Meeting the educational needs of people at risk of diabetes-related amputation: a vignette study with patients and professionals

Maxine Johnson RGN BSc,* Peggy Newton BA MA PhD,† Moyez Jiwa MRCGP MD‡ and Elizabeth Goyder MRCGP MFPH§

*Research Associate, School of Health and Related Research (ScHARR), University of Sheffield, †Lecturer, Institute of General Practice and Primary Care, University of Sheffield, ‡Lead Research Fellow, Institute of General Practice and Primary Care, University of Sheffield and §Senior Clinical Lecturer in Public Health, School of Health and Related Research (ScHARR), University of Sheffield, Sheffield, UK

Abstract

Correspondence

Maxine Johnson
School of Health and Related
Research (ScHARR)
University of Sheffield
Regent Court
30, Regent Street
Sheffield S1 4DA
UK
E-mail: m.johnson@sheffield.ac.uk

Accepted for publication

23 June 2005

Keywords: diabetes, education,
foot complications, patient-centred,
qualitative, vignette

Objective To investigate how patients and professionals view the role of advice in diabetes foot care, in order to inform educational practice.

Design A qualitative study based upon one-to-one interviews using a vignette technique with patients and professionals.

Setting and participants Interviews with 15 patients with diabetes-related foot complications attending diabetes foot clinics, and 15 health professionals across two hospital sites and two primary care trusts.

Results There were similarities between issues raised by patients and professionals, with differences in emphasis. An important factor was patient understanding and acceptance of the implications of diabetes from diagnosis. Many patients reported a lack of early understanding that may reflect inadequate provision or acceptance of advice. Development of positive relationships with health professionals was important for patients and encouraged shared understanding. Use of the vignette technique highlighted the gap between patient knowledge and action, with patients and professionals emphasizing their own responsibilities in relation to reduction of risk through education and action. Responses suggest that early positive interactions with appropriately trained professionals are needed to help patients assimilate advice into everyday routines.

Conclusions For effective preventive care, patients need to understand how diabetes impacts on their health. Foot care education should begin early, be patient-centred and delivered with empathy by professionals whom the patients trust. The findings reflect patient and professional expectations in educational practice, and therefore have relevance for other chronic conditions for which much education and advice is related to self-care.

Introduction

Lower limb amputation remains a major cause of morbidity in people with diabetes, with an incidence of 2–3 per 1000 of the diabetic population.¹ A much higher proportion are at risk of foot problems,² of which the main risk factors are peripheral vascular disease (PVD), and neuropathy, which have estimated prevalence rates of 11% and 41.6% respectively.³ This is despite efforts to prevent ischaemic, traumatic and infective damage, such as the provision of guidelines aimed at encouraging increased monitoring of, and information for, patients with diabetes-related foot problems.^{4,5} Foot complications are costly for service providers,⁶ and have a marked impact upon quality of life for the individuals concerned, but they are not inevitable, and risk reduction through high quality preventive care has recently been advocated in the National Service Framework for Diabetes.⁷

Patient education plays an important role in the care of patients with diabetes; appropriate information helps to empower patients by providing the knowledge base to perform self-management skills.⁴ Education in optimum glycaemic control^{8,9} and appropriate foot care^{8,10–12} in particular is thought to be a major factor in prevention of lower extremity amputations and ulceration. However, a systematic review by Valk *et al.*¹³ concluded that most trials that examined educational programmes for prevention of foot complications have poor design or conflicting results. Approaches to patient education and information-exchange in practice vary from opportunistic sessions at GP or clinic visits, to structured management programmes that follow a set curriculum. The latter has been shown to be more effective than *ad hoc* delivery of information in terms of retained knowledge.¹⁴

Educational interventions for people with diabetes have been extensively studied, but are fragmented in design and delivery, often lacking a theoretical base, and mainly focussing on outcomes such as amount of knowledge attained, and objective glycaemic control.¹⁵ This

approach tends towards a professional-oriented perspective and does not take into account the expectations and capabilities of patients, or the communication skills and knowledge base of professionals. Two recent reviews show that knowledge acquisition is not the only important factor in self-management training; patients also need to be motivated¹⁶ to learn, and the effect upon quality of life should be taken into account.¹⁷

A study by Cooper *et al.*,¹⁸ addresses this issue with an educational intervention that includes humanistic, cognitive and behaviourist elements. Qualitative data show that patients appreciated the learner-centred approach and empathy towards their real experiences, but some health professionals were reluctant to commit to a shared learning model.

