The cartoon in doctor-patient communication

Further study of the Arthritis and Rheumatism Council handbook on gout

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SUMMARY A sample of 50 consecutive patients with gout was tested by means of a multiple-choice knowledge-testing questionnaire based on the Arthritis and Rheumatism Council's *Gout: A Handbook for Patients*. Patients were divided into two groups: (a) those tested with an illustrated booklet containing 89 cartoons, and (b) those tested with an unillustrated booklet with text exactly the same as in the illustrated booklet. No significant difference was observed in either the overall test scores between the two groups or between individual question scores.

It was concluded that increasing the number of illustrations in the Arthritis and Rheumatism Council's handbook on gout had not significantly increased the value of this material as a communication aid. Certain sources of error have been discussed including the possibility of an 'interest factor' due to the inevitable interest patients have in reading about their own disease, and also the possibility that technical factors to do with page layout and picture/text imbalance might be responsible for failing to show differences between the two groups.

For more than 20 years the Arthritis and Rheumatism Council has produced a series of illustrated booklets in order to facilitate doctor-patient communication in various rheumatic disorders. As a result of recent quantitative studies showing poor recall among hospital patients (Ley and Spelman, 1965; Joyce *et al.*, 1969), we felt there was a need to examine the value of these booklets as communication aids. This preliminary study (Moll and Wright, 1972), which tested the handbook on gout by means of a multiple-choice questionnaire, showed the booklet to be highly satisfactory as a communication aid. Our findings raised further questions, one of which concerned the possible value of increasing the number of illustrations in such booklets. The study reported here is an attempt to throw further light on this point.

Material and method

A sample of 50 consecutive patients with gout was

studied. On a random basis 28 patients were given a booklet illustrated with a large number of cartoons, and 22 were given a purely textual booklet. The patients were simply asked to read the booklet, but were specifically not told that they would later be tested on what they had read. This precaution was taken to obviate the artificially high scores which might have arisen from 'over study' through repeatedly reading the handbook.

At routine follow-up each patient was asked to complete a simple knowledge-testing questionnaire (see Appendix). This was designed on the lines of the one used in our previous study (Moll and Wright, 1972). The questionnaire consisted of 14 multiple-choice questions based entirely on information in the handbook. All patients said that they had read the booklet, and all co-operated in completing the questionnaire. (One patient experienced a serious cardiac arrhythmia halfway through the test, but he was able to finish the questionnaire after hospital treatment.)

To avoid unnecessary anxiety in patients, no examination time limit was imposed, and all subjects were allowed to sit the test in a quiet private room. The system of scoring was as follows: (a) 1 point

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awarded for correct statements ticked and incorrect statements not ticked; (b) 1 point subtracted for incorrect statements ticked and correct statements not ticked.

Two booklets were specially printed for the study. One was a multicartoon booklet with legends taken from the text of the standard ARC booklet on gout

Fig. 1 Cartoon no. 15. *This tendency to produce too much uric acid is normally inherited from one or other parent or grandparent.*

Fig. 2 No. 25. *No sufferer from gout needs any description of what the acute attack is like, for it is one of the most painful experiences known to man.*

Fig. 3 No. 37. *It has often been said that too much alcohol can cause gout. This is not true. . . . However, it is true that if you are a gouty subject then too much of anything can set off an attack—too much food. . . .*

(Arthritis and Rheumatism Council, 1967). An attempt was made to illustrate each of the 89 points made in the original book. The 89 cartoons were drawn by one of us (J.M.H.M.) and examples of these are shown in Figs. 1–6. An illustration indicating page layout is shown in Fig. 7. The other booklet was completely unillustrated with text identical to that in the ARC standard booklet on gout.

Results

The scores obtained by the two groups of patients (illustrated versus unillustrated) are shown in Tables 1 and 2. The *over-all test scores* surprisingly showed no significant difference between the two groups. However, regarding *individual question scores*, there were appreciable differences between the scores obtained by the two groups in some questions, particularly Question 11 – that concerning 'life-long and preventive treatment'. However, when the P value was multiplied by the number of questions in the test, the difference lost significance ($P > 0.05$). Patients who had read the illustrated booklet scored a mean of 78% on Question 11 and those who had read the unillustrated booklet 57% (Tables 1, 2).

There was no significant difference, therefore, between either overall test scores or individual question scores. Furthermore, there was no significant difference between the overall scores obtained by patients who had read the 89-cartoon booklet,

Table 1 Test scores obtained by patients ($n=28$) who had read the illustrated booklet

Question no.	Individual question score	
	No.*	%
1	70/100	70
2	94/112	83
3	83/84	98
4	63/84	75
5	95/140	67
6	75/85	89
7	104/112	92
8	196/336	57
9	89/189	47
10	109/189	57
11	85/108	78
12	60/81	74
13	68/135	50
14	58/135	42
Overall test score 65.5		

*The data on the left in this column represent the grouped marks scored by patients for individual questions. Next to this is shown the maximal possible score. 70/100 means, therefore, that 28 patients scored 70 marks out of a possible 100 in response to Question 1.

