

Review of patient-reported type 2 diabetes service quality

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Abstract

A critical review was conducted of the literature from 1960 to June 2005 on service quality in type 2 diabetes. The review demonstrated that improving service quality may improve the outcomes for people with type 2 diabetes. The potential service quality factors from the perspective of people with type 2 diabetes were: timeliness, confidentiality, continuity, dignity, communication, access, education, cost, amenities and autonomy.

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UP TO 7.5% of Australian adults over 25 years old suffer from type 2 diabetes and its related long-term and short-term complications.¹ Undiagnosed, untreated or poorly controlled diabetes can lead to serious complications, including renal disease, non-traumatic amputation and blindness among Australians aged under 60 years.²

Early diagnosis and better management of type 2 diabetes can reduce the burden of disease and improve patients' health. Previous studies have shown that improved quality of delivered care in both clinical and non-clinical areas increases

What is known about the topic?

Early diagnosis and management of type 2 diabetes can reduce the burden of disease and improve patients' health.

What does this paper add?

This paper describes a literature review on service quality in type 2 diabetes. The findings demonstrated that diabetes management programs with focus on regular visits are significantly related to better control of diabetes, reduced rates of diabetes complications and reduced hospital admissions.

What are the implications for practitioners?

Improving service quality can lead to improved outcomes for people with type 2 diabetes, including glycaemic control, reduced macro and micro complications, and increased patient satisfaction and quality of life. The potential service quality factors important to patients were: timeliness, confidentiality, continuity, dignity, communication, access, education, cost, amenities and autonomy.

quality of life³ and personal satisfaction⁴ and reduces the disease complications^{5,6} as well as the overall burden of type 2 diabetes.⁷

Health systems customers increasingly expect higher quality in their care services aligned with changing trends of diseases, socio-economic issues and advances in medical and health procedures.⁸ Consequently, patients' needs and expectations should be measured as part of measuring the responsiveness of health care systems.⁹ Organisational and physical structure and care processes should be designed and built; and delivered care should reflect what patients want from care services.*

Despite the growing consumer-orientated focus in health care, only a small number of

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* "Patients" are the "customers" of health care processes and "customer" is a term expressing an important relationship between the provider of a particular service or care and the user of that specific care.¹⁰

studies have focused on this area, and few specifically on type 2 diabetes. This paper aims to review these studies to determine the important service quality factors from the perspective of patients with type 2 diabetes as well as to clarify the relationship of these to other measures of quality and outcomes of care.

Methods

MEDLINE and PubMed citations were searched for the period January 1960 to June 2005 with keywords: "type 2 diabetes", "qualitative research", "quantitative research", "mixed method research", "quality of care", "service quality", "patients' perspective" and "patient satisfaction". Using this strategy, 23 qualitative and 171 quantitative or mixed method articles from MEDLINE and 6 additional articles from PubMed were found. Titles and abstracts of all articles were reviewed and only 49 papers were found to be related to service quality in type 2 diabetes. In addition, references from the reviewed articles and the latest issues of relevant journals were assessed and 3 additional articles were found (52 in sum).

Selection criteria

All 52 qualitative and quantitative studies that assessed the quality of care and service quality (process quality) for people with type 2 diabetes from any setting and level of health system were reviewed. Five studies in languages other than English, with the exception of the abstract of one article in Spanish, were excluded. The content of the remaining 47 articles was separately reviewed. Of these, 15 studies (32%) from the perspective of doctors (5), nurses (3) and both (7) were excluded to maintain the focus on service quality from the perspective of people with type 2 diabetes. Also excluded were 11 articles (23%) relating to diet, 7 (15%) about foot care and 5 (11%) about ophthalmic care. Finally, applying all inclusion and exclusion criteria (mentioned above), only nine articles (19%) of most relevance to our topic remained (Box 1).

Results

Measurement of service quality in health care

Donabedian, who pioneered the concept of quality improvement in health care and its assessment, introduced three types of measures; "structure", "process" and "outcome", which have been generally accepted and used by others.¹¹⁻¹⁴

Structure measures

The concept of *structure* as an indirect measure of quality of care¹⁴ includes established characteristics of resources such as manpower, personal and physical organisations, patients, financial resources and the rule of procedures.^{12,13} Since structure is a relatively stable concept and has a significant relationship with quality of care, it therefore can influence the performance of the health care system. However, the relative stability of structure limits the usage of structural indicators as appropriate measures for continuous quality control and quality improvement.¹⁵

Process measures

Process measures are a set of activities with clear aims and objectives, which are supported by resources to achieve the desired outputs.¹⁰ In the health field, process measures include data from inpatient and outpatient records, reviews of diagnostic and treatment patterns, utilisation rates and access to care.^{12,13} Process measures include the ways in which clinicians and patients interact, as well as the appropriateness of medical treatment for a specific patient.

