to reinforce the value of the patient's choice to follow the regimen, and allow space for patients to discuss different values or weights that may arise over time and necessitate alterations to the treatment regimen later.

Competing interest: None declared.

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Patients' own assessments of quality of primary care compared with objective records based measures of technical quality of care: cross sectional study

Mala Rao, Aileen Clarke, Colin Sanderson, Richard Hammersley

Abstract

Objective To investigate the relation between older patients' assessments of the quality of their primary care and measures of good clinical practice on the basis of data from administrative and clinical records.
Design Cross sectional population based study using the general practice assessment survey.
Setting 18 general practices in the Basildon primary care trust area, south east England.
Participants 3487 people aged 65 or more.
Main outcome measures Correlations between mean practice scores on the general practice assessment survey and three evidence based measures on survey of case records (monitoring for, and control of, hypertension, and vaccination against influenza).
Results 76% of people (3487/4563) responded to the general practice assessment survey. Correlations between patient assessed survey scores for technical quality and the objective records based measures of good clinical practice were 0.22 (95% confidence interval −0.28 to 0.62) for hypertension monitored, 0.30 (−0.19 to 0.67) for hypertension controlled, and −0.05 (−0.50 to 0.43) for influenza vaccination.
Conclusions Older patients' assessments are not a sufficient basis for assessing the technical quality of their primary care. For an overall assessment both patient based and records based measures are required.

Introduction

Research in the United States suggests that patient reports can be used to identify health plans that offer care of higher clinical quality.[1] The general practice assessment survey is a patient questionnaire developed in the United States and adapted for use in the United Kingdom.[2 3] We used the survey to test whether older patients' assessments of the technical quality of their care in general practice were related to evidence based good clinical practice as indicated by data from medical records.

Participants and methods

We invited 23 general practices in Basildon to participate in the study (see bmj.com for sample size calculation.) Our study population was patients of participating practices aged 65 or more, registered on 1 September 2000.

The general practice assessment survey covers nine domains of patient assessed quality, including quality of care provided by practice nursing or reception staff and the technical quality of care. Each domain includes several items. The technical quality domain includes items on medical knowledge, thoroughness of physical examination, and prescribing the right treatment. The survey also includes personal information and indicators of socioeconomic status. We used a postal version of the survey. Questionnaires were sent to 300 randomly selected people in each practice.

We chose three indicators of the technical quality of clinical care on the basis of several criteria (see bmj.com).[4] Two indicators were based on adherence to the British Hypertension Society guidelines.[5] We extracted records with sampling fractions dependent on estimated numbers of patients aged 65-79 with hypertension (n=5473). Two research nurses established whether blood pressure had been measured within the past five years (hypertension monitored) and whether hypertension was controlled to British Hypertension Society standards (hypertension controlled).

The third indicator was coverage of influenza vaccination. The current guideline recommended vaccination for patients aged 75 or more.[6] The research nurses extracted data on the vaccination status of such patients (4961 people) in each of the practices.

Data analysis

We estimated mean general practice assessment survey scores for each domain in each practice.[2 3] Analysis of variance was used to assess variation in scores between and within practices. We constructed four socioeconomic groups: access to car, owns or is buying home; access to car, renting home; no access to car, owns or is buying home; no access to car, renting home. For each domain we derived a regression equation, with, as independent variables, five age groups, four socioeconomic groups, and sex. We used these equations to produce practice scores adjusted for these variables.

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Editorial by Coulter

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Pearson's correlation coefficients (95% confidence intervals) for each domain of general practice assessment survey, with general practice assessment survey "technical care" and three records based measures, unadjusted, but weighted by number sampled in each practice

