Validity and Reliability of a Self-Administered Health History Questionnaire

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SELF-ADMINISTERED HEALTH HISTORY questionnaires have been developed to reduce the high cost in time and dollars of the traditional verbal history taken by physicians and to enhance the completeness, organization, and quality of the medical record (1–3). Sophisticated computer-based systems for eliciting and record-

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ing the medical history have been evaluated and standardized, but these are not necessarily readily available, affordable, or appropriately designed for use by office or clinic practitioners. Although many self-administered "paper-and-pencil" questionnaires have been devised, some require assistance in completion, and others require interpretation, editing, or collation before the information can be used by the health care provider. Few self-administered questionnaires have been tested statistically for the reliability or validity of the historical information obtained.

We devised an inexpensive, self-administered health history questionnaire, now in routine use at the time of the initial visit of a patient to a general medical outpatient clinic, tested its reliability in a test-retest format, and determined its clinical validity by comparing its yield to the responses obtained to the same questions posed by physicians in the traditional interview.

The questionnaire requires no assistance to the patient during completion and no transcription or review before use by the health care provider. It may be

inserted directly into the medical record to complement a more detailed narrative history of the patient's principal medical problems recorded by the provider.

Clinic Setting

The Medical Comprehensive Care Unit (MCCU) of the Seattle Veterans Administration Medical Center provides long-term general ambulatory care for a panel of 2,100 veterans. The mean age of the clinic patients is 57 years; 97 percent are men. Clinic patients typically receive care for multiple problems; they average 3.3 major conditions per patient. The most common diagnoses include hypertension, ischemic heart disease, degenerative joint disease, chronic pulmonary disease, and diabetes (Inui, unpublished data). Of the MCCU's "new" patients, 65 percent are referred from the hospital's walk-in clinic, and other patients are referred from specialty clinics or medical and surgical inpatient services. The MCCU enrolls an average of 72 new patients each month.

The MCCU provider staff includes seven internists, eight nurse practitioners, and a varying number of junior and senior medical residents. Support staff includes two clerk receptionists and a nursing assistant.

The rationale for developing the self-administered health history questionnaire for routine clinic use was the staff's desire to minimize time competition in new-patient encounters between data base collection and other aspects of the patient-health care provider interaction. We wished to enhance the opportunity and time available to develop communication and rapport, to provide patient education, and to encourage compliance without sacrificing the collection of complete historical data. The questionnaire is not intended for use in conjunction with automated systems for data retrieval, but rather as a tool to facilitate the clinic encounter.

Development of the Questionnaire

Before assembling our questionnaire, we reviewed a variety of health history questionnaires in use by other institutions, clinics, and practitioners. We also studied the many forms compiled and criticized by Wakefield and Yarnall (2).

In view of budgetary and personnel limitations, our needs seemed best served by a questionnaire that could be completed by a patient without assistance or automation. A largely "nonbranching" style of questioning was chosen for its simplicity. The unedited, completed questionnaire would be forwarded to the provider for use

during the clinic encounter, where each positive response would be subject to further exploration, if desired by the examiner, and annotations could be entered in the margin on each page.

Specific questions were designed to address the complaints common among our population, as defined from preliminary survey data. Additionally, we attempted to cover areas of history that have been inadequately recorded in outpatient data bases in general (1,4,5)—history of tobacco and alcohol use, diphtheria-tetanus immunization, tuberculin skin test results, medication allergies, care at other institutions, family history, and symptoms such as sexual dysfunction and emotional or behavioral conditions.

After developing and refining a large number of potential questions, we reproduced them in a first-draft format and pretested them on a number of volunteer patients at the clinic to estimate the time required for completion, the extent of inquiries or requests for assistance, and to identify individual questions that seemed ambiguous. After another fundamental revision, the individual items were typed on index cards and submitted to staff physicians and nurse practitioners for review. They were asked to evaluate each item by assigning it to one of four categories: acceptable without modification; important to include, but needs revision; serious doubt regarding appropriateness or effectiveness; or not acceptable.

Based on the opinions of the staff members, the questionnaire was refined further, submitted for review and criticism to S. R. Yarnall, MD (author of "The History Database"), Medical Computer Services Association, Seattle, and then assembled into the final and tested form. The patient identification information was not included in the analysis of reliability and validity. (The format of the questionnaire shown here was subsequently changed. Copies may be obtained from Pecoraro.)

