nelson, Jacobs, and Johnson (1974); Snyder and Ware (1974); Zyzanski, Hulka, and Cassel (1974); Aday and Andersen (1975); Hulka, Kupper, Daly, et al. (1975); Linn (1975); Rojek, Clemente, and Summers (1975); Ware and Snyder (1975); Ware, Wright, Snyder, et al. (1975); Tessler and Mechanic (1975).

quality, perceived changes in care due to programmatic interventions, and appropriateness of task delegation to physician assistants; and factor scales constructed by Ware and colleagues (Ware and Snyder, 1975; Ware, Wright, Snyder, et al., 1975) to measure art of care, technical quality, accessibility/convenience, availability, continuity, and finances.

### Reliability

Only 11 of the 81 empirical studies reported reliability estimates for patient satisfaction measures. None of the 51 publications that described analyses of single-item satisfaction measures reported reliability estimates. Thus, for the great majority of published evidence regarding patient satisfaction, it is not clear how much information was actually obtained from the measures fielded. Many of the measures in question detected significant group differences or related significantly to other variables, indicating a high probability that they contained some information about something. Without reliability estimates, however, it is impossible to draw conclusions about the true magnitude of significant relationships or differences observed.

Internal-consistency or alternate-forms reliability coefficients were published by: (1) Franklin and McLemore (1967) for their Scale for Measuring Attitudes Toward Student Health Services; (2) Hulka, Zyzanski, Cassel, et al. (1970) for three scores computed from early versions of the Scale to Measure Attitudes Toward Physicians and Primary Health Care; (3) Zyzanski, Hulka, and Cassel (1974) for three scores computed from a revised version of the Hulka scale; (4) Ware, Wright, Snyder, et al. (1975) for 18 factor scales; (5) Rojek, Clemente, and Summers (1975) for a scale measuring community satisfaction with medical services; (6) Aday and Andersen (1975) for two scores computed from their Health Opinions Questionnaire; and (7) Ware and Snyder (1975) for 20 scales constructed from the Patient Satisfaction Questionnaire. The latter investigators also reported test-retest reliability estimates for their scales.

Because they employed test-retest methods, Ware and Snyder (1975) had the opportunity to estimate reliability of single-item satisfaction

measures, although they did not do so in their published report. An unpublished technical report (Ware and Snyder, 1974) presented 80 test-retest reliability estimates for single-item measures ranging from 0.19 to 0.70; half were below 0.50 and all but five were below 0.60. These coefficients are much lower than those for scales constructed in the same study (see Table 1). Poor reliability of single-item measures was a major factor in their decision to construct scales.

Table 1 summarizes reliability findings and other pertinent information about scales for which reliability data were published. The reliability of a scale is a function of the extent to which items are interrelated (homogeneity) and the number of items included (scale length). Lengthy, homogeneous scales will be the most reliable in a given population. Both these factors should be kept in mind when interpreting the reliability coefficients presented in Table 1. For example, many of the lengthy scales that tap more than one major dimension of satisfaction are not much more reliable than shorter scales that tap only one dimension, because the latter tend to be substantially more homogeneous.

One basis for evaluating results in Table 1 is in terms of the reliability levels achieved by similarly constructed attitude scales described in the published literature. Helmstadter (1964) summarized reliability findings for attitude scales (scale length not reported); 18 coefficients ranged from 0.47 to 0.98, with a median of 0.79. The majority of satisfaction scales containing 10 or more items equaled or exceeded this median; with few exceptions, the very short satisfaction scales did not (see Table 1).

Another basis for evaluating these results is in terms of the minimum reliability levels required for the intended use of the scale; none of the investigators in Table 1 reported systematic tests designed to specify these levels. As Helmstadter (1964) noted, reliability levels need not be as high for studies involving group as opposed to individual comparisons. He suggested minimum standards of 0.50 for group comparisons and 0.90 for individual comparisons. When viewed in terms of the 0.50 standard, reliability coefficients cited in Table 1

appear quite satisfactory. Even the very short satisfaction scales published by Rojek, Clemente, and Summers (1975), Aday and Andersen (1975), Ware and Snyder (1975), and Ware, Wright, Snyder, et al. (1975) achieved this level with few exceptions. Particularly encouraging in this regard is the demonstrated reliability of both the Hulka and Ware scales in disadvantaged populations, where reliability tends to be poorest.

Results suggest poor reliability for single-item measures (particularly in disadvantaged populations). Because the majority of published satisfaction studies relied on single-item measures, they should be interpreted with caution. This is particularly true for those that resulted in acceptance of null hypotheses or reported significant but weak relationships.

Further research is necessary to determine whether some dimensions of the satisfaction taxonomy require longer scales than others to achieve minimum standards of reliability. For example, when scale length is taken into account, measures of accessibility/convenience tend to be more heterogeneous (see Table 1). Relatively longer scales may be necessary, therefore, to measure this dimension with reliability comparable to that of more homogeneous measures of other dimensions. Given that the proposed satisfaction taxonomy is multidimensional, and that there may be distinguishable dimensions within major dimensions (Ware and Snyder, 1975; Ware, Wright, Snyder, et al., 1975), there is great value in determining the shortest possible scales that will achieve minimum reliability requirements. Without identifying such scales, it may not be possible to field comprehensive satisfaction questionnaires without exceeding practicality or jeopardizing data quality due to excessive respondent burden.