Outcome measures

Assessment of *outcome* is an indirect measure of quality of health care¹⁴ because outcomes are affected by more than the delivered care. Outcomes consist of changes in patients' current and future health status, including health-related quality of life and satisfaction with care. According to Biech, outcome is a general word encompassing output, effect, outcome and impact, of which outputs are the most immediate results of the health care process.¹⁶

I Summary of the qualitative and quantitative studies about the important service quality indicators from the perspective of people with Type 2 diabetes

Author/year	Hares et al 1992 (abstract) ⁵¹	Sixma et al 1998 ⁵²	Khunti 1999 ²⁵	Pooley et al 2001 ⁴⁸
Study design	Quantitative and qualitative study	Qualitative and quantitative study	Qualitative study	Multi-method approach, quantitative and qualitative survey
Study purpose	To identify issues that patients and professionals consider important in diabetes care and differences in their priorities	To develop an instrument for measuring quality of care through the patients' eyes	To determine information on all factors that may be associated with delivery of care to patients with diabetes	To explore the issues which both patients and practitioners perceive as central to the effective management of diabetes
Sampling	Five district health authorities consist of: 7 expert and 7 non-expert health centre professionals, 4 insulin dependent and 8 non-insulin dependent patients	Qualitative: Focus group discussion (8 women and 5 men) Quantitative: Random sample of 961 people	15 and 8 people for brainstorming and focus group discussions	47 patients with type 2 diabetes randomly selected from those who more willing to participate in the survey and 38 health professionals who deliver their diabetes care from four localities in the study area
Data collection	Structured group interviews using the nominal group technique	Data collected from 6 focus group discussion with women and men, using closed-ended questionnaire for quantitative section of study	One focus group discussion, brainstorming with patients and 15 general practitioners, and face-to-face interview	Semi-structured in-depth interviews with type 2 diabetes patients over 50 years old (living in their own home), and health professionals, were conducted in two health authorities in north-west United Kingdom (1997–1998)
Data analysis	Important themes of diabetes care to each nominal group ranked by hand into series of top 10 items and allocated a score according to relative importance to individual members	Qualitative data coded and categorised by hand and quantitative data analysed by computer	Data analysed qualitatively by hand	Interviews taped and fully transcribed and also qualitative data coded and categorised by hand
Main finding	Patients and providers agreed that education, autonomy, interaction between patients and professionals, and access were important for good diabetes care. But the professionals focused on empathy and good communication and patients' need to know enough to live a normal life	Service quality aspects that were derived from focus group discussions were: accessibility, cost, continuity, dignity, timeliness, autonomy and communication	Developing a multi-method approach to overcome bias can be useful in primary care; availability of diabetes care and having opportunity to see the same professional were the most important factors in patients' view	The concepts of timeliness, confidentiality, continuity, and communication were important factors in both patients' and providers' opinions. Patient–care provider relationship has key role in the development of effective care management. Both patients and providers also emphasise the role of geography of health and health care (place). Finally, the location, layout and friendliness of consulting environment were important
Comment/limitation of research	Not stated	Low response rate (35%) for quantitative section of study. Non-responders more likely to be ill patients or less satisfied by care and care providers	Major barriers to conduct of multiple methods include time, cost and skill of researchers. This needs careful planning; interpretation of data can also be difficult	Care providers (nurses, GPs and specialists) have to pay more attention to the needs of diabetic patients; they have to show their respect to the patient's own concern. Limitation: only relationship between patients and providers measured. Evaluation of other non-health aspects of quality of care beyond scope of assessment

I (continued)