	General practice assessment survey measures									Records based measures	
	Access	Receptionists	Continuity of care	Communication	Interpersonal skills	Trust	Knowledge of patient	Practice nursing	Technical care	Hypertension monitored	Hypertension controlled
General practice assessment survey measures:											
Technical care	0.33 (–0.16 to 0.69)	0.33 (–0.16 to 0.69)	0.33 (–0.17 to 0.69)	0.85 (0.64 to 0.94)	0.88 (0.69 to 0.95)	0.87 (0.69 to 0.95)	0.84 (0.62 to 0.94)	0.32 (–0.17 to 0.68)	1	—	—
Records based measures:											
Hypertension monitored	0.16 (–0.33 to 0.58)	0.30 (–0.19 to 0.67)	–0.03 (–0.49 to 0.44)	–0.01 (–0.47 to 0.46)	0.15 (–0.34 to 0.58)	0.05 (–0.42 to 0.51)	–0.04 (–0.50 to 0.43)	0.08 (–0.40 to 0.52)	0.22 (–0.28 to 0.62)	1	—
Hypertension controlled	–0.09 (–0.53 to 0.40)	–0.11 (–0.55 to 0.38)	–0.38 (–0.72 to 0.11)	0.29 (–0.21 to 0.66)	0.37 (–0.11 to 0.72)	0.29 (–0.21 to 0.66)	0.28 (–0.22 to 0.66)	0.36 (–0.13 to 0.71)	0.30 (–0.19 to 0.67)	0.52 (0.07 to 0.79)	1
Influenza vaccination	–0.46 (–0.76 to 0.01)	–0.35 (–0.70 to 0.14)	–0.44 (–0.75 to 0.03)	0.03 (–0.44 to 0.49)	0.05 (–0.43 to 0.50)	0.08 (–0.40 to 0.53)	–0.10 (–0.54 to 0.39)	–0.02 (–0.48 to 0.45)	–0.05 (–0.50 to 0.43)	–0.08 (–0.53 to 0.40)	0.27 (–0.22 to 0.66)

We estimated the proportions of participants in the relevant age groups in each practice who had had their blood pressure monitored and influenza vaccination. For those with a diagnosis of hypertension, we also estimated the proportions whose blood pressure was controlled.

We produced two matrices of correlation coefficients between survey domain scores and records based measures of technical quality. One was unweighted. For the other we used weights inversely proportional to the variance of the estimated practice mean to account for the varying survey sample sizes.

Results

Nineteen of 23 practices agreed to participate. The numbers of people aged 65 or more in the practices ranged from 155 to 1695. The smallest practice had only 39 such patients and was excluded.

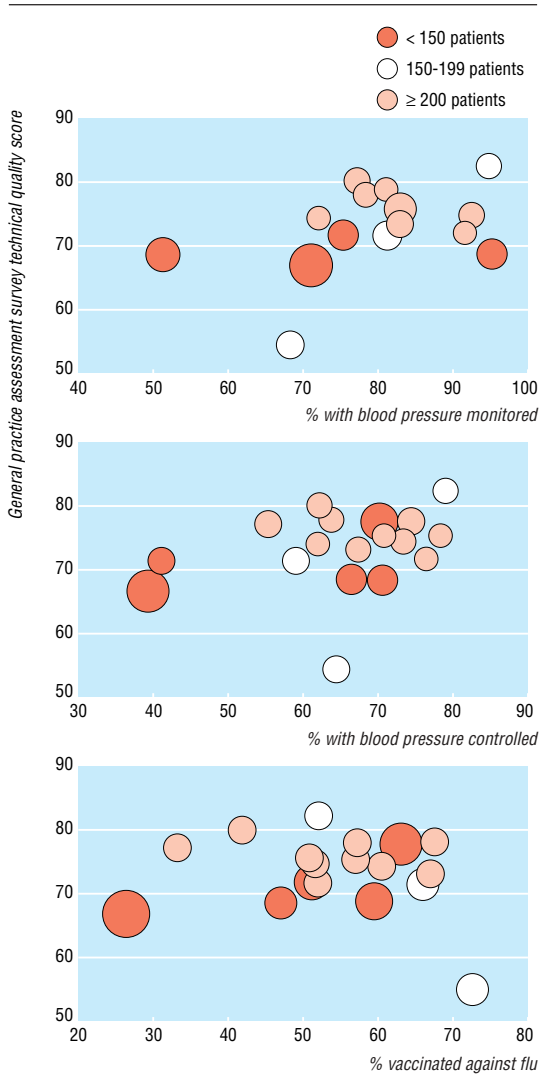
The demographic structure of the practices was similar to that of the rest of England (see bmj.com). In total, 3487 out of a possible 4563 patients in the 18 practices responded to the general practice assessment survey (76% response rate).

Respondents were of lower socioeconomic status than the population aged 65 or more in the health survey for England.[7] The proportion of respondents who owned or were buying their home and had access to a car was 37.7% compared with 47.8% in the health survey, and the proportion who lived in rented or part rented accommodation with no access to a car was 28.5% compared with 22.1%. Data on satisfaction with practice nursing were missing for 35% of respondents (see bmj.com).