### Validity

Published results relevant to the validity of patient satisfaction scores can be grouped in two categories corresponding to the major uses of the data: evaluation of health and medical care services, and prediction of health and illness behavior.



Evaluation of Services. Satisfaction data have been used most frequently (in 51 of 81 empirical studies) to evaluate health and medical care services. The most critical validity evidence, therefore, is whether the structure, process, and outcomes of care affect satisfaction. Unfortunately, findings regarding the validity of satisfaction scores as dependent variables in relation to specific characteristics of providers and services are very limited.

Almost without exception, however, available evidence is consistent with the hypothesis that patient satisfaction scores are valid dependent variables. Ratings have been significantly linked to characteristics of providers and services. Patients tended to be more satisfied when providers gave more information (Houston and Pasanen, 1972); when they were counseled by a physician (Linn, 1975); when payment plans were explained (Bashshur, Metzern, and Worden, 1967); when providers were happier and held more favorable attitudes toward patients (Greenley and Schoenherr, 1975); and when providers showed a personal interest (King and Goldman, 1975). Other characteristics of the provider-patient relationship that have been related to satisfaction include the amount of time providers spend with patients or patients spend at clinics (Linn, 1975; Lebow, 1975), and the nature of the provider-patient communication (Korsch, Gozzi, and Francis, 1968).

Continuity of care has been linked to patient satisfaction by several investigators. Patients tended to be more satisfied when they saw the same physician or were seen for the same problem (Linn, 1975); had a regular source of care (Hulka, Zyzanski, Cassel, et al., 1971); saw the same provider for a longer period of time (Hulka, Kupper, Daly, et al., 1975); and were scheduled for a return visit (Linn, 1975).

Several characteristics of facilities and services have been related to satisfaction ratings. Patients reported being more satisfied when they were in larger hospitals (Abdellah and Levine, 1958); when services were properly organized (Conforti, 1969); when pediatric care was more comprehensive (Alpert, Kosa, Haggerty, et al., 1970); and the room environment was more pleasant (Houston and Pasanen, 1972).

Accessibility and availability of services and resources are also related to patient satisfaction. Satisfaction ratings were negatively correlated with waiting times (Deisher, Engel, Speilholz, et al., 1965), and patients tended to be more satisfied in hospitals that scheduled more hours of professional nursing (Abdellah and Levine, 1957).

Relationships between financial variables and satisfaction ratings have been reported in a few studies. Patients tended to be more satisfied when they had hospital insurance (Hulka, Zyzanski, Cassel, et al., 1971); were not on Medicare<sup>1</sup> (Enterline, Salter, McDonald, et al., 1973); and were not on Medicaid (Berkanovic, Reeder, Marcus, et al., 1974).

Other published studies suggest that patient satisfaction scores are sensitive to programmatic interventions, providing further evidence of their sensitivity as dependent variables. Bellin and Geiger (1972) reported increases in satisfaction with information giving and gathering, art of care, preventive care, and care for minor problems in a longitudinal evaluation of a neighborhood health center. Alpert, Kosa, Haggerty, et al. (1970) reported significant differences in satisfaction levels between patients who received comprehensive family-focused pediatric care and a control group. Differences between groups were reported for ratings of waiting time and ease of talking to the doctor; in all cases where differences were significant, treatment group members gave more favorable ratings than did control group patients. Tessler and Mechanic (1975) compared satisfaction levels for participants in a prepaid group practice and alternative health insurance plans. Satisfaction with accessibility/convenience of services was significantly less favorable for those enrolled in the prepaid group practice. These differences remained significant even when all available correlates of satisfaction were controlled for in the analysis.

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<sup>1</sup>This study was conducted in Quebec, where "Medicare" refers to the province-wide, compulsory health insurance plan covering physician services for persons of all ages.

The most important issue regarding the validity of satisfaction scores as dependent variables is whether measures of specific satisfaction dimensions differentiate between specific characteristics of providers and medical care services. For example, can measures distinguish between satisfaction with financial aspects of care (fees, payment mechanisms) and with art of care? Demonstrating that patients tend to be less satisfied when services and care are poor is useful if satisfaction data are used only to determine how consumers feel about their care in general. If satisfaction data are used in planning programmatic interventions, evidence that the specific nature of problems with care and services can be detected with patient satisfaction scores is necessary. For example, scores on the access dimension should be lower when access is poor, and scores on the art of care dimension should be lower when providers do not behave properly. In other words, the discriminant validity of satisfaction scores must be demonstrated and well-understood before they are used to make judgments about specific characteristics of providers and services. Findings published to date do not justify the use of patient satisfaction ratings for this purpose.