The patient centred approach to education has been explored using qualitative methods in other areas, such as low back pain, in order to improve available information¹⁹ and reduce barriers to provision.²⁰ These studies allowed respondents to openly discuss their own needs to help improve the quality of and access to information.

The aims of this paper are to explore factors that prevent people with diabetes receiving optimal advice or information to help reduce their risk of foot complications. The views of patients and professionals who deliver care and education to people with diabetes were obtained using a structured vignette.

Method

Ethical approval was granted by North Sheffield Local Research Ethics Committee (LREC). Health professionals and patients gave informed consent to take part in the study, and to having their interviews recorded by audiotape. The interviews took place between September 2003 and April 2004; health-care professionals were interviewed at their place of work (at one of two hospital sites, or in primary care). The interviews took place either at their home, or, if preferred by the patient, in the hospital-based diabetes foot clinics.

Participants

Purposive sampling was used to identify participants for the study, patients with type 1 and type 2 diabetes, and with a long history of foot complications were invited to participate because of their potential wealth of experience in relation to diabetes foot care services. We provided the Diabetes Foot Clinics at two teaching hospitals with 20 information packs each to distribute to suitable patients (a total of 40 packs). Fifteen patients, whose characteristics are summarized in Box 1, agreed to be interviewed. Sheffield has a diverse population in terms of socio-economic circumstances, with its 10 most deprived wards being within the 10% most deprived, and the two most affluent being within the 5% most affluent in England and

Wales.²¹ The patients reflected this diversity, being drawn from postcode areas ranging from relatively deprived, to relatively affluent.

Seventeen health-care professionals were contacted by letter, or by other health professionals, and 15 agreed to be interviewed; three consultants (one in vascular surgery, two diabetologists), two general practitioners, three nurses, three orthotists, three podiatrists, and a dietician.

The vignette

We used a structured, large-print vignette (Box 2), relating to a patient with diabetes-related foot complications. The use of vignettes allows patients to express their views without a direct reference to themselves. This method facilitates the expression of knowledge, opinions, beliefs, values and attitudes²² but is also less intrusive than focusing the patient on their own history, and for health professionals is less judgmental than asking direct questions about the participants own values or behaviour.^{23,24} A single, continuous vignette was used rather than several short scenarios. This method has been used successfully in other areas of health research, such as HIV/AIDS, to explore patients' attitudes and experiences. It allows a story to build up, maintaining the interest of the respondents, and prevents the repeated introduction of new characters, which could be tiresome for the audience.²⁵

Interviews were chosen in preference to focus groups because we were particularly interested in individual views rather than interaction between participants. In addition, problems may have been encountered in attempting to assemble patients at an appropriate site, particularly given the limited mobility of this population. Focus groups can also inhibit the expression of views where there is a power differential between various health-care professionals.

The vignette was developed with reference to the relevant literature and following discussions with an expert panel²⁶ before being piloted. The items within the vignette were chosen to depict a plausible patient care trajectory, so that any barriers to such care could be identified from responses to the prompts. Development of the

Box 1 Demographic details of patient sample

Patients	
15 patients (including three in pilot) from two teaching hospitals (9/6)	
Sex: 9 male, 6 female	
All were of white ethnic group, and English-speaking	
Age	No of participants
30–39	1
40–49	2
50–59	5
60–69	4
70 or more	3
Diabetes diagnosed (years)	
0–2	0
3–5	1
6–10	2
11–20	4
21 or more	8
Treatment	
Type 1	7
Type 2 on insulin	6
Type 2 on oral medication	2
Health professionals	
Total of 15 based in two teaching hospitals, and primary care	
Consultant diabetologists	2
Vascular surgeons	1
General practitioners	2
Nurses	3
Podiatrists	3
Orthotists	3
Dieticians	1

Box 2 Vignette and prompts used for interviews

Mr Smith is 61 years old, and a retired storekeeper. In 1992 he was told that he had diabetes, which needed to be controlled by taking tablets and adjusting his diet. His doctor advised him to stop smoking, and look after his feet. Mr. Smith visited his GP for check-ups. On some visits his blood sugars were higher than they should have been. He continued to smoke.