Case notes were retrieved for 97.5% (n=5336) of the 5473 patients eligible for hypertension monitoring. Overall, 4332 (81.2%) of patients had had their blood pressure measured within the past five years. In total, 2166 people in the 18 practices had a diagnosis of hypertension, and 68.0% (n=1473) of these had a systolic blood pressure of less than 160 mm Hg. Overall, 94.4% (n=4683) of the 4961 records sampled for investigation of influenza vaccination rates were retrieved; 46.0% (n=2282) had been vaccinated.

Adjusting mean survey scores for age, sex, and socioeconomic status made little difference. The largest change in score for any of the 162 practice and domain combinations was less than 1%, with 97% of the changes less than 0.5% and 61% less than 0.2%. Unadjusted scores were therefore used here. With a possible range of scores for each domain of 0 to 100, overall mean scores ranged from 61.4 for doctors' knowledge to 76.9 for satisfaction with receptionists (see bmj.com). Variation between practices for most domains was broadly similar, except for satisfaction with nursing, which was relatively low.

The figure gives scatter plots for survey scores for technical care against each of the records based indicators. Each circle represents a practice. One practice's technical quality score seems to be an outlier.



Scatter plots for general practice assessment survey scores for technical quality compared with three records based measures. Size of marker indicates confidence interval around survey score estimate

The table gives weighted correlation coefficients with 95% confidence intervals for 17 practices, excluding this outlier. Strong and significant correlations were found between general practice assessment survey technical quality and three other survey domain scores: doctors' communication skills (0.85, 95% confidence interval 0.64 to 0.94), doctors' interpersonal skills (0.88, 0.69 to 0.95), and trust in doctors (0.87, 0.69 to 0.95). The correlations between technical quality and the records based measures were, however, much weaker and not significant (technical care and hypertension monitored 0.22, −0.28 to 0.62; technical care and hypertension controlled 0.30, −0.19 to 0.67; and technical care and influenza vaccination −0.05, −0.50 to 0.43). When the outlier was included, coefficients changed little (see bmj.com) and none became significant.

Influenza vaccination rate was negatively related to continuity of care and access: −0.44, −0.75 to 0.03 and −0.46 −0.76 to 0.01, respectively. Some evidence was found for a correlation between monitoring and control of hypertension (0.52, 0.07 to 0.79). However, the correlations between influenza vaccination rates and the measures of hypertension care were weak: hypertension monitored −0.08 (−0.53 to 0.40) and hypertension controlled 0.27 (−0.22 to 0.66).

Discussion

In this survey, older patients in primary care did not distinguish between technical quality of care and other aspects of doctor quality. We found evidence of variation between practices in all our measures of good clinical practice, but weak correlations between the technical care measure on the general practice assessment survey and three records based measures (hypertension monitored, hypertension controlled, influenza vaccination), and also between the records based measures themselves. Strong correlations were, however, shown between patients' own assessments of technical care using the general practice assessment survey and their assessments of characteristics of their doctors, such as interpersonal skills, trust, and communication.

Response rates in our study were overall good and general practice assessment survey scores are close to those found in the United Kingdom for patients from the full range of ages.[3] Our three records based measures were based on explicit criteria (see bmj.com), and we believe that they were reliably ascertained. Basildon is a medium sized town in south east England with fairly typical demography, and although the population has below average home ownership and access to a car, there are few pockets of serious deprivation. Recruitment of practices was good. Therefore our findings are likely to be generalisable to the United Kingdom.

One possible explanation for our results is that patients are right; technical quality of care may be closely related to communication skills, interpersonal skills, and trustworthiness, and it is our records based indicators that are misleading. If so, patient assessments would be sufficient. A parallel qualitative study of patients who had been asked to complete the general practice assessment survey, however, found that "relatively few patients had enough knowledge about their own particular illnesses or about possible alternative treatments to make informed judgments."[8]

It seems more likely that when patients are asked about technical quality they base their judgments on those aspects of care that they feel better able to judge. These may be only weakly related to recognised standards of good clinical practice. The question then is how to construct a valid instrument for assessing clinical quality. We used only three measures. It is reassuring that the two related to hypertension were correlated with each other but a matter of concern that they were not correlated to influenza vaccination rates.

In an era of strong advocacy for quality of health care driven by choice and "assessment and accountability,"[9] valid and reliable indicators are needed. We conclude that the evidence for relying solely on patient assessed measures of quality of primary care for older people is weak and that a broader range of measurements is needed.[10]

What is already known on this topic

Different dimensions need to be taken into consideration when measuring quality of care in general practice

Patients can appropriately assess some aspects of quality of health care

What this study adds

Some aspects of technical quality of primary care can be measured using practice records; these measures indicate substantial variations between practices

Patients' own assessments of technical quality are not closely related to independently ascertained records based measures of technical quality

Assessment of the technical quality of primary care should not rely on patient based assessments alone

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Competing interests: At the time of the study MR was employed first as director of public health for South Essex Health Authority and subsequently as director of the Essex Public Health network.

Ethical approval: This study was approved by south Essex research ethics committee.

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Serum cholesterol, haemorrhagic stroke, ischaemic stroke, and myocardial infarction: Korean national health system prospective cohort study

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Abstract

Objective To investigate risk factors, such as heavy alcohol consumption, that might explain any increased risk of haemorrhagic stroke associated with low blood cholesterol.
Design Prospective cohort study.
Setting Korea.
Participants 787 442 civil servants (661 700 men, 125 742 women) aged 30-64.
Main outcome measures Cardiovascular risk factors were assessed at biennial health check. Data on morbidity and mortality were ascertained from 1990 to 2001 using hospital admissions and mortality surveillance systems.
Results 6328 cases of ischaemic stroke (6021 men, 307 women), 3947 cases of haemorrhagic stroke (3748 men, 199 women), 3170 cases of undefined stroke (2902 men, 268 women), and 4417 cases of myocardial infarction (4305 men, 112 women) occurred. Ischaemic stroke and myocardial infarction were strongly and positively associated with blood cholesterol (hazard ratio per 1 mmol/l cholesterol 1.20 (95% confidence interval 1.16 to 1.24) and 1.48 (1.43 to 1.53), respectively). Haemorrhagic stroke showed an inverse association in fully adjusted models (0.91, 0.87 to 0.95). This inverse association was confined to participants with hypertension. When stratified by concentration of γ glutamyl transferase (GGT), an indicator of alcohol consumption, the association was not seen in participants with low concentrations of GGT, and it was independent of hypertension in those with high concentrations of GGT (>80 U/l).
Conclusions High alcohol consumption may underlie the association between low blood cholesterol and increased risk of haemorrhagic stroke.

Introduction

The role of blood cholesterol as a cause of stroke remains uncertain.[1–3] The lack of an association between all types of stroke and concentrations of cholesterol may mask a positive association with ischaemic stroke and an inverse association with haemorrhagic stroke. The inverse association between serum cholesterol and haemorrhagic stroke may be specific to men with hypertension; this has led to speculation that heavy alcohol consumption underlies hypertension, hypocholesterolaemia, and increased risk of haemorrhagic stroke.[4]

This uncertainty causes concern that treatment to lower cholesterol might increase the risk of haemorrhagic stroke.[5] A recent review of randomised trials found no influence of such treatment on haemorrhagic stroke.[6] However, only 204 cases were used to estimate the risk of haemorrhagic stroke, and confidence intervals were wide. We aimed to resolve this uncertainty by investigating the association of blood cholesterol with stroke subtype in a large cohort of Korean civil servants.

Methods

Participants and study measures

Participants were Korean male and female public servants aged 30-64, who had a health check provided by the Korean national health system between 1986 and 1990. In total, 902 222 people were examined. We excluded people who changed job or had a myocardial infarction or stroke between 1986 and 1990, and people who lack data on blood cholesterol, leaving a study population of 787 442 (661 700 men, 125 742 women). Extra information on risk factors was obtained from the biennial multiphasic health examination and a self administered questionnaire. We excluded values obtained after a cardiovascular event and used mean values between 1986 and 1996 for measures that were repeated.

We classified participants into six groups according to cholesterol concentrations (table 1). See bmj.com for categories used for other risk factors.

Alcohol consumption was categorised as <30, 30-104, 105-209, 210-419, or ≥420 g/week. We also measured γ glutamyl transferase (GGT) as a proxy of alcohol intake (Spearman's correlation coefficient 0.40 between self reported alcohol consumption and GGT values; $P<0.0001$). Because participants (especially heavy drinkers) may under-report alcohol consumption, we stratified the analyses by each measure.

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