Another issue is the extent to which patient satisfaction ratings are influenced by factors outside the control of the medical care system. For example, patient satisfaction ratings are correlated with more general attitudes toward the community (Linn, 1975; Rojek, Clemente, and Summers, 1975) and general feelings about oneself (Tessler and Mechanic, 1975). Are these relationships strong enough to invalidate use of patient satisfaction ratings in the evaluation of health and medical care services?

Prediction of Health and Illness Behavior. Many investigators published results relevant to the validity of patient satisfaction as a predictor of health and illness behavior.<sup>1</sup> With few exceptions, they relied on cross-sectional study designs and self-reports of behavior. Because satisfaction levels at the time of data gathering were used to predict prior health and illness behavior, these studies should be considered weak on methodologic grounds.

<sup>1</sup>Our use of the term "predictive" in the context of a cross-sectional study design is consistent with the broad meaning of the term

Satisfied patients are hypothesized to use more services than less satisfied patients. Likewise, patients are hypothesized to choose services that enhance their satisfaction. Many investigators presented theoretical arguments in favor of these hypotheses.<sup>2</sup> Thirty-five comparisons of satisfaction scores and variables defining use of health care services were reported in 22 studies. Thirty-three indicated significant positive relationships consistent with these hypotheses; as satisfaction increased, use of services increased or a particular type of utilization occurred more often. Significance tests were reported for 30 analyses of satisfaction and use of health care services; 26 were significant and in the hypothesized direction. Specifically, satisfaction scores significantly predicted one or more measures of volume of use of medical care services in studies reported by Andersen (1968), Bice and White (1969); Hulka, Zyzanski, Cassel, et al., (1971), Fabrega and Roberts (1972), Brooks (1973), Wan and Soifer (1974), Kravitz (1975), and Ware, Wright, Snyder, et al., (1975). Patient satisfaction has also been significantly linked to dental visits (Kravits, 1975; Ware, Wright, Snyder, et al., 1975).

Satisfaction levels have been significantly related to choice of care, location, use of specific facilities, and participation in specific treatment programs (Bashshur, Metzern, and Worden, 1967; Elling, Whitmore, and Green, 1960; Kessel and Shepherd, 1965; Schoenfield, Schmidt, and Sterfield, 1963). Satisfaction variables were significant predictors of patient compliance (e.g., appointment-keeping) in studies reported by Becker, Drachman, and Kirscht (1974), Hurtado,

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in science, namely, to estimate a variable prior to complete knowledge of that variable (without respect to time); see Kerlinger (1973; pp. 459-460). Ultimately, we are most interested in the usefulness of patient satisfaction measures in forecasting subsequent health and illness behavior. The validity of satisfaction measures for this purpose can be precisely estimated only from the results of prospective studies.

<sup>2</sup>Stoeckle, Zola, and Davidson (1963); Suchman (1964); Weinerman (1964); Coe and Wessen (1965); Donabedian (1966); Kasl and Cobb (1966a, 1966b); Zola (1966); Rosenstock (1966); Mechanic (1968, 1972); De Geyndt (1970); Fink (1970); Bice and White (1971); Bice, Eichhorn, and Fox (1972); Aday and Eichhorn (1972); Lohr (1972); McKinlay (1972); Anderson (1973); Aday and Anderson (1974); Becker and Maiman (1975).

Greenlick, and Colombo (1973), Korsch, Gozzi, and Francis (1968), and Francis, Korsch, and Morris (1969). Satisfaction measures were significantly related to medical checkups when well and to changes in doctors in a study reported by Ware, Wright, Snyder, et al., (1975). Satisfaction scores were predictive of patient complaints (Deisher, Engel, Spielholz, et al., 1965; Bashshur, Metzern, and Worden, 1967). Other trends supporting the predictive validity of satisfaction measures have also been reported by Salber, Feldman, Johnson, et al., (1972), Berkanovic and Reeder (1973), and Aday (1975).

The weight of the evidence cited above is consistent with the hypothesis that patient satisfaction measures are valid predictors of health and illness behavior. Despite weaknesses in study design that characterize much published research, satisfaction measures will very likely prove useful in understanding how people behave in the health care arena. Many important questions, however, remain unanswered.

Which satisfaction dimensions best predict what people do? With one or two exceptions, satisfaction measures fielded in studies of health and illness behavior did not include all dimensions of the proposed taxonomy. Thus, it is not yet possible to answer this question. In the study reported by Ware, Wright, Snyder, et al., (1975), satisfaction with the art and technical aspects of quality of care and with continuity of care tended to be the best predictors of four behaviors studied (total use of medical services, dental visits, checkups, and changes in physicians). Surprisingly, the accessibility/convenience and financial dimensions tended to be less predictive of these behaviors.

How much does satisfaction influence health and illness behavior? Which are the more important dimensions of satisfaction in influencing behavior? These questions cannot be adequately answered based on reported results. The operational definitions of behavior must be improved by increasing their specificity (e.g., distinguishing between patient-initiated initial contacts and physician-initiated followup visits in studying total volume of services) and by reducing reliance on self-report. Studies must include good measures of all major satisfaction dimensions, and relationships among major satisfaction dimensions, which are substantial in some cases (e.g., art and technical

quality of care), must also be taken into account. Prospective studies are necessary to estimate the true effects of satisfaction variables on subsequent behavior.

