Patients' responses to risk information about the benefits of treating hypertension

David Misselbrook and David Armstrong

SUMMARY

Background: *The medical profession is often presented with information on the value of treatment in terms of likely risk reduction. If this same information was presented to patients — so enabling them to give proper informed consent — would this affect their decision to be treated?*

Aim: *To examine patients' choice about treatment in response to different forms of risk presentation.*

Design of study: *Postal questionnaire study.*

Setting: *The questionnaire was sent to 102 hypertensive patients and 207 matched non-hypertensive patients aged between 35 and 65 years in a UK general practice.*

Methods: *Patients were asked the likelihood, on a four-point scale, of their accepting treatment for a chronic condition (mild hypertension) on the basis of relative risk reduction, absolute risk reduction, number needed to treat, and personal probability of benefit.*

Results: *An 89% response rate was obtained. Of these, 92% would accept treatment using a relative risk reduction model, 75% would accept treatment using an absolute risk reduction model, 68% would accept treatment using a number needed to treat model, and 44% would accept treatment with a personal probability of benefit model.*

Conclusion: *Many patients may prefer not to take treatment for mild hypertension if the risks were fully explained. However, given that the form of the explanation has a strong influence on the patient's decision, it is not clear how decision-making can be fully shared nor what should constitute informed consent to treatment in this situation.*

Keywords: *risk; patient choice; informed consent; hypertension.*

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Introduction

A NUMBER of studies have shown that clinicians' understanding of the effectiveness of treatment can be influenced by the way in which evidence is presented. For example, when findings from clinical trials are presented to clinicians in terms of relative risk reduction and number needed to treat (NNT) it has been found that an apparently large relative risk reduction creates a more favourable view of effectiveness than the NNT statistic,[1] despite the preference of trialists for the latter figure.[2,3]

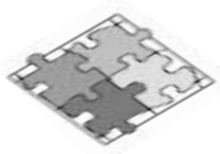
Given the increasing importance accorded to patients' involvement in decision-making it can be argued that they too have the right to know the risks they accept in undertaking treatment. There is some evidence that positive and negative framing (for instance, '95% of patients survive this operation' versus '5% of patients do not survive') influences patients' decisions[4,5] and that when presented with a hypothetical disease and treatment patients seem more inclined to accept treatment when it is offered in terms of relative risk reduction;[6,7] however, it is not clear what the effect on decision-making would be if patients were presented with the same range of risk information that is available to doctors.

Hypertension is a relatively common primary care problem that has been clearly documented as a risk factor for vascular morbidity and mortality.[8,9] Moreover, the benefits to populations from treating essential hypertension have been well demonstrated.[10-13] However, this evidence is based on population-based data and not all treated patients can expect to benefit.[14] Indeed there is some evidence of disbenefit from treatment, such as side-effects of medication,[15,16] diffuse but significant negative effects on a patient's (or spouse's) well being from an illness label,[17,18] or even from the process of screening itself.[19,20] This study therefore examined patients' responses to different forms of risk presentation of the benefits of treating mild hypertension.

Methods

The study involved a postal survey of a group of hypertensive patients aged 35 to 64 years together with a matched group of non-hypertensive patients drawn from a practice in a council housing estate in south London that has a Jarman score of 29.6. All of the practices' hypertensive patients aged between 35 and 64 and without known end-organ damage were identified from the practice computer. An age–sex matched group of patients without recorded hypertension in a ratio of 2:1 were then selected from the practice register. Patients were excluded from the study if they were known to be illiterate, suffered from serious mental health problems, had already suffered a cardiovascular event (myocardial infarction, stroke or angina), had major disabili-

HOW THIS FITS IN



What do we know?
How clinical information is presented seems to have an effect on patients' decisions to accept treatment.

What does this paper add?
The willingness of patients to accept treatment for mild hypertension varies with the way in which risk information is presented. The belief that patients accepting treatment for mild hypertension have given (tacit) informed consent may not be correct, though it remains unclear which risk statistic would imply being fully informed.

ties or major chronic illnesses (e.g. diabetes), or had suffered major adverse life events (such as bereavement) in the previous six months.

