
Patient education leaflet for hypertension: a controlled study

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SUMMARY. This study attempts to answer the question: is a leaflet, designed according to criteria of likely effectiveness, actually more effective in practice than a standard patient education leaflet? A new leaflet was designed, its content determined by the responses of a sample of New Zealand general practitioners. Four matched groups of hypertensive patients were used to compare gain from an old leaflet (group 1), a new leaflet (group 2), a tape-slide programme plus a new leaflet (group 3); group 4 were controls. Group 3 showed the only significant educational gain.

Introduction

PATIENT education is attracting the attention of academic general practice and a number of factors have contributed to this. Among these are the advances in the behavioural sciences which have led to a greater awareness of (and facility in) communication skills; the changes in morbidity pattern that have resulted in more people with chronic medical problems; an increasing awareness that patients do not adhere to medical advice; the rise of consumerism; and the observation that people are often dissatisfied with information given them by their doctors, and that they soon forget much of what they have been told.

Personal influence may be a critical variable in the effectiveness of patient education.^{1,2} Certainly a number of determinants of good compliance have been shown to be associated with family practice—the presence of a regular as opposed to a substitute physician, clinic convenience and high patient satisfaction with a specific visit, therapist or clinic. Charney and colleagues³ showed that a mother was more likely to adhere to a medication regime if her child were examined by the regular family doctor rather than by his partner or some other doctor. Becker and associates⁴ found the mother more compliant when the physician had treated the child or siblings before and where the mother reported that she ‘generally sees the same physician’. Studies in general practice^{5,6} have frequently shown high levels of compliance when compared with similar studies from

hospital outpatient clinics. Drury and co-workers have suggested that the key factor in this high compliance level is the relationship between doctor and patient.

Currently popular patient education techniques are those based on theories of individualized learning. The implication is that in each individual doctor-patient encounter there should be three steps—an educational diagnosis, educational treatment, followed by monitoring and assessment. However, there are problems with this approach. It is time-consuming and repetitive. It requires a degree of adult-to-adult communication between doctor and patient less obvious in real doctor-patient encounters than in the ideal.

The problems with individualized instruction have led to the production of audiovisual materials for patient education, now a sizable industry with leaflets, audio- and videocassettes and films. There is wide variability in style and format, and little in the literature to suggest guidelines for effective use of these materials. The most simple, the most widely used and the most variable in style and format are leaflets.

Most reported studies relate to health education rather than to patient education. Young⁷ pointed out that evaluation of pamphlets is not often undertaken, and it could save health agencies thousands of dollars wasted each year on materials that serve no definite purpose. Whealy and Wake⁸ say:

‘Although the results of numerous surveys are published about reading habits of the populace and effectiveness of print in general, there does appear to be very little conclusive literature on the specific effects of pamphlets.’

Wellin⁹ conducted a study on the use and distribution of booklets on sodium restricted diets. The booklet was found to be too difficult for the patients to use.

Pike¹⁰ found in general practice that parents given a booklet on child care scored better in a questionnaire two or three weeks after reading the booklet, than before reading the booklet. The critical flaw in his study was the absence of a control group.¹¹

Gauld¹² found that women with acute urinary infections recalled information about their condition more completely when verbal advice was reinforced by written advice, than when verbal advice was given alone.

It is likely that the educational effectiveness of a printed leaflet will depend on its content, how well it

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conforms with proven methods of doctor-patient communication, how readable it is, the style and spatial organization of the text, its legibility and the appropriateness of its illustrations. A checklist of factors thought likely to influence leaflet effectiveness was developed after an extensive literature review.¹³ A number of patient education leaflets currently available in New Zealand for hypertension were examined according to the checklist and appeared to be inadequate.

This study attempts to answer the question: is a leaflet, designed according to criteria of likely effectiveness, actually more effective in practice than a standard patient education leaflet?

Method

A new leaflet was designed. Its content was determined by the responses of a sample of New Zealand general practitioners who were asked what facts and instructions they considered important for their patients with newly diagnosed hypertension to know. The style, layout and typography were all designed to adhere to the checklist. Because of the printing expense, illustrations were not used, but a tape-slide programme was produced according to the guidelines of Fyfe and Mainwaring.¹⁴ An earlier study had shown the tape-slide vehicle to be acceptable to patients in this general practice.¹⁵

A 50-item questionnaire was designed; the questions were aimed at evaluation, recall and understanding of the instructions and information given in the leaflet and tape-slide commentary. Demographic data were obtained about the patients, who were also asked whether or not they had been satisfied with their previous education about hypertension.

An experimental design used in education is similar to the controlled clinical trial. Learners (patients) are subjected to a pretest of their entry knowledge (initial assessment), then exposed to the educational experience (treatment), then post-tested to examine the gain (improvement). Pretesting may have variable effects on student performance. There may be no effect on the post-test results; the pretest questions may remind learners that they do know the answers; or there may be informal education between the tests. Post-test scores may therefore show improvement even in the absence of a formal learning experience. On the other hand the pretest may be perceived as so difficult that it actively dissuades the learner from learning. For these reasons it is essential to have a control group who are not exposed to any formal education.

Four age and sex matched groups from a random sample of 100 hypertensive patients in one doctor's general practice were examined according to the format shown in Table 1. All patients were 'educated' individually immediately after the pretest. Group 1 simply took the old leaflet home, group 2 the new leaflet, group 3 were shown the tape-slide programme (15 minutes) and took the new leaflet, group 4 were controls who received no formal education. The old leaflet used for comparison was one from the New Zealand National Heart Foundation which gives all the facts and instructions regarded as important, but in a less attractive and more difficult layout, according to the checklist criteria.

Results

Eighty-seven patients completed the study. Those who did not complete it either considered themselves too aged or infirm (two), gave no reason (five), had died or could not be contacted (five), or failed to return for

Table 1. Format of the controlled study. All groups were pretested and post-tested.

Group	Education
1	Old leaflet
2	New leaflet alone
3	New leaflet and tape-slide programme
4	None (control)

Table 2. Mean pretest scores.

Group	Pretest score	Number of patients
1	32.27 ± 5.85	22
2	30.63 ± 7.14	19
3	29.13 ± 7.71	23
4	30.56 ± 6.63	23
Total number of patients		87

Analysis of variance between groups: $F=0.787$; $P=0.5044$.

follow-up (one). When compared with respect to age, sex, marital status, socio-economic level, educational level, duration of hypertension and whether or not they were symptomatic or asymptomatic at the time of the first diagnosis, no significant differences among the four groups were found.

Pretest

One mark was awarded for each correct response in the 50 pretest questions administered 'blind' to all patients by one interviewer from outside the practice. The score was added for each individual. Mean pretest scores among the four groups were not significantly different (Table 2). The amount of knowledge about hypertension was not related to sex, socio-economic level, duration of diagnosis, or how satisfied patients had been with their previous education about hypertension. On the other hand, the younger, better educated, married person with hypertension was likely to know more about the condition than his or her older, less well educated, single counterpart.

Gain

The same 50 questions were administered one week later by the same interviewer as a post-test. The pretest score was subtracted from the post-test score to give an analysis of gain. Results for the four groups are shown in Table 3.

It can be seen from the gain for group 4 (the control group) that the process of pretesting has positively influenced the post-test score. In fact the gain for group

Table 3. Mean gain (post-test minus pretest scores).

Group	Gain	SD
1	2.23	5.20
2	5.32	5.52
3	7.87	4.64
4	3.91	4.51

Analysis of variance between groups: $F = 5.23$; $P = 0.0023$.

4 is greater than that for group 1 so that the old leaflet may actually have had a negative influence on learning. The gain for group 3 (new leaflet and tape-slide programme) is highest and for group 2 (new leaflet alone) is second highest. However, when the data are subjected to the Mann-Whitney U test, only the gain for group 3 is significant ($P = 0.0007$). In order to compare gain with other variables in the four groups, computer-generated scatter diagrams were made, and analyses of variance were carried out; no significant correlations with gain were found for any of the variables except for the style of education presented. No differences were shown in patients' preference for the type of education used in groups 1, 2, or 3.

Discussion

It is not possible to differentiate among the many factors possibly contributing to the gain achieved by the new leaflet and tape-slide programme, but it is interesting to speculate that the use of illustrative material, or the 'personal influence' factor of their own family doctor's voice on the tape, may have been important. In any event it appears that without the tape-slide programme to reinforce its message, the new leaflet alone offered little advantage over the control situation.

All three methods showed a gain on the pretest score, however, a result that reinforces the necessity of a control group in these kinds of studies.

There are a number of shortcomings in this study. First, the established hypertensives, despite the gaps in their knowledge, scored quite highly in the pretest; a group of newly diagnosed hypertensives might have fared differently, but separation of a control ('not to be educated') group from a group of new patients would be difficult to justify ethically. Second, many of the layout features of the new leaflet were designed to enhance later scanning of the leaflet at rereadings; we do not know what patients do with leaflets, and a further post-test much later would be needed to assess the value of the new leaflet in this respect. Third, the educative experience was, to an extent, artificial. The general practitioner purposely did not participate in the educative process further than in his previous contacts with the patients, all of whom had shown their compliance

by the fact that they were established hypertensives on therapy. Again, a newly diagnosed group, with follow-up personal interviews with the doctor (as in the real situation) may have fared differently.

Even long-established hypertensives were unaware of important information about their condition: further research into the use and effectiveness of audiovisual materials is needed. Possibly the best approach will prove to be the use of these materials as a time-saving adjunct to the 'individualized' personal interview.

References

- Glogow E. Effects of health education methods on appointment breaking. *Public Health Rep* 1970; **85**: 441-450.
- Roberts B. An experimental study of two approaches to communication. *Am J Public Health* 1963; **35**: 1364-1381.
- Charney E, Bynum R, Eldredge D, et al. How well do patients take oral penicillin? A collaborative study in private practice. *Paediatrics* 1967; **40**: 188-195.
- Becker MH, Drachman RH, Kirsh JP. Predicting mothers' compliance with paediatric medical regimens. *J Paediatr* 1972; **81**: 843-854.
- Drury VWM, Wade OL, Woolf E. Following advice in general practice. *J R Coll Gen Pract* 1976; **26**: 712-718.
- St George IM. Compliance with follow-up advice after acute illness in general practice. *NZ Fam Physician* 1979; **7**: 17-18.
- Young MAC. Review of research and studies related to health education communication: Methods and materials. *Health Education Monographs* 1967; **25**: 33.
- Whealy E, Wake FR. Pamphlets and changes in behaviour: experimental evidence. *Can J Public Health* 1963; **54**: 73-80.
- Wellin E. *Study of utilization and distribution of sodium-restricted diet booklets*. American Heart Association: New York, 1962.
- Pike LA. Teaching parents about child health using a practice booklet. *J R Coll Gen Pract* 1980; **30**: 517-519.
- Freer CB. Booklets for patients. *J R Coll Gen Pract* 1980; **30**: 757.
- Gauld VA. Written advice: compliance and recall. *J R Coll Gen Pract* 1981; **31**: 553-556.
- St George IM. The development of a checklist for leaflet effectiveness. In: *Patient education by AV techniques*. Dip. Ed. paper. University of Otago, New Zealand, 1982.
- Fyfe TW, Mainwaring G. Preparing an individual learning unit. Unit 2: tape and tape-slide units, part 1 & 2. Dundee College of Education L R No. LER/10475, 1975.
- St George IM. Is a tape-slide machine acceptable to patients in general practice? *NZ Fam Physician* 1982; **9**: 77.

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