	Bolanos & Sarria-Santamera 2003 (abstract) ⁴⁹				
Author/year	Steine et al 2001 ⁵³	Pouwer & Snoek 2002 ⁴⁷	Bethel et al 2004 ⁵	Vinter-Repalust et al 2004 ⁵⁰	
Study design	Quantitative and qualitative study	A prospective design	Qualitative study carried out Sep–Nov 2000	Qualitative and quantitative study	Qualitative study
Study purpose	To develop a satisfaction questionnaire for measuring diabetic patients' experiences about their care	To develop a brief measure of patients' evaluation of the quality of diabetes care and to study predictors of consumers' rating of the quality of diabetes care	To investigate perceptions held by people with type 2 diabetes about their disease and relationship with primary health care professionals	To improve diabetes control and decrease the progression of microvascular complications	To explore type 2 diabetes patients' attitudes, thoughts, and fears connected with their illness; explore their expectations of the health care system
Sampling	Undefined patients for focus group discussion and 660 general practice patients on a national database	176 adults with type 1 (39%) or type 2 (61%) diabetes	Structural sampling	All patients with established diagnosis of diabetes who gave their consent were recruited	Non-random sample of the type 2 diabetes members of the Croatian Family Medicine Research Club (10), 5 from urban and 2 from rural areas
Data collection	Data collected with 6 focus group discussions qualitatively and with questionnaire from 660 patients from various parts of Norway	People with type 1 and type 2 diabetes who had participated in study in 1997 were invited to complete the satisfaction questionnaire	Open interviews with 15 patients with type 2 diabetes	100 patients were interviewed to obtain demographic data and some process indicators of their diabetes care	7 focus group discussions with a maximum 8 patients for each group from Dec 2001–Apr 2002. 49 patients with type 2 diabetes (22 male and 27 females) recruited
Data analysis	Data analysed by hand for focus group discussions and with statistical software for quantitative information	Statistically analysed by SPSS software	Not stated	Descriptive analyses using SAS software	Group discussions were audiotaped and transcribed after the session. Available data coded and categorised by hand
Main finding	Important service quality factors were timeliness, continuity, education, dignity, amenities, communication and autonomy	Results indicate more positive evaluation of the care delivered by the diabetes nurse specialist than that delivered by the internist with regard to the following topics: waiting times, duration of consultations, clarity of information, amount and usefulness of information, opportunity to ask questions, and emotional support	Important factors in patients' perspective were: enough information about their disease; trust context; takes account of their perspective; involving in decision making and effective communication	Adherence to guidelines for standards of diabetes care and the level of diabetes control was inadequate. The most important service indicators were: continuity; communication; education; and regular screening plan with concern about home glucose monitoring	Patients need more check ups, further education to refresh their knowledge, meeting with other type 2 diabetes patients to share information and experiences, more written materials and TV shows about their concerns. Most important factors in their opinion were communication, education and autonomy
Comment/limitation of research	Not stated	Questionnaire appeared to have a clear structure, adequate reliability, high internal consistencies and high item total correlations. Limitation: some topics not included may be highly relevant for other samples with a different educational, racial, or ethnic background	Not stated	Limited by some factors: referral bias; non-responder bias; recall bias; and ungeneralisable to other populations	Excluded people with severe complications; included people who wanted to participate

Kenagy et al in 1999⁹ argued that, in general, quality has two main dimensions — “technical quality” and “service quality”. Technical quality consists of the appropriateness of the delivered services and the skills of the service providers. In other words, technical quality is related to the clinical aspects of care,¹⁷ and this seems most consistent with Donabedian’s¹⁴ process approach to measuring quality of care. Service quality does not deal with the clinical aspects of care but mostly relates to non-health aspects and directly mirrors the contact between patients and the health care system, including the relationship between patients and care providers, patients and health system resources,¹⁷ and management.¹² Hence people feel and understand the service component of quality in health care which has a direct influence on overall quality of care as experienced by service users.⁹

Of the three categories of quality assessment, *process measures* are the most direct and more relevant than *structure* and *outcome* measures. Therefore, the assessment of quality will depend more on process data than on outcome data.^{14,15,17} So, process measures used to evaluate the performance of health care providers in the management of diabetes would include reviewing of medical records and gathering both patients’ and care providers’ perspectives on the delivered care.

Quality indicators

Quality indicators for health care services need to be clearly defined devices for assessing structure, process and outcome, which are derived from a series of observed facts, guidelines and care standards to indicate poor or good quality of care.¹⁸ For clinical quality, appropriate indicators should be focused on specific areas of care. Such indicators are defined specifically to meet the aims of a study, and not to assess all aspects of a condition. According to the Diabetes Australia Guideline 2004–05¹⁹ evidence supports an annual eye examination, 6-monthly HbA_{1c} testing and annual serum cholesterol testing. For service quality, there are no disease-specific indicators, so

that similar indicators could be used for different conditions across different health systems. Waiting times, respectful care, enough amenities, autonomy and confidentiality are examples of previously accepted indicators of service quality.²⁰

