Continuity of care of diabetic patients in a family practice clinic: How important is it?

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Abstract

Aim: To assess the importance of continuity of care among diabetic patients attending a primary care clinic and to correlate degree of continuity of care with diabetic control.

Methods: A cross sectional survey was carried out among diabetic patients ($n = 166$) attending follow-up consultations in a family practice clinic of a teaching hospital. Face-to-face interviews were carried out on patients' perception of continuity of care and various aspects related to diabetes. Diabetic control was assessed by glycosylated hemoglobin. Retrospective chart audits of each patient over the previous 28 months were done to assess the degree of continuity of care, measured with the Usual Provider Continuity Index (UPCI).

Results: The UPCI ranged from 0.18 to 1.00 with a mean value of 0.60. The average number of visits per patient over the 28-month period was 11.7 visits. The majority of patients saw five different doctors for all their visits. There were no statistically significant associations between the degree of provider continuity with diabetic control ($r = 0.054$) and diabetic self-care behavior ($r = 0.065$). The majority of patients (89%) felt that it was important to have a regular doctor. The main reason given was that a regular doctor would know the patient's problems.

Conclusions: Continuity of care was highly valued by diabetic patients attending a hospital-based family practice clinic. Even though the degree of continuity was not associated with the degree of diabetic control, patients felt that it was important to have doctors who are aware of their problems.

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Key words: continuity of care, diabetes mellitus, family practice.

Introduction

Continuity of care is the central issue in family medicine.[1] The various dimensions that can be defined in terms of continuity include the chronological, geographic, interdisciplinary, interpersonal and informational dimensions.[2] In their model of continuity of care, Rogers and Curtis have also added the dimensions of relationship, stability and accessibility, reviewing the differences between longitudinality and continuity.[3] It can also be seen as care from one doctor, usually over an extended period of time and where more than one episode of illness is involved.[4] This also refers to personal continuity,[5] which can be measured over a defined time or as an ongoing therapeutic relationship between a patient and his practitioner. Various methods of measuring continuity of care had been described by Steinwachs.[6] These include the Usual Provider Continuity Index (UPCI), Continuity Index, Continuity of Care Index, Gini Index, Likelihood of Continuity and Sequential Continuity.

There is consistent evidence highlighting the advantages of continuity of care in the aspects of a doctor–patient relationship,[7,8] patient satisfaction,[9] improved resident and faculty physician satisfaction with their outpatients,[10] increased knowledge of and interest in the patient,[11] better accumulated knowledge and doctors' sense of responsibility towards their patients,[12] and drug compliance.[13] In the care of diabe-

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tes, it leads to greater physicians' understanding of patients' views of diabetes.[14] However, various parties may have differing perceptions of the importance of continuity of care. In one study, 'seeing the same health care provider' is of more interest to patients than it seems to be for the care providers themselves.[15]

There are contradictory findings. Lewis surveyed care in children, asking different population groups to rank 11 aspects of comprehensive care.[16] 'Provider continuity' was consistently ranked lowest while 'emergency services' and 24-hour availability ranked highest. Looking at a group of patients treated for respiratory illnesses and eventually having tonsillectomy and adenoidectomy, there was no causal relationship between continuity and quality.[17] Sturmberg noted that patients who seek care from the same provider double a doctor's workload.[18]

The type of practice also affects continuity of care. A higher continuity of care would be easier to achieve in clinics with personal lists or in solo practices. In an academic set-up, barriers to continuity include the succession of trainees in the practice for limited periods of time, the commitment of trainees and academic staff to teaching, which may limit the doctors' availability. Studies found that patient satisfaction on the continuity of care and availability was reduced in training practices,[19] and continuity dropped from 84 to 68% after a private pediatric practice became a university teaching clinic.[20]

The present study was therefore carried out to assess the importance of continuity of care among diabetic patients attending a primary care clinic and to correlate degree of continuity of care with diabetic control.

Materials and methods

Study setting

This study was conducted over a 3-week period in the Family Practice Clinic of the University of Malaya Medical Center. This clinic is part of the Department of Primary Care Medicine, an academic department providing both undergraduate and postgraduate teachings in family medicine. Each patient seen in this clinic receives care from a designated doctor by appointment. The doctors providing clinical care belong to one of three categories: academic staff, trainee medical officer (enrolled in the 4-year Master in Family Medicine program) and non-trainee medical officer (not enrolled in the postgraduate program). If a doctor is not available on his or her clinic days, another appointment day is scheduled or another doctor sees the patient. Patients with acute complaints (without appointment) are seen by a medical officer on duty.

Patients

Patients in this study were adult diabetic patients (above 18 years) in the Family Practice Clinic. These diabetic patients were recruited if their regular doctors had been working in the clinic for at least 28 months. This corresponds to the final year masters trainee medical officers' duration of attachment in the clinic.

Study questionnaire

Patients were interviewed by trained research assistants using a fixed format questionnaire before seeing their doctors to reduce bias in their recall of information. Patients were also asked on their self-care practices in relation to diabetic care. These practices include home blood glucose monitoring, dietary control, eliminating sugar in their drinks, exercising, complying with medication and not smoking. For the six parameters, practice scores were obtained by giving one point for a positive response and zero points for negative responses. For each patient, a retrospective chart audit was done covering consultations for the previous 28 months.

The degree of provider continuity was calculated using the UPCI that measures the number of visits to a usual provider as a proportion of all visits. The UPCI theoretically can range from '0' (no continuity at all) to '1' (perfect provider continuity). The UPCI was correlated with glycosylated hemoglobin (HbA_{1c}) values and practice scores. Two groups with different degrees of provider continuity were created using the median UPCI value as a cut off point. The group with a lower degree of provider continuity had a UPCI less than the median value and those with a higher degree of provider continuity had a UPCI equal to or more than the median value.

Methodology

Ethical approval was obtained from the Ethical Committee of the University of Malaya Medical Center. A pilot study was initially carried out. Data were collected during a 3-week period. Patients were selected from their appointment lists with their regular doctors who had been in the department in the previous 28 months. Inclusion criteria were patients aged above 18 years, already diagnosed as having diabetes based on having a written diagnosis of 'diabetes' in the records or those who were already on diabetic treatment. A total of 166 patients were included and informed consent was obtained from every patient. There were no refusals.

Statistical analysis

Independent variables were the demographic and clinical parameters and patients' perceptions of continuity of care. Results were analyzed using the Statistical Package for Social Services (SPSS version 10) using the χ^2 tests for nominal variables while continuous variables (UPCI, HbA_{1c}) were tested for statistical significance using the Student's *t*-test or ANOVA (analysis of variance). The significance level was set at $p < 0.05$.

Results

Patients

During the data collection period, a total of 166 diabetic patients turned up for their appointments (106 females, 60 males). All subjects had non-insulin dependent diabetes mellitus (type 2). The mean duration of diabetes was 11.5 years (range from 2 to 45 years). Approximately 70.2% had other comorbidities apart from diabetes. Table 1 shows the demographic details of the subjects.

Table 1 Demographic characteristics of patients ($n = 166$)

Characteristic	Number (%)
Age, mean	59.2 years
Age, range	21–81 years
Sex	
Male	60 (36)
Female	106 (64)
Ethnicity	
Malay	37 (22)
Chinese	65 (39)
Indian	63 (38)
Others	1 (1)
Marital status	
Single	8 (5)
Married	138 (83)
Divorced/widowed	20 (12)
Education	
No formal education	31 (19)
Primary	66 (40)
Secondary	57 (34)
Tertiary	12 (7)
Employment	
Unemployed	60 (36)
Employed	32 (19)
Retired	74 (45)
Duration of diabetes, mean	11.5 years
Mode of treatment	
Non-pharmacological (diet control)	(6.0)
Oral hypoglycemic agents	(88.6)
Combination of oral agents and insulin injections	(1.8)
Subcutaneous insulin	(3.6)

Consultation patterns and degree of provider continuity

Twenty-two doctors were involved in the study. The majority (12) were family medicine trainee medical officers, eight were full-time academic staff members and two were non-trainee medical officers. Of the total 166 patients, 55.4% were registered with trainee medical officers, 36.1% were registered with academic staff members and 8.4% were with non-trainee medical officers. There were a total of 1947 consultations for all 166 patients with a mean of 11.7 visits per patient over 28 months (range of 6–25 visits). The majority of patients saw five different doctors for all their visits. Two patients saw more than 10 different doctors each, with the maximum number of doctors seen by one subject as shown in Fig. 1.

The UPCI was between 0.18 and 1.00. The mean value was 0.60 (SD = 0.19). There were seven patients who had perfect provider continuity; they were registered with four different academic staff. Patients registered with academic staff had the highest continuity (mean value of 0.72) compared to those registered with the trainee medical officers and non-trainee medical officers with mean UPCI values of 0.53 and 0.50, respectively (ANOVA F = 26.22, $p < 0.005$).

Patients' perceptions of a regular doctor

Four questions were asked to assess patients' perception of provider continuity (Table 2). A total of 89.2% felt that it was important to have one regular doctor treating them. Not surprisingly, significantly more patients with higher levels of continuity (as measured by UPCI) answered these four questions affirmatively.

Why is continuity of care important to patients?

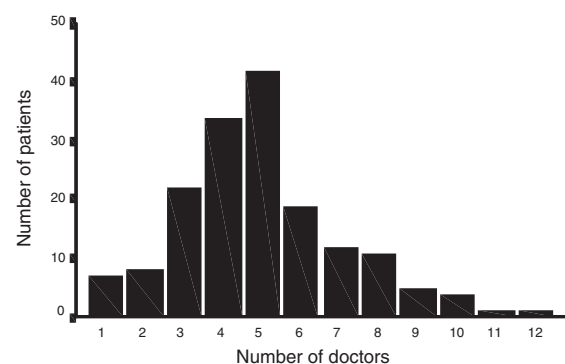The main reason for patients valuing a regular doctor was that the doctor would know their problems

Figure 1 Number of different doctors seen by each patient.

Table 2 Patients' perceptions of a regular doctor and degree of provider continuity

Perception of regular doctor	Patients who responded 'Yes'		Low continuity n	High continuity n	Statistical test value χ^2	p value
	n	%				
Do you feel that it is important to have one regular doctor treating you?	148	89.2	68	80	5.294	0.021
Do you have a regular doctor who sees you most of the time in this clinic?	130	78.3	51	79	24.788	<0.0001
What is your regular doctor's name? (*Able to name the doctor*)	132	79.5	51	81	31.946	<0.0001
Would you be prepared to wait to see your regular doctor?	141	84.9	64	77	4.998	0.014

Table 3 Reasons for the importance of having a regular doctor

Reason	n	%
The doctor knows my problems	106	71.6
I'm used to this doctor	22	14.9
This doctor is easy to talk to	26	17.6
The doctor knows my medication	56	37.8
Others:		
'I trust the doctor'	1	0.7
'Other doctors change medication'	1	0.7
'Having many doctors is confusing'	1	0.7
Total	148	100.0

(Table 3). However, there were 18 patients who thought that it was not important to have a regular doctor. Of these, 17 felt this was because all doctors were the same and one patient felt that it was difficult to see the same doctor.

Provider continuity and clinical parameters

The mean HbA$_{1c}$ for all 166 patients was 8.7% (range of 3.6–29.6%). There was no relationship between HbA$_{1c}$ and the degree of provider continuity (UPCI) as shown by the Pearson correlation coefficient test, $r = 0.054$ ($p = 0.505$).

Patients were also asked about their diabetic self-care behaviors based on six practices. The Pearson correlation value between the practice scores and the UPCI was $r = 0.065$, showing that there was no relationship between self-care behaviors and provider continuity. Four patients had a score of 1, 22 patients scored 2, 46 patients scored 3, 63 patients (the majority) scored 4, 26 patients scored 5 and five patients had the maximum score of 6. Table 4 gives the details of these parameters.

Discussion

The mean UPCI in the present study was 0.60. This meant that a diabetic patient would, on the average, see his or her regular doctor in 60% of all consultations. The group of patients who had perfect provider continuity were all registered with members of the academic staff. Similarly the continuity for patients registered with academic staff were higher compared to those registered with medical officers. The reasons for this might be that academic staff members make more efforts to re-schedule their appointment lists should they not be able to run a particular days' clinic, and maintain a better doctor–patient relationship so that patients do not default their appointments.

Barriers to a high degree of provider continuity include staff rotation and teaching duties.[5] These barriers also apply to the present study setting. Perhaps when absolute continuity of care is difficult to achieve such as in our clinic, a strict personal list cannot be enforced. Instead we should strive to provide better quality of care, to maintain continuity with the whole team and to strive for good informational continuity through proper and complete documentation.

The degree of provider continuity was not shown to have any significant relationship to the degree of diabetic control. This is similar to the finding in a study by O'Connor *et al.* who found that there was no statistically significant difference in glycemic control among patients with or without regular providers.[21] Rather, having a regular provider was more strongly related to the process of care given.

Having a lower UPCI meant that patients saw more doctors. This indirectly serves as an audit for processes of care, as different doctors may pick up areas of inadequacies and try to correct them, resulting in better care and control. Furthermore, when a doctor has seen a patient several times, interpersonal continuity may

Table 4 Patients' self-care practices and degree of provider continuity

Type of practice	Positive response (n=166)	%	Mean UPCI	F	p value
Home monitoring	31	19	0.63	1.081	0.300
Diet control	138	83	0.59	1.160	0.280
No sugar in drinks	114	69	0.60	0.255	0.614
Exercise	116	70	0.61	2.027	0.156
Good compliance	127	77	0.60	1.011	0.316
Never/stopped smoking	152	72	0.60	0.619	0.432

UPCI, Usual Provider Continuity Index.

be directed at maintaining that relationship rather than striving for better control of diabetes.

Despite the lack of diabetic control, the majority of subjects valued having a regular doctor. Furthermore, our diabetic patients appear to value continuity more than the doctors (as UPCI is mainly at the control of the doctors). While nine out of 10 patients think it is important to have a regular doctor, only 63% of them were seeing their regular doctor for more than half of their visits (UPCI >0.50).

Some 84.9% of patients were prepared to wait to see their regular doctor even when given the choice of seeing another doctor straight away. This strengthens the value patients place on their doctor–patient relationship. Love and Mainous found that 51.4% valued continuity with their regular physicians to the extent that they would wait a day or more to receive care from their own physician while suffering an acute illness.[22] The authors suggested that the relationship between a patient and a physician created in ongoing treatment of a chronic disease might sensitize patients to prefer a physician who is familiar with their medical history. A study of 111 patients attending three Southampton group practices found that half of the respondents desired high continuity of care by replying 'very important' to the question 'how important is it to you to see the same doctor each time you visit the surgery or health center?'[23] Among those who valued having a regular doctor, 71.6% gave the reason 'the doctor knows my problems'.

Despite all the evidence, there has been no optimum level of continuity established. Continuity with a personal physician was said to occur in 80% of patient visits in a general practice in England.[24] In comparing four group practices, Freeman and Richards noted that in a practice with a strict system of personal list, the percentage of consultations with the same doctor was higher (83%) compared to the three other practices with combined lists (49, 52, 58%).[25]

The lack of a relationship between the UPCI with diabetic control and process of self care may appear to call into question the value of continuity. However, the use of HbA_{1c} is only one way of assessing diabetic control. The lack of its relationship with continuity of care does not necessarily mean that continuity of care does not have an impact on the overall diabetic management. Probably it takes more than just continuity to produce high quality diabetic care, requiring adherence to evidence-based clinical practice guidelines, availability of supportive services (dietician, diabetic educator) and efficacious drugs as well as patients' literacy and ability to follow instructions. However, the result of this study highlights the need to refocus on the clinical outcome in the care of patients with chronic disease while striving to ensure high level of continuity of care.

Summary of implication for GPs

Most diabetic patients prefer to receive care from a regular doctor. However, patients with higher continuity with a particular doctor may not have better diabetic care when measured objectively. Family physicians should strive to provide continuing care to patients with chronic disease but at the same time must not neglect the clinical outcomes that really matter in such patients

Acknowledgments

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