Table 2 Test scores obtained by patients ($n=22$) who had read the unillustrated booklet

Question no.	Individual question score	
	No.*	%
1	65/88	73
2	73/88	82
3	63/66	95
4	49/66	74
5	72/110	65
6	58/66	87
7	82/88	93
8	145/264	54
9	77/147	52
10	97/147	65
11	48/84	57
12	51/63	80
13	55/105	52
14	59/105	56
Overall test score 67		

Table 3 Mean overall test scores obtained by patients who had read the 89-cartoon booklet ($n=28$), the 9-cartoon 'standard' booklet ($n=53$), and the unillustrated booklet ($n=22$)

	Mean overall test score (%)		
	89-Cartoon booklet	9-Cartoon 'standard' booklet (Moll and Wright, 1972)	Nonillustrated booklet
Mean	65.5	70.0	67.0
Range	43-86	35-93	44-86

the unillustrated booklet, and the 9-cartoon standard booklet analysed in our previous study (Table 3).

Discussion

Considering the widespread use of the cartoon as a graphic device in the field of communication, it is surprising that this has not been previously evaluated objectively. Cartoons have been called the slang of graphic art, and, like verbal slang, they tend to rely for their impact on spontaneity, playfulness, popular imagery, and often deliberate vulgarity. In common with all forms of humorous expression, cartoons tend to have a deceptively naïve, and sometimes an even banal exterior. Often, this is a mere camouflage for ideas and opinions that are not in the least flippant.

Within the last few generations cartoons have spilt over from the popular satire sheets of Rowlandson and Gillray to infiltrate almost every facet of

Fig. 4 No. 40. —or indeed anything which upsets the system and this includes, of course, too much drink.

Fig. 5 No. 58. *In the acute attack it is usually a comfort to wrap the joint in an ice pack.*

Fig. 6 No. 65. *You should know that colchicine in particular may give you diarrhoea and this will tell you that you have had enough.*

journalism, including advertising, entertainment, and more to the point of this study, education. Considering their generally accepted value as a vehicle for interpersonal communication, we were surprised that better results were not obtained by the patients who had read the multicartoon booklet.

We have not been able to explain these results satisfactorily, but one possibility is that an 'interest factor', due to the inevitable concern and attention patients exercise in reading material about their own disease, might make it more difficult for any potentially useful device, such as graphic illustration to show itself effectively. In favour of this idea it is worth pointing out that for 12 of the 14 questions the differences were within 8%, and those for 9 questions within 3%. These differences are very acceptable *biological* variations. It could be argued that this is strong evidence for an over-riding factor—either the inadequacy of the test or, more likely, the 'interest factor' mentioned previously.

Another possibility is that technical factors largely to do with page layout, have not enabled the beneficial effects of illustration to exert their maximal effect. The inclusion in some pages of as many as four cartoons per page was perhaps one source of error. This resulted in undue reduction in size of the graphic material and often considerable attenuation of the drawing line. This weakening of the graphic image was in some pages further added to by the weight of the caption print (Fig. 8). This imbalance would doubtless have tended to draw the eye away from the cartoon towards the print. Further analysis of our material from our previous study (Moll and Wright, 1972), has lent some support to this in that higher scores were obtained by patients answering questions based on material presented in bold type.

A further possibility is that the humorous nature of the material created a distracting effect in that its jocular impact may have over-ridden its instructional value. Further, and still in the context of the humorous nature of the material, the common observation that humorous material in other forms, particularly verbal jokes, is quickly forgotten (except by a minority who seem to have a special propensity for memorizing this sort of matter), may be relevant, though still not understood. The possibility that our testing technique was too insensitive is another possibility, although unlikely considering the large range of scores obtained by our patients.

Although the differences are small it is worth mentioning that the text+cartoons scored best. Intuitively, the Arthritis and Rheumatism Council in preparing their standard booklet may have hit on the best mode of presentation. Against this is the finding that the illustrated material in our first study scored worst. However, one may be seeing an overall impact, i.e. the relatively few cartoons of ARC booklets creating maximal interest and enjoyment, the 89 cartoons on the other hand representing an 'over-kill' and therefore an effect of varying interest.

A further study to explore these possible sources of error is currently being pursued (Moll, 1977).

5. ... Generals of Armies ...

6. ... and Admirals of Fleets ...

7. ... Philosophers and many others such as these are commonly affected.

Fig. 7 Three-cartoon layout.

87. GOUT IS NOW A TREATABLE DISORDER

88. THE ACUTE ATTACKS CAN BE RAPIDLY CONTROLLED ...

89. ... AND ARTHRITIS PREVENTED IF YOU SEEK EARLY TREATMENT AND FOLLOW YOUR DOCTOR'S INSTRUCTIONS.

Fig. 8 Page showing undue attenuation of cartoon line due to photographic reduction. Note also disparity between attenuated cartoon line and weight of caption print.