Such information comes from two main sources: recorded information by care providers (medical records and administrative data); and recalled information by patients (self-reported information). Each source of data has biases. It is assumed that recorded information should be more valid and reliable than self-reported information. Although recorded information is costly to collect and time consuming, particularly from review of the medical record, it should provide strong evidence to judge the quality of care, particularly if the right information is recorded at the right time. Obviously, care provider, recording systems and availability of data are three important factors which influence the quality of recorded information. Unfortunately, it has been shown that providers do not always record medical information accurately or that the information does not get to the record. Examples of recording problems include eye specialists not sending feedback to primary care for referred patients,²¹ information about smoking or alcohol habits only being recorded for 20% and 10% of diabetic patients, respectively;⁷ and in some studies 20%–70% of information being unrecorded.²² Therefore, medical records are an imperfect indicator of quality of diabetes care.²²

While patients’ perception of delivered health care is not necessarily identical to quality of health care, it can be a valuable means to evaluate the quality of care.²³ Health care services are for people and should be influenced by their needs, experience and knowledge. From this perspective, patients are the right individuals to assess the care services and make judgements about the quality of a particular delivered care.

For self-reported information, three things need to be considered: the condition (type 2 diabetes), the nature of information, and recall bias. Evidence shows that patients can report valid information about the quality of care, in

general,²⁴ and specifically about their condition.²¹

Measurement of self-reported quality in diabetes

Since the choice of method will influence the interpretation of the study, researchers must be careful in selecting the appropriate study approach. Several quantitative, qualitative and mixed methods have been developed to assess the quality of health care.^{18,25,26}

Qualitative methods

The use of qualitative research in evaluating the quality of health care is growing. These case-oriented methods are concerned with subjective issues such as individuals' feelings, opinions and experiences with health care delivery as well as understanding how and why people behave the way they do.²⁷ Qualitative methods are used broadly to seek the patients' and providers' experiences and feelings about care services, gaining insight into the care processes and measuring the interaction between patients and their health care settings as well as care providers.²⁸ Such methods emphasise processes (rather than causal relationships) and evaluate the actual experiences. However, the results may not be reliably generalisable. Participant observation, interviews and focus group discussions are the most commonly used qualitative methods (Box 1) for collecting detailed data on quality.²⁹

Quantitative methods

These methods are population-oriented, focus on objective measurement and utilise well-understood statistical methods to produce repeatable data to show causal relationships between variables. Because of these characteristics, results obtained are usually generalisable.³⁰ Quantitative methods tell us how many, how much, to what extent, and how often people behave in a certain way. Quantitative methods for assessing the quality of care from the customers' perspective are of two main types; consensus techniques including the Delphi technique and nominal group tech-

nique (NGT); and surveys using multiple choice questionnaires.³¹

Mixed methods

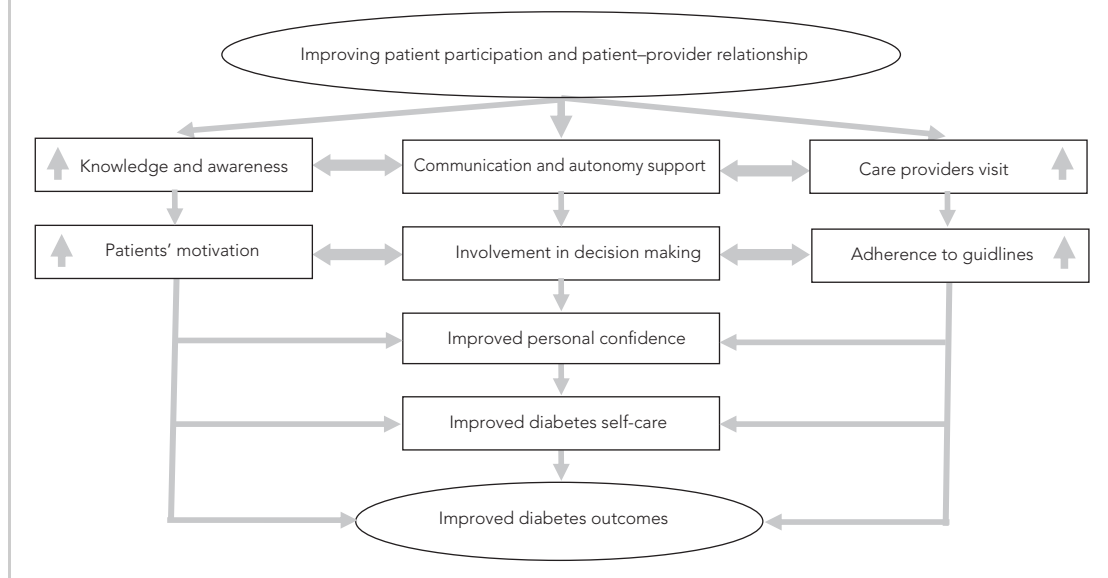
The strength of one approach can compensate for the limitations of another approach. Therefore, integrating one or more qualitative and quantitative methods may provide higher quality and more realistic outcome data than using only a single approach.³² Creswell et al³³ pointed out that integrating qualitative and quantitative methods "is more than simply collecting both quantitative and qualitative data; it indicates that data will be integrated, related or mixed at some stage of the research process" (p. 7). Mixed methods allow researchers to gain in-depth insight into the real world by using qualitative methods and using the statistical reliability and generalisability potential of quantitative studies.³³

