The Diabetic Foot: Quality of Life

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A literature search investigated the health-related quality of life of patients with foot complications associated with diabetes. There are very few data on the life experiences of patients with infection and diabetic foot ulceration. The potential consequence of infection, in terms of amputation, is the focus of some studies, in which immobility and a restricted social life are potential areas of concern, although the location of the amputation may confound these results. The health-related quality of life for patients with diabetic foot ulceration may be poorer than that experienced by those who had amputation, because many of the patients live with the fear of recurrence of ulceration, repeated bouts of infection, and potential life-long disability. The clinical and academic communities must work together to improve the data on this important outcome measure so that we can work with patients to improve preventive care and treatment options.

Diabetic foot ulcers represent a substantial economic cost to any health care system, and costs have been estimated to be in the region of US$500 million [1]. Although diminished quality of life is thought to be a consequence [2], little is known of the human costs involved or of the impact of this condition on everyday living. Very few studies have specifically investigated the consequences of diabetic foot ulceration on everyday living, despite the seriousness of the condition. Research that focuses on these patients’ experiences could help both them and their health professionals in explaining issues such as perceived risk and the consequences of various treatment interventions.

CONSEQUENCES OF FOOT COMPLICATIONS IN DIABETIC PATIENTS

About 5% of the population of western Europe and the United States have diabetes mellitus [3]. Peripheral neuropathy is an important complication of this condition that progresses gradually and variably over time; in addition, neuropathy is often associated with other complications [4]. In the absence of sound data about health-related quality of life, estimates of the economic burden of diabetic foot problems act as surrogates and as additional measures. Some argue that although these parameters are important, “information on admissions to hospital for diabetic foot problems is probably a relatively poor surrogate for direct information on morbidity or effect on quality of life” [5, p. 21–2].

The impact of infection has not been directly investigated in a diabetic population in terms of quality of life. However, Oyibo et al. [6] note the effects of infection on the outcomes of foot ulcers, and Benotmane et al. [7] suggest that “infection was almost constant” in their study of 132 diabetic patients referred for foot lesions. These studies suggest that patients regularly face the consequences of infection, and many will realize that it can be a serious complication of their disease. The treatment for deep foot infection has traditionally been surgical; recent work has suggested that conservative treatment can avoid amputation for many diabetic patients with foot osteomyelitis [8]. The most important cost drivers in a prospective study of 220 such patients were duration of wound healing and repeated surgery; the authors argue that the high costs of antibacterials should not be considered in deciding between early amputation and conservative treatment [9].

THE EXPERIENCE OF FOOT ULCERATION AND AMPUTATION

Although the literature contains many references to the devastating effects of diabetic foot wounds, these are
often just personal statements by the author [10], usually based on clinical experience. Unfortunately, research on health-related quality of life has been sparse, and there is little empirical evidence that illuminates this issue.

Bradway et al. [11] published an overview of psychological adaptation to amputation due to a range of causes, reflecting the experiences of 248 patients with 368 amputations. The authors noted that preoperative concerns focused on pain, financial difficulties, general health, and future functional capabilities at home or at work [11]. Other concerns have included the inability to walk, drive a car, or negotiate stairs without difficulty [12].

In a sample of 134 people who had amputations [13], 61 of whom had been wearing prostheses for up to 2 years, almost half were found to be at risk of psychiatric illness. However, only 13% stated that depression had been the greatest effect of amputation [13]. Patients who have had an amputation often express a desire for greater social activity [13]. Those living in small houses often lose the motivation to use their prosthesis, which can put an additional strain on their personal relationships.

However, we must be careful not to assume that there is a direct relationship between the extent of surgery and health-related quality of life. A ground-breaking study published in 1982 by Sugarbaker et al. [14] included a quality-of-life assessment of 27 patients with sarcoma of an extremity who underwent either limb-sparing surgery plus radiation and chemotherapy or amputation and chemotherapy. The initial hypothesis that sparing a limb would offer a quality-of-life advantage was not supported; there were no statistically significant differences between the groups.