Testing Procedures and Definitions

Forty successive patients referred routinely to four MCCU staff physicians (M. C., J. H., T. I., R. P.) were sent letters requesting them to participate in the study along with notification of their initial appointment. Twenty-five volunteered to participate. Although we did not systematically ask those who failed to volunteer their reasons for refusing, some did not keep their MCCU appointments, and others expressed an unwillingness or inability to comply with two clinic visits within the same week, as required by the protocol. During the time of the study, an average of 15 percent of the newly referred patients failed to appear for their initial appointments; thus, under any circumstances, 6

of 40 patients could be expected not to keep their initial appointment. The study sample of 25 patients was compared statistically to a larger panel of 1,300 patients referred to the MCCU in the previous 3 years and was found to be entirely similar $(P > 0.1)$ on measures of diagnostic case mix, mean age, and sex.

The study sample consisted of 24 men and 1 woman; their ages ranged from 37 to 80 years (average 58.8 years). The diagnoses assigned to three or more patients included hypertension, degenerative joint disease, ischemic heart disease, peptic ulcer, obesity, dermatitis, and alcoholism.

We thought that 25 was a reasonable arbitrary number of patients to pretest the questionnaire. Since two people were unable to successfully self-administer the questionnaire, most individual questions were tested with an n of 23. Testing the health history responses of 23 subjects allowed analysis of 2,647 separate items to characterize the performance of the entire instrument. The total number of items included 115 responses from each of the 22 men and 117 responses from the woman, including the questions intended for women only.

The reliability of the patients' responses was determined by a comparison of their written responses to the questionnaire routinely administered before each initial clinic visit, "form 1," with their written responses to a retest 2 days later when the same questions were arranged in an alternate sequence, "form 2." Because of the informed-consent procedure, the subjects knew that they would be asked to complete the questionnaire on two occasions. They were not aware, however, that

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HEALTH HISTORY QUESTIONNAIRE

Good health care requires a broad understanding of your past and present health-related experiences. With this information, your physician can more quickly and correctly assess your present condition. For these reasons, we are asking that you complete this health history questionnaire as carefully as possible.

Please follow these instructions:
1. PRINT all information clearly.
2. If you do not understand a question, mark it with a "?"

IDENTIFICATION DATA: Please fill in the following information. *PLEASE PRINT.*

Name _____ Date _____ SS# _____
      last   first   middle
Address _____ Age _____ Date of Birth _____
_____ Home phone_____ Male____ Female____
     city   state   zip
Present married status: Married_____ Separated_____ Divorced_____ Widowed_____ Single_____
Live with: Spouse_____ Parents_____ Relatives_____ Friends_____ Alone_____ Other_____
Education: Yrs. elem._____ Yrs. high school_____ Yrs. coll., tech., bus., etc._____
Present work status: Working_____ Unempl._____ Sick leave_____ Retired_____
What is or was your primary occupation? _____
Service-connected disability? Yes_____ No_____ Don't know_____ If yes, please specify
_____ _____% of service connection
Where are you now receiving medical care? SVAH_____ Private MD_____ Other_____ None_____
What are your (or your household's) sources of income? Salary_____ Disability comp._____
    Social Security_____ Pension_____ Other_____
Are you now involved in any of the following organizations?
    Community group_____ School group_____ Church_____ Veteran's activities_____ Other_____

FAMILY HISTORY: Has any *BLOOD RELATIVE* had any of the following?

YES	NO	DK (don't know)	
___	___	___	Anemia or low blood
___	___	___	Arthritis
___	___	___	Asthma
___	___	___	Easy bleeding
___	___	___	Cancer
___	___	___	Diabetes
___	___	___	Glaucoma
___	___	___	High blood pressure (hypertension)
___	___	___	Hay fever or eczema
___	___	___	Heart attacks
___	___	___	Seizure or epilepsy
___	___	___	Sickle cell anemia
___	___	___	Stroke
___	___	___	Thyroid trouble (over active, under active, goiter)
___	___	___	Tuberculosis (TB)

YOUR HEALTH HISTORY: Have *YOU* had any of the following?

YES	NO	DK (don't know)	
___	___	___	Asthma
___	___	___	Cancer
___	___	___	Heart murmur
___	___	___	High blood pressure (hypertension)
___	___	___	Liver disease, yellow jaundice, hepatitis
___	___	___	Mental trouble
___	___	___	Pneumonia
___	___	___	Rheumatic fever

they would be asked the same health history questions by their physicians at the time of the second clinic visit.

