doi: 10.1111/hex.12081

Drivers of overall satisfaction with primary care: evidence from the English General Practice Patient Survey

Charlotte A. M. Paddison PhD,* Gary A. Abel PhD,* Martin O. Roland DM,† Marc N. Elliott PhD,‡ Georgios Lyratzopoulos MD§ and John L. Campbell MD¶

*Senior Research Associate, †Professor of Health Services Research, Cambridge Centre for Health Services Research, Institute of Public Health, University of Cambridge, Cambridge, UK, ‡Senior Statistician, RAND Corporation, Santa Monica, CA, USA, §NIHR Postdoctoral Fellow, Cambridge Centre for Health Services Research, Institute of Public Health, University of Cambridge, Cambridge, ¶Professor of Primary Care, University of Exeter Medical School, Smeall Building, Exeter, UK

Correspondence
Dr Charlotte Paddison, PhD
Primary Care Unit
Institute of Public Health
University of Cambridge
Forvie Site, Robinsons' Way
Cambridge CB2 OSR
UK
E-mail: Camp3@medschl.cam.ac.uk

Accepted for publication
1 May 2013

Keywords: model, primary care, satisfaction, survey

Abstract

Background/objectives To determine which aspects of primary care matter most to patients, we aim to identify those aspects of patient experience that show the strongest relationship with overall satisfaction and examine the extent to which these relationships vary by socio-demographic and health characteristics.

Design/setting Data from the 2009/10 English General Practice Patient Survey including 2 169 718 respondents registered with 8362 primary care practices.

Measures/analyses Linear mixed-effects regression models (fixed effects adjusting for age, gender, ethnicity, deprivation, self-reported health, self-reported mental health condition and random practice effect) predicting overall satisfaction from six items covering four domains of care: access, helpfulness of receptionists, doctor communication and nurse communication. Additional models using interactions tested whether associations between patient experience and satisfaction varied by socio-demographic group.

Results Doctor communication showed the strongest relationship with overall satisfaction (standardized coefficient 0.48, 95% CI = 0.48, 0.48), followed by the helpfulness of reception staff (standardized coefficient 0.22, 95% CI = 0.22, 0.22). Among six measures of patient experience, obtaining appointments in advance showed the weakest relationship with overall satisfaction (standardized coefficient 0.06, 95% CI = 0.05, 0.06). Interactions showed statistically significant but small variation in the importance of drivers across different patient groups.

Conclusions For all patient groups, communication with the doctor is the most important driver of overall satisfaction with primary care in England, along with the helpfulness of receptionists. In contrast, and despite being a policy priority for government, measures of access, including the ability to obtain appointments, were poorly related to overall satisfaction.

Introduction

Using measures of patient experience and satisfaction in assessing quality of care is important as a means of incorporating the views of service users into the evaluation of health services.[1] Information on poor patient experience can be used to inform decisions about priorities for action aimed at improving the quality of primary care,[2–4] a factor which is known to vary widely between UK general practices.[5] The experiences patients report are also related to subsequent health behaviours, including treatment adherence,[6,7] and thus have potential to impact on health status.[8]

Measurement of the relationship between patient experience and satisfaction helps to identify those aspects of health-care experiences which matter most to patients.[9–11] Previous research examining the relationship between patient experience and overall satisfaction has helped identify the most important drivers of overall satisfaction with hospital care,[9,10,12–14] for example, highlighting the importance to patients of communication with nurses and of the cleanliness of the hospital environment. However, despite an on-going emphasis on the contribution of primary care provision to overall health-care provision in the UK,[15] there is a paucity of recent UK research exploring the drivers of overall satisfaction with primary care. Consequently, we have a limited understanding of which aspects of their experiences in primary care may currently matter most to patients and thus drive their reports of satisfaction with the service.

Identifying patient priorities can help to inform improvements in the measurement and reporting of patient experience,[14] including the identification and selection of patient experience indicators as a component of pay-for-performance schemes.[9] In England, for example, detailed measurement of clinical performance was used as part of a pay-for-performance scheme in primary care.[16] Between 2008 and 2011, the scheme included financial incentives based on data from a national survey of patient experience.[17,18]

Designing health services which reflect patients' priorities will benefit from an understanding of differences in priorities held between different subgroups within the population. There is some evidence that patient's priorities differ by age and health status,[19] by type of hospitalization[9,10] and condition[14] and by health system/country.[11] By examining possible differences in the drivers of satisfaction for some patient subgroups (for example, based on socio-demographic or health characteristics), resource allocation and health service delivery may be tailored to the needs and preferences of the population for whom care is being provided. Approaches involving 'value-based purchasing' have been introduced in the US, providing for allocating resource on the basis of the patients' experiences of hospital care.[20] In the context of current reform of health care in the UK and specifically in the development of consortia responsible for commissioning health care for a defined population, information on patient priorities may be particularly useful.