Interactions among variables should also be studied to determine the conditions under which satisfaction variables play the greatest role in predicting behaviors. Is patient-initiated behavior influenced more than physician-initiated behavior? Is the influence of satisfaction on behavior the same for those in good and in poor health? Does satisfaction influence behavior of upper and lower socioeconomic groups in the same way?

#### Other Measurement Issues

Other important measurement issues also remain unresolved. The effects of response set (such as the tendency to agree with items regardless of their content) on patient satisfaction questionnaires have only rarely been considered (Suchman, 1965; Tessler and Mechanic, 1975). Some investigators constructed scales that were balanced in terms of favorably- and unfavorably-worded items to eliminate acquiescent bias (e.g., Hulka, Zyzanski, Cassel, et al., 1971; Ware and Snyder, 1975). Further research is needed to determine to what extent balanced scales are successful in reducing response set, and the conditions under which tests of hypotheses might be invalidated if response set bias were not controlled for or eliminated.

Finally, factors relevant to respondent acceptance of the task of filling out a satisfaction questionnaire or consenting to be interviewed about health and medical care need to be clarified. Information about the quality of data obtained (e.g., amount of missing data) has rarely been reported and return rates have often been ignored. The amount of time and effort (i.e., respondent burden) required to complete patient satisfaction questionnaires should be more thoroughly studied and documented in published reports. Without such information, it is very difficult to determine the suitability of published questionnaires for use in a given study.

### Demographic and Socioeconomic Correlates of Patient Satisfaction

The precision of satisfaction measures in detecting differences in general populations and the extent to which such differences exist are important factors in determining the policy relevance of patient satisfaction research. Fourteen studies of demographic and socioeconomic correlates of patient satisfaction that are relevant to these issues have been published.<sup>1</sup>

Age. Older persons were more satisfied than younger persons with personal physicians (Apostle and Oder, 1967; Linn, 1975), the art of care and followup care (Andersen, Kravits, and Anderson, 1971), waiting time (Andersen, Kravitz, and Anderson, 1971; Kaim-Caudle and Marsh, 1975), and with medical care services in general (Rojek, Clemente, and Summers, 1975). Hulka, Zyzanski, Cassel, et al. (1971) found no relationship between age and satisfaction with art of care, technical quality, or access/finances. Similarly, Apostle and Oder (1967) found no relationship between age and satisfaction with the emergency room; however, satisfaction with the medical profession in general correlated negatively with age for men. In a more recent study, Hulka, Kupper, Daly, et al. (1975) reported that older persons were less satisfied with access/finances. Kirscht, Haefner, Kegels, et al. (1966) also reported a negative correlation; older persons had less favorable beliefs regarding the efficacy of diagnostic and preventative practices.

Education. The less educated appeared to be less satisfied with medical care in several populations. Suchman (1964) reported that less educated study participants were more skeptical of medical care, and Hulka, Zyzanski, Cassel, et al. (1971) reported that they were less satisfied with the technical quality of care received from physicians. Attitudes toward personal physicians were positively correlated with

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<sup>1</sup>Suchman (1963); Cornely and Bigman (1963); Kirscht, Haefner, Kegeles, et al. (1966); Apostle and Oder (1967); Bashshur, Metzern, and Worden (1967); Korsch, Gozzi, and Francis (1968); Andersen, Kravitz, and Anderson (1971); Hulka, Zyzanski, Cassel, et al. (1971); Enterline, Salter, MacDonald, et al. (1973); Kaim-Caudle and Marsh (1975); Linn (1975); Hulka, Kupper, Daly, et al. (1975); Rojek, Clemente, and Summers (1975); Tessler and Mechanic (1975).

Unless described as a trend, all relationships mentioned were statistically significant according to the criteria of the investigators.

education for women but not men in a study reported by Apostle and Oder (1967). Korsch, Gozzi, and Francis (1968) found no relationship between education level and satisfaction.

Family Size. Those in larger families were less satisfied with access/finances in two studies reported by Hulka and colleagues (Hulka, Zyzanski, Cassel, et al., 1971; Hulka Kupper, Daly, et al., 1975). In the earlier study (Hulka, Zyzanski, Cassel, et al., 1971), the same relationship was reported for technical quality and for art of care, although neither was significant.

Income. Income was both negatively and positively correlated with satisfaction; differences in the direction of the relationship were related to the satisfaction dimensions measured. Higher income persons tended to be more satisfied with accessibility/convenience (Andersen, Kravits, and Anderson, 1971), efficacy/technical quality (Suchman, 1963; Kirscht, Haefner, Kegeles, et al., 1966), and travel time to the doctor's office (Enterline, Salter, MacDonald, et al., 1973). Higher income women (but not men), were more satisfied with personal physicians (Apostle and Oder, 1967). Higher income persons were less satisfied with continuity of care (Andersen, Kravits, and Anderson, 1971), outcomes of treatment in a prepaid group practice (Bashshur, Metzern, and Worden, 1973), and amount of improvement in care (Enterline, Salter, MacDonald, et al., 1973). Apostle and Oder (1967) reported that income was unrelated to attitudes toward emergency room care and the medical profession.