Why do you think his blood sugars were sometimes high?

Why do you think he was still smoking?

Gradually, Mr. Smith's eyesight began to deteriorate, and he lost some of the sensation in his feet. One day, he caught his big toe on a piece of torn lino. He didn't feel anything, but it started to bleed. He put a plaster on it, and left it for a few days, after which the cut began to discharge, and he showed it to his GP.

Why do you think he waited before seeing his GP?

What might influence this decision?

The GP referred Mr. Smith to the hospital foot clinic, where the ulcer was dressed, antibiotics were prescribed, and a district nurse was arranged. It took a long time to heal.

Why might this be?

After some time, the ulcer healed, and Mr. Smith was discharged from clinic and given special shoes. One year later, the ulcer reappeared.

Why do you think the ulcer might have reappeared?

Mr Smith has a hospital foot clinic appointment every 2 weeks; he doesn't always make it.

Why might he not attend?

The staff in the foot clinic arranged for Mr. Smith to see a vascular surgeon. He didn't arrive for the appointment.

Why do you think he didn't turn up?

This is a study looking at services for people with diabetes, and in particular, with diabetes related foot problems. The interview consists of a short story that is about a person with diabetes, and will be presented in stages so that you can discuss any issues you think relate to the story.

There are no right or wrong answers, we are not attempting to find out how much you know about diabetes; we are trying to find your views about services available to patients.

The information is recorded on tape with your permission, and will remain confidential. No names will be attached to the data, either on tapes, transcriptions, or in any report that is produced. Tapes will be erased after writing up, and you will be able to read any report that is written, and give feedback, before it is circulated generally.

You can stop the interview at any time, or contact me later if you decide you no longer wish to take part in the study, or if you want to add to, or change anything you have said during the interview.

Prompts for patient information

1. Who is regarded as important in diabetes care
2. Mode of travel to and from GP/clinic
3. Working/retired. Occupation if working
4. Housing
5. Marital status
6. How access could be improved.

vignette was an iterative process and modification took place several times before a final version was agreed.

Patients and professionals were presented visually and verbally with the vignette in stages, with open-ended prompts to encourage discussion (Box 2). Relevant related issues were explored as volunteered during the interviews.

The interviews were audiotaped and transcribed verbatim. Data was analysed using

framework analysis.²⁷ This method involves becoming familiar with the data prior to developing a thematic framework which is then used to classify or 'code' the data. Two researchers (MJ, PN) carried out this process using a small number of transcripts to develop a set of categories, which were then applied to the larger data set, as in the constant comparative method.²⁸ In this way the categories were further refined, and main themes charted into a matrix with the numbered

subcategories in columns and respondents in rows. There is transparency with this method, which allows other members of the team to easily follow the process.

Findings

Understanding diabetes and its implications was seen as crucial for patients to cope and effectively manage their disease and their life. Patients' understanding had three elements: the factors that prevent initial understanding, the circumstances that reinforce understanding over time, and the relationship between understanding information and acting upon it. For health professionals, these themes were presented in terms of both 'ideal' and 'challenging' situations, for themselves, and for patients. Professionals provided a second-hand account of patient experiences that came from their clinical encounters, but also provided their views of the ideal situation compared with the reality of dealing with limited resources and the varied perspectives of patients.

For patients, the themes were based mainly on personal experience, with some idealistic views being vicariously offered through the vignette. There was also a sense of passing time in accounts, as patients related events from the time of their diagnosis through to the present, and this is reflected in the themes.

Barriers to early understanding

Lack of information

Many of the participants stressed the importance of understanding diabetes and its implications from diagnosis. Professionals pointed out potential barriers to understanding in terms of the timing, content and delivery of information:

if he's given leaflets with little, sort of, explanation, he could easily put them to one side and not look at them. (Cons 1)

I think the GP's have got to be able to reiterate to the patients exactly what the long term effects of diabetes are, the need is to push those things, rather than it all come to the hospital. (Orth 10)

A common report from patients was an early misunderstanding that type 2 diabetes was not serious; this could result from inappropriate framing of information by professionals, and/or inadequate lay knowledge. Patients often came to realize the potential effects of diabetes as complications were taking effect:

When I first got it, I was er, 'Oh, it's only diabetes'. I didn't know anything about it, and I just thought it were another illness, I didn't realise at the end of the day, I'd to have become like this, I didn't realise 'it'll not happen to me', but it has, everything's happened.... I know when I were younger, I neglected myself, I really did, and now I'm paying for it. (female patient G)

I mean, I was never told about the importance of looking after my feet, it's only in the last six, seven years, if that, that I've been told. (female patient F)

Patients often felt let down, reporting that they had not received foot care advice, or adequate referral during the initial years of having diabetes. Possible explanations for this could be differences over time in attitudes towards patient education, or variations in the skills and knowledge of the professionals involved. Some patients did not feel confident about the specialized knowledge levels in primary care compared with those at the diabetes foot clinic:

He's alright, he's alright [GP], but I take more notice of them, and I know he's good, and they reckon he's good in his field, and he's a good doctor and that, but I listen more to them [clinic team]... because I think they're more expert.... (female patient B)

They are, very good, diabetic nurses, very good...diabetic nurses in my opinion are far better than doctors... (male patient N)

I'd got ulcers on my legs as well as on my feet through my working boots. My doctor, my personal GP never did anything for them, never. (male patient K)

Previous experiences, such as receiving inadequate information and advice, or suspecting that practitioners are not well-informed, can have an effect on the level of trust that patients

have for health professionals, with implications for the patient–practitioner relationship, and future health-care seeking behaviour.

Lack of accessibility

Professionals were concerned about the inconsistency of relevant education, lack of time to provide adequate information, and the poor accessibility of podiatry and dietetic advice in primary care. Dietary advice was seen as an important factor in early education, so that appropriate blood glucose levels and tailored diets can be established before complications arise. However, in practice, by the time patients are seen by a dietician or a podiatrist, it is often too late for routines to be established:

The value of professional dietetic advice [in primary care] is really underestimated ... and I think that dieticians really have a very crucial role, providing that people with diabetes can adjust their diet and lifestyle. (Cons 2)

I'm not always sure that we pick people up soon enough, I think probably we pick them up when they've got a problem, and maybe prevention is better than cure...I think the patients need to understand the implications...and what can happen on a long term basis. (Orth 11)

Inconsistent access to relevant advice might have been affected by the socio-economic background of patients, as well as inequitable provision across the city.

Lack of acceptability

Although health professionals and patients stressed the importance of specific advice and explanations early in the course of diabetes, professionals suggested that too much information at once can be overwhelming, and that patients often appear to forget advice, or deny having received it. This is particularly likely when advice includes lifestyle changes such as smoking cessation, or dietary restriction. The initial shock of diagnosis may restrict the absorption of information, so there is a need for continual assessment of appropriate educational strategies.

Shared understanding

Interviews with professionals and patients highlighted the importance of shared understanding of the patient situation in providing both support and advocacy. Health professionals had gained a wealth of insight from their clinical interactions and professional knowledge that was used to build relationships with patients. Patients were particularly positive about Diabetes Specialist Nurses in terms of their expertise, empathy and accessibility; allocation to a particular nurse provided continuous access to advice and support:

I just think they know more, more than what the doctors know, and they know every crook and cranny, whereas your doctors, working on a general principle, whereas they are working, specialising... and they're friendly, more like a family basis... (male patient N)

Understanding and acceptance of foot care information was encouraged by the constant sharing of knowledge, the reinforcement of knowledge, and provision of new pieces of information, which patients perceived as supportive.

You pick up lots of different advice from lots of different people, you know....(podiatrist) may well tell you about your socks being, you know 'wear your socks inside out'..., I've been diabetic for ten years, going to foot clinic for two years and I've not heard that one before, so, you know, you do, it does, it does increase your knowledge base attending a specialist foot clinic, rather than just going to see your GP. (female patient M)

This shared understanding between the professionals and patients appears to have created a sense of security for patients which encourages participation in self-care while also providing a safety net when problems arise.

Acting on information

While professionals provided insights into the patient experience from their professional interactions, there was some evidence of a different worldview in terms of acting upon knowledge.