Various approaches have been used to ascertain patient preferences and health-care priorities. UK research using discrete choice experiments has highlighted the value many patients in primary care place on a thorough physical examination and on seeing a doctor who knows them well.[21] Although a systematic review of 57 studies identified interpersonal quality of care as the most important priority for patients in primary care,[2] in England, health policy has often focused on improving access to health care in response to perceptions that this is important to patients. More recently, health policy has also highlighted the need for better integration of care.[22–25] Using recent data from a major national survey of patient experience in primary care in England,[17,18] we aimed to identify those aspects of patients' experiences which are the most important factors driving overall satisfaction with primary care. In addition, we sought to determine the extent to which the drivers of overall satisfaction vary between groups according to socio-demographic and health characteristics.

Methods

Data were collected from 2 169 718 respondents registered with 8362 primary care practices in England as part of the 2009/10 General Practice Patient Survey, a national survey of patient experience with primary care. Women, middle-aged patients and those in less socially deprived areas were more likely to respond to the survey – this is consistent with response patterns reported for other patient experience surveys.[26] Details of the survey and method of administration have been published elsewhere.[17,27]

Measurement of patient experience and overall satisfaction

We measured patient experience using six questions from the 2009/10 General Practice Patient Survey which cover four domains of primary care: access (three items including telephone access, appointment availability following a request for prompt medical care and the ability to book appointments in advance), helpfulness of receptionists, doctor communication and nurse communication. These items were selected on the basis that they are domains of care recognized as important in health-care policy and previous research on patient priorities.[14,28] Response options included both dichotomous categories (yes/no) and 4- or 5-point Likert scales. The questionnaire can be viewed at http://www.gp-patient.co.uk/questionnaires/. Composite measures were computed separately for doctor communication and nurse communication on the basis of our earlier research[17,29] using the mean of non-missing items from all respondents answering four or more of the seven constituent items for each composite. We also used a single item 'In general, how satisfied are you with the care you get at your GP surgery or health centre?' to assess overall satisfaction with primary care services, with response options: very satisfied; fairly satisfied; neither satisfied nor dissatisfied; fairly dissatisfied; very dissatisfied. All measures were scored linearly then standardized to have a mean of zero and a standard deviation of one in order to facilitate comparisons across questions.

Demographic and health characteristics

Data on socio-demographic characteristics and health status collected as part of the General Practice Patient Survey included: age [seven ordinal categories from 18–24 to 75+; 55–64 (reference group)]; gender [female, male (reference group)]; ethnicity [using the Office of National Statistics categories of: White (reference group); Mixed; South Asian; Black; Chinese; Other]; self-reported health [excellent (reference group), very good, good, fair, poor]; and presence of mental health condition. As the survey targets adults aged 18 years or older, data were excluded from any individual reporting their age as <18. Based on the findings of our earlier research,[29] we merged data for two groups of respondents aged 75 years and older ('75–84' and '85 years or older'). Socio-economic status of residential address (by quintile; using the highest level of deprivation as the reference group) was the only variable measured at aggregate level and was derived by linking patient postal codes to the 2007 Lower Super Output Area Index of Multiple Deprivation[30] (higher quintiles represent greater socio-economic deprivation).

Analyses

Cases included in the analysis were those with complete data in respect of all demographic and health items, all six patient experience items and the overall satisfaction item. A linear mixed-effects model was used with practice included as a random effect and six patient experience items as fixed effects (continuous variables). In addition the model included, as categorical fixed effects, the six socio-demographic variables (age, gender, ethnicity, deprivation, self-reported health and self-reported mental health condition). This model was augmented in a series of models where, in addition to the terms listed above, each model included interaction terms between the patient experience

items and one of the socio-demographic variables (interaction terms for age, deprivation and self-reported health used continuous forms of the socio-demographic variable to improve estimation). This provided six additional linear mixed-effects models, each including practice as a random effect and the following fixed effects: six patient experience measures, six socio-demographic variables and six interaction terms (socio-demographic by patient experience interactions). These models were used to construct standardized regression coefficients to quantify the strength of association between measures of patient experience and overall satisfaction and the extent to which they varied across patient groups. As stepwise regression is known to capitalize on chance and overstate statistical significance, and as our intention was to explain factors driving satisfaction, we did not undertake a stepwise regression analysis of the data. At the sample size available, regression based approaches are very robust to skewness in the data,[31] and for this reason, no transformation of data was undertaken.

Sensitivity analyses

Patient experience surveys such as GPPS ask some questions only of those patients whose particular experiences or preferences make the given questions applicable. As such, there is substantial patient experience data missing by design when predicting patient satisfaction from patient experience, in addition to the customary unintended missing data. While multiple imputation requires inferring experiences not applicable to a given patient, complete-case analyses would be dominated by the few intensive users eligible to answer all items. A continuity of care item is of particular interest, as it is only asked of those who state a preference for a particular physician. The statistical supplement (Appendix 1) describes sensitivity analyses that compared multiple imputation with complete-case analyses and which included and excluded the continuity of care item. In that appendix, we also consider the issue of coefficients standardized within patient groups as opposed to coefficients standardized across all patients.