Marital Status. Two of the four studies that correlated marital status with satisfaction variables found no relationship (Hulka, Zyzanski, Cassel, et al., 1971; Linn, 1975). Bashshur, Metzern and Worden, (1967) reported that single persons were less satisfied than married persons with a prepaid group practice; Tessler and Mechanic (1975) reported the opposite.

Occupational Level. Hulka, Zyzanski, Cassel, et al. (1971) reported that those with higher skill levels tended to be more satisfied with technical quality of care. Rojek, Clemente, and Summers (1975) reported that occupational level correlated positively with general satisfaction with medical services.



Race. Results regarding correlations between satisfaction and race differed between studies. No relationship with race was observed by Linn (1975) for satisfaction in general, or by Hulka, Zyzanski, Cassel, et al. (1971) for art of care, technical quality, or access/finances. Linn (1975) reported that blacks and Spanish respondents were more satisfied than whites with physicians. More recently, Hulka, Kupper, Daly, et al. (1975) reported that blacks were less satisfied than whites with technical quality, art of care, and access/finances. They suspected that, when correlations among variables were considered, the major source of the difference was access/finances. In contrast, Cornely and Bigman (1963) reported that whites were less satisfied than blacks with access and finances. Bashshur, Metzern, and Worden (1967) found that blacks were more satisfied than whites with a pre-paid group practice.

Religion. Linn (1975) found no relationship between religion and satisfaction with care.

Duration of Residence. Total years in residence was positively correlated with satisfaction with medical services in general in the community satisfaction study reported by Rojek, Clemente, and Summers (1975).

Sex. Both Hulka, Zyzanski, Cassel, et al. (1971) and Linn (1975) found no relationship between sex and satisfaction with care. More recently, however, Hulka, Kupper, Daly, et al. (1975) reported that females were significantly more satisfied than males with art of care, technical quality, and access/finances. Apostle and Oder (1967) reported that, for high users of services, women tended to be more satisfied than men with personal physicians.

Social Class. Korsch, Gozzi, and Francis (1968) found no relationship between social class and satisfaction. Suchman (1963) reported that lower class persons were more skeptical of medical care, and Cartwright (1967) reported that lower class persons were more satisfied with technical quality.

Summary. It is difficult to summarize the literature regarding demographic and socioeconomic correlates of patient satisfaction. In many instances, findings across studies did not agree. Differences in

results may be due to true population differences in the relationships and/or to methodologic problems and differences (including different operational definitions of variables, reliability of scores, response bias, and correlations among satisfaction dimensions).

There is no reason to believe that demographic and socioeconomic variables correlate in the same way with all dimensions of satisfaction. Given that groups differ in health care priorities and that tradeoffs regarding characteristics of services seem to be operating in the delivery of care, it is likely that both positive and negative correlations between a given sociodemographic variable and satisfaction dimensions would be observed. Unfortunately, with the exception of the scales used by Hulka and colleagues (Hulka, Zyzanski, Cassel, et al., 1971; Hulka, Kupper, Daly, et al., 1975), the single-item measures used by Andersen, Kravits, and Anderson (1971) and the open-ended questions used by Korsch, Francis, and Gozzi (1968), satisfaction batteries were not comprehensive with respect to the dimensions of satisfaction in the proposed taxonomy. Thus, some potential sources of satisfaction and dissatisfaction were not measured in many studies that correlated satisfaction with demographic and socioeconomic variables.

Reliability of scores was ignored in most studies of relationships between satisfaction and sociodemographic variables. Hulka and colleagues (Hulka, Zyzanski, Cassel, et al., 1971; Hulka, Kupper, Daly, et al., 1975) reported reliability for satisfaction scores, but did not compute coefficients separately for sociodemographic groups that were compared. Satisfaction scores were probably less reliable for disadvantaged persons in all studies and probably did not achieve minimum standards for purposes of group comparisons in at least some studies that used single-item measures. Lack of precision may account for certain instances in which group differences were not observed. Finally, correlations among satisfaction scores were rarely taken into account in determining the major underlying sources of satisfaction and dissatisfaction for sociodemographic groups that were compared.

