

Determining the patient-perceived impact of foot health education for patients with diabetes mellitus

Andrew Hill, Gloria Dunlop

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Article points

1. Foot disease continues to be a major threat to individuals with diabetes mellitus and accounts for over £300m per year of NHS spending in the UK.
2. Patient education has been shown to be a useful tool in improving health outcomes for people with diabetes mellitus without having a major impact on healthcare costs.
3. Studies looking at the impact of foot health education specifically, however, have been few and far between with virtually none looking to assess patient-perceptions of this crucial area of patient education.

Key words

- Diabetes mellitus
- Foot health
- Patient education
- Patient experience
- Patient perceptions

Authors

Andrew Hill is Clinical Services Manager and Programme Lead at The SMAE Institute (1919 Ltd), Berkshire, UK; Gloria Dunlop is Officer and Programme Leader of MSc Podiatry at Queen Margaret University, Edinburgh, UK

The aim of this study was to identify the perceived impact of foot health education for patients with diabetes mellitus using a qualitative research methodology. Twenty participants with either type 1 or type 2 diabetes mellitus were randomly selected and invited to an in-depth, semi-structured interview relating to each individual's experience of patient education relating to diabetes mellitus, with a focus on foot health. The results of this study indicated that the individuals interviewed had an inconsistent patient education experience, particularly in relation to foot health, with a large proportion not receiving routine education services in line with national clinical guidelines and commissioning reports. This was most notably identified with almost half of all participants interviewed who indicated they had received no patient education whatsoever. Those who did receive structured patient education did not have this reinforced annually. Furthermore, where patient education pertaining to foot health was received by individuals, the patient-perceived impacts were varied and did not demonstrably lead to a sustained change in foot health perception or behaviours.

Foot disease continues to be a major threat to individuals with diabetes mellitus. The lifetime risk of developing a foot complication leading to significant morbidity and mortality is between 12% and 25% (Ooi et al, 2007). The burden of foot health-related costs on the NHS was estimated by Gordois et al (2003) to be £200m per year, excluding the management of ulcers in the community. This figure has subsequently risen to nearer £300m per year (Global Diabetes Community, 2015). However, studies have shown that diabetes education is a useful tool to improve outcomes without having a major impact on healthcare costs (McGowan, 2011; Gagliardino et al, 2012; Mash et al, 2015).

A Cochrane review in 2012 found there is insufficient robust evidence that patient education alone is effective in achieving clinically-relevant reductions in ulcer and amputation rates (Dorresteyin et al, 2012), however, other single studies have suggested that an increased awareness and subsequent education programme aimed at foot care would lead to the prevention of foot ulcer occurrence (Basu et al,

2004; Ooi, 2007). Patient education is considered a cornerstone of diabetes management due to the central role that patients play in their own diabetes care on a daily basis when having to take responsibility for a large number of behavioural choices and activities (Heinrich et al, 2010). Studies looking at this specific area are few and far between, however, and there is scarcely any literature that looks to assess individual perceived impacts of the standard patient education that all patients with diabetes are entitled to and recommended to receive, particularly within the context of foot health. Therefore, this study aimed to determine the patient-perceived impact of foot health education for patients with diabetes mellitus.

The National Health Service (NHS, 2011) commissioned a report that cited patient education as a key factor in the overall care package of optimum diabetic foot management, regardless of patient risk status. Despite this drive in diabetes patient education in the UK since the UK Prospective Diabetes Study (1999) and National Institute for Health and Care Excellence (NICE) guidance (2003; 2009), the

individual education models have had relatively little assessment from the point of view of their focus on foot health and the efficacy of any such education on foot health outcomes in diabetes mellitus.

Indeed, studies looking at the impact of foot health education on the incidence of ulcerations and amputations have proved largely inconclusive, with the largest systematic review of the current literature finding there is insufficient robust evidence that patient education alone is effective in achieving clinically-relevant reductions in ulcer and amputation rates (Dorresteijn et al, 2012). However, what is not clear from the studies covered in the systematic review is whether the patient-perceived impacts of the educational models were measured at any stage and if that may be an area of relevance.

Many studies have concluded that patient education in diabetes has real clinical impacts, such as improved health outcomes, which serve to highlight the importance of patient education given the significant

burden placed on community health resources as a consequence of diabetes care and complications (Rothmann et al, 2011; Rygg et al, 2012; Baba et al, 2015). However, despite the overall positives of patient education in diabetes, the question of clinical benefit related to foot health specifically continues to remain the subject of debate.