All analysis was completed using Stata, version 11.2 (College Station, TX, USA). Multiple imputation was performed using the ice package.[32]

Results

Demographic characteristics and the self-reported health of the 2 169 718 respondents to the 2009/10 General Practice Patient Survey appear in Table 1 along with the characteristics of those respondents included in the complete-case analysis. Fifty-eight percentage of respondents were female; 31% were aged over 65; and 13% were non-white.

Association between overall satisfaction and aspects of patient experience

Table 2, displaying standardized coefficients from mixed-effects linear regression models, shows the relationships between overall satisfaction and six measures of patient experience. Concentrating on the model where all patient groups are considered together (no interaction terms), we find that doctor communication showed the strongest relationship with overall satisfaction [standardized coefficient 0.48 (95% CI = 0.48, 0.48)].The helpfulness of reception staff showed a somewhat weaker relationship with overall satisfaction [standardized coefficient 0.22 (95% CI = 0.22, 0.22)]. The magnitude of relationships between overall satisfaction, nurse communication and three measures of patient experience relating to access was smaller (standardized coefficients all <0.11) than the standardized coefficients for doctor communication and reception staff. Among the six measures of patient experience included in this first series of mixed-effects models, experience with obtaining appointments in advance showed the weakest relationship with overall satisfaction [standardized coefficient 0.06 (95% CI = 0.05, 0.06)]. We have previously reported that 6.2% of the variance in patient satisfaction between practices is accounted for by the socio-demographic mix

Table 1 Demographic characteristics and self-reported health of the 2,169,718 respondents to the 2009/10 General Practice Patient Survey (England) and the respondents included in the complete-case analysis

	Total survey respondents (n)	% of survey respondents	Complete-case analysis (n)	% of complete case
Gender				
Male	897 326	42.4	119 887	36.3
Female	1 218 009	57.6	210 051	63.7
Age group				
18–24	103 865	4.9	11 480	3.5
25–34	230 654	10.9	32 138	9.7
35–44	326 488	15.5	51 721	15.7
45–54	376 472	17.8	62 073	18.8
55–64	428 774	20.3	72 545	22.0
65–74	357 022	16.9	58 984	17.9
75+	290 455	13.7	40 997	12.4
Ethnic group				
White	1 861 508	87.4	296 627	89.9
Mixed	16 381	0.8	2200	0.7
Asian*	113 501	5.3	15 784	4.8
Black†	58 781	2.8	5913	1.8
Chinese	10 007	0.5	996	0.3
Other ethnic group	69 665	3.3	8418	2.6
Socio-economic deprivation quintile				
1 (Affluent)	387 771	17.9	66 933	20.3
2	418 707	19.3	67 856	20.6
3	430 329	19.8	66 778	20.2
4	446 263	20.6	64 485	19.5
5 (Deprived)	486 648	22.4	63 886	19.4
Self-rated health				
Excellent	120 576	5.7	28 983	8.8
Very good	413 578	19.7	85 265	25.8
Good	751 665	35.8	120 448	36.5
Fair	625 087	29.8	78 165	23.7
Poor	190 453	9.1	17 077	5.2

*Indian, Pakistani, Bangladeshi, any other Asian.
†Black Caribbean, Black African, any other Black.

and health status of patients within practices.[33] In this study, accounting for six patient experience items explained nearly all (92%) of the practice level variance, which existed after accounting for variation in the socio-demographic and health status characteristics of patients.

Variation in the association between overall satisfaction and different aspects of patient experience by socio-demographic characteristics and health status

There is evidence (joint test of interaction terms, $P<0.001$ for all models) that some aspects of care are more strongly related to overall satisfaction within certain patient groups depending, for example, on ethnicity, health status and age – but the differences in effect size between groups were generally small (see Table 2). The strongest independent association for all groups remains between overall satisfaction and doctor communication followed by the helpfulness of receptionists.

Patients in poor health, those with a mental health condition and those living in deprived areas showed the largest standardized coefficients for doctor communication [coefficients = 0.53 (95% CI = 0.53, 0.54); 0.53, (95% CI = 0.52, 0.54); 0.50 (95% CI = 0.50,

Table 2 Standardized regression coefficients (95% confidence intervals) from mixed-effects linear regression models showing the relationships between patient experience and overall satisfaction by socio-demographic group (deprivation, age, gender, ethnicity) and health status (self-rated health, presence of mental health condition)

