



How Do People With Diabetes Describe Their Experiences in Primary Care? Evidence From 85,760 Patients With Self-reported Diabetes From the English General Practice Patient Survey

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Charlotte A.M. Paddison,¹
Catherine L. Saunders,¹ Gary A. Abel,¹
Rupert A. Payne,¹ Amanda I. Adler,²
Jonathan P. Graffy,³ and
Martin O. Roland¹

OBJECTIVE

Developing primary care is an important current health policy goal in the U.S. and England. Information on patients' experience can help to improve the care of people with diabetes. We describe the experiences of people with diabetes in primary care and examine how these experiences vary with increasing comorbidity.

RESEARCH DESIGN AND METHODS

Using data from 906,578 responders to the 2012 General Practice Patient Survey (England), including 85,760 with self-reported diabetes, we used logistic regressions controlling for age, sex, ethnicity, and socioeconomic status to analyze patient experience using seven items covering three domains of primary care: access, continuity, and communication.

RESULTS

People with diabetes were significantly more likely to report better experience on six out of seven primary care items than people without diabetes after adjusting for age, sex, ethnicity, and socioeconomic status (adjusted differences 0.88–3.20%; odds ratios [ORs] 1.07–1.18; $P < 0.001$). Those with diabetes and additional comorbid long-term conditions were more likely to report worse experiences, particularly for access to primary care appointments (patients with diabetes alone compared with patients without diabetes: OR 1.22 [95% CI 1.17–1.28] and patients with diabetes plus three or more conditions compared with patients without diabetes: OR 0.87 [95% CI 0.83–0.91]).

CONCLUSIONS

People with diabetes in England report primary care experiences that are at least as good as those without diabetes for most domains of care. However, improvements in primary care are needed for diabetes patients with comorbid long-term conditions, including better access to appointments and improved communication.

¹Cambridge Centre for Health Services Research, Institute of Public Health, University of Cambridge, Cambridge, U.K.

²Wolfson Diabetes and Endocrine Clinic, Addenbrooke's Hospital, Institute of Metabolic Science, Cambridge, U.K.

³Primary Care Unit, Institute of Public Health, University of Cambridge, Cambridge, U.K.

Corresponding author: Charlotte A.M. Paddison, camp3@medschl.cam.ac.uk.

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See accompanying article, p. 343.

The American Diabetes Association's position statement on Standards of Medical Care (1) emphasizes the importance of a patient-centered environment for creating high-quality diabetes care. As quality of care is a multidimensional construct (2,3), improving the quality of primary care provided to people with diabetes requires considering both the clinical aspects of care and the patients' experience. Government policy in the U.K. emphasizes that peoples' views about their care are key to improving the design and delivery of health services (4), and there is evidence that information on poor patient experience can be used to drive improvements in quality of care (5). However, definitions of quality standards for diabetes care have often focused on clinical or technical domains of quality. Relatively fewer studies have examined the quality of diabetes care using measures of patient experience and large, national, methodologically robust studies are rare.

Delivering high-quality primary care is a current health policy goal in the U.S. (6–8) and England. In the U.K., care for most people with diabetes is delivered through family practices where care is free at the point of delivery for all residents. In England, almost all of the population is registered with a family practice. Family practices have an average of 3.5 primary care physicians and are responsible for registered lists averaging 6,745 patients. The concept of a family (or general) practice in the U.K. is not dissimilar to the concept of a patient-centered medical home as articulated in the U.S. (8). Shared features include, for example, the provision of integrated care to a defined population of patients and care that is delivered in a way that maximizes opportunities for the prevention of disease.

The quality of health care provided plays a salient role in enabling people with diabetes to stay well. Previous research has highlighted disparities in health outcomes among people with diabetes from different patient subgroups (9–11). In the U.K., "quality care for all" is a strategic priority within diabetes (12). Whether all people with diabetes receive similar quality of care regardless of, for example, age, ethnicity, or health status is unknown, and this remains an important gap in our current knowledge.