Service quality and diabetes outcomes

On one hand, effective participation in decision making and policy making in health care systems has been introduced as the unique approach for well developed service delivery.³⁴ On the other hand, adherence to the medical guidelines has been reported as an important factor for improving health outcomes.^{5,6,35} As demonstrated in Box 2, one of the most important factors in adherence to the clinical guidelines is increasing patients' access to effective diabetes care and education.³⁶ Facilitating patient participation and their access to health systems as well as having regular medical visits and consulting the same care providers increases the likelihood of adherence. The studies reviewed demonstrate that diabetes management programs with focus on regular visits are significantly related to better control of diabetes,^{3,5} reduced rates of diabetes complications⁶ and reduced hospital admissions.³⁷

Several factors have been shown to improve regularity of visits with doctors, adherence to guidelines and self-management and, consequently, to lead to better diabetes control. Improving patients' participation in service deliv-

2 Mechanisms by which improving service quality may improve diabetes outcomes



ery systems, communication and the patient-provider relationship have been emphasised as potential facilitators in a number of studies (Box 2).^{34,36,38-41} Heisler et al³⁶ suggested that improving general and diabetes-specific communication and patient-provider interaction improved patients' confidence and self-management; and subsequently may improve clinical outcomes. Researchers also demonstrated that diabetic patients whose own decision making (autonomy) was supported by their principal care provider, including respect of patients' perspective and support for their initiatives, providing information about disease and offering choice of treatment options,³⁸ were more likely to receive effective diabetes management and more likely to have better glycaemic control.^{5,42} A randomised controlled trial demonstrated a significant progression in patients' involvement in decision-making processes after conducting the decision-making skill development programs for physicians.⁴¹ As Box 2 shows, diabetic patients who had greater involvement in decision making about their condition and treatment are able to improve their problem-solving and diabetic self-care ability.³⁹ Although these abilities can lead to

improved patient satisfaction, studies did not find any relationship to patients' quality of life.⁴⁰

Reminder systems improve the regularity of medical visits and health outcomes. Telephone reminders and follow-up increased the proportion of patients seen in diabetes clinics and physician counseling⁴³ and were associated with improved HbA_{1c} levels (from 8.8% to 7.6%) in the intervention group.⁴⁴ It has been reported that providing educational intervention programs for general practitioners,⁴² diabetic patients, and both³⁷ can improve diabetes outcomes. Previous studies also reported that maintaining continuity of care was significantly associated with good health-related quality of life⁴⁵ and patient satisfaction⁴⁶ among people with type 2 diabetes.

The bulk of evidence suggests that factors mentioned above may improve diabetes outcomes, and the possible indirect causal mechanisms for this are shown in Box 2. The majority of these factors, such as patient-provider relationship, communication, autonomy and involvement in decision-making processes, recall and reminder systems, education and continuity of care are not related to clinical or technical aspects of care but relate to non-health aspects or service