In accordance with the findings of Dorresteijn et al (2012) and Gershater et al (2011), the impact of foot health education was of greater benefit to lower-risk patients; those at higher risk of foot problems benefited little from focused patient education. This particular study did have methodological drawbacks, however, with its largest limitation being that the study participants had active ulceration or previously ulcerated feet. Myriad factors, chronic in nature, would likely have contributed to the ulceration that education alone could not help to alleviate. One of the most striking studies in this area by Basu et al (2004) found that a third of participants with

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2. Recommendations within previous studies looking into the efficacy of patient education suggest that exploring the motivations and individual cognitive processes underpinning behavioural changes towards self-management is required.

diabetes sampled did not remember the advice they were given about their feet. Another third had been given information sporadically over the previous decade, and the final third did not recall having been given any foot care advice at all despite over 70% of the participants assessed providing the majority of their own foot care needs. Where patients did not recall ever having received any education, it is unclear if this was due to education not being given or not having a significant enough impact. Either way, it would suggest that for a number of patients, structured education at the point of diagnosis with annual reinforcement and review is not necessarily a reality for all.

With the paradigm shift within diabetes management focussing evermore on patient empowerment and self-management, there have been a number of education initiatives made available, and recommended to, patients with diabetes mellitus irrespective of severity and risk. While these initiatives and structured courses provide internal reports and audits that demonstrate their efficacy at improving health outcomes for patients (Deakin and Witham, 2009), these reports do not specifically look to assess foot health outcomes or outline the patient-perceived impacts of the education.

In the context of the current literature and the clear gaps within it, this study proposed to explore the patient-perceived impact of foot health education for individuals with diabetes mellitus and aimed to provide some important insights into this key area for diabetes self-management and prevention of complications. Indeed, recommendations within previous studies looking into the efficacy of patient education suggest that exploring the motivations and individual cognitive processes underpinning behavioural changes towards self-management is required (Heinrich et al, 2010; Rygg et al, 2012; Gucciardi et al, 2012; Baba et al, 2015).

Aims

The aim of the study was to determine the patient education approach that individuals with diabetes mellitus were exposed to, as well as exploring patient perceptions and the impact of foot health.

Methods

The study was qualitative in nature, using semi-structured interviews to obtain rich data and identify

emerging themes from the participants' own and unique perspectives while maintaining consistency in the line of questioning between all participants. This study looked to assess participants' stories as accounts, rather than reports, and looked to formulate understanding of the factors shaping them, so an ethnomethodological approach was taken (Cohen et al, 2011). The most notable limitation of this approach in the context of this research is the notion that result bias may come from the researcher when interpreting the data. This particular limitation was addressed by employing respondent validation as a means to test the trustworthiness of the research. The semi-structured interviews were 30 minutes in duration and patients fitting the inclusion criteria (below) were selected at random and invited to take part in the research. In total 75 participants were approached in order to arrive at 20 consenting participants.

In qualitative healthcare research, it has been demonstrated in numerous studies that comprehensive data can be attained from the first 20 or so participants and any further participants above this number yield little 'new' data; therefore, for this study, a sample of 20 participants was considered appropriate.

The interviews were recorded and then transcribed onto a password-protected computer for analysis. Once transcribed, the recordings were destroyed and the transcripts given anonymous codes so that the anonymity of the participants was protected at all times. Only the researcher knew who the participants were and which transcript belonged to which participant. Once the data were transcribed, the final involvement for the participant was a request for a validation of their anonymised transcript, which was done via post. The transcribed data were analysed using a framework analysis model and the next step was for the researcher to thematically analyse the data by developing a coding scheme, otherwise known as indexing. The final stage of the process was 'charting', which looked to rearrange the data according to thematic content. This then allowed the researcher to provide summaries of data. Ethical approval for this study was obtained from the Queen Margaret University ethics panel (DivREC) in December 2014.

Clinical provision of ongoing informal advice

The inclusion criteria for participants were that they had been diagnosed with type 1 or type 2 diabetes

mellitus for at least 18 months; were over the age of 18; had been referred to the New Hall podiatry clinic in Maidenhead, Berkshire; were considered mentally competent to provide informed consent to take part; had not previously been treated by the researcher and had not received initial or formal foot health education from the clinic associated with the research.

Results and discussion

Data were collected from all 20 participants and analysed. At the time of analysing the data and collating the results of the study, one of the participants (participant 11) contacted the researcher indicating that he/she wished to withdraw from the study without citing a reason. The transcript from this interview was then deleted and any results arising from it discounted. The data arising from the remaining 19 interviews produced a range of specific themes that are presented in order of significance to the aims of the study in a format designed to highlight any contextual links that exist within themes. Sub-headings have been used, therefore, to clarify the key themes emerging from the data.

Inconsistency

During the semi-structured interviews it was clear that those interviewed had widely varying experiences of structured patient education pertaining to their diabetes and their foot health. This inconsistency occurred within three areas covered in the interviews: whether or not structured or formal patient education was received; whether or not this formal or structured education specifically covered foot health; and whether or not this formal or structured education had a positive or negative impact from the perspective of the participants. Of the 19 participants that were interviewed, nine did not recall receiving any formal or structured patient education whatsoever, with one participant pointing out that when he/she requested to attend a structured patient education programme, the request was denied by the general practitioner.

Having noted the inconsistency in whether or not formal or structured patient education was received by the study participants, one other sub-theme that emerged from the data related to whether participants recalled foot health being covered within this education. Of the ten participants who recalled that structured patient education was given, only half recalled that foot health was specifically covered.

These inconsistencies aligned with the final emerging sub-theme: whether or not participants interviewed perceived the impact of the structured or formal patient education as positive or negative. For the purposes of this analysis, the terms 'positive' and 'negative' were determined by the wording given by the interviewee, the context of the dialogue, and the intonation and emphasis in their wording. A 'positive' experience was determined as being recollections where the participant has displayed a real and tangible benefit to their perception of living with diabetes and/or self-management and foot health behaviours. A 'negative' experience was determined as being recollections that displayed real and tangible drawback to their perception of living with diabetes and/or self-management and foot-health behaviours.

There was a wide variation in participant experiences here, with some suggesting that the structured patient education left a positive impression upon them, others feeling more negative and some implying indifference. This was followed up, often directly, with the participant indicating whether or not a tangible benefit has been felt by having had this structured patient education.

Belief that structured education is/ would be beneficial

Having identified that inconsistency was a key theme across significant areas of exploration in this study, the next striking theme to emerge was that most of the study participants (regardless of whether or not they received structured or formal patient education) indicated a belief that structured or formal patient education is/would be beneficial, with very few indicating that they felt it is/would be of little benefit. Interestingly, those that had received initial patient education indicated that further, regular sessions to reinforce this education would be of significant benefit, with some highlighting that they would have preferred the education to arrive sooner post-diagnosis. Strikingly, one participant indicated that he/she wished that the structured education had been presented differently as he/she felt a lot more would have been gained if it had been.

Providing ongoing informal advice

Another theme emerging from the interviews with both those who did and those who did not receive structured or formal patient education is that advice/

education, albeit unstructured and/or informal was, and is, being delivered by health professionals on a regular or semi-regular basis.

Positive view on patients' own foot health

The final theme that clearly emerged from the interviews was that virtually all of the participants, regardless of differences in terms of their diabetes history and patient education, reported a largely positive view of their own foot health.

Study limitations

The results of this study need to be considered within the context of the study's limitations. The limitations are mainly focussed around the nature of patient one-on-one interviews possibly leading to researcher bias influencing the results. This limitation was addressed by employing respondent validation; ensuring that the study participants and the researcher were not previously known to each other and random sampling of participants. The other limitation of this study is that all participants were patients of the SMAE Institute where the study was being conducted, and it is possible that the participants felt a sense of allegiance to the SMAE Institute and this could have influenced their interviews. A repeat of this study within a different setting and to incorporate a wider study population would be needed to compare results.

Conclusion

The results of this study indicate that the individuals interviewed had a very inconsistent patient education experience, particularly in relation to their foot health, with a large proportion of these individuals not receiving services in line with national commissioning reports and guidelines that determine this education should be given irrespective of individual risk status.

Almost half of all participants interviewed indicated that they had received no patient education whatsoever, and those that did receive structured patient education did not have this education reinforced annually. Furthermore, where patient education pertaining to foot health was received by individuals, the patient-perceived impacts of this education were varied and did not demonstrably lead to a sustained change in foot health perception or behaviours. The reasons for this appear multi-factorial, but where the patient experiences are so varied it does not seem possible to reach a conclusion as to any single area where this

disparity can be resolved. Where patient education is cited as being a significantly important part of the patient-centred approach to diabetes management, if this education is not offered and reinforced as directed, then further studies into the reasons why are indicated.

The results of this study, when contextualised within the acknowledged study limitations, indicate that there is a need for more research into this area to establish whether the experiences of the participants in this study are in keeping with larger demographics of individuals across the country and, subsequently, why there appears to be such inconsistency in this crucial area of diabetes management. ■

- Baba M, Duff J, Foley L, Davis W, Davis T (2015) A comparison of two methods of foot health education: The Freemantle diabetes study phase II. *Prim Care Diabetes* **9**: 155–62
- Basu S, Hadley J, Tan RM et al (2004) Is there enough information about foot care among patients with diabetes? *Int J Low Extrem Wounds* **3**: 64
- Cohen L, Manion L, Morrison K (2011) *Research Methods in Education* (7th edn.) Routledge, London
- Deakin T, Whitham C (2009) Structured patient education: the X-PERT programme. *Br J Community Nurs* **14**: 398–404
- Dorresteijn JAN, Kriegsman DMW, Assendelft WJ, Valk GD (2012) Patient education for preventing diabetic foot ulceration (review). *Cochrane Database Syst Rev* **10**: 1–13
- Gagliardino JJ, Aschner P, Baik SH et al (2012) Patients' education, and its impact on care outcomes, resource consumption and working conditions: data from the international diabetes management practices study (IDPMS). *Diabetes Metab* **38**: 128–34
- Gershater M, Pilhammar E, Apelqvist J and Alm-Roijer C (2011) Patient education for the prevention of diabetic foot ulcers. *European Diabetes Nursing* **8**: 102–7
- Global Diabetes Community (2015) Cost of Diabetes. Available at: <http://bit.ly/1pEEbUZ> (accessed 14.10.2015)
- Gordois A, Schuffman P, Shearer A, Oglesby A (2003) The healthcare costs of diabetic peripheral neuropathy in the UK. *The Diabetic Foot Journal* **6**: 62–73
- Gucciaroli E, Wing-Sheung V, Cheun Lo B et al (2012) Patients perspectives on their use of diabetes education centres in Peel-Hatton region in Southern Ontario. *Canadian Journal of Diabetes* **36**: 214–7
- Heinrich E, Schaper NC, de Vries NK (2010) Self-management interventions for type 2 diabetes: a systemic review. *European Diabetes Nursing* **7**: 71–6
- Mash R, Kroukamp R, Gaziano T, Levitt N (2015) Cost effectiveness of a diabetes group education programme delivered by health promoters with a guiding style in underserved communities in Cape Town, South Africa. *Patient Education and Counselling* **98**: 622–6
- McGowan P (2011) The efficacy of diabetes patient education and self-management education in type 2 diabetes. *Canadian Journal of Diabetes* **35**: 46–53
- NHS diabetes (2011) *Commissioning Diabetes Foot Care Services*. Available at: <http://bit.ly/1QrsKu9> (accessed 14.10.2015)
- NICE (2003) Technology Appraisal: Diabetes (types 1 and 2) – patient education models. Available at: <http://bit.ly/1RHgzuf> (accessed 14.10.2015)
- NICE (2009) Clinical Guideline 87: The management of type 2 diabetes. 23–29. Available at: <http://bit.ly/1zQybfr> (accessed 14.10.2015)
- Ooi GS, Rodrigo C, Cheong WK et al (2007) An evaluation of the value of group education in recently diagnosed diabetes mellitus. *Int J Low Extrem Wounds* **6**: 28
- Rothmann M, Nyland AH, Hammelsvang L et al. 2011. Patient education on retinopathy. *European Diabetes Nursing* **8**: 62–6
- Rygg L, By Rise M, Gronning K, Steinsbekk A (2012) Efficacy of ongoing group based diabetes self-management education for patients with type 2 diabetes mellitus. A randomised controlled trial. *Patient Educ Couns* **86**: 98–105