Knowing vs. doing

Professionals are provided with evidence-based guidance on specific practice, such as foot care for people with diabetes, the essence of which is passed on to patients in consultations. While guidelines aim to standardize care, patients have different needs and circumstances that cannot be accounted for in standard advice. In addition, some patients find that professional expectations conflict with social expectations. Advice may therefore interfere with activities of daily living, and appear unreasonable or impossible to carry out.

When I'm in the house and I'm resting... obviously I do, but as long as there's things to do, you know, I can't neglect everything else 'cos of that, cos it's not going to rule my life, that's not what its all about is it? (male patient L)

This was verified by one of the nurses:

They never rest it to the full effect, because they've got to make a cup of tea if they're on their own, or they've got to sort themselves out, or go to the shops. (nurse 15)

Some patients might have difficulty accepting their diagnosis, and disregard preventive advice. Particularly in the early years, patients with type 2 diabetes generally have no serious symptoms to remind them of the need for action:

Not having any problems, you feel alright, I mean, I felt alright, for a long time I felt fine...and I think, when you feel alright, you start thinking, 'oh, it's not serious', so you just carry on your own life... but as soon as you start getting some problems, you look into things more. (female patient B)

However, when discussing the fictitious character in the vignette, some of the patients referred to 'rules' or 'instructions' that he should follow in order to avoid complications. There was therefore a conflict between knowing what needs to be done, and actually carrying the actions out. The character was chastised for non-adherence, or non-attendance:

All I can say is, he didn't do what he was told to do...and what's the point of going to clinics if you don't do what they tell you to do? (female patient K)

I always keep my appointments, but like I say, if he thinks 'Oh, it looks alright', and he gets infection in it, its his fault, its his problem. (male patient L)

Health professionals also found that encouraging some patients to act upon their advice could be a challenge. Possible reasons reported for this were lack of cognitive ability to assimilate or remember the necessary information, cultural barriers that limit understanding of medical language, and cultural differences in the perception of health:

[People from Glasgow] just have more of a carefree, c'est la vie...approach to life. I've worked in Cambridge... the approach there is different, the people there tend to get very concerned about their health, they'll try their very best, and I guess there are socio-economic factors that come into it as well, and what different background you come from. (Orth. 9)

These views highlight the problems in delivering and evaluating educational programmes without taking into account the variations in acceptability to patients of the information being given. They also show that acceptability can change over time, and with circumstances. With hindsight, patients with complications realised that they either did not receive or accept appropriate information at a time when it was crucial. They now felt a strong desire to share their experiences, or warn newly diagnosed patients of potential risks.

Show them in a class, what happens when you don't look after yourself, show them that; in the end, it is the end, it's death, and that's your fault.... (Male patient N)

Shared responsibility

While most patients focussed on the (real or fictional) patient's responsibility to follow advice, professionals were also concerned with their own, and the organizational responsibilities in providing and maintaining effective communication with patients.

There's a greater duty of care because the staff know...which factors they haven't compensated accordingly, so he's missed appointments, carried on smoking, surely that's more the reason for chasing him up. (Pod 7)

Professionals were concerned that patients should receive enough advice to be able to carry out self-management, and this was a challenge if patients did not attend appointments, or if organizational barriers prevented access to optimal information.

Discussion

In this paper we have examined the issues around education and information exchange that affect people with diabetes-related foot complications. We found that patients reported a lack of early understanding of diabetes that may contribute to suboptimal self-care, and delayed health-care seeking. Reasons for this include inadequate or inconsistent information, a possible variation in cognitive ability, and difficulties in absorption of uncomfortable information in excessive amounts. Inequitable access to health education across the city could also be a factor at the time of diagnosis. For people with type 2 diabetes, in particular, there is also a paradox between understanding prevention and the lack of symptoms in early years.

Early education was, however, seen as important, with regular, full explanations to ensure that patients fully understand the implications of diabetes, and misunderstandings are dealt with. The varied knowledge base of professionals may have influenced referral behaviours, leading to delay of treatment, and some patient experiences have fostered ongoing mistrust of certain professionals. However, mistrust could have arisen from professional training issues, or patient–professional relationships. The latter was the most striking feature of perceived support in self care, along with expertise and empathy. It therefore seems important that professionals develop an understanding of the patient in order to empower them in their self-care activities, and this shared responsibility was acknowledged by some of the practitioners in this study.