3 The most important service quality indicators

			Service quality indicator									
Method used			Timeliness	Confidentiality	Continuity	Communication	Access	Education	Dignity	Autonomy	Amenities	Cost
Author/Year	Qualitative	Quantitative										
Hares et al 1992 ⁵¹	Interview	Nominal group technique				✓	✓	✓		✓		
Sixma et al 1998 ⁵²	Focus group discussion	Questionnaire	✓		✓	✓	✓		✓	✓		✓
Khunti 1999 ²⁵	Focus group discussion, interview, brainstorming				✓		✓					
Pooley et al 2001 ⁴⁸	Focus group discussion		✓	✓	✓	✓	✓					✓
Steine et al 2001 ⁵³	Focus group discussion	Questionnaire	✓		✓	✓		✓	✓	✓	✓	
Pouwer & Snoek 2002 ⁴⁷		Questionnaire	✓		✓	✓		✓		✓		
Bolanos & Sarria-Santamera 2003 ⁴⁹	Interview			✓		✓		✓	✓	✓		
Bethel et al 2004 ⁵	Interview				✓	✓		✓				
Vinter-Repalust et al 2004 ⁵⁰	Focus group discussion					✓		✓		✓		

issues of care. It can therefore be reasonably assumed that better diabetes outcomes can arise from the improved quality of delivered services.

Important service quality factors

Ten potential service quality factors were derived from the review of the nine studies meeting the inclusion criteria. Of those one study used quantitative methods,⁴⁷ five studies used qualitative approaches^{5,25,48-50} and three studies used mixed methods⁵¹⁻⁵³ to ascertain patients' perspective on the most important service quality factors.

Pooley and colleagues⁴⁸ conducted 85 semi-structured interviews with 47 type 2 diabetic patients and 38 health professionals to explore their perspectives on service quality in a primary care setting. They argued that in both patients' and providers' perspectives the concepts of access, timeliness, confidentiality, continuity, communication, patients' and care providers' relationship play the key role in the development of effective diabetes care management (Box 1). Also the location, layout and friendliness of the

consulting environment were other important factors. In a study by Bolanos and Sarria-Santamera,⁴⁹ findings were similar to those of Pooley et al.⁴⁸ After 15 in-depth interviews with type 2 diabetes patients they concluded that the most important aspects of the relationship with diabetes care providers are confidentiality, dignity, education, communication and autonomy.

Vinter-Repalust et al⁵⁰ conducted seven focus group discussions with 49 participants to obtain the opinions of patients with type 2 diabetes about their experiences, needs and expectations. They concluded that diabetic patients received insufficient information about their disease, their diet and management of their disease. They also found that communication, education and autonomy were the most important factors (Box 1).

Khunti²⁵ used several qualitative methods, including integrated brainstorming, focus group discussions and face-to-face interviews, in the same study to determine possible factors related to quality of delivered care for diabetes from the

viewpoint of both patients and providers (Box 1). It was suggested that the most important service quality factors for diabetic patients were continuity and access to primary care diabetes services.

Hares et al⁵¹ conducted structured group interviews using the nominal group technique with 20 people with type 2 diabetes to identify important issues as seen by diabetic patients and their care providers and also to assess the process of judging the relative importance of their chosen priorities (Box 1 and Box 3). From patients' and professionals' views, education, communication, autonomy and access were most important for good diabetes care.⁵¹

Two studies were conducted in The Netherlands⁴⁷ and Norway,⁵³ with 107 and 660 people with type 2 diabetes, respectively. They used a self-administered questionnaire to obtain participants' perspectives on service quality factors. The most important service quality aspects from both of these studies were timeliness, continuity, education, dignity, amenities, communication and autonomy (Box 1 and Box 3).

The other mixed methods study, conducted in the United States⁵ among diabetic patients admitted to a cardiovascular ward, reported that continuity of care, communication between doctors and patients, and education were the most important service factors from their perception. The Netherlands Institute for Health Services Research has also assessed type 2 diabetic patients' perceptions about service quality factors. From the patients' perspective the most important factors related to service quality were: accessibility, cost, continuity, dignity, timeliness, communication and autonomy (Box 3).⁵²

Conclusion

To translate customers' voices to practical quality indicators, qualitative data collection techniques offer a different and more detailed approach. Qualitative approaches identify how people feel about the quality of services they receive and can be used to investigate issues in greater depth than using quantitative methods alone.^{25,54}

This review of the literature leads to the two main conclusions. First, improving service quality can improve outcomes for people with type 2 diabetes, including glycaemic control, reduced macro and micro complications, and increased patient satisfaction and quality of life. Second, the potential service quality factors as seen by type 2 diabetic patients (Box 3) were: timeliness, confidentiality, continuity, dignity, communication, access, education, cost, amenities and autonomy. Further research should be conducted to find the most important service quality indicators in the Australian context. Given the increasing burden of diabetes, additional research is also needed to measure service quality for people with type 2 diabetes in the Australian health care system.

Competing interests

The authors declare that they have no competing interests.

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