Taking into account study methods and considering only those variables compared in two or more investigations, the following conclusions

seem to be supported by the 14 publications that reported demographic and socioeconomic correlates of patient satisfaction:

- (1) Age: Older persons tended to be more satisfied with the conduct of providers and less satisfied with access to care and outcomes of care
- (2) Education: Less educated persons tended to be less satisfied with medical care in general and with conduct of providers
- (3) Family size: Persons in larger families tended to be less satisfied with access to care
- (4) Income: Lower income persons tended to be less satisfied with access and the outcomes of care
- (5) Marital status: No clear trends
- (6) Occupational level: Persons at the higher occupational levels tended to be more satisfied with medical care
- (7) Race: No clear trends
- (8) Sex: Women tended to be more satisfied in general than did men
- (9) Social Class: No clear trends

#### THEORETICAL UTILITY OF THE PATIENT SATISFACTION CONCEPT

As the preceding discussion of measurement issues indicates, it is very difficult to determine whether and how well patient satisfaction was measured in many of the empirical studies reviewed. For this reason, determination of how useful satisfaction concepts would be to health services research is even more difficult. The difficulty stems from the fact that the empirical literature relevant to the usefulness of the satisfaction concept is essentially the same as that reviewed to evaluate the validity of published satisfaction measures. Thus, in those instances where success of measurement was poorly documented and satisfaction dimensions did not prove useful in hypothesis-testing, it is impossible to discern whether measurement was at fault or whether the satisfaction concept was unimportant in relation to the goals of the study. In those few instances where sizeable relationships were

detected between satisfaction scores and policy variables, there is support for the usefulness of the concept. This conclusion rests, however, on the assumption that the questionnaires fielded actually measured patient satisfaction. In most instances, this was assumed but not demonstrated. If reliability and validity were better documented for published satisfaction measures, the issues of measurement adequacy and usefulness of the satisfaction concept could be more easily separated.

Many investigators have presented theoretical justification for the usefulness of the patient satisfaction concept as an independent variable in health and medical care research. On the assumption that satisfaction influences what people do, Stoeckle, Zola, and Davidson (1963) argued in favor of using satisfaction data to plan and organize facilities and to set priorities for medical education and public health programs. Weinerman (1964) believed that sociopsychological concepts like satisfaction influence the degree to which medical care is sought and the extent to which advice is accepted and heeded. He also suggested that the importance of sociopsychological concepts would increase with the transition to prepayment for services. In a more general sense, several investigators noted the usefulness of patient satisfaction in understanding *why* people do or do not seek care, as opposed to merely describing *who* does and does not seek care (Coe and Wesson, 1965; Fink, 1970; Anderson, 1973; McKinlay, 1972). Lewis (1971) called attention to the importance of assessing patient acceptance, which looms as a potential barrier to the implementation of new modes of delivering services.

Regarding satisfaction as a dependent variable, Donabedian (1966) argued that patient satisfaction (along with health status) is an ultimate outcome in evaluating quality of medical care. His argument, which clearly implies that the patient satisfaction concept is an important dependent variable in health and medical care research, has been echoed by others (Hulka, Zysanski, Cassel, et al., 1970; De Geyndt, 1970; Lebow, 1974). Without a better understanding of what causes patients to be more or less satisfied with the care they receive, however, it is not clear whether the medical care system should be held

accountable for all of the variability in satisfaction scores. For example, to the extent that more general life sentiments (e.g., community and life satisfaction) determine how patients evaluate their care, satisfaction should not be viewed as an ultimate outcome of care. Rather, to the extent that satisfaction scores reflect general concepts like life satisfaction, they would be better used to evaluate society at large than specific programs within the medical care system.

When the empirical literature on patient satisfaction is viewed critically and emphasis is placed on empirical studies in which measurement issues were well handled, four kinds of evidence emerge that are relevant to the meaning of the satisfaction concept and its usefulness to health and medical care researchers. The first two relate to the measurement and meaning of the satisfaction concept, the second two to the usefulness of the concept.

First, psychometric studies (i.e., those that focus on measurement methods and issues) indicate that satisfaction is a multidimensional concept and that the dimensions are related; some dimensions (e.g., art and technical quality of care) are highly related (Ware and Snyder, 1975; Ware, Wright, Snyder, et al., 1975; Hulka, Zyzanski, Cassel, et al., 1971; Hulka, Kupper, Daly, et al., 1975). Studies of the importance placed on characteristics of providers and services also yield multiple satisfaction categories similar to those defined in the proposed taxonomy (Cornely and Bigman, 1973; Caplan and Sussman, 1966; Cartwright, 1967; Korsch, Francis, and Gozzi, 1968; Kane, 1969; Fisher, 1971). Therefore, the dimensions in the taxonomy should be measured and scored separately to permit meaningful interpretation of satisfaction data.

Second, studies of relationships among questionnaire items hypothesized to measure specific satisfaction dimensions (e.g., the factor analytic studies published by Bice and Kalimo [1971], by Ware, Miller, and Snyder [1973], by Ware and Snyder [1975], and by Ware, Wright, Snyder, et al., [1975]) provide empirical evidence in support of the validity of patient satisfaction variables. This evidence is particularly important because it is not based on presumptions underlying theory about the relationships between satisfaction and other concepts

(e.g., health status or use of services). The state of the art is such that patient satisfaction theory should be held as much in question as patient satisfaction measures; hence, it is desirable to include tests of validity that are independent of theory about how satisfaction relates to other concepts.