	Q5a* Phone access	Q7 Quick appointment	Q10 advanced appointment	Q4 Receptionist	Q20 Doctor communication	Q24 Nurse communication
Standardized regression coefficient						
All patient groups	0.09 (0.09, 0.10)	0.11 (0.11, 0.12)	0.06 (0.05, 0.06)	0.22 (0.22, 0.22)	0.48 (0.48, 0.48)	0.09 (0.10, 0.09)
Most affluent	0.10 (0.09, 0.10)	0.12 (0.12, 0.13)	0.06 (0.06, 0.07)	0.21 (0.21, 0.22)	0.45 (0.45, 0.46)	0.09 (0.09, 0.09)
Most deprived	0.09 (0.09, 0.10)	0.10 (0.10, 0.11)	0.05 (0.05, 0.05)	0.23 (0.23, 0.23)	0.50 (0.50, 0.51)	0.10 (0.10, 0.10)
Youngest (18-25)	0.14 (0.13, 0.14)	0.15 (0.14, 0.15)	0.08 (0.07, 0.08)	0.24 (0.23, 0.24)	0.51 (0.50, 0.51)	0.12 (0.12, 0.13)
Oldest (75+)	0.06 (0.06, 0.07)	0.08 (0.08, 0.09)	0.04 (0.04, 0.04)	0.20 (0.20, 0.20)	0.45 (0.44, 0.45)	0.07 (0.07, 0.08)
Men	0.09 (0.09, 0.09)	0.11 (0.11, 0.12)	0.06 (0.05, 0.06)	0.22 (0.21, 0.22)	0.49 (0.49, 0.50)	0.09 (0.09, 0.09)
Women	0.10 (0.09, 0.10)	0.12 (0.11, 0.12)	0.05 (0.05, 0.06)	0.22 (0.22, 0.23)	0.48 (0.47, 0.48)	0.10 (0.09, 0.10)
Poor health	0.08 (0.07, 0.08)	0.10 (0.09, 0.10)	0.05 (0.05, 0.05)	0.23 (0.22, 0.23)	0.53 (0.53, 0.54)	0.10 (0.09, 0.10)
Excellent health	0.11 (0.11, 0.12)	0.13 (0.13, 0.13)	0.06 (0.06, 0.07)	0.21 (0.21, 0.22)	0.42 (0.42, 0.43)	0.09 (0.09, 0.10)
No mental Health condition	0.10 (0.09, 0.10)	0.11 (0.11, 0.12)	0.06 (0.05, 0.06)	0.22 (0.22, 0.22)	0.48 (0.47, 0.48)	0.10 (0.09, 0.10)
Mental health condition	0.08 (0.08, 0.09)	0.11 (0.11, 0.12)	0.06 (0.05, 0.06)	0.21 (0.20, 0.22)	0.53 (0.52, 0.54)	0.09 (0.09, 0.10)
White	0.09 (0.09, 0.10)	0.12 (0.11, 0.12)	0.06 (0.05, 0.06)	0.22 (0.22, 0.22)	0.48 (0.48, 0.48)	0.09 (0.09, 0.10)
Mixed	0.11 (0.08, 0.13)	0.10 (0.08, 0.12)	0.09 (0.06, 0.11)	0.23 (0.20, 0.25)	0.50 (0.48, 0.52)	0.12 (0.10, 0.14)
Asian	0.12 (0.11, 0.13)	0.12 (0.11, 0.12)	0.06 (0.05, 0.07)	0.25 (0.24, 0.26)	0.50 (0.49, 0.51)	0.10 (0.09, 0.11)
Black	0.08 (0.07, 0.10)	0.09 (0.07, 0.10)	0.04 (0.03, 0.06)	0.24 (0.22, 0.25)	0.48 (0.47, 0.50)	0.10 (0.08, 0.11)
Chinese	0.13 (0.09, 0.17)	0.10 (0.06, 0.13)	0.04 (0.01, 0.08)	0.25 (0.21, 0.29)	0.43 (0.39, 0.47)	0.14 (0.10, 0.17)
Other	0.10 (0.09, 0.12)	0.11 (0.10, 0.12)	0.06 (0.05, 0.08)	0.22 (0.21, 0.24)	0.51 (0.50, 0.52)	0.10 (0.09, 0.12)

*GPPS question number.

0.51), respectively]. Interactions with non-GP staff – receptionists and nurses – were of lesser importance than doctor communication for all groups, but were of relatively higher importance for non-white groups in comparison with respondents of White ethnicity [coefficient for nurse communication (Chinese) = 0.14 (95% CI = 0.10, 0.17); and (White) = 0.09 (95% CI = 0.09, 0.10)].

Access, while of limited overall importance as a driver of satisfaction, was somewhat more important for younger adults (aged 18–25), those in excellent health, and, in respect of telephone access, for Asians and Chinese.

Sensitivity analyses

Results from sensitivity analyses examining the impact of multiple imputation, and the inclusion of a question on continuity of care, are shown in Tables S1 and S2, respectively. When compared with results from the primary (complete case) analyses (Table 2), results in Table S1 from mixed-effects models using multiple imputation do not show any meaningful differences, and our interpretation of the main drivers of overall satisfaction is consistent whether using complete-case analysis or multiple imputation models.