All patients in the study were sent a questionnaire that asked them to compare the advantages and disadvantages of treating mild hypertension and whether they themselves would accept treatment on the basis of the given information. To exclude preconceived ideas about the dangers of high blood pressure and to avoid challenging patients currently taking antihypertensive therapy, mild hypertension was relabelled as a hypothetical Stroke Prediction Factor 2, 'SPF 2', and patients were asked to suppose that this was a risk factor for stroke. In effect, patients included in the study remained blind to the focus on hypertension.

A brief statement listed possible disbenefits of treatment. These included side-effects that could usually be managed by choosing the right medication and some of the inconvenience involved in taking regular medication. The probability of benefit from taking medication was expressed in terms of reducing the risk of stroke as this is generally agreed to be the main benefit from the treatment of mild hypertension. Risk reduction was presented using three different (and commonly recognised) statistics, the last of which was presented in two different ways; all figures were derived from the 1985 MRC Mild Hypertension Trial.[12] The figures were: relative risk reduction, absolute risk reduction, NNT, and the personal probability of benefit. These statistics were expressed in the sort of statement that a GP might use with a patient. In response to each of the four framing statements, patients were invited to tick one of four choices ('yes, definitely', 'yes, maybe', 'no, probably', and 'no, definitely') indicating whether they would choose treatment. The framing statements are shown in Figure 1 together with the underlying risk model.

The questionnaire also included questions on the patient's age, sex, housing tenure, whether or not someone close to them had had a stroke, and whether or not they were taking regular medication for another chronic medical problem.

Following a pilot survey, the final questionnaire was sent by post to the study sample with a brief covering letter on practice notepaper emphasising the voluntary and confidential nature of the study. A response was encouraged by entry into a prize draw. Two follow-up questionnaires were sent to non-responders.

Data from the questionnaires were entered onto computer and analysed using SPSS for Windows. The Mann–Whitney U and chi-square tests were used to compare the age and sex characteristics respectively of responders and non-responders. The relationship between patient characteristics and framing question response was explored using the Mann–Whitney U test.

Now imagine your doctor discovered that you suffered from 'SPF 2'. Please tick the answer that is closest to how you would react:

1. Would you take the pills described above if they reduced your risk of having a stroke by 45%? *(risk reduction model*)
2. What if you were unlikely to have a stroke, so that it worked out that in a year you would have only a 1 in 400 chance of having a stroke, but the pills could reduce this to a 1 in 700 chance? Would you take the pills? (*absolute risk reduction model*)
3. If the doctor had to treat 35 patients for 25 years in order to prevent one stroke, do you think it would be worth taking the treatment for yourself? (*number needed to treat model*)
4. If the tablets had a 3% chance of doing you good by preventing a stroke and a 97% chance of doing no good or not being needed in your case would you take them? (*personal probability of benefit from treatment model*)

Figure 1. Risk framing questions (with underlying model in parenthesis).

Results

Out of 131 hypertensive patients identified by the practice computer, 25 were excluded because they had end-organ damage and a further four were excluded because of psychological problems. This meant that 309 questionnaires were sent to 102 hypertensive patients and 207 normotensive patients. Usable questionnaires were returned by 89 hypertensive patients and 187 normotensive patients (response rates of 87% and 90% respectively) giving an overall response rate of 89%. The age and sex of non-responders was obtained from the practice database. There were no significant differences between responders and non-responders by age or sex.

Table 1 shows patients' decisions on whether they would take treatment for a given risk presentation. Patients gave different responses to all four questions: for relative risk reduction most patients would accept treatment; however, for personal probability of benefit a narrow majority would decline.

Hypertensive patients reported themselves significantly more willing (Mann–Whitney U = 6688; $P<0.01$) than non-hypertensive patients to take treatment when presented with relative risk reduction data, but otherwise showed no significant differences in choices. Patients already taking medication for another chronic medical problem were also likely to be more swayed by relative risk reduction data (Mann–Whitney U = 7666; $P<0.001$).

There were no significant differences in responses to any of the risk data by age, sex, housing tenure or familiarity with stroke.

Discussion

This study has shown that different forms of risk presentation produced markedly different decisions on whether to accept treatment for hypertension. Although based on only

Table 1. Risk and treatment.

Would you take treatment?	Relative risk reduction (%)	Absolute risk reduction (%)	Number needed to treat (%)	Personal probability of benefit (%)
Definitely	180 (65)	129 (47)	96 (35)	50 (18)
Maybe	75 (27)	79 (29)	92 (33)	71 (26)
Probably not	14 (5)	46 (17)	63 (23)	91 (33)
Definitely not	7 (3)	22 (8)	25 (9)	64 (23)
Proportion accepting treatment (95% CI)	92% (89–96%)	75% (70–80%)	68% (63–74%)	44% (38–50%)

one practice, some support for the generalisability of the findings can be drawn from the similar results obtained by analogue studies from the United States that compared responses to absolute and relative risk.[6,7] However, in the study reported here it was possible to show that, except for a difference in responding to relative risk reduction information, the responses of patients with hypertension were no different to those without. This suggests that, not only was the study successful in masking the condition being presented but also that patients with hypertension are no more risk averse than normotensive patients. Similarly, for those patients already taking medication for a chronic condition, there seemed no marked preference for taking or avoiding additional treatment.

In making a treatment decision there are two questions to consider. First, what are the possible advantages and disadvantages of taking the treatment? Secondly, what are the chances of any of these advantages and/or disadvantages occurring? This study addressed the latter question, in particular the effect of presentation style on treatment decision. However, the first question, namely the potential advantages and disadvantages of treatment, will inevitably have an important effect on the response to the second. No doubt preliminary statements that either stressed the potential harms of a stroke or emphasised the side-effects of treatment would have influenced the level of risk that responders were willing to accept; though, arguably, the overall pattern across the four risk presentations would have shown similar variability to that found. This means that the presentation of the bald risk statistic in 'everyday' language — important to ensure full comprehension — may itself have been a source of bias. It may be possible to manipulate experimentally the form of the explanation, though making a complete separation of the cost–benefit equation from the judgement about risk probabilities would be difficult to achieve.

So, what are the implications of a finding that the way of presenting the same risk data affects the patient's decision about whether or not they would accept treatment? First, it has implications for the medical management of mild hypertension. The guidelines of the British Hypertension Society reflect the conventional view that it should be treated;[21] though, as Hart recognised, this could involve between 10% and 30% of the adult population.[22] Yet it would seem that, when presented with risk information, patients might choose not to follow this line of advice. At the very least patients should be entitled to share in the decision-making, as it is their subjective evaluation of risk that may tip the balance one way or another and fully informed consent may well improve adherence to whatever the chosen treatment. Without such involvement the management of hypertension is based on a paternalism that may not only override patients' wishes but also risk medicalising the population further.

However, this (surely proper) emphasis on patient involvement is clouded by the second issue raised by this study, namely what is to count as informed consent. It is clear that a doctor is in a very powerful position to influence patient choice, not only by stressing certain advantages or disadvantages of treatment but also, as shown here, by presenting risk information in a certain way. Even should a doctor wish to encourage patient involvement this cannot be a dispassionate process if the framing of statements carries an implicit response bias. Informed consent becomes an elusive goal if the style of framing risk information influences patient response.

General practitioners have been urged to use the NNT statistic as the basis for treatment decisions, and to use it to convey benefits and risks to the patient.[23] If patients were given this information then a sizeable proportion may choose not to take treatment for their mild hypertension. On the other hand, it might be argued that patients should be encouraged to use the personal probability of benefit statistic as their task is to consider their own well being alone. This would imply an even larger group of current hypertensive patients declining medication. This raises the possibility that patients would also decline treatment for many other conditions where they considered the probability of benefit was not sufficiently persuasive.

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