A similar phenomenon has also been noted in patients with diabetic foot problems. In one study, 13 diabetic patients with chronic unilateral foot ulceration were matched for sex and age with 13 diabetic patients with lower-limb amputation and 26 diabetic patients with no history of foot ulcers [15, 16]. The authors found that quality of life for mobile amputees was better than that for the patients with foot ulcers but not as good as that for the diabetic patients with no history of foot ulceration. Those with diabetic foot ulcers were significantly more depressed and dissatisfied with their personal lives (P < .05) than were controls; those with foot ulcers also reported a significantly more negative attitude toward their feet and foot care than did either the diabetic amputees or controls (P < .05). These negative attitudes may contribute to their recurrent foot ulceration.

In a more recent study [17], 14 patients with a previous or current (but clinically stable) diabetic foot ulcer were compared with 24 controls without ulcers, matched for age, sex, and duration of diabetes. The investigators concluded that an existing or previous foot ulcer had a negative influence on the physical and social aspects of their subjects’ quality of life. Although these study samples are not large, the findings are similar and suggest that limitations on physical functioning and mobility can reduce self-reported health-related quality of life.

These findings are supported by a study that used the Markov state transition model to estimate the cost effectiveness of several approaches to the diagnosis and treatment of foot infection and suspected osteomyelitis in diabetic patients [18]. To adjust life expectancy for quality of life as an outcome measure, scores from 1738 diabetic patients on 3 subscales of the Short Form-36 were used to calculate weighting factors for the decision model. Compared with diabetic controls, both those with ulceration and those who had amputation rated their quality of life significantly poorer for physical functioning (P < .001). Mean scores for the ulceration group (44.1) were lower than for those who had amputation (49.1). The location of the amputation was also important: patients with foot ulceration had poorer scores than did those who have had toe, transmetatarsal, and below-the-knee amputation but had better scores than did those who have had above-the-knee amputation.

Studies of patients with foot problems other than amputation also provide information on the consequences of foot complications. For example, a study of patients with peripheral neuropathy who developed ulcers over a 10-month period found that they had a more negative attitude toward their feet and less belief in the efficacy of medical advice than did those with existing ulcers or Charcot neuroarthropathy or than did diabetic controls [19]. In this study, neuropathy and negative attitude toward feet predicted development of a first ulcer. These data may reflect the complex relationship between depression and neuropathy [18, 20].

A qualitative study by Brod [21] demonstrated that not just the patient with a diabetic foot ulcer but also their caregivers or partners are affected. This study of 14 patients and 11 caregivers reported that reduction in social activities, increased family tensions, lost time from work, and negative effects on general health were experienced by both groups. The enormous impact of lack of mobility in everyday living for both the patient with ulceration and for his or her caregivers led Brod [20] to refer to the condition as “the burden of a non–weight-bearing” regimen. This may explain some of the reasons for the counterintuitive findings that ulceration may affect quality of life more than amputation does: those fitted with prostheses are encouraged to be mobile, whereas those with an ulcer are not. Furthermore, ulcers are associated with daily dressing changes, trips to health care providers, topical or systemic medications, and anxiety about the outcome.

These studies certainly do not suggest that amputation is a positive option; the loss of a limb is recognized by both doctors and patients as a “drastic” step [16]. However, in these studies, the health-related quality of life for patients with foot ulceration is worse even than for those who have had an amputation and
represents a neglected area of investigation. Patients with foot ulceration may need support to adjust to the complications that have developed and the depression that may accompany their poorer health state.

Fortunately, quality of life may be improved by interventions. A study [22] in the United Kingdom found that patients attending a specialist foot clinic and receiving orthotic interventions had significantly improved health-related quality of life, whereas those in the group not attending the clinic had a decline ($P < .05$). Attendance at a clinic using a multiprofessional approach may aid patients to understand their condition and to become more hopeful for the future and may reduce their risk of further foot complications.

CONCLUSION

The health-related quality of life experiences of patients with diabetic foot ulceration have received little attention. The few available studies indicate that the everyday experiences of such patients may be even poorer than those of patients who have had an amputation. