

# Who is targeted for lifestyle advice? A cross-sectional survey in two general practices

PAUL LITTLE

LUCY SLOCOCK

SIMON GRIFFIN

JOHN PILLINGER

## SUMMARY

**Background.** Recent health promotion guidelines reimburse primary health care teams for targeting lifestyle advice to patients at risk of cardiovascular disease. However, it is unclear whether primary health care teams do target advice, who is targeted, and whether the advice is acted upon.

**Aim.** To assess which factors predict the targeting and recall of lifestyle advice.

**Method.** A total of 370 patients with, and 192 without, a computer record of risk factors for cardiovascular disease (hypertension, diabetes, ischaemic heart disease/myocardial infarction/angina, a body mass index  $\geq 30$ ) from two contrasting Wessex practices were sent a postal questionnaire about medical conditions, recall of lifestyle advice, current lifestyle, and their perceptions about the health of their lifestyle.

**Results.** Seventy-seven per cent of patients responded. There was good agreement between listed risk factors and patients reporting a risk factor ( $\kappa = 0.60$ ), which was similar for both sexes and better in older age groups. Recall of lifestyle advice was not significantly affected by practice, but was more likely in patients with listed risk factors (adjusted odds ratio [OR] = 4.62, 95% confidence intervals [CI] = 2.89–7.37) and in men (OR = 1.64, 95% CI = 1.07–2.52), and less likely in older age groups (age  $\geq 64$  years = 1.00; 65–74 years = 0.47, 95% CI = 0.27–0.81; 75+ years = 0.34, 95% CI = 0.20–0.60). Of patients with listed risk factors, 27% could not recall having received any advice, and recall varied with medical condition. Only 40% of patients with reported high blood pressure recalled being given advice about salt. Those who recalled advice were more likely to report a healthier current lifestyle. Of those with unhealthy lifestyles, 30–50% were unaware that their lifestyle was unhealthy.

**Conclusion.** Lifestyle advice is not recalled for some important risk factors, and some patients are unaware of their unhealthy lifestyle. Although advice is being preferentially targeted to those with risk factors, women and older patients recall advice less. Research is needed to assess the cost-effectiveness of advice for both sexes and different ages.

**Keywords:** lifestyle advice; risk factors; cardiovascular disease; questionnaires.

P Little, MD, MRCP, MRCPGP, GP Wellcome training fellow; L Slocock, BA, medical student; and S Griffin, MSc, MRCPGP, GP Wellcome training fellow, Primary Medical Care, University of Southampton. J Pillinger, MRCPGP, general practitioner, Highcliffe Medical Centre, Hampshire. Submitted: 27 May 1998; final acceptance: 14 April 1999.

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## Introduction

SINCE cardiovascular disease is the major cause of premature death in the United Kingdom, in the *Health of the Nation* document<sup>1</sup> the government set targets for the major cardiovascular risk factors. The government has also recently implemented a health promotion package for primary care aimed at modifying risk by lifestyle assessment and appropriate advice among both high-risk groups and the population as a whole.<sup>2</sup>

Brief advice is probably the most common and widely available lifestyle intervention from a health care professional; normally the general practitioner (GP) or practice nurse. But how effective is brief advice as an intervention? Patients who recall receiving advice about a lifestyle factor are more likely to report changes in behaviour,<sup>3</sup> and giving patients a leaflet was as effective in reducing cholesterol as more intensive approaches.<sup>4</sup> Although there is insufficient trial evidence of the effectiveness of brief advice, it was promoted by the government and is an inexpensive intervention. Currently the only information on the amount of advice that patients recall receiving is from a cross-sectional survey seven years ago<sup>3</sup> — which showed that less than 50% of patients received appropriate advice that could help them to reduce their risk of cardiovascular disease<sup>3</sup> — and from a study in hypertensive patients in whom 70% recalled receiving advice, but targeting of specific areas was poor.<sup>5</sup> Since this time, the government has placed increased emphasis on lifestyle advice as an important part of the prevention of cardiovascular disease.<sup>2</sup> But are primary health care professionals appropriately targeting advice to high risk groups, and are patients acting on it?

This study documents — in a patient population of 18 000 individuals served by approximately 22 doctors and nurses in two practices — how much lifestyle advice patients can recall receiving from a health care professional, whether it is being appropriately targeted to patients at risk, and whether those who can remember receiving advice report acting on it.

## Method

### Setting

Two practices were chosen that provided a good contrast of patient and practice characteristics. One was a non-fundholding practice linked to an academic unit with the equivalent of 4.5 full-time doctors — including three part-time GPs with a special interest in health promotion — 2.5 full-time practice nurses, and two district nurses serving a deprived urban area with 8053 registered patients of whom 11.3% were over 65 years old. The second practice was a semi-rural, fundholding practice with 5.8 whole-time equivalent doctors, 3.5 nurses, and 4.2 district nurses serving a more affluent retirement area, with 10 328 registered patients of whom 45% were over 65 years old. They are both teaching and training practices, and both achieved health promotion band 3<sup>2</sup> — as did nearly all practices nationally.

### Patient sample

Patients were identified from practice computer records. Two groups were selected at random using a computer-generated list:

1. 370 patients who had a computer record of cardiovascular risk factors: diabetes, angina/ischaemic heart disease, stroke,

hypertension, hyperlipidaemia, and/or BMI >30;

- 192 patients not recorded as having any of the above cardiovascular risk factors.

**Exclusions.** Patients with dementia, patients with psychoses, and patients with nursing home residency were excluded from the study.

*Sample size calculation (for alpha = 0.05 and 1-beta = 0.8 using Epi Info)*

Based on previous estimates, to detect a 15% difference in levels of advice recalled between the group with recorded risk factors and those without recorded risk factors, and assuming a response rate of 50% in the group without risk factors and 70% in the group with risk factors, required a minimum of 160 patients in the non-risk factor group and 340 in the risk factor group.

### Questionnaire

The questionnaire comprised a section on sociodemographic characteristics, whether the patient recalled being told that they had cardiovascular risk factors (angina/heart attack, high blood pressure, obesity, high cholesterol, stroke, and diabetes) and, based on the previous study,<sup>3</sup> whether they recalled lifestyle advice in relation to fat in the diet, fibre in the diet, salt, fruit and vegetables, exercise, alcohol, and smoking. In addition, reported diet and exercise were assessed using two previously validated instruments: DINE<sup>6</sup> and GODIN.<sup>7</sup> There were also questions on perceived health in relation to specific aspects of lifestyle. The validity of patient responses was assessed by comparing patient-reported risk factors and computer-listed risk factors.

As there were only two patients under the age of 50 years in the risk factor group, the sample for the non-risk factor group was taken from the over-50s only. The questionnaire was mailed to all patients in the random sample and then again after three weeks to non-responders.

### Analysis

Dietary fat and fibre intake were classified as high, moderate, and low according to the DINE scoring method,<sup>6</sup> and exercise was scored using the GODIN scoring method.<sup>7</sup> Patients were classified as being in the low exercise category if they were taking less than the equivalent of three sessions of 15 minutes of moderate exercise (brisk walking or equivalent) per week.

The data was analysed using SPSS and STATA for Windows, with chi-squared and Mann-Whitney U tests to test for the significance of differences in proportion and medians respectively. To assess which factors predict receiving advice, statistical models were built using logistic regression. Variables were included in the model by forward selection if they were significant at a 5% level and if there was no evidence of significant multi-collinearity.

## Results

### Non-response

Table 1 shows the characteristics of the survey. A total of 432 patients (77%) returned their questionnaires, although data on recall of lifestyle advice was only available in 428 patients. Non-responders were more likely to be male and under 65 years old.

### Recall of advice

Patients with listed computer risk factors were much more likely to recall advice (73%) compared with those without risk factors (48%) (Table 2), but a significant minority of patients at risk (27%) did not recall any advice. There was no significant effect

of the practice patients were registered with, and there was no interaction between practice and age, sex, or computerized risk factors (likelihood ratio:  $\chi^2 = 0.58$  [ $P = 0.45$ ],  $\chi^2 = 0.04$  [ $P = 0.85$ ],  $\chi^2 = 0.44$  [ $P = 0.51$ ], respectively). There was also no significant effect of educational level, but women and older patients were less likely to recall receiving advice. There was no interaction between computer-listed risk factors and either age or sex (likelihood ratio:  $\chi^2 = 2.21$  [ $P = 0.33$ ],  $\chi^2 = 1.54$  [ $P = 0.21$ ], respectively) or between age and sex ( $\chi^2 = 0.31$  [ $P = 0.86$ ]). Patients who reported medical risk factors were much more likely to recall advice (adjusted OR = 3.27, 95% CI = 1.97–5.41); i.e. a similar estimate to computer-listed risk factors (Table 2). There was good agreement between patient recall of risk factors and the computer record of risk factors (81.9% concordance, kappa = 0.60), and the agreement increased with age: for <65 years, 65–74 years, and 75+ years age groups, the percentage agreement was 74%, 85%, and 87% respectively (kappas = 0.48, 0.64, and 0.68 respectively) and was similar for both sexes (agreement for men and women = 85% and 80% respectively, kappas = 0.64 and 0.57 respectively). This not only supports the reliability of patient responses, but also suggests that the differences in recall of advice by sex are not related to possible inherent recall differences between the sexes, and that age-related memory loss cannot explain the reduced rates of recall of advice in older age groups (also see exclusions).

Tables 3 and 4 show that most people reporting risk factors recalled advice, but that there was considerable variability according to condition, even when adjusting for the presence of other conditions and age and sex. Recall of some advice was universal for diabetes but there were lower figures for hypertension: 26% could not recall any advice, only 40% recalled being given advice on salt, and 48% advice on exercise.

### Current lifestyle and perceptions of lifestyle

Although there was only complete data of reported current lifestyle for a smaller subsample — for 60% of patients who returned the questionnaire — patients who recalled advice were more likely to report healthier lifestyles (Table 5). After adjusting for other predictors (age, sex, and computerized risk factors if appropriate), patients who perceived their lifestyle to be healthy for fat, fibre, and exercise were much less likely to report a high fat diet (OR = 0.44; 95% CI = 0.23–0.82, a low fibre diet (OR = 0.32; 95% CI = 0.13–0.81), and sedentary leisure time (less than three sessions of 15 minutes of moderate exercise per week: OR = 0.18; 95% CI = 0.10–0.34). However, of patients reporting a healthy diet regarding fat, 80 (34%) had high fat diets. Similarly, for fibre, only 57 (30%) patients reporting a healthy diet for fibre had a low fibre diet, and 126 (57%) of those perceiving their exercise was healthy took less than three sessions of 15 minutes of brisk walking, or equivalent exercise, per week.

## Discussion

To our knowledge this is the first study since the government's health promotion package<sup>2</sup> to assess the recall of lifestyle advice among the intended 'target' population at high risk of cardiovascular disease. The study suggests that advice is being targeted to those at risk, that those who recall advice are more likely to report healthier lifestyles, but that there is variation between conditions, evidence of age and sex bias, and a mismatch between health perceptions and lifestyle for many patients. Before discussing the results in detail, the potential limitations of the study will be discussed.

**Table 1.** Characteristics of the survey sample.

	Responders (n = 432)		Non-responders (n = 130)
	Percentage with no listed risk factors (n = 148)	Percentage with listed risk factors (n = 284)	Percentage
Response rate	76.9	76.8	N/A
Male	40.4	45.4	53.7
Age 65 years and over	51.4	74.3	46.3
Educated over age 16	39.2	30.3	N/A

**Table 2.** What factors predict recall of lifestyle advice?

	Recall advice n (%)	Don't recall advice n (%)	Crude odds ratio (95% CI)	Adjusted odds ratio (95% CI) <sup>a</sup>	LR c <sup>2</sup>	P-value
Sex (male)	131/268 (49)	57/159 (36)	1.71 (1.14,2.56)	1.64 (1.07,2.52)	5.20	0.02
Age (years)						
<64	101/268 (38)	44/160 (28)	1.00	1.00	15.76	<0.001
65–74	85/268 (32)	53/160 (33)	0.70 (0.43–1.14)	0.47 (0.27–0.81)		
75+	82/268 (31)	63/160 (39)	0.57 (0.35–0.92)	0.34 (0.20–0.60)		
				z for trend = -3.74 P<0.001		
Higher education (over age 16)	82/268 (31)	59/160 (37)	0.75 (0.50–1.14)	0.88 (0.56–1.38)	0.31	0.58
Registered practice <sup>b</sup>	137/267 (51)	102/160 (64)	0.60 (0.40–0.90)	0.71 (0.45–1.12)	2.21	0.14
Listed computer risk factors <sup>c</sup>	205/268 (77)	77/160 (48)	3.51 (2.31–5.34)	4.62 (2.89–7.37)	44.74	<0.001

<sup>a</sup>Adjusted mutually for age, sex, and computer-listed risk factors; <sup>b</sup>registered with rural, fundholding practice; <sup>c</sup>hypertension, body-mass index  $\geq 30$ , ischaemic heart disease/angina/myocardial infarction, diabetes, hyperlipidaemia, stroke. Denominators vary owing to missing data.

**Table 3.** Percentage of patients with each condition recalling lifestyle advice according to the medical condition reported by the patient.

Recollection of advice	Recall [n (%)] in patients with condition	Recall [n (%)] in those without condition	Crude odds ratio (95% CI)	Adjusted odds ratio <sup>a</sup> (95% CI)	Likelihood ratio Chi-squared test (P-value)
Hypertension	146/198 (74%)	116/222 (52)	2.57 (1.70–3.87)	2.44 (1.48–4.02)	12.5 (P<0.001)
Ischaemic heart disease	74/87 (85%)	175/313 (56)	4.49 (2.39–8.43)	4.80 (2.31–10.00)	20.1 (P<0.001)
Hyperlipidaemia	71/78 (91%)	179/322 (56)	8.10 (3.62–18.16)	5.16 (2.17–12.28)	17.6 (P<0.001)
Stroke	15/18 (83%)	228/376 (61)	3.24 (0.92–11.4)	3.00 (0.74–12.17)	2.7 (P = 0.10)
Obesity	80/94 (85%)	165/305 (54)	4.84 (2.63–8.93)	3.54 (1.74–7.20)	13.9 (P<0.001)
Diabetes	28/28 (100%)	216/366 (59)	N/A	N/A	

<sup>a</sup>Adjusted for age, sex, and mutually for other medical conditions listed.

### Response rates

The response rate was high, 76.8% overall, with responders being more likely to be female and aged over 65 than non-responders, which could underestimate the overall advice levels in the true population; however, because of the high response rate, this effect is likely to be small.

### Generalizability of the data

Although both practices were teaching and training practices, the two practices chosen displayed contrasting features, in particular

in their interest and research into health promotion, academic links, geographical settings, and the age and social class distributions of their patients. Despite these contrasts, the adjusted results did not differ significantly between the practices and there was no evidence of an interaction between the practice and the significant predictors of recall. Nevertheless, the training and computerized status of both practices could have made screening and targeting of patients for lifestyle advice more likely — i.e. possibly overestimating the extent of lifestyle advice: this is not likely to be significant, since there is very little difference between the rates of lifestyle advice recalled in this study and in

**Table 4.** Number (%) for each patient with a reported medical condition who recalls receiving specific lifestyle advice.

	Recollection of advice about:						
	Fat	Fruit	Exercise	Salt	Fibre	Smoking <sup>a</sup>	Any
Hypertension (n = 200)	89 (45)	96 (48)	97 (48)	80 (40)	94 (47)	11 (69)	146 (74)
Ischaemic heart disease (n = 87)	56 (64)	54 (62)	50 (58)	38 (44)	56 (64)	5 (100)	74 (85)
Hyperlipidaemia (n = 78)	66 (85)	54 (69)	51 (65)	40 (51)	59 (76)	6 (75)	71 (91)
Stroke (n = 18)	10 (56)	12 (67)	10 (56)	9 (50)	10 (56)	2 (100)	15 (83)
Obesity (n = 94)	65 (69)	63 (67)	63 (67)	42 (45)	60 (64)	4 (67)	80 (85)
Diabetes (n = 28)	24 (86)	25 (89)	19 (68)	14 (50)	20 (71)	5 (100)	28 (100)

<sup>a</sup>For smokers only.

**Table 5.** Recall of specific past lifestyle advice about fat, fibre, and exercise, and current reported lifestyle.

	Recalled advice n (%)	Did not recall advice n (%)	Mantel-Haenzel chi-squared for trend
Dietary <sup>a</sup> fat			
Low fat	76/112 (68)	102/176 (58)	
Moderate	26/112 (23)	48/176 (27)	
High fat	10/112 (9)	26/176 (15)	3.4; P = 0.066
Dietary <sup>a</sup> fibre			
Low fibre	28/104 (27)	52/143 (36)	
Moderate fibre	23/104 (22)	41/143 (29)	
High fibre	53/104 (51)	50/143 (35)	5.3; P = 0.021
	Median (interquartile range)	Median (interquartile range)	Mann-Whitney U test
Exercise			
Godin score <sup>b</sup>	20 (8–32)	17 (5–24)	z = -1.; P = 0.051

<sup>a</sup>Categories from DINE questionnaire; <sup>b</sup>GODIN score: a change of 5 represents one episode of 15 minutes of moderate activity (e.g. brisk walking) per week.

a large national study for hypertension predating the recent reimbursement guidelines<sup>5</sup> — suggesting that these findings are likely to be generalizable.

### Reporting bias

Recall of advice is not 'objective' and has other problems:

- Advice may not be recognized as advice when it is being given
- Patients may not remember receiving the advice they have been given
- People may not accurately recall the source of the advice.

However, Pill *et al*<sup>8</sup> showed that, when advice-giving has been recorded in a patient's notes, 77% of patients recalled having received that advice many years later and also recalled its source and content. We have shown through internal validation that there is a high level of agreement ( $\kappa = 0.60$ ) between computer-listed risk factors and patient-reported risk factors. This further reinforces the reliability of patient recall. Furthermore, whether a patient *remembers* the advice they have been given is an essential part of successful health promotion. Thus, patient recall is likely to be a useful and reasonably reliable way of estimating the effective delivery of advice.

### Targeting of advice

Although advice is preferentially targeted to those at risk, there has been little change since the previous study in hypertensive patients<sup>5</sup> and there were differences according to reported medical condition. All diabetics could recall some lifestyle advice, but patients with hypertension less so, even though there is evi-

dence that changing lifestyle behaviour can play an important role in the management of hypertension.<sup>9–14</sup> There is clearly a need to improve delivery and uptake of non-pharmacological advice to patients.

### Advice and the elderly

In our sample the elderly did not recall as much advice as those aged under 65 years, which supports previous evidence in a population of hypertensive patients.<sup>5</sup> It could be argued that elderly people are less likely to remember receiving advice owing to the effects of age-related memory loss; however, as we showed in our results, the recall of risk factor status appeared to improve with age. This implies that the elderly in this sample were no more likely to forget advice than younger patients were. Responders able to fill in a lengthy questionnaire are less likely to be suffering from dementia and we had excluded those with a known history of dementia and those from nursing homes residency. Thus, the impact of age-related memory loss on recalling advice is not likely to explain our results. There is already evidence of discrimination against the elderly in research into cardiovascular disease,<sup>15</sup> and our findings further support that there is likely to be prejudice in the delivery of health care to the elderly, who have the most to gain from it since they are at the highest absolute risk.

### Advice and women

Men were more likely to recall receiving advice than women, supporting previous evidence shown in hypertensive patients.<sup>5</sup> Since there was no evidence in our sample of inherent differences in recall between the sexes, the likely explanation is that



women are receiving less advice than men. Every year around 80 000 women die of coronary heart disease (compared with 100 000 men), making it the leading cause of death in women.<sup>1</sup> Reduction of cardiovascular risk is obviously of the utmost importance for women, but they are not being involved in this area of research and are discriminated against in the treatment of coronary heart disease, without clinical justification.<sup>15-17</sup> It could be argued that, because there is a higher incidence of coronary heart disease in men, interventions for men would be more cost effective, and this is confirmed by research into the cost-effectiveness of lifestyle advice in primary care.<sup>18, 19</sup> However, the interventions used were much more intense than brief advice, and very brief interventions are likely to be cost-effective even in subjects at lower absolute risk. This also raises the issue of whether it is justifiable and equitable to withhold brief advice from half the population. Research to demonstrate the cost-effectiveness of brief advice in both men and women of different ages is clearly needed.

### Health perceptions

The correlation between health perception and reported behaviour suggests that, if a patient is in a high-risk category and is aware of this, then they may be more likely to make changes in their lifestyle. However, about one-third of people are still misclassifying their health status; i.e. they think that they are healthy when in fact their reported lifestyle does not support this belief. These people are an important target for lifestyle information and advice. The association between recall of advice and reported lifestyle is encouraging but should be interpreted with caution:

- Patients could report a healthier lifestyle because they know that is what they should be doing. However, even if these results reflect increased knowledge rather than healthier behaviour, this is still important, particularly as many patients with an unhealthy lifestyle were unaware that their lifestyle was unhealthy.
- Patients who already had an unhealthy lifestyle did not listen to advice or forget it (i.e. denial). This may be a contributory factor but is unlikely to be the major explanation as patients who recall the most advice have cardiovascular risk factors, which are associated with unhealthy lifestyle.
- Patients remember receiving advice if they have acted upon this advice. There is little evidence to support this, but it remains a possible influence upon these results.

With these caveats, the current study supports previous evidence that lifestyle advice may lead to small but measurable modifications in knowledge and/or behaviour.<sup>3, 4, 20</sup>

### Conclusions

Lifestyle advice is not recalled for some important risk factors, and some patients are unaware of their unhealthy lifestyle. Although advice is being preferentially targeted to those with risk factors, women and older patients recall, and by implication receive, less advice. Further research is needed to assess the cost-effectiveness and equity of advice for both sexes and different age groups.

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### Address for correspondence

Dr Paul Little, Department of Primary Medical Care, University of Southampton School of Medicine; Aldermoor Health Centre, Aldermoor Close, Southampton SO16 5ST.