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References

- Arthritis and Rheumatism Council (1967). *Gout: A Handbook for Patients*. Arthritis and Rheumatism Council, London.
- Joyce, C. R. B., Caple, G., Mason, M., Reynolds, E., and Mathews, J. A. (1969). Quantitative study of doctor-patient communications. *Quarterly Journal of Medicine*, 38, 183-194.
- Ley, P., and Spelman, M. S. (1965). Communication in an out-patient setting. *British Journal of Social and Clinical Psychology*, 4, 114-116.
- Moll, J. M. H. (1977). A psychometric study of graphic devices in doctor-patient communication. (In preparation.)
- Moll, J. M. H., and Wright, V. (1972). Evaluation of the Arthritis and Rheumatism Council Handbook on Gout. An objective study of doctor-patient communication. *Annals of the Rheumatic Diseases*, 31, 405-411.

Appendix

MULTIPLE-CHOICE QUESTIONNAIRE ON ILLUSTRATED AND UNILLUSTRATED BOOKLETS ON GOUT

- (1) Gout:
 - (a) Has been known since before the time of Christ.
 - (b) Affects women more often than men.
 - (c) Affects the poor more often than the rich.
 - (d) Sufferers tend to be of more than average intelligence.
- (2) Is gout *caused* by:
 - (a) Drink
 - (b) Infection
 - (c) Inheritance
 - (d) Unknown factors.
- (3) Is gout:
 - (a) Due to too much uric acid in the body.
 - (b) Due to too little uric acid in the body.
 - (c) Neither of the above.
- (4) Modern drugs used in the treatment of gout can:
 - (a) Relieve gout pain.
 - (b) Prevent arthritis developing
 - (c) Reverse damage in gout which has progressed to arthritis.
- (5) The amount of uric acid in the system:
 - (a) Can be measured by a simple blood test.
 - (b) Is particularly useful as an index of progress in treatment.
 - (c) May be increased in relatives of gouty subjects who may not have symptoms.
 - (d) Can only be measured by complicated tests not usually available in general hospitals.
 - (e) Cannot be measured at all.
- (6) Gout:
 - (a) Only affects the big toe.
 - (b) Only affects joints other than the big toe.
 - (c) May affect the big toe as well as other joints.
- (7) If you injure a joint and it becomes painful or takes longer to get better than you would expect you should:
 - (a) Accept this and do nothing as this is normal in a gouty subject and will do no harm.
 - (b) Seek treatment from your doctor.
 - (c) Treat yourself with household remedies only
 - (d) Accept this and do nothing as there is no satisfactory treatment.
- (8) Which of the following may bring on an acute attack of gout:
 - (a) Worry
 - (b) Smoking
 - (c) Fatigue
 - (d) Surgical operation
 - (e) Injury
 - (f) Vegetarian diet
 - (g) Vitamin deficiency
 - (h) Excess alcohol
 - (i) Excess food
 - (j) Starvation
 - (k) Heavy red wines rather than gin or whisky
 - (l) Purine rich foods (e.g. offal and meat).
- (9) In a mild attack one or more of the following may be sufficient treatment:
 - (a) Massage
 - (b) Protection with a cage
 - (c) Exercise
 - (d) Hot poultice
 - (e) Ice pack
 - (f) Lead and opium lotion
 - (g) Immobility.
- (10) In a severe, acute attack your tablets (e.g. colchicine, phenylbutazone, or similar preparation):
 - (a) Should be taken at the beginning of an attack.
 - (b) Should be taken after the pain has been present for at least 2 hours.
 - (c) May be taken before the acute attack when some warning sign appears.
 - (d) Are effective in getting rid of uric acid only.
 - (e) Only relieve pain and have no action in preventing further attacks.

- (f) Sometimes cause side-effects such as diarrhoea.
- (g) Should never be taken without consulting your doctor, even though you may still have a supply given for a previous attack.
- (11) Lifelong and regular preventive treatment:
 - (a) Prevents attacks of gout occurring.
 - (b) Prevents uric acid crystals being deposited in the joints and other parts of the body.
 - (c) Keeps uric acid flushed out of the system.
 - (d) All of the above.
- (12) The main reason for ridding the body of uric acid is:
 - (a) Only because deposition of uric acid in the joints causes pain.
 - (b) Because deposition of uric acid causes permanent damage to the joints.
 - (c) Because uric acid lessens the patient's general feeling of well-being.
- (13) During regular preventive treatment the following points are important:
 - (a) Drink plenty of fluids to assist flushing out the uric acid.
 - (b) Perform rigorous exercises to flush out uric acid in the sweat.
 - (c) Expect the frequency and severity of attacks to take a month or more before dying away.
 - (d) Visible deposits of uric acid in the skin will tend to become smaller.
 - (e) Avoid aspirin as this interferes with treatment.
- (14) The new method to correct the tendency to accumulate uric acid:
 - (a) Reduces the amount of uric acid made by the body.
 - (b) Flushes uric acid from the system as with the old method.
 - (c) Must be taken regularly over a long term.
 - (d) May be taken with aspirin.
 - (e) Must be taken with large quantities of drinking fluid.