There is also a paucity of research examining the health and health care experiences of people managing diabetes in the context of comorbid long-term conditions. Evidence shows those with multiple long-term conditions are more likely to experience poor quality of life (13), die prematurely, and be admitted to hospital (14) compared with those with single conditions. Multimorbidity, the co-occurrence of two or more chronic medical conditions in one person, is increasingly common: in the U.K., 6.75 million adults have more than one long-term condition (15). In the U.S., most adults with diabetes have at least one comorbid condition, and ~40% have at least three (16). However, we do not know how comorbidity might impact on the primary care experiences of people with diabetes or how best to provide health services for this group.

This study describes primary care experiences among people with diabetes in England and examines variation in patient experience reported by sociodemographic characteristics and health status. We address three research questions:

1. How do people with diabetes describe their experiences of primary care at their family practice, and how do these experiences compare with patients without diabetes?
2. Do people with comorbid long-term conditions in addition to diabetes report worse (or better) primary care experiences compared with those with diabetes alone?
3. Are there differences in patient experiences by sociodemographic characteristics, or health status, among people with diabetes?

RESEARCH DESIGN AND METHODS

Data were collected from 906,578 respondents, including 85,760 with self-reported diabetes, registered with 8,254 primary care practices in England as part of the 2012 General Practice Patient Survey (GPPS), a national survey of patient experience with primary care (response rate 37.8%). The GPPS questionnaire is sent by mail each year to 2.7 million patients in England who have been continuously registered with a family practice for at least 6 months. The questionnaire can also be answered online or by telephone in 13 languages.

Stratified random samples from family practice patient lists, with oversampling of small practices and practices known from prior surveys to provide low response rates, are used to provide an average of 127 respondents per practice. Additional details on the GPPS have been published (17,18).

Patient Experience Measures

In this study, patient experience was measured using a single item to assess overall experience with primary care services and six items assessing patient experience in three domains of primary care: access (two questions); continuity of care (one question); and communication (doctor communication [one question with five subitems]; nurse communication [one question with five subitems]; and receptionists, single question). Response options included three-, four-, and five-point Likert scales.

We used categories employed for the public reporting of these data at the practice level (19) to define a binary indicator (yes/no) for positive experience of care. For example, for the question on overall experience at your general practitioner (GP) surgery, we considered the endorsement of either "very good" or "fairly good" response options to indicate a positive experience of care. For doctor and nurse communication, we included respondents who had completed a minimum of three or more of the five constituent subitems, with an overall positive experience defined as endorsement of either "good" or "very good" response options for all of the completed items. For reasons of parsimony, we present data from seven patient experience items in the main results tables. However, data for a total of 11 patient experience items, including 4 additional questions (2 questions on access and 2 questions on trust and confidence), are available in Supplementary Tables 2–4. The specific wording for each survey question in these analyses is provided in Supplementary Table 1.

Demographic and Health Measures

The GPPS questionnaire also includes 14 questions assessing: health-related quality of life; self-reported health and disability status; and sociodemographic characteristics. Age was measured using eight ordinal categories from 18–24 to 85+ years. Race/ethnicity, hereafter

ethnicity, as this is the terminology used in the U.K. survey, was quantified using categories from the office of National Statistics (white, mixed, South Asian, black, or other). We used an area-based measure of socioeconomic status based on the patient's residence, categorized into quintiles of socioeconomic status by linking patient postal codes to the 2010 Lower Super Output Area Index of Multiple Deprivation (20). Respondents were also asked to indicate, separately, if they had 1 or more of 16 long-term conditions (see Supplementary Fig. 1 for list of conditions) including diabetes. Health-related quality of life was measured using the five-dimensional EuroQoL (EQ5D) (21).

Analyses

Multivariable logistic regressions on respondents with complete data (Supplementary Fig. 1), adjusting for age, sex, ethnicity, and socioeconomic status, were used in all analyses using Stata 11.2 statistical software. In the first set of analyses, we examined the percentage of respondents with and without diabetes who reported a positive experience of care, after adjusting for socio-demographic characteristics. We used a likelihood ratio test for differences between people with and without diabetes and estimated the CIs for the adjusted differences in experience using bootstrap resampling. A supplementary set of analyses were run to further examine differences in patient experience across four groups: self-reported diabetes only; diabetes with at least one comorbid long-term condition; without diabetes but with at least one other long-term condition; and no self-reported long-term conditions. To explore the experience of being able to see the patients' preferred primary care doctor, we also calculated the proportion of respondents who attend a family practice with more than one doctor, expressed a preference to see a particular doctor, and, among those who preferred a particular doctor, the proportion of patients who reported that they were able to see their preferred doctor always, almost always, or a lot of the time.

