Middle Articles

CONTEMPORARY THEMES

Difference between Patients' and Doctors' Interpretation of Some Common Medical Terms

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Summary: Multiple-choice questionnaires completed by 234 outpatients were compared with those completed by 35 doctors to evaluate differences between their interpretation of some commonly used medical terms. There were significant differences between the "majority doctors' definition" and the number of patients agreeing with that definition in all cases except the term "a good appetite." It is suggested that unless the patient is cross-examined recording of symptoms—particularly in computer studies—may be unreliable.

Introduction

Computers are being increasingly introduced into clinical medicine with a view to making diagnostic procedures more objective. This necessitates a close scrutiny of current medical vocabulary and the interpretation put on common medical terms by patients and doctors.

This paper presents the results of a multiple-choice questionnaire survey designed to evaluate differences between doctors and patients on two issues: (a) interpretation of some commonly used medical terms, and (b) knowledge of gross anatomy of some important organs.

Method

Two multiple-choice questionnaires, including such commonly used terms as "arthritis," "heartburn," "palpitation," "the heart," "the stomach," and "the kidneys," were designed for the survey. The full contents of these questionnaires are given in Tables I to XII and Figs. 1 to 8. To detect any "systematic" guessing tendencies half the questionnaires were printed with the terms, illustrations, and multiple-choice alternatives in the reverse order. Questions were all of the forced-choice type, the patients being instructed to guess if they did not know an answer. This method was felt to approximate more faithfully to the doctor-patient interview situation.

The clinical material included patients aged 17 or over who were attending for the first time at medical, surgical, dermatological, otorhinolaryngological, or antenatal outpatient clinics at the Southern General Hospital. This is a teaching hospital serving the urban area of the south-west of Glasgow and the rural districts of Argyll and the Inner Isles. At the admission desk the patients were given a questionnaire and asked to complete it while waiting to see the doctor and to return it before leaving. Patients inadvertently taking their questionnaires home were sent a stamped addressed envelope in which to return them.

A control group of doctors' replies was also obtained. Of the 42 physicians and surgeons on the staff of the general

medical and surgical units 35 co-operated in the survey. This group comprised house-officers (28.6%), senior house-officers/registrar (34.3%), senior registrars/S.H.M.O.s/medical assistants (5.7%), and consultants (31.4%).

Non-parametric tests of significance appropriate to sample size (χ^2 test with Yates's continuity correction or Fisher's Exact Test) were performed for each term and illustration to detect differences in interpretation between patients and doctors or differences in interpretation among patients due to age or sex.

Results

A total of 234 questionnaires were completed satisfactorily by patients from a possible 257—a response rate of 91.1%. Reasons for failure were: inadequate understanding of instructions (3.9%), failure to return questionnaire after taking it home (2.3%), unwillingness to co-operate (1.2%), no spectacles (0.8%), no time (0.4%), and severity of illness (0.4%).

The average age of the men was 45.4 years, and that of the women 41.0 years, and the male:female ratio was about 2:3. The patients were distributed by age as follows: 17 to 29 years, 30.7%; 30 to 44 years, 25.2%; 45 to 59 years, 25.2%, and 60 and over, 18.9%. The lower social classes predominated as judged by the Registrar General's classification: class I, 1.4%; class II, 8.2%; class III, 39.0%; class IV, 22.6%; and class V, 28.8%.

The results of patients' and doctors' answers to the multiple-choice questions are shown in Tables I to XII and Figs. 1 to 8. No tendency to "systematic" guessing was found from analysis of the reversed-order questionnaires.

The doctors were unanimous in their choice of definition for 7 of the 12 terms—"arthritis," "heartburn," "jaundice," "palpitation," "bronchitis," "piles," and "flatulence." They reached a level of agreement of over 90% for "least starchy food," "a medicine," and "a good appetite." "Constipation" was defined as "not opening one's bowels every day" by 11.4%, and "diarrhoea" as "passing a lot of bowel motions in a short time" by 31.4%. The very low level of agreement in this case may have been due to poor wording of alternative definitions. Apart from the 5.7% of doctors who chose the small "heart" placed well to the left, they were unanimous in their choice of anatomical site for all organs.

The patients did not reach complete agreement of definition for any term. By comparison with the "majority doctors' definition," between 80 and 90% of patients answered "a good appetite," "arthritis," "heartburn," and "bronchitis" correctly. About three-quarters correctly defined "jaundice," "least starchy food," and "piles," while only 50 to 60% agreed with the majority of doctors for "constipation" and "palpitation." The lowest responses for correct definition of terms were for

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"a medicine" (43.2%), "flatulence" (42.9%), and "diarrhoea" (37.0%). Patients displayed a considerable lack of knowledge of simple anatomy, the best understood terms being "intestines" (76.9%) and "thyroid gland" (69.9%), and the poorest "heart" (42.1%) and "stomach" (20.2%).