Third, there is published evidence regarding the characteristics of providers and medical care services that influence patient satisfaction ratings. The weight of this evidence favors the usefulness of satisfaction scores as dependent variables in evaluation of health and medical care services. However, as noted earlier, there are substantial gaps in understanding how well satisfaction questionnaires work for this purpose and which dimensions are more important. Further research on the specificity of measures of each satisfaction dimension in detecting variations in one major characteristic of providers and services (as opposed to reflecting many or all such characteristics) would contribute greatly to this understanding. For example, virtually nothing is known about the validity of patient satisfaction ratings in distinguishing art of care from technical aspects of the quality of care. Yet, if valid patient satisfaction measures could be constructed for that purpose, they could provide one cost-effective solution to the urgent but unsolved methods problems in quality of care assessment.

Fourth, the concept of patient satisfaction appears to be related to health and illness behavior. Although the magnitude of the relationships, the more important dimensions, and the nature and direction of causality remain to be clarified, even the most conservative critique of the literature would conclude that there is some evidence for the usefulness of the satisfaction concept in predicting what people do at a very general level (e.g., total consumption of health and medical care resources) and at the specific level (e.g., appointment-keeping).

In summary, what should be emphasized in future patient satisfaction studies? On the measurement side, the following questions need to be addressed: Is it possible to measure all of the dimensions in the proposed patient satisfaction taxonomy? How many questionnaire

items are required to achieve a reliable and valid score for each dimension? Which items and data-gathering methods work best and are most practical? What are the major threats to the validity of patient satisfaction questionnaires and how should they be controlled (e.g., due to acquiescence and other response sets, or general life attitudes)? In terms of the role and usefulness of patient satisfaction questionnaires in evaluating services and in explaining how people behave, the following questions need to be addressed: What characteristics of physician *and* non-physician providers and medical care services influence patient satisfaction most? Are patient satisfaction questionnaires valid in predicting what people do and do not do? Which satisfaction dimensions are more predictive of health and illness behavior? How strong are the relationships?

Many of the questions raised above being addressed in ongoing research. Ronald Andersen and LuAnn Aday at the Center for Health Administration Studies, University of Chicago are studying the relationship between differences in access to medical care and patient satisfaction. They are also using a comprehensive patient satisfaction questionnaire to study the variability in satisfaction dimensions for a representative sample of the American population. Barbara S. Hulka and her colleagues at the University of North Carolina have included measures of several satisfaction dimensions in studies of patients representing specific diagnostic groups. Their findings will be relevant to the role of the patient satisfaction concept in the care process and to the relationships between specific dimensions of satisfaction and patient compliance and self-care behavior. Longitudinal studies of patient satisfaction are currently being fielded by The Rand Corporation in Santa Monica, California pursuant to the Health Insurance Study. These studies will yield information regarding changes in numerous patient satisfaction dimensions over time, the effects of health care financing and organization of care on satisfaction, the effects of good and bad health status outcomes on satisfaction, and the influence of patient satisfaction on medical care consumption and other health and illness behavior.

Table 1

## SUMMARY OF RELIABILITY ESTIMATES FOR PUBLISHED SATISFACTION SCALES

Investigators	Scaling Method	Sample Size	Dimensions(s)	No. of Items	Reliability Coefficient		
					Internal Consistency	Alternate Forms	Test Retest
Franklin and McLemore (1967, 1970)	Thurstone/Likert <sup>a</sup>	136	1. General Satisfaction	20	.87		
Hulka, Zyzanski, Cassel, et al. (1970)	Thurstone <sup>b</sup>	49	1. Professional Competence	12-14		.63	
			2. Personal Qualities	12-14		.75	
			3. Access/Finances	12-14		.43	
Zyzanski, Hulka, and Cassel (1974)	Thurstone <sup>b</sup>	426	1. Professional Competence	14	.52		.28
			2. Personal Qualities	14	.74		
			3. Access/Finances	14	.55		
			4. Total	42	.80		
Zyzanski, Hulka, and Cassel (1974)	Thurstone/Likert <sup>a</sup>	426	1. Professional Competence	14	.75		
			2. Personal Qualities	14	.86		
			3. Access/Finances	14	.68		
			4. Total	42	.90		
Rojek, Clemente, and Summers (1975)	Factor Analytic/Likert	1100	1. General Satisfaction	3	.71		



Table 1 (continued)

Investigators	Scaling Method	Sample Size	Dimension(s)		Internal Consistency	Alternate Forms	Test Retest
Aday and Andersen (1975)	Factor Analytic <sup>c</sup> / Likert	2000+	1. Access/Finances	3	.68 <sup>d</sup>		
			2. Art of Care/Technical	8	.90 <sup>d</sup>		
			3. Total	11	.84 <sup>d</sup>		
Ware, Wright, Snyder, et al (1975)	Factor Analytic/ Likert	903	1. Availability (9) <sup>e</sup>	2-4	.57-.81		
			2. Availability Total	10	.83		
			3. Continuity	4	.78		
			4. Finances	4	.69		
			5. Art of Care	3	.67		
			6. Technical Quality (7)	2-4	.51-.89		
			7. Art/Technical Total	25	.89		
Ware and Snyder	Factor Analytic/ Likert	433	1. Availability (4)	2	.47-.76		.57-.62 <sup>f</sup>
			2. Accessibility (3)	2-3	.49-.64		.59-.62 <sup>f</sup>
			3. Continuity (2)	2	.57-.67		.59-.64 <sup>f</sup>
			4. Finances (3)	3-4	.66-.75		.62-.69 <sup>f</sup>
			5. Art of Care (3)	3-4	.67-.75		.62-.69 <sup>f</sup>
			6. Technical Quality (5)	2-4	.52-.73		.64-.70 <sup>f</sup>

<sup>a</sup>Thurstone weights with Likert-type responses and combined Thurstone and Likert scoring.