The second set of analyses explored the impact of increasing numbers of comorbidities among people with diabetes on their experience of care compared with people without diabetes. In these

models, comorbidity was included in the form of a count of self-reported long-term conditions (i.e., 0, 1, 2, 3, or more).

A third set of unadjusted and adjusted analyses were used to identify variation in primary care experiences among people with diabetes by age, sex, socioeconomic status, ethnicity, and health-related quality of life (EQ5D).

RESULTS

Demographic and health characteristics of the 85,760 respondents with self-reported diabetes in the 2012 GPPS are shown in Table 1. Fifty-nine percent

of respondents were female; 48% were aged ≥ 65 years, and 15% were non-white. Most respondents with diabetes had other comorbid long-term conditions (27% diabetes alone, 30% diabetes plus one other long-term condition, and 43% diabetes plus two or more long-term conditions) and reported compromise to their quality of life as measured by the EQ5D. Compared with the 820,818 survey responders who did not report diabetes, responders with diabetes were more likely to be aged >55 years, female, Asian, living in less affluent areas, and in poor health (represented by greater

Table 1—Demographic and health characteristics of patients with self-reported diabetes among responders to the 2012 GPPS England

	Self-reported diabetes, N (weighted* %) (total n = 85,760)	Responders without diabetes, N (weighted %) (total n = 820,818)
Sex	N = 83,777	N = 807,930
Male	37,751 (41.4)	342,129 (51.5)
Female	46,026 (58.6)	465,801 (48.5)
Age group, years	N = 83,905	N = 807,880
18–24	361 (1.4)	38,445 (10.1)
25–34	1,115 (3.0)	84,864 (17.6)
35–44	3,588 (7.7)	114,085 (18.5)
45–54	10,269 (17.1)	143,398 (18.4)
55–64	19,662 (23.1)	164,712 (15.1)
65–74	25,430 (24.3)	144,669 (11.0)
75–84	18,800 (18.1)	87,874 (6.6)
85+	4,680 (5.5)	29,833 (2.7)
Ethnic group	N = 83,772	N = 806,655
White	69,736 (84.7)	719,772 (88.2)
Mixed	477 (0.6)	5,981 (0.9)
Asian**	7,634 (8.4)	43,821 (6.1)
Black†	2,921 (3.0)	19,794 (2.5)
Other ethnic group	3,004 (3.3)	17,287 (2.3)
Socioeconomic status	N = 85,698	N = 820,247
1 (most affluent)	12,500 (15.9)	161,906 (20.1)
2	15,025 (17.8)	170,460 (20.1)
3	17,259 (19.8)	169,603 (20.1)
4	18,788 (21.7)	159,167 (20.0)
5 (least affluent)	22,126 (24.8)	159,111 (19.8)
Health-related quality of life		
Problems with mobility‡	83,475 (47.3)	803,655 (19.4)
Problems with self-care‡	82,671 (19.5)	801,238 (7.1)
Problems with usual activities‡	82,958 (45.0)	803,611 (22.1)
Pain/discomfort‡	82,883 (62.5)	800,790 (39.2)
Anxious or depressed‡	80,058 (34.2)	787,530 (23.8)
Number of long-term conditions	N = 85,760	N = 820,818
0	Not applicable	323,435 (48.0)
1	20,205 (26.9)	280,614 (31.7)
2	25,563 (29.8)	128,145 (12.4)
3	18,895 (20.5)	56,022 (5.0)
≥ 4	21,097 (22.8)	32,602 (2.8)

*Weighted percentages are calculated using survey design and nonresponse weights (by age, sex, geographical location, and GP practice; full details in the Technical Annex GP Patient Survey 2011–2012 Annual Report). **Indian, Pakistani, Bangladeshi, Chinese, and any other Asian.

†Black Caribbean, black African, and any other black. ‡Table numbers are the numbers of valid responses, and percentages are those endorsing response categories representing either some or severe limitations on named EQ5D subscale.

number of long-term conditions and worse health-related quality of life). Responders with diabetes were also more likely to report anxiety and depression than responders without diabetes.

Experience of Primary Care Among People With Self-reported Diabetes

Results from the first set of analyses, examining the percentage of respondents reporting a positive experience across three domains of care (access, continuity, and communication), are shown in Table 2. Data are displayed separately for two groups: responders with self-reported diabetes and responders without diabetes. Results show that for six out of seven questionnaire items, patients with diabetes more often reported positive primary care experiences in comparison with those without diabetes when controlling for age, ethnicity, sex, and socioeconomic status ($P < 0.001$ for all). For the one remaining question, asking about communication with GP surgery receptionists, there was no difference in reported experiences among people with diabetes compared with people without diabetes ($P = 0.41$). Data for an extended set of 11 patient experience items displayed separately for four patient groups are shown in Supplementary Table 2.

Analyses exploring the experience of seeing the patients' preferred primary care doctor showed that almost three-quarters

(72%) of respondents with diabetes who attend a family practice with more than one doctor expressed a preference to see a particular doctor. Among those who preferred a particular doctor, three-quarters (75%) reported that they were able to see their preferred doctor always, almost always, or a lot of the time (Table 2).

Results from the second set of analyses that explore differences in primary care experiences among people with diabetes by comorbidity status are shown in Fig. 1. Among people with diabetes, those with additional comorbid long-term conditions reported worse patient experiences, particularly for questions on access to appointments. As the number of comorbid long-term conditions increased, the odds of reporting a poor patient experience also increased. For the ability to see the patient's preferred doctor among people with diabetes, this trend was less evident. Results in Fig. 1 show that the likelihood of being able to see the patient's preferred doctor does not change substantially with increasing number of comorbid long-term conditions.

Differences in overall experience of primary care by sociodemographic characteristics and health-related quality of life among people with diabetes are displayed in Table 3. Odds ratios (ORs) from logistic regressions (both unadjusted and adjusted for sociodemographic characteristics and health status) show that among people with self-reported

diabetes, there is some evidence of disparities in the quality of primary care experience reported among patient groups. These differences in patient experience persist when controlling for quality of life and other sociodemographic characteristics (see Table 3, adjusted model). The strongest effects, representing poorer patient experience, are seen for patients aged 25–34 years (OR 0.43 [CI 0.35–0.51]) and for Asian patients (OR 0.43 [CI 0.40–0.47]). Health-related quality of life was also associated with differences in patient experience. Diabetic patients in pain/discomfort and those who report feeling anxious or depressed were less likely to report a positive experience of care (OR 0.79 [CI 0.73–0.86] and 0.68 [CI 0.63–0.72], respectively). ORs describing the differences in experience of primary care by sociodemographic characteristics and health-related quality of life among people with diabetes for an additional 10 patient experience items are shown in Supplementary Table 3.

CONCLUSIONS

In a study of 85,760 people with self-reported diabetes among respondents to the 2012 GPPS, we show that people with diabetes on average report primary care experiences that are at least as good as, or better than, those reported by patients without diabetes for most domains of care. This is consistent with findings from research showing that

Table 2—Survey responders reporting a positive patient experience for seven questionnaire items

GPPS question	Self-reported diabetes (n = 72,493)	No diabetes (n = 735,602)	Adjusted** difference (%)	ORs (95% CI)	P value
How easy is it to get through to someone at your GP surgery on the phone?	85.7 (85.4–86.0)	84.7 (84.7–84.8)	0.9 (0.6–1.2)	1.08 (1.05–1.10)	<0.0001
Overall, how would you describe your experience of making an appointment?	84.2 (83.9–84.5)	83.3 (83.2–83.4)	0.9 (0.6–1.2)	1.07 (1.04–1.09)	<0.0001
How often do you see or speak to the GP you prefer?†	75.0 (74.6–75.4)	71.8 (71.7–72.0)	3.2 (2.7–3.6)	1.18 (1.16–1.22)	<0.0001
How helpful do you find the receptionists at your GP surgery?	93.1 (92.8–93.3)	93.2 (93.1–93.2)	0.1 (–0.1 to 0.3)	0.98 (0.95–1.02)	0.41
Doctor communication‡	80.4 (80.1–80.7)	79.2 (79.1–79.3)	1.2 (0.9–1.6)	1.08 (1.06–1.11)	<0.0001
Nurse communication‡	86.4 (86.2–86.7)	84.6 (84.5–85.0)	1.8 (1.5–2.1)	1.16 (1.13–1.19)	<0.0001
Overall, how would you describe your experience of your GP surgery?	91.5 (91.3–91.8)	90.4 (90.4–90.5)	1.1 (0.8–1.3)	1.15 (1.11–1.18)	<0.0001