TABLE I.—Distribution of Definitions of "Arthritis"

Definitions	Patients* n = 113	Doctors n = 35
A disease due to muscle strain or a "pulled muscle"	5 (4.4%)	—
Any disease causing a painful back	1 (0.9%)	—
Any disease with sore arms or legs	9 (8.0%)	—
Lumbago	1 (0.9%)	—
Any disease causing a painful joint or painful joints†	97 (85.8%)	35 (100%)

*Six patients did not answer this question.

†P = 0.01015 (Fisher's Exact Test; doctors > patients).

TABLE II.—Distribution of Definitions of "Heartburn"

Definitions	Patients* n = 112	Doctors n = 35
Passage of wind through the mouth	9 (8.0%)	—
Excess saliva	5 (4.5%)	—
A burning sensation behind the breastbone†	95† (84.8%)	35 (100%)
A dull ache in the stomach	1 (0.9%)	—
A feeling of the heart thumping inside the chest	2 (1.8%)	—

*Seven patients did not answer this question.

†P = 0.007157 (Fisher's Exact Test; doctors > patients).

‡ $\chi^2 = 4.16$; D.F. 1; P < 0.05 (females > males).

TABLE III.—Distribution of Definitions of "Least Starchy Food"

Definitions	Patients* n = 107	Doctors n = 35
Fish and chips	2 (1.9%)	—
Bacon and eggs†	80 (74.8%)	34 (97.1%)
Jam tart and custard	13 (12.1%)	—
Bread-and-butter pudding	1 (0.9%)	—
Mince and potatoes	11 (10.3%)	1 (2.9%)

*Twelve patients did not answer this question.

† $\chi^2 = 6.99$; D.F. 1; P < 0.01 (doctors > patients).

TABLE IV.—Distribution of Definitions of "Jaundice"

Definitions	Patients* n = 111	Doctors n = 35
Generally sick and unwell—with yellow vomit	11 (9.9%)	—
Pale skin and anaemia (bloodlessness)	1 (0.9%)	—
Generally unwell, whether yellow skin or not	6 (5.4%)	—
Yellow skin and eyes†	85 (76.6%)	35 (100%)
Headache, furred yellowish tongue, and "run down" feeling	8 (7.2%)	—

*Eight patients did not answer this question.

† $\chi^2 = 8.44$; D.F. 1; P < 0.005 (doctors > patients).

TABLE V.—Distribution of Definitions of "A Medicine"

Definitions	Patients* n = 111	Doctors n = 35
Any drug to open the bowels	1 (0.9%)	—
Any substance used to treat disease†	48 (43.2%)	32 (91.4%)
Any tablets except simple things like aspirin, Askit powders, etc.	6 (5.4%)	—
Anything prescribed by a doctor	47 (42.3%)	3 (8.6%)
A tablet or liquid to relieve constipation	9 (8.1%)	—

*Eight patients did not answer this question.

† $\chi^2 = 23.03$; D.F. 1; P < 0.0005 (doctors > patients).

TABLE VI.—Distribution of Definitions of "Diarrhoea"

Definitions	Patients* n = 108	Doctors n = 35
Passing loose bowel motions†	40 (37.0%)	24 (68.6%)
Opening one's bowels more than once a day	4 (3.7%)	—
Passing a lot of bowel motions in a short time	59 (54.6%)	11 (31.4%)
Straining to pass bowel motions	4 (3.7%)	—
Passing a lot of wind by the back passage	1 (0.9%)	—

*Eleven patients did not answer this question.

† $\chi^2 = 9.32$; D.F. 1; P < 0.005 (doctors > patients).

The difference between the "majority doctors' definition" and the number of patients agreeing with that definition was significant for all terms and illustrations except the term "a good appetite" (P = 0.1). In only a few cases were there significant differences between male and female patients. Thus

TABLE VII.—Distribution of Definitions of "Palpitation"

Definitions	Patients* n = 103	Doctors n = 35
A feeling of breathlessness—especially when excited	27 (26.2%)	—
A feeling of fright and panic	15 (14.6%)	—
A dull ache over the heart	—	—
A pain in the chest, usually over the heart	7 (6.8%)	—
A feeling of the heart thumping inside the chest†	54 (52.4%)	35 (100%)

*Twelve patients did not answer this question.

† $\chi^2 = 23.78$; D.F. 1; P < 0.0005 (doctors > patients).