The criterion for validity of the history obtained from the self-administered questionnaire was identity with the history provided by the patient in the traditional history interview. Immediately following the administration of form 2, each patient was introduced to the staff physician who would subsequently be his or her clinic physician. An extensive verbal history was then taken by the physician in his clinic office according to his accustomed practice, but without prior review of the medical chart or access to the patient's completed Health History Questionnaire. The interviewing physicians were instructed to take a "complete" history and were allowed ample time to do this. Although the physicians were told to employ their usual interviewing techniques, they were provided a checklist of medical topics to be covered, including all the topics covered by the patient's self-administered health history, to assure that the information elicited by the written questionnaire would be explored in the verbal history.

Immediately after completing the verbal history, the examining physician was given the patient's completed form 1, and the response to each question was compared with the information acquired in the interview. Each discrepancy was annotated, discussed, and clarified with the patient, and the discordant response on form 1 was classified by the examining physician as (a) false negative (negative response on questionnaire, positive response on verbal history), (b) false positive response (positive response on questionnaire, negative on verbal

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HEALTH HISTORY QUESTIONNAIRE (cont.)

_____ _____ _____ Serious injury
_____ _____ _____ Diabetes
_____ _____ _____ Thyroid gland trouble
_____ _____ _____ Tuberculosis (TB)
_____ _____ _____ Uncontrolled bleeding
_____ _____ _____ Venereal disease (VD)

HOSPITALIZATIONS: List all hospitalizations as best you can.

Type of illness/operation	Name of hospital	City & State	Year

TESTS & IMMUNIZATIONS:

What year was your last tetanus (lockjaw) shot? _____ Don't know_____
What year was your last chest X-ray? _____ Don't know_____
Have you ever had a TB (tuberculosis) skin test? YES_____ NO_____ Don't know_____
            Was it positive (reactive)? YES_____ NO_____ Don't know_____

MEDICINES: Are you allergic to or have you had a "bad reaction" to any medicines or other substances? YES_____ NO_____ If yes, list the medicines or substances.

What medicines do you presently take? (List as best you can).

Do you take any non-prescription medicines or tonics: For example: laxatives, diet pills or cold remedies? YES____ NO_____ If yes, please list. _____

HEALTH HABITS:

How would you describe your use of alcohol?
            amount per week
Wine _____
Beer _____
Whiskey _____
Has anyone ever told you that you drink too much?   YES_____ NO_____
How would you describe your use of tobacco?
            amount per day
Cigarettes _____
Cigars _____
Pipe _____
What is the total number of years you have smoked? ____Do you inhale? YES_____ NO_____

history), (c) true positive response (positive response on questionnaire, missed in the verbal history), or (d) other (including discrepancies due to an intervening event between the time of completion of form 1 and the interview).

Since the possibility of chance agreement between two series of replies to the same set of questions varies according to the incidence of affirmative or negative replies to the individual questions, the kappa (κ) statistic was calculated to "adjust" for the contribution of chance agreements (6). Kappa is calculated according to the formula, $\kappa = (P_o - P_c)/(1 - P_c)$, where P_o is the observed proportion of agreement, and P_c is the proportion of agreement expected from chance as calculated from the marginal totals in a two-by-two table. Values of kappa may range from -1.0, representing complete disagreement, to $+1.0$, representing perfect agreement, with an intermediate value of 0 corresponding to the agreement predicted by chance alone.

Results

Two of 25 patents (8 percent) were unable to complete the questionnaire coherently without assistance. Their diagnoses included organic brain dysfunction, in both cases reflected by their inability to consistently complete the patient identification items on forms 1 and 2.

The remaining 23 patients completed the testing protocol, and their responses were analyzed for reliability and validity. These 23 patients averaged 32 minutes to complete form 1 (standard deviation 11.6, ranging from 15 to 60 minutes). The average time required by the physicians to obtain the health history

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Who cooks the food you eat? _____

How many meals do you generally eat? 3 meals per day___
2 meals per day___
Irregular meals?___

SYMPTOMS: Please mark (X) if any of the following apply to you NOW or In the PAST.

NOW   PAST

___ ___ Unexplained weight loss or gain
___ ___ Unexplained fever
___ ___ Night sweats
___ ___ Dizziness
___ ___ Severe headaches
___ ___ Double vision
___ ___ Poor eyesight
___ ___ Ear or hearing trouble
___ ___ Frequent nose trouble
___ ___ Persistent hoarseness
___ ___ Teeth trouble
___ ___ Sore mouth
___ ___ Daily cough
___ ___ Daily coughing of phlegm (mucous, "cold")
___ ___ Coughing blood
___ ___ Wheezing
___ ___ Shortness of breath
___ ___ Chest pain when walking
___ ___ Chest pain when breathing
___ ___ Heart palpitation (fluttering, skipping, going fast)
___ ___ Leg vein trouble
___ ___ Leg pain when walking
___ ___ Ankle swelling
___ ___ Breast lumps or discharge
___ ___ Frequent or severe nausea
___ ___ Vomiting
___ ___ Blood in stools
___ ___ Diarrhea (loose stools)
___ ___ Constipation
___ ___ Hemorrhoids
___ ___ Bowel habit change
___ ___ Black stools
___ ___ Vomiting blood
___ ___ Heartburn
___ ___ Indigestion
___ ___ Excess belching

NOW   PAST

___ ___ Yellow jaundice
___ ___ Stomach pain
___ ___ Trouble swallowing
___ ___ Can't stand hot weather
___ ___ Can't stand cold weather
___ ___ Frequent urination
___ ___ Painful urination
___ ___ Abnormal urine
___ ___ Night urination
___ ___ Trouble starting urine
___ ___ Trouble holding urine
___ ___ Discharge from vagina
___ ___ Discharge from penis
___ ___ Sexual trouble
___ ___ Testicle (balls) trouble
___ ___ Joint pains
___ ___ Lack of energy
___ ___ Loss of balance
___ ___ Fainting spells
___ ___ Convulsions (seizures, epilepsy)
___ ___ Tremor (shaking, trembling)
___ ___ Paralysis
___ ___ Numbness (body parts "go to sleep")
___ ___ Lack of strength
___ ___ Nervousness
___ ___ Excessive worry
___ ___ Trouble sleeping
___ ___ Memory trouble
___ ___ Trouble concentrating
___ ___ Depression (feeling blue)
___ ___ Crying spells
___ ___ Feeling of worthlessness
___ ___ Skin trouble
___ ___ Trouble getting along with people
___ ___ Other

1.) In your opinion, what are your most important health problems? List as many as you can.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

2.) What health problems do you want to talk about today?

_____
_____

verbally was 34 minutes per patient (standard deviation 8.4, ranging from 20 to 55 minutes).

Reliability. The percentage agreement between forms 1 and 2 on all responses by each of the 23 subjects ranged from 75 to 96 percent; the average agreement was 89.6 percent (table 1). The kappa statistics comparing the agreement between all responses on forms 1 and 2 by each of the 23 subjects ranged from +0.495 to +0.883; the average kappa was +0.705.

When each health history question was analyzed independently for reliability, the percentage agreement between responses on forms 1 and 2 ranged from 65 to 100 (excluding the "female" questions answered by the woman); the corresponding kappas ranged from −0.065 to +1.0. (Readers interested in the reliability and validity performance of specific questionnaire items may request the data from us.) The mean percentage agreement was 92.4; the median percentage agreement was 90.9; the mean kappa was +0.610.

Table 1. Self-administered health history questionnaire: reliability and validity data

| Patient No. | Reliability | | Validity | |
	Percent Item agreement, forms 1 and 2 (N=113) [1]	Kappa	Percent Item agreement, form 1 and Interview (N=115) [1]	Kappa
1	92.0	+0.778	94.8	+0.859
2	91.2	+0.720	94.8	+0.825
3	94.7	+0.819	95.6	+0.866
4	83.7	+0.564	97.4	+0.941
5 [2]	88.7	+0.751	94.0	+0.859
6	91.2	+0.696	96.5	+0.892
7	85.8	+0.577	89.6	+0.717
8	81.4	+0.567	93.0	+0.850
9	92.9	+0.857	98.3	+0.965
10	85.0	+0.495	94.8	+0.847
11	96.4	+0.883	98.8	+0.947
12	95.6	+0.838	93.9	+0.800
13	97.6	+0.701	87.0	+0.699
14	94.7	+0.818	91.3	+0.719
15	92.0	+0.827	91.3	+0.805
16	93.8	+0.832	91.3	+0.784
17	93.8	+0.774	94.8	+0.803
18	93.8	+0.723	96.5	+0.847
19	95.0	+0.633	89.6	+0.727
20	84.1	+0.655	85.2	+0.687
21	93.8	+0.599	93.0	+0.655
22	75.2	+0.508	89.6	+0.792
23	89.4	+0.591	87.0	+0.371
Mean value	89.6	+0.705	92.9	+0.794

[1] Two questionnaire items were omitted from form 2 and, therefore, were not subjected to reliability testing.
[2] Female patient; therefore, N = 115 for reliability testing, N = 117 for validity testing.

Validity. For individual subjects, the average agreement between responses on form 1 and the history provided during the interview was 92.9 percent (range 85 to 98 percent). The corresponding kappas ranged from +0.371 to +0.965; the average kappa was +0.794 (table 1).

Analysis of the validity of individual questions across all patients tested revealed from 65 to 100 percent agreement between responses on questionnaire form 1 and verbal history (excluding the "female" questions). Mean agreement for individual questions was 92.4 percent. Kappas ranged from −0.62 to +1.0 (mean +0.713).

Among the total questionnaire responses by the 23 subjects, 92 percent of the items agreed with the replies to equivalent inquiries in the interview, and 8 percent of the items did not agree. The distribution of these responses is shown in table 2.

There were 3.2 false negative and 2.0 false positive questionnaire responses per patient. An average of 1.9 responses per patient were disparate for other reasons, including omission, obvious misinterpretation of questionnaire items, and intervening events.

An average of 1.3 items of positive history per patient (1.2 percent) was noted on the questionnaire but missed in the interview ("true positives"), despite use of a checklist by the physicians to assure attention during the interview to all items of history encompassed by the questionnaire. Because "true positives" should not be counted as errors, the questionnaire responses were 93.7 percent valid.

In general, the false negative and false positive responses were distributed throughout the questionnaire, without particular clustering among certain questions. Three open-ended type questions requiring a written

Table 2. Self-administered health history questionnaire: distribution of disagreements between questionnaire responses (form 1) and responses to inquiries in interviews

Classification of responses [1]	Number of responses (N=2,647) [2]	Percent of total questionnaire items
False negative	74	2.8
False positive	47	1.8
True positive	31	1.2
Other	44	1.7
Total	196	7.5

[1] For definitions of classification, see "Testing Procedures and Definitions."
[2] Total number of questionnaire items among 23 patients.

response obtained valid responses by fewer than 80 percent of the subjects. The questions and corresponding rates of valid responses were: "Hospitalizations—list all your hospitalizations as best you can" (65 percent agreement, kappa +0.171). "Are you allergic to or have you had a 'bad reaction' to any medicine or other substances? If yes, list the medicines and reactions" (75 percent agreement, kappa +0.569). "Do you take any non-prescription medicine or tonics? For example: laxatives, diet pills, vitamins, antacids, or cold remedies? If yes, please list" (65 percent agreement, kappa +0.378). These questions are recognized as problematic for patients—as questionnaire items and in direct interviews (7). To alert providers to the increased likelihood of invalid replies, these questions were flagged by asterisks.

Only 2 of 71 questions relating to symptoms were answered with agreement less than 80 percent: "Joint pains" (70 percent agreement, kappa +0.348) and "Night sweats" (78 percent agreement, kappa +0.228).

Discussion

Thirty years ago, Brodman and associates (1) demonstrated with the Cornell Medical Index, one of the earliest and most widely used health history questionnaires, that a well-designed, self-administered form captured significantly more items of affirmative medical history than physicians recorded when interviewing the same patients. They emphasized the potential utility of such a questionnaire, which defined for the physician the overall scope of his patient's medical problems and saved time during the clinical encounter by obviating the need to discuss areas of negative history. The assumption was implicit, however, that the history provided on the completed questionnaire, particularly the negative history, was valid. Today, health history questionnaires are widely used in office and institution-based clinical practices, although few have been formally tested for reliability and validity.

Reliability. Collen and associates (8) tested the reliability of a self-administered patient questionnaire used as part of a mass multiphasic screening program at the Permanente Medical Group, Oakland, Calif. Using a questionnaire of 204 items printed individually on cards, they reported that 95 percent of the patients changed their answers to fewer than 6 percent of the questions when retested 30 minutes later. Collen and associates discussed the characteristics of questions that were answered on the questionnaire with good reproducibility and pointed out that questions considered reliable in patient-physician interviews did not necessarily perform reliably as part of a self-administered questionnaire. Presumably this discrepancy resulted

from the absence of subjective nonverbal factors which are in part responsible for the accuracy of responses in the traditional interview. No attempt to measure the validity of questionnaire responses was reported.

Mellner (9) submitted a 300-item questionnaire to 89 clinic outpatients on 2 occasions separated by 1 week. Analysis of the reproducibility of patients' responses yielded results similar to Collen's. In Mellner's study, 17 percent of the initial positive responses were changed to negative on retest, whereas 98 percent of the negative replies remained unchanged.

We presented our data regarding questionnaire reliability to completely characterize the performance of the questionnaire. Overall questionnaire reliability for all items was 90 percent during a testing interval of 2 days. This characteristic of the questionnaire would not become clinically important unless we were to administer the questionnaire repeatedly as a measure of health status, attributing changes in responses to changes in health.

Validity. A recent report verifies the validity of a self-administered questionnaire, focused on chest pain and intermittent claudication, used in conjunction with a screening examination of more than 18,000 men (10). Although twice as many positive responses for "angina" and "history of possible infarction" were obtained by the questionnaire as with interviewers, the positive respondents in both groups had a similar association with electrocardiographic changes and increased risk for 5-year coronary mortality. This evidence supports, although indirectly, the validity on physiological and mortality criteria of the positive questionnaire responses.

Abramson (11) reviewed the evidence relating to the validity of the Cornell Medical Index as an indicator of health status and concluded that, although not designed for this purpose, it is of sufficient validity on a variety of criteria for use as an epidemiologic tool, particularly as a measure of emotional ill health.

Previous efforts to test the validity of self-administered health history questionnaires (1,3) failed to control two important intervening variables: the completeness of the verbal history and the completeness of the physician's recording of the history. Furthermore, these studies relied on review of questionnaire and chart data in the absence of the patient. Our study's protocol for questionnaire testing obviated each of these problems.

Because the protocol for the physician interviews in this study required a complete history (limited only by the tolerance and stamina of the physician and patient) and a checklist recording of responses, uniform testing of all questionnaire items was assured. Since discrepant responses were discussed with the patient immediately

after the interview, we were able to identify and classify all possible types of errors on the self-administered questionnaire. In spite of this complete identification of errors, the average questionnaire validity for individual patients was still 92.9 percent (table 1), with a low incidence of false negative and false positive responses.

The study of our questionnaire was not intended to measure in any "absolute" sense the validity of the medical history it obtained. Validation in the ultimate sense is simply not achievable in view of the lifetime accumulation of events and experience that contribute to each individual's medical history. We chose as the pragmatic criterion for validity that body of historical information a clinician could evoke in a careful interview. Because in our clinic we use the questionnaire to accurately elicit information that otherwise would have to be obtained in a time-consuming interview, we believe this is a clinically meaningful criterion for testing validity.

A low frequency of false negative and false positive responses is important to the clinical application of this questionnaire. False positive responses must be infrequent if the clinician is to avoid expending significant effort in the exploration of erroneous historical "clues" that the questionnaire might otherwise provide. False negative responses must be infrequent if the questionnaire is to safely obviate the need for face-to-face exploration of whole areas of the medical history. Furthermore, because of the great probability of a negative response to screening questions, it is important to evaluate the performance of each question in a manner which discounts chance agreements between questionnaire replies and the corresponding answers in the interview. The kappa statistics were calculated to provide this perspective; the kappa averaged +0.713 for the agreement of responses to individual self-administered questions and the interview.

Conclusions

This self-administered questionnaire may be useful to practitioners in other clinical settings. We have demonstrated the questionnaire's reliability and validity. We recommend its use as a standard feature of intake procedures for new general medical patients having characteristics similar to those of our patients. Practice organizations contemplating the use of different self-administered health histories for other populations may wish to replicate our testing procedure when evaluating these questionnaires.

Summary

A self-administered, health history questionnaire devised for routine use in a general medical clinic is completed without the assistance of clinic personnel and used, unedited, by the providers. The reliability and validity of the responses of 23 patients to this questionnaire were tested statistically.

In our setting, more than 90 percent of the patients referred for care are capable of completing the questionnaire. The 23 patients averaged 32 minutes to complete the questionnaire. An average of 34 minutes of encounter time is required to obtain the same historical data by interview. Test-retest reliability of patients' responses to the questionnaire was 90 percent. More than 92 percent of the patients' written responses to health history items agreed with the data obtained in a blinded fashion by internists in the traditional interview.

The questionnaire accurately obtains items of history frequently missing from the recorded ambulatory care data base, and in some instances obtains items of history more effectively than the interviewing physician. The study results showed a low incidence of false positive (1.8 percent) and false negative (2.8 percent) responses to questionnaire items.

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