When included in mixed-effects models, continuity of care was not a strong driver of overall satisfaction and doctor communication and helpfulness of receptionists continue to be of greater importance (Table S2). Notwithstanding this observation, continuity of care was somewhat more important for those in poor vs. excellent health, and for those with a long-term health condition, among those who expressed a preference for it. The magnitude of effect for the relationship between continuity and overall satisfaction was approximately similar to that observed for questions relating to access. Finally, results were very similar when coefficients were standardized within groups rather than overall. This arises as, although the variance of responses does indeed vary

substantially between groups, the variation is fairly consistent across all items.

Discussion

In a study of 2 169 718 respondents from 8362 English primary care practices, we show that the overall satisfaction of patients is most sensitive to the quality of communication by doctors, and that this is consistent across age, gender, ethnicity, deprivation and health status. Relative to the importance of good doctor communication, other aspects of patient experience – including obtaining appointments in advance – were less strongly associated with overall satisfaction.

Which aspects of patient experience are the most important drivers of overall satisfaction with primary care?

The primacy of communication with the GP as the driver of overall satisfaction suggests that good communication with your doctor is perhaps the most important element of patient experience in primary care. This concurs with a systematic review concluding that interpersonal aspects of care (particularly 'humaneness' and involvement in shared decision making) were the most important priority for patients in primary care.[2] The finding is also consistent with recent research identifying involvement in shared decision making and being treated with respect and dignity as patient priorities and core domains for the measurement of patient experience in hospital-based care.[9,10] Furthermore, it has been reported by organisations responsible for assessment of poor performance in doctors that around 25% of their workload relates to doctors with allegedly poor communication skills.[34] The importance of doctor–patient communication in primary care does not appear to be limited to a UK setting. Across eight European countries, patients have been found to share many views about priorities in primary care, particularly the importance of good communication by your doctor.[11]

We found that the helpfulness of receptionists was the second most important driver of overall satisfaction, highlighting the potential importance of interactions with non-medical staff as a salient aspect of the patients' experience of health care. In the light of this observation, refined communication skills are likely to be of great importance for reception and administrative staff providing first contact with the health service, and, as for doctors, appropriate training for receptionists may be of value. Such arrangements are now available through NHS provision[35] and are to be welcomed. Measures of access, including being able to get an appointment in advance, were not shown to be among the most important drivers of overall satisfaction in our study. This finding is consistent with a systematic review which found also that access and organisation of health services were seen by patients as less important than interpersonal aspects of care.[2] The relative lack of priority patients appear to place on access in primary care contrasts markedly with the emphasis on access in recent UK health policy. We considered whether helpfulness of receptionists might be a surrogate for ease of access, therefore artifactually reducing the strength of the association between positive or negative experiences of access and overall satisfaction. To explore this, in a sensitivity analysis (data not shown), we excluded helpfulness of receptionist from the explanatory model, but observed that the pattern of overall primacy of the doctor communication domain compared with access was unaltered.

Our proxy for continuity of care was based on patients reports on access to their preferred doctor,[36] we believe reflecting relational continuity.[37] Continuity has been an inconsistent priority for patients in previous primary care research[2] and was not found to be a strong driver of overall satisfaction in our study. This finding contrasts with research undertaken among hospital inpatients, which suggested that consistency and co-ordination of care were important independent predictors of overall satisfaction among that group of patients.[10] Differences in the context of care may thus be

important in explaining such inconsistencies. In the United Kingdom, General Practitioners play an important role in co-ordinating primary care for individual patients: in contrast, there is often no equivalent 'single co-ordinator' in hospital-based care and this may help to explain why co-ordination of care could become a more salient issue for patients in a hospital-based context. In a similar way, concerns about the risk of infection could account for why cleanliness of the environment is often viewed as a priority by patients in studies of hospital-based care,[14] but rarely as a priority among patients in primary care. Research from Norway[12] has recently noted the importance of the relationship between patients' satisfaction with hospital care and their reports of their experience of nurses and doctors providing services, and the fulfilment of their expectations in respect of care.

Do some aspects of care matter more to certain groups of patients?

We show that some aspects of care may matter more to certain patient groups depending for example on ethnicity (interactions with non-GP staff were somewhat more important for non-white); health status (relational continuity and communication with the GP were more important to patients in poor health or with mental illness) and age (access was more important to younger patients). However, the differences in effect size between groups were generally small, and variation in the drivers of overall satisfaction between groups was very limited in comparison with the dominant importance of doctor communication for all groups. There is a small body of previous research[19] showing that age and health status make independent contributions to patient preferences within primary care; our findings concur, and add to this by suggesting also that differences in preferences by ethnicity could be important.