TABLE VIII.—Distribution of Definitions of "Constipation"

Definitions	Patients* n = 107	Doctors n = 35
Passing a lot of wind by the back passage	6 (5.6%)	—
Passing loose bowel motions	—	—
Passing dark-coloured motions	1 (0.9%)	—
Difficulty in opening one's bowels†	64 (59.8%)	31 (88.6%)
Not opening one's bowels every day	36 (33.6%)	4 (11.4%)

*Eight patients did not answer this question.

† $\chi^2 = 8.59$; D.F. 1; P < 0.005 (doctors > patients).

TABLE IX.—Distribution of Definitions of "Bronchitis"

Definitions	Patients* n = 106	Doctors n = 35
Any disease causing a bad cough	3 (2.8%)	—
Wheezing, cough, and spit; usually worse in winter†	85 (80.2%)	35 (100%)
Severe influenza	3 (2.8%)	—
Breathlessness	9 (8.5%)	—
Any chest complaint	6 (5.7%)	—

*Nine patients did not answer this question.

† $\chi^2 = 6.66$; D.F. 1; P < 0.01 (doctors > patients).

TABLE X.—Distribution of Definitions of "A Good Appetite"

Definitions	Patients* n = 108	Doctors n = 35
When you are not constipated after a big meal	1 (0.9%)	—
A strong need for food because you feel your stomach is empty	6 (5.6%)	2 (5.7%)
When you do not get indigestion after a big meal	1 (0.9%)	—
When you enjoy your food and look forward to eating it†	95 (88.0%)	33 (94.3%)
When you eat your food and are not sick after it	5 (4.6%)	—

*Seven patients did not answer this question.

†P = 0.1044 (Fisher's Exact Test; doctors > patients—not significant).

TABLE XI.—Distribution of Definitions of "Piles"

Definitions	Patients* n = 102	Doctors n = 35
Any disease of back passage, whether painful or not	1 (1.0%)	—
Any disease of back passage, but usually painful	3 (2.9%)	—
Enlarged blood vessels at the back passage†	75† (73.5%)	35 (100%)
Any pain at the back passage	6 (5.9%)	—
Any bleeding at the back passage	17 (16.7%)	—

*Thirteen patients did not answer this question.

† $\chi^2 = 9.92$; D.F. 1; P < 0.005 (doctors > patients).

‡ $\chi^2 = 4.74$; D.F. 1; P < 0.05 (males > females).

TABLE XII.—Distribution of Definitions of "Flatulence"

Definitions	Patients* n = 105	Doctors n = 35
Passage of wind through the mouth or back passage†	45 (42.9%)	35 (100%)
Passage of loose bowel movements	2 (1.9%)	—
A sort of chest pain	10 (9.5%)	—
An acid taste in the mouth—especially after eating food	31 (29.5%)	—
Stomach ache—usually after eating food	17† (16.2%)	—

*Ten patients did not answer this question.

† $\chi^2 = 32.7$; D.F. 1; P < 0.0005 (doctors > patients).

‡ $\chi^2 = 6.05$; D.F. 1; P < 0.025 (females > males).

FIG. 1.—Distribution of positions of the heart. A, 47 patients (41.2%), 2 doctors (5.7%); χ^2 5.07; D.F. 1; $P < 0.025$ (females > males), no doctors. C, 48 patients (42.1%), 33 doctors (94.3%) χ^2 25.3; D.F. 1; $P < 0.0005$ (doctors > patients). D, 2 patients (1.8%), no doctors.

FIG. 2.—Distribution of positions of the bladder. A, 27 patients (24.1%), no doctors. B, 67 patients (59.8%), 35 doctors (100%) χ^2 18.44; D.F. 1; $P < 0.0005$ (doctors > patients). C, 9 patients (8.0%), no doctors. D, 9 patients (8.0%), no doctors.

FIG. 3.—Distribution of positions of the kidneys. A, 52 patients (46.0%), 35 doctors (100%) χ^2 29.05; D.F. 1; $P < 0.0005$ (doctors > patients). B, 55 patients (48.7%), no doctors. C, 2 patients (1.8%), no doctors. D, 4 patients (3.5%), no doctors.

FIG. 4.—Distribution of positions of the stomach. A, 67 patients (58.8%), no doctors. B, 22 patients (19.3%), no doctors. C, 23 patients (20.2%), 35 doctors (100%) χ^2 43.21; D.F. 1; $P < 0.0005$ (doctors > patients). D, 2 patients (1.8%), no doctors.

FIG. 5.—Distribution of positions of the lungs. A, 36 patients (33.3%), no doctors. B, 2 patients (1.9%), no doctors. C, 55 patients (50.9%), 35 doctors (100%) χ^2 25.24; D.F. 1; $P < 0.0005$ (doctors > patients). D, 15 patients (13.9%), no doctors.