The use of vignettes was helpful in allowing patients to discuss a range of issues without necessarily having to remember their own history, or disclose personal information. It also

allowed comparison of patient and professional data as the same vignette was used in all interviews. While the vignette focussed on the patient situation, prompts were used to encourage respondents to consider any issues that might affect the patient experience, for example, patient behaviour, or service delivery. To ensure that responses were not restricted by the vignette items, respondents were also encouraged to raise issues of their own interest at the end of the interview.

Care has to be taken to separate potential behaviour of the fictitious character from actual experiences of the patient or professional. These were clearly identifiable in that respondents tended to signpost when they shifted focus from one to the other. Previous work has commented on the validity of the information obtained using vignettes;²² In this study the vignette was thoroughly tested with an expert panel and piloted to obtain internal validity.

Patients with longstanding foot complications and experience with health-care services were chosen for the study in order to access the potential barriers that lead to amputation. The findings cannot therefore be directly generalized to all people with diabetes, who may have experience of different local service provision.

Previous studies and reviews that have examined patient education have usually evaluated prospective educational interventions^{15,18} in terms of their outcomes. Interventions tend to vary in style, content, delivery and theoretical base, and include only a selected group of participants, and the studies rarely include patient views of the intervention. One study¹⁸ that did include qualitative information supported our findings in that patients had often not received adequate information following diagnosis. They also found that education programmes are generally poorly attended, possibly not only because of misconceptions about the seriousness of type 2 diabetes, but also because there was often a perceived mismatch between educational recommendations and the reality of living with diabetes.

A qualitative study that assessed female patient attitudes to type 2 diabetes²⁹ also found

that practitioners had tended to underplay its seriousness, which led to a lack of incentive for patients to make recommended changes to their lifestyle. Campbell *et al.*³⁰ suggested in their meta-ethnography of qualitative studies that in order to cope with diabetes, patients need to realize the seriousness of their disease, and that time is required to allow patients to become familiar with the effects of diabetes on the individual. A review by Krichbaum *et al.*³¹ supports the need to tailor educational packages to meet the needs of individuals, and their varied coping styles.

A contradiction in diabetes education, evident in our study, is that patients realize with hindsight the importance of early education, and that they want to share their experiences with those who are newly diagnosed. However, when patients are newly diagnosed, they may not receive or accept this information; furthermore, because there are no symptoms, the importance of changing their lifestyle is not immediately apparent.

The results highlight the need for a thorough evaluation to determine the gaps that need to be closed to fulfil the expectations and requirements of individual patients, as well as the patient population. This could involve assessment of professional training, patient–professional relationships, and the barriers that patients may experience in accepting information that may seem irrelevant at the time of delivery.

Acknowledgements

We thank all the health professionals and patients who took part in the interviews, and the Consultants and nurses who identified and contacted patients on our behalf. Funding for this study was provided by a Department of Health Public Health Scientist Career Award, and the Sheffield Health and Social Research Consortium.