Our study, using data from a large national survey of more than two million primary care patients, builds on what is known about patient preferences within hospital-based care[9,10,13,14] and adds to earlier work, including the EUROPEP study,[2,11] by examining patient preferences within primary care in the context of current NHS policy and service delivery. The response rate (39%) is comparable with other major national surveys, and is not associated with non-response bias when this has been assessed for some of the key survey measures.[38] Despite its large overall sample, one limitation of our study is the small group sizes – and consequently wider confidence intervals around effect sizes – for some individual patient subgroups (e.g. Chinese). Other limitations include the observation that some aspects of care, for example, preferences for relational continuity, only apply to a minority of patients. In our study, we assessed the importance of continuity using a single item focussing on the importance of relational continuity. Future research might consider including additional items to measure the importance of a wider range of domains of continuity[37] and co-ordination of primary care, particularly given the interest in promoting integrated care in current UK health policy.

While we infer the implicit importance of each patient experience measure using a regression model, no direct measures of patient priorities – for example using a discrete choice experiment or other survey-based approaches[39] – were obtained. As there is wide variation in the aspects of care included and in the methods of analysis in individual studies examining patient priorities, research using different methods to those we employed may yield different results. Indeed, our results contrast somewhat with those from discrete choice experiments, in which patients prioritized technical quality of care (a thorough physical examination) over interpersonal quality of care.[21]

Identifying aspects of patient experience that show the strongest relationship with overall satisfaction is one approach to identifying patient priorities. In selecting aspects of care to prioritize for improvement initiatives, it is important to consider which aspects of care are rated most poorly by patients (i.e. show the most potential for improvement) and the overall variation in performance between organisations.

Where measures of patient experience are included as part of pay-for-performance schemes, it is also of importance to consider issues of reliability, including both precision of measurement and reliability for use, in comparisons made across health-care providers.[38]

Implications for health policy and practice

In England, health policy during the last 5 years has focused strongly on improving access to care. Provision of NHS walk-in centres and polyclinics, and a trend towards larger practices with more doctors (many often working part-time) are examples of initiatives whose introduction may affect patients' perceptions of access to care. Targets introduced in 2004 focussing on timeliness of GP appointments and the ability to book appointments in advance formed the basis of a pay-for-performance scheme in the UK between 2008 and 2011. While all such initiatives may provide improved access, an unintended consequence may be to reduce continuity of care, and increase fragmentation of care delivery. Put simply; you may be more able to see a doctor after 5.00 PM or at the weekend, but then be less likely to see the same doctor each time you visit your practice.

Our study does not suggest that patients view access or continuity of care as the most important priorities, and indeed, although of some importance, both were weak drivers of overall satisfaction with general practice care. Instead, the fundamental skill of communicating well with patients is the most important driver of overall satisfaction. Teaching new doctors how to communicate well with their patients is one part of improving physician communication. At least as important may be identifying existing doctors with poor communication skills, and developing effective means to improve their communication with patients. In the UK, this could potentially occur as part of the process of revalidation.[40]

Quality in health care is a multidimensional construct. Providing good quality clinical care is important, as are the organisational aspects of care including responsiveness to patients' needs regarding access. In addition, we suggest that good doctor communication should be included as a priority in health policy, as it may be one of the most useful ways to improve the quality of primary care in line with patients' priorities. A renewed emphasis on the action of delivering care to a patient (that is, quality of care – including communication – *within* a consultation) is likely to be an important step in delivering health care which is truly responsive to the aspirations of patients.

Acknowledgements

The study was funded by a grant from the UK Department of Health. GL is funded by a Post-Doctoral Research Fellowship award from the National Institute for Health Research. The views expressed are those of the authors and not of the Department of Health. All authors had full access to all of the data in the study and take responsibility for the integrity of the data and accuracy of the data analysis. JC is the guarantor of the paper.

Conflict of interests

MR and JC act as academic advisors to Ipsos MORI for the General Practice Patient Survey. All other authors have no conflict of interest to declare.

Supporting Information

Additional Supporting Information may be found in the online version of this article:

Table S1. Standardised regression coefficients (95% confidence intervals) from mixed effects linear regression models using multiple imputation showing the relationships between patient experience and overall satisfaction by socio-demographic group (deprivation, age, gender, ethnicity) and health status (self-rated health, presence of mental health condition).

Table S2. Standardised regression coefficients (95% confidence intervals) from mixed effects linear regression models including continuity of

care showing the relationships between patient experience and overall satisfaction by socio-demographic group (deprivation, age, gender, ethnicity) and health status (self-rated health, presence of mental health condition).

References

1 Department of Health. *The NHS Outcomes Framework 2011/12*. London: Department of Health, 2010.

2 Wensing M, Jung HP, Mainz J, Olesen F, Grol R. A systematic review of the literature on patient priorities for general practice care. Part 1: description of the research domain. *Social Science and Medicine*, 1998; **47**: 1573–1588.