<sup>b</sup>Method of equal-appearing intervals.

<sup>c</sup>Items meeting factor analytic and/or Likert scaling and/or homogeneity criteria.

<sup>d</sup>Not reported; computed from published information.

<sup>e</sup>More than one scale in the same dimension; number of scales shown in parentheses.

<sup>f</sup>N=167 for test-retest reliability study.

Figure 1

DIMENSIONS OF PATIENT SATISFACTION MEASURED  
IN PUBLISHED STUDIES

Dimensions	Investigators
Art of Care	Gray and Cartwright (1953); Abdellah and Levine (1957, 1958); Borsky and Sagan (1959); Boyle (1960); Friedson (1961); Cahal (1962); Davis and Eichhorn (1963); Schonfield et al. (1963); Suchman (1964); Deisher et al. (1965); Cartwright (1967); Apostle and Oder (1967); Franklin and McLemore (1967); Kane (1969); Francis et al. (1969); Alpert et al. (1970); Hulka et al. (1970); Fisher (1971); Jolly et al. (1971); Rickels et al. (1971); Bellin and Geiger (1972); Fabrega and Roberts (1972); Houston and Pasanen (1972); Langston et al. (1972); Lerner et al. (1972); Udry (1972); Brooks (1973); Hurtado et al. (1973); Berkanovic et al. (1974); Guardiola et al. (1974); Nelson et al. (1974); Noyes et al. (1974); Lebow (1975); Linn (1975); Tessler and Mechanic (1975)
Technical Quality of Care	Abdellah and Levine (1957, 1958); Borsky and Sagan (1959); Boyle (1960); Friedson (1961); Cahal (1962); Schonfield et al. (1963); Deisher et al. (1965); Kessel and Shepherd (1965); Cartwright (1967); Apostle and Oder (1967); Franklin and McLemore (1967); Alpert et al. (1970); DeCastro and Amin (1970); Hulka et al. (1970); Fisher (1971); Andersen et al. (1971); Jolly et al. (1971); Rickels et al. (1971); Udry (1972); Bellin and Geiger (1972); Fabrega and Roberts (1972); Houston and Pasanen (1972); Langston et al. (1972); Lerner et al. (1972); Enterline et al. (1973); Hurtado et al. (1973); Becker et al. (1974); Berkanovic et al. (1974); Nelson et al. (1974); Lebow (1975); Linn (1975); Rojek et al. (1975); Tessler and Mechanic (1975).
Accessibility/Convenience	Gray and Cartwright (1953); Friedson (1961); Deisher et al. (1965); Kessel and Shepherd (1965); Apostle and Oder (1967); Franklin and McLemore (1967); Kane (1969); Bice and White (1969); Alpert et al. (1970); Hulka et al. (1970); Fisher (1971); Andersen et al. (1971);

Figure 1 (continued)

Dimensions	Investigators
	Bice and Kalimo (1971); Udry (1972); Bellin and Geiger (1972); Langston et al. (1972); Salber et al. (1972); Enterline et al. (1973); Hurtado et al. (1973); Guardiola et al. (1974); Aday (1975); Lebow (1975); Kaim-Caudle et al. (1975); Stratmann and Ullman (1975)
Finances	Borsky and Sagan (1959); Friedson (1961); Cahal (1962); Suchman (1964); Deisher et al. (1965); Kessel and Shepherd (1965); Apostle and Oder (1967); Franklin and McLemore (1967) Andersen (1968); Hulka et al. (1970); Fisher (1971); Andersen et al. (1971); Houston and Pasanen (1972); Langston et al. (1972); Noyes et al. (1974)
Physical Environment	Abdellah and Levine (1957, 1958); Cartwright (1967); Fisher (1971); Lerner et al. (1972); Brooks (1973); Tessler and Mechanic (1975)
Availability	Gray and Cartwright (1953); Hulka et al. (1970); Bellin and Geiger (1972); Langston et al. (1972); Brooks (1973)
Continuity	Friedson (1961); Bice and White (1969); Fisher (1971); Andersen et al (1971); Houston and Pasanen (1972); Langston et al. (1972); Aday (1975); Kaim Caudle et al. (1975)
Efficacy/Outcomes of Care	Borsky and Sagan (1959); Friedson (1961); Suchman (1964); Andersen (1968); Hulka et al. (1970); Fisher (1971); Bice and Kalimo (1971); Houston and Pasanen (1972); Hulka et al. (1972); Langston et al. (1972); Becker et al. (1974)

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