Data for each question show the adjusted percentage endorsing a positive response, and adjusted difference between responders with and without self-reported diabetes. Adjusted percentages are the expected percentage of patients reporting a positive experience in the particular group (self-reported diabetes or not) if the age, sex, ethnicity, and socioeconomic status profile in that group was the same as all included respondents.

**Difference in percentage calculated by (adjusted percentage of people with self-reported diabetes endorsing a positive response) minus (adjusted percentage of people with no diabetes endorsing a positive response) with adjustment for age, sex, ethnicity, and socioeconomic status. †Calculated only for those who had a preference to see or speak to a particular GP. ‡Full details of question subparts in Supplementary Table 1.

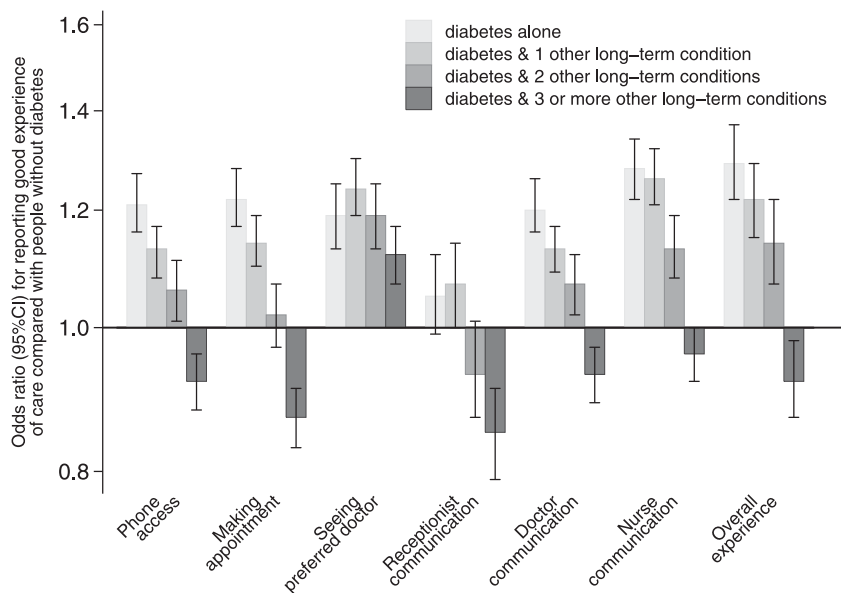


Figure 1—Variation in primary care experiences among people with self-reported diabetes by number of additional long-term conditions.

patients with diabetes in the U.S. generally report a more positive experience of care than those without diabetes (22). However, we also found important evidence of differences in the primary care experiences for diabetes patients with comorbid conditions. In comparison with patients with diabetes alone, those with diabetes and additional comorbid long-term conditions reported poorer experiences for both access and communication in primary care.

People With Comorbid Long-Term Conditions in Addition to Diabetes Report Poorer Primary Care Experiences

Although improving access to health care has been a major policy focus within the U.K., our findings suggest problems with access persist, particularly among those with diabetes and additional comorbidities. People with diabetes also experience difficulties obtaining continuity of care. In the current study, 25% of respondents who preferred to see a particular doctor were unable to do so. However, people with diabetes were *more* likely to report being able to see their preferred primary care doctor in comparison with patients without diabetes and those with no long-term conditions. This suggests that although there is room for improvement, people with diabetes in England may experience a more joined-up patient experience than many other patients.

Research examining patient priorities in England (23) and across eight European countries (24) suggests that good communication with your doctor is one of the most important elements of patient experience. Good interpersonal communication with health professionals is essential for people with diabetes (25), both to promote a positive patient experience of care and facilitate good self-management. Examples could be through clear explanation of test results or providing information on how to recognize and treat hypoglycemia. The benefits of clear communication may be particularly important for patients who have multiple diseases and the complex treatment regimens often associated with multimorbidity. It is concerning, therefore, to find in our study that patients with diabetes and comorbid long-term conditions are more likely to report experiences of poor communication with doctors and nurses involved in their care.

Primary Care Experiences Among People With Diabetes Vary by Sociodemographics and Health Status

We found evidence that primary care experience among people with diabetes varies by sociodemographic group and health status. Among people with diabetes those in poor health reported worse primary care experiences. This is consistent with the inverse care law (26), which shows that the availability of

good medical care tends to vary inversely with the need for it in the population served. In our study of people with diabetes, on average, younger adults and those of Asian ethnicity reported poorer primary care experience. These results are consistent with broader U.K. literature showing that older adults are more likely to report positive patient experiences in primary care (27). Previous research in the U.S. has also shown evidence that patient experience among people with end-stage renal disease (22) also varies by age and ethnicity.

We perceive that our results showing that primary care experience among people with diabetes varies by age and ethnicity are most likely to reflect trends in patient-reported experience within the general U.K. primary care population rather than differences between patient subgroups that are unique to people with diabetes. On the basis of data available in this study, we cannot be sure to what extent these findings reflect generational and cultural differences in patterns of response to questionnaire surveys asking about your health care experiences or genuine differences in the quality of care provided to some patient groups.

Our study builds on what is known within a U.S. context about health care experiences among people with diabetes (28) and those with complications often arising from diabetes (22) by investigating the experience of people with diabetes in a U.K. setting in which a national health system with universal coverage enables access to free healthcare for all residents. Particular strengths of our study are the large sample size, our analysis of the impact of comorbidity, and our ability to investigate how the experiences of people with diabetes vary by sociodemographic characteristics and health status. This study also has some limitations. Data were collected as part of a national population survey. We were reliant on patients to report whether they had diabetes, and there is no opportunity to verify this or supplement clinical details through medical records due to protection of anonymity of survey responders guaranteed by the U.K. Department of Health. Responses from people with diabetes may reflect their

Table 3—Differences in overall experience of primary care by sociodemographic characteristics and health status among people with self-reported diabetes

Variable category	OR model series 1 (unadjusted)†	OR model series 2 (adjusted)‡	P value model 2
Sex			
Male	Reference	Reference	0.96
Female	0.95 (0.89–1.00)	1.01 (0.95–1.07)	
Age group, years			
18–24	0.51 (0.37–0.70)	0.45 (0.32–0.62)	<0.0001
25–34	0.45 (0.38–0.54)	0.43 (0.35–0.51)	
35–44	0.61 (0.55–0.69)	0.65 (0.57–0.73)	
45–54	0.71 (0.65–0.77)	0.72 (0.66–0.79)	
55–64	Reference	Reference	
65–74	1.68 (1.55–1.83)	1.57 (1.44–1.71)	
75–84	1.96 (1.77–2.15)	1.83 (1.66–2.02)	
85+	1.58 (1.35–1.85)	1.53 (1.30–1.79)	
Ethnic group			
White	Reference	Reference	<0.0001
Mixed	0.55 (0.39–0.79)	0.72 (0.51–1.03)	
Asian	0.35 (0.33–0.38)	0.43 (0.40–0.47)	
Black	0.81 (0.69–0.96)	0.95 (0.80–1.12)	
Other	0.63 (0.54–0.73)	0.78 (0.67–0.91)	
Socioeconomic status			
1 (most affluent)	Reference	Reference	0.0004
2	0.97 (0.86–1.09)	1.00 (0.89–1.13)	
3	0.76 (0.69–0.85)	0.87 (0.78–0.97)	
4	0.66 (0.59–0.73)	0.84 (0.75–0.93)	
5 (least affluent)	0.60 (0.55–0.67)	0.86 (0.78–0.96)	
EQ5D			
Mobility problems§	0.90 (0.85–0.95)	1.05 (0.96–1.15)	0.31
Self-care problems	0.75 (0.70–0.80)	0.98 (0.90–1.07)	0.73
Usual activities problems	0.75 (0.71–0.79)	0.81 (0.74–0.89)	<0.0001
Pain/discomfort	0.74 (0.69–0.79)	0.79 (0.73–0.86)	<0.0001
Anxious or depressed	0.56 (0.53–0.60)	0.68 (0.63–0.72)	<0.0001

Data shown are ORs for reporting a positive patient experience. Positive patient experience defined as endorsement of very good or fairly good in response to the question "Overall, how would you describe your experience of your GP surgery?" ORs <1.0 represent a poorer patient experience. †ORs from model series 1 (unadjusted) used logistic regressions with a single fixed effect for the exposure variable alone (e.g., age) and no adjustment for other covariates. ‡ORs from model series 2 (adjusted) included fixed effects for all sociodemographic variables and health status measured using EQ5D. §Reference groups for EQ5D domains are, respectively: no problems for mobility, self-care, and usual activities; no pain or discomfort; and not anxious or depressed.

experience with primary care services as a whole, not just care provided for their diabetes. Another limitation is the modest response rate to the survey (38%). However, in our previous analysis of two questions associated with payment to practices, we found minimal evidence of nonresponse bias (29), and this is consistent with a meta-analysis of survey methodology literature showing that response rates are only weakly associated with nonresponse bias among studies using methodology similar to ours (30). Finally, there are limits to the generalizability of our findings. The experience of people with diabetes may vary between countries due to differences in the design and delivery of health care, and we were not able in

our study to explore variation across nations or health care settings.

Implications for Health Policy and Practice and Future Research

Better access to primary care appointments could be a useful target for improving the quality of care for people with diabetes in England. A second area for improvement is patients' ability to see their preferred primary care doctor. Although our results suggest most people with diabetes are able to see their preferred doctor if they wish, a substantive minority (25%) were not able to do so. This is important because there is evidence of increasing fragmentation of primary care in the U.K. (31,32), including loss of relational continuity (33), and concerns

that poor coordination of care may impact negatively on people with diabetes (34). Concerns about the impact of fragmented care on diabetic patients have also been raised in the U.S. (28), and coordination of care through a single provider or provider team has been identified as critical for improving diabetic health services for people with diabetes and comorbid chronic conditions (16). Our results highlight the difficulties of providing coordinated care for people with diabetes, even in the U.K., where all patients are enrolled in a family practice not dissimilar to the U.S. concept of a patient-centered medical home.

Our findings suggest groups of patients with diabetes who may benefit most from improvements in care. We found responders with diabetes were more likely to report anxiety and depression and that, among people with diabetes, compromise to quality of life in the domains of "pain" and "anxiety and depression" were both associated with notably worse patient experience. This suggests that better recognition and improved management of pain and depression among patients with diabetes may help to improve quality of life, while potentially also improving the experience of care for those patients with unrecognized or poorly treated pain or depression. While recognizing that the management of pain and depression is relevant for all patients, this may be particularly important for people with diabetes. Chronic pain is known to be associated with poorer diabetes self-management (35) and depression among people with diabetes is higher than among the general population (36), with evidence suggesting depression is underrecognized and undertreated among people with diabetes (37).

Many people with diabetes also have other comorbid long-term conditions (16), but the implications of this for the delivery of care for people with diabetes are only just beginning to be understood. Our results suggest a need to improve primary care for people who have diabetes with other comorbid long-term conditions. We recommend that when making improvements, the impact of comorbidity both in terms of number of long-term conditions and the patients' quality of life is considered. There is considerable interest in the potential harms of overtreatment (38), but we do not yet have a good understanding

of the possible burden of treatment (39,40) for people with diabetes. It is very encouraging to see that individualized diabetic treatment plans that take into account comorbidity, patient preferences, and time frame to benefit are emphasized in current American Diabetes Association guidelines (1).

In conclusion, people with self-reported diabetes in England on average report primary care experiences that are at least as good as, or better than, those reported by patients without diabetes for most domains of care. However, our results highlight specific groups of patients with diabetes who could benefit from improvements in care. These include patients with diabetes and additional comorbid conditions and those with diabetes who also report high levels of pain and/or anxiety and depression. Better access to primary care appointments, improving communication, and enabling patients to see their preferred doctor are useful targets for improving the quality of primary care for people with diabetes.

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