3 Browne K, Roseman D, Shaller D, Edgman-Levitan S. Analysis & commentary. Measuring patient experience as a strategy for improving primary care. *Health affairs (Project Hope)*, 2010; **29**: 921–925.

4 Picker Institute Europe. Improving patients' experience – sharing good practice. Patient surveys: the national picture. Picker, 2003: 1–4.

5 The King's Fund. Improving the quality of care in general practice: report of an independent inquiry commissioned by The King's Fund. The King's Fund, 2011

6 Safran DG, Taira DA, Rogers WH, Kosinski M, Ware JE, Tarlov AR. Linking primary care performance to outcomes of care. *Journal of Family Practice*, 1998; **47**: 213–220.

7 Schneider J, Kaplan SH, Greenfield S, Li W, Wilson IB. Better physician-patient relationships are associated with higher reported adherence to antiretroviral therapy in patients with HIV infection. *Journal of General Internal Medicine*, 2004; **19**: 1096–1103.

8 Bowling A, Ebrahim S. Measuring patients' preferences for treatment and perceptions of risk. *Quality in Health Care:* 2001; **10** (Suppl. 1): i2–i8.

9 Sizmur S, Redding D. Key domains of the experience of hospital outpatients. Picker Institute Europe, 2010.

10 Sizmur S, Redding D. Core domains for measuring inpatients' experience of care. Picker Institute Europe, 2009.

11 Grol R, Wensing M, Mainz J *et al*. Patients' priorities with respect to general practice care: an international comparison. European Task Force on Patient Evaluations of General Practice (EUROPEP). *Family Practice*, 1999; **16**: 4–11.

12 Bjertnaes OA, Sjetne IS, Iversen HH. Overall patient satisfaction with hospitals: effects of patient-reported experiences and fulfilment of expectations. *BMJ Quality and Safety*, 2012; **21**: 39–46.

13 Doyle C, Reed J, Woodcock T, Bell D. Understanding what matters to patients – identifying key patients' perceptions of quality. *JRSM Short Reports*, 2010; **1**: 3.

14 Elliott MN, Kanouse DE, Edwards CA, Hilborne LH. Components of care vary in importance for overall patient-reported experience by type of hospitalization. *Medical Care*, 2009; **47**: 842–849.

15 Department of Health. *The NHS Outcomes Framework 2012/13*. London: Department of Health, 2012.

16 Roland M. Linking physicians' pay to the quality of care–a major experiment in the United kingdom. *The New England Journal of Medicine*, 2004; **351**: 1448–1454.

17 Campbell J, Smith P, Nissen S, Bower P, Elliott M, Roland M. The GP Patient Survey for use in primary care in the National Health Service in the UK–development and psychometric characteristics. *BMC Family Practice*, 2009; **10**: 57.

18 Roland M, Elliott M, Lyratzopoulos G *et al*. Reliability of patient responses in pay for performance schemes: analysis of national General Practitioner Patient Survey data in England. *BMJ*, 2009; **339**: b3851.

19 al Bashir MM, Armstrong D. Preferences of healthy and ill patients for style of general practitioner care: implications for workload and financial incentives under the new contract. *British Journal of General Practice*, 1991; **41**: 6–8.

20 US Senate. *Patient Protection and Affordable Care Act*. USA: Office of the President, 2011.

21 Cheraghi-Sohi S, Hole AR, Mead N *et al*. What patients want from primary care consultations: a discrete choice experiment to identify patients' priorities. *Annals of Family Medicine*, 2008; **6**: 107–115.

22 Ham C, Imison C, Goodwin N, Dixon A, South P. Where next for the NHS reforms? The case for integrated care. The Kings Fund, 2011.

23 Ham C, Smith J, Eastmure E. Commissioning integrated care in a liberated NHS: research summary. Nuffield Trust, 2011.

24 Ham C, Smith J. Removing the policy barriers to integrated care in England. Nuffield Trust, 2010.

25 Hawkes N. Integrated care. *BMJ*, 2009; **338**: b1484.

26 Elliott MN, Edwards C, Angeles J, Hambarsoomians K, Hays RD. Patterns of unit and item nonresponse in the CAHPS hospital survey. *Health Services Research*, 2005; **40**: 2096–2119.

27 Ipsos MORI. Technical annex for the GP patient survey 2010. http: and www.gp-patient.co.uk/results/download/y4q4/y4q4_AnnualTechnical_unweighted.pdf. London: Ipsos Mori, 2010.