References

- 1 Rayman G, Krishnan STM, Baker NR, Wareham AM, Rayman A. Are we underestimating diabetes-related lower-extremity amputation rates? *Diabetes Care*, 2004; **27**: 1892–1896.
- 2 Hutchinson A, McIntosh A, Feder G, Home PD, Young R. *Clinical Guidelines and Evidence Review for Type 2 Diabetes: Prevention and Management of Foot Problems*. London: Royal College of General Practitioners, 2002: 1–95.
- 3 Kumar S, Ashe HA, Parnell LN *et al.* The prevalence of foot ulceration and its correlates in type 2 diabetic patients: a population-based study. *Diabetic Medicine*, 1994; **11**: 480–484.
- 4 NHS: National Institute for Clinical Excellence. *Type 2 diabetes: Prevention and Management of Foot Problems*. Clinical Guideline 10. London: NHS, 2004.
- 5 Edmonds ME, Boulton AJ, Buckenham T *et al.* Report of the diabetic foot and amputation group. *Diabetic Medicine*, 1996; **13**: S27–S42.
- 6 Boulton AJM, Vileikyte L. The diabetic foot: the scope of the problem. *The Journal of Family Practice*, 2000; **49**: S3–S8.
- 7 Department of Health. *National Service Framework for Diabetes: Standards*. London: Department of Health, 2001: 1–45.
- 8 Vinik AI. Management of neuropathy and foot problems in diabetic patients. *Clinical Cornerstone*, 2003; **5**: 38–55.
- 9 Culleton JL. Preventing diabetic foot complications: tight glucose control and patient education are the keys. Symposium: first of three articles on the diabetic foot. *Postgraduate Medicine*, 1999; **106**: 74–78, 83.
- 10 Richbourg MJ. Whatever happened to foot care? Preventing amputations in patients with end stage renal disease. *Edtna-Erca Journal*, 1998; **24**: 4–10.
- 11 Ledda MA, Walker EA, Basch CE. development and formative evaluation of a foot self-care program for African Americans with diabetes. *Diabetes Educator*, 1997; **23**: 48–51.
- 12 Helfand AE. Assessing and preventing foot problems in older patients who have diabetes mellitus. *Clinics in Podiatric Medicine and Surgery*, 2003; **20**: 573–582.
- 13 Valk GD, Kriegsman DMW, Assendelft WJJ. Patient education for preventing diabetic foot ulceration – a systematic review. *Endocrinology and Metabolism Clinics of North America*, 2002; **31**: 633–658.
- 14 Zernike W, Henderson A. Evaluating the effectiveness of two teaching strategies for patients diagnosed with hypertension. *Journal of Clinical Nursing*, 1998; **7**: 37–44.
- 15 Loveman E, Cave C, Green C, Royle P, Dunn N, Waugh N. The clinical and cost-effectiveness of patient education models for diabetes: a systematic review and economic evaluation. *Health Technology Assessment*, 2003; **7**: 1–202.
- 16 Norris SL, Engelgau MM, Venkat Narayan KM. Effectiveness of self-management training in type 2 diabetes. *Diabetes Care*, 2001; **24**: 561–587.

- 17 Steed L, Cooke D, Newman S. A systematic review of psychosocial outcomes following education, self-management and psychological interventions in diabetes mellitus. *Patient Education and Counselling*, 2003; **51**: 5–15.
- 18 Cooper HC, Booth K, Gill G. Patients' perspectives on diabetes health care education. *Health Education Research*, 2003; **18**: 191–206.
- 19 Glenton C. Developing patient-centred information for back pain sufferers. *Health Expectations*, 2002; **5**: 319–329.
- 20 McIntosh A, Shaw C. Barriers to patient information provision in primary care: patients' and general practitioners' experiences of information for low back pain. *Health Expectations*, 2003; **6**: 19–29.
- 21 Reid G. *Sheffield and Its Electoral Wards – A review of the Index of Multiple Deprivation*. Sheffield: Sheffield Health Authority, 2000.
- 22 Gould D. Using vignettes to collect data for nursing research studies: how valid are the findings? *Journal of Clinical Nursing*, 2003; **5**: 207–212.
- 23 Greenhalgh T. Health beliefs and folk models of diabetes in British Bangladeshis: a qualitative study. *British Medical Journal*, 2003 (Data Supplement); **316**: 978.
- 24 Hughes R, Huby M. The application of vignettes in social and nursing research. *Journal of Advanced Nursing*, 2002; **37**: 382–386.
- 25 Hughes R. Considering the vignette technique and its application to a study of drug injecting and HIV risk and safer behaviour. *Sociology of Health and Illness*, 1998; **20**: 381–400.
- 26 Flaskerud JH. Use of vignettes to elicit responses toward broad concepts. *Nursing Research*, 1979; **28**: 210–212.
- 27 Ritchie J, Lewis J. *Qualitative Research Practice: A Guide for Social Science Students and Researchers*. London: SAGE, 2003.
- 28 Silverman D. *Doing Qualitative Research: A Practical Handbook*. London: Sage Publications Ltd, 2003.
- 29 Dietrich UC. Factors influencing the attitudes held by women with type II diabetes: a qualitative study. *Patient Education and Counselling*, 1996; **29**: 13–23.
- 30 Campbell R, Pound P, Pope C *et al.* Evaluating meta-ethnography: a synthesis of qualitative research on lay experiences of diabetes and diabetes care. *Social Science and Medicine*, 2003; **56**: 671–684.
- 31 Krichbaum K, Aarestad V, Buethe M. Exploring the connection between self-efficacy and effective diabetes self-management. *The Diabetes Educator*, 2003; **29**: 653–662.