FIG. 6.—Distribution of positions of the intestines. A, 83 patients (76.9%), 35 doctors (100%) χ^2 8.3; D.F. 1; $P < 0.005$ (doctors > patients). B, 1 patient (0.9%), no doctors. C, 13 patients (12.0%), no doctors. D, 11 patients (10.2%), no doctors.

FIG. 7.—Distribution of positions of the liver. A, no patients, no doctors. B, 6 patients (6.1%), no doctors. C, 45 patients (45.5%), no doctors. D, 48 patients (48.5%), 35 doctors (100%) χ^2 25.53; D.F. 1; $P < 0.0005$ (doctors > patients).

FIG. 8.—Distribution of positions of the thyroid gland. A, 72 patients (69.9%), 35 doctors (100%) χ^2 11.91; D.F. 1; $P < 0.001$ (doctors > patients). B, 3 patients (2.9%), no doctors. C, 25 patients (24.3%), no doctors. D, 3 patients (2.9%), no doctors.

more females chose the correct definition of "heartburn" ($P<0.05$), and more males the correct meaning of "piles" ($P<0.05$). More females than males thought that "flatulence" meant "stomach ache—usually after eating food" ($P<0.025$) and that the "heart" occupied almost the entire thorax ($P<0.025$). Age alone did not appear to affect ability to define terms correctly.

Discussion

In the rapidly advancing field of medical computer technology, with the ultimate aim of "diagnosis by computer," it is mandatory to have either a vocabulary of totally unambiguous medical terms or a knowledge of the syntactic, semantic, or pragmatic limitations of our existing medical terminology. It would seem that the latter alternative is more practicable, and questionnaire surveys of the present type might well have a part to play in defining these limitations.

Romano (1941) was the first to consider this subject when he asked 50 patients to define 60 medical terms and abbreviations often used in bedside conferences. Many of these terms, however, were highly technical and no detailed analysis was presented. Others (Redlich, 1945; Pratt *et al.*, 1957; Seligmann *et al.*, 1957; Samora *et al.*, 1961; Riley, 1966; Ley and Spelman, 1967; Plaja *et al.*, 1968) have conducted statistical studies of patients' understanding of medical terms and diseases, but many of these tended to concentrate more on patients' knowledge of the aetiology, treatment, and prognosis of certain diseases than on their ability to agree with the majority of doctors over the more basic issue of definition. Samora *et al.* (1961) concluded that 92.8% of their group of patients had an "adequate" knowledge of the word "constipated," and Riley (1966) found that 57% of his sample correctly identified 7 or more of 12 foods containing sugar or starch. In another series (Plaja *et al.*, 1968) 94.9% of outpatients had "exact knowledge" of the meaning of "a drug or remedy" and 79.8% had "exact knowledge" of the term "diarrhoea." In Ley and Spelman's 1967 study 96.5% chose the correct multiple-choice definition of "arthritis" and 86.1% correctly identified one of the early symptoms of "chronic bronchitis" as "a persistent cough during winter."

In the present survey significant differences were found between patients' and doctors' interpretation of all terms and illustrations except the term "a good appetite." Perhaps some

form of "reliability factor" will have to be constructed for each medical term in common usage before any significance can be attached to it. In addition, the educational level of the patient must be considered, as relationships between vocabulary performance and educational attainment have been reported (Seligmann *et al.*, 1957; Samora *et al.*, 1961). In his small study of neuropsychiatric patients, however, Redlich (1945) found the correlation between knowledge of terms and I.Q. to be poor.

For the clinician the results probably do no more than formalize and lend statistical verification to his impression that clinical interrogation often reveals large areas of misunderstanding between conventional medical opinion and the vagaries of the lay mind. This misunderstanding, however, must be identified and evaluated scientifically if techniques such as self-completion medical questionnaires or patient-activated computer programmes are to play a reliable part in clinical medicine.

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GENERAL PRACTICE OBSERVED

Livingston New Town—Use of Computer in General Practice Medical Recording

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Summary: An account is given of the use of a computer in general practice medical recording. The general practitioners who are involved work from a health centre and each one holds a hospital appointment in addition to his general practice commitment. The most effective practical assistance so far provided by the computer is in the preventive field of the practitioner's work. The additional but equally important potential use is in the processing of data in such a way as to allow the doctor to assess his methods of work, and to provide information of statistical and epidemiological value.

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Introduction

In November 1964 the Scottish Home and Health Department recommended that the medical services in Livingston New Town should be developed on the basis of a centrally placed district general hospital having a number of health centres closely associated with it, from which the hospital services, the preventive services, and the general practitioners could operate in close association. In addition, it was intended that joint staffing arrangements should be considered whereby general practitioners would practise part-time in general practice and part-time in hospital. These recommendations have since been implemented. The first health centre is now in operation and each general-practitioner principal, with a list restricted to a