28 Cheraghi-Sohi S, Bower P, Mead N, McDonald R, Whalley D, Roland M. What are the key attributes

of primary care for patients? Building a conceptual 'map' of patient preferences *Health Expectations*, 2006; **9**: 275–284.
29 Lyratzopoulos G, Elliott M, Barbiere JM *et al*. Understanding ethnic and other socio-demographic differences in patient experience of primary care: evidence from the English General Practice Patient Survey. *BMJ Quality and Safety*, 2012; **21**: 21–29.
30 Noble M, McLennan D, Wilkinson K, Whitworth A, Barnes H, Dibben C. The English Indices of Deprivation. Department for Communities and Local Government, 2007.
31 Landon BE, Zaslavsky AM, Bernard SL, Cioffi MJ, Cleary PD. Comparison of performance of traditional Medicare vs Medicare managed care. *JAMA*, 2004; **291**: 1744–1752.
32 Royston P. Multiple imputation of missing values: further update of ice, with an emphasis on interval censoring. *Stata Journal*, 2007; **7**: 445–464.
33 Paddison C, Elliott M, Parker RA *et al*. Should measures of patient experience in primary care be adjusted for case mix? Evidence from the English General Practice Patient Survey *BMJ Quality and Safety*, 2012; **21**: 634–640.
34 Vincent C, Woloshynowych M. The nature of poor performance; an analysis of cases referred to the GMC following the introduction of performance procedures. London: GMC, 2002.
35 Connected. *National Communication Skills Training*. London: UK NHS Connected, 2012.
36 Aboulghate A, Abel G, Elliott MN *et al*. Do English patients want continuity of care, and do they receive it? *The British Journal of General Practice*, 2012; **62**: 567–575.
37 Haggerty JL, Reid RJ, Freeman GK, Starfield BH, Adair CE, McKendry R. Continuity of care: a multidisciplinary review. *BMJ*, 2003; **327**: 1219–1221.
38 Lyratzopoulos G, Elliott MN, Barbiere JM *et al*. How can health care organizations be reliably compared?: lessons from a national survey of patient experience. *Medical Care*, 2011; **49**: 724–733.
39 de Boer D, Delnoij D, Rademakers J. The discriminative power of patient experience surveys. *BMC Health Services Research*, 2011; **11**: 332.
40 Wright C, Richards S, Hill JJ *et al*. Multisource feedback in evaluating the performance of doctors: The example of the UK General Medical Council Patient and Colleague Questionnaires. *Academic Medicine*, 2012; **87**: 1668–1678.
41 van Buuren BS, Boshuizen HC, Knook DL. Multiple imputation of missing blood pressure covariates in survival analysis. *Statistics in Medicine*, 1999; **18**: 681–694.
42 Rubin DB. *Multiple Imputation for Nonresponse in Surveys*. New York: J. Wiley & Sons, 1987.

Appendix 1
Statistical supplement – sensitivity analyses and standardized coefficients

Sensitivity analyses

To examine the impacts of missing data and to examine the importance of continuity of care we specified, a priori, two sensitivity analyses. First, we employed multiple imputation. Only 21% of responders to the GPPS were included in the complete-case analysis; this arises largely because 24% of responders did not provide answers to one or more of the socio-demographic questions, and 65% did not answer one of the two questions relating to attempts to make appointments in the last 6 months. As a result, the complete-case analysis is dominated by frequent users, who have tried to book both an urgent and advanced appointment in the last 6 months. In order to examine any bias this may introduce, we imputed missing data on patient experience measures using chained equations[41] for responders with complete socio-demographic data only. Imputation models included overall satisfaction, the seven patient experience items (including continuity of care), the six case-mix variables as well as passively imputed interaction terms between experience and case-mix items. Regression coefficients from the five imputed data sets were combined using Rubin's rules.[42]

Second, we ran an additional series of mixed effects models identical to the primary analyses except that they included one additional patient experience question, measuring relational continuity. This question, 'how often do you see the doctor you prefer to see?', is preceded by a filter question that asks 'is there a particular doctor you prefer to see at your GP surgery or health centre?'. A substantial minority of respondents (37%) indicated that they either have no preference to see a particular doctor or have no choice of doctor at their practice, and were therefore ineligible to answer the question following on how often they see the doctor they prefer. By including the item on continuity of care in our main analysis, we would be assess-

ing the importance of seeing the doctor you prefer only for those who have specifically indicated that they have a preference to see a particular doctor. With that in mind, we ran analyses including patients' experience with continuity as a separate series of secondary models in order to assess the importance of continuity of care as a driver of satisfaction for people who have expressed a preference to see a particular doctor.

Standardized coefficients

The standardized coefficients presented here represent the amount of absolute change in overall satisfaction that is associated with a one standard deviation change in the patient experience measures, standardizing across all patients. As such, they do not necessarily quantify how strong a driver of satisfaction the items are, given that the variance of responses can, and indeed does, vary across patient groups. In theory, a smaller absolute change in satisfaction in one group compared with another could explain more of the variation of satisfaction in that group if the variance in that group was small. It is possible to post hoc rescale to standardized coefficients such that the coefficients are specific to that group. We have done this in analysis not shown. Results were very similar when coefficients were standardized within groups rather than overall. This is because although the variance of responses do indeed vary substantially between groups the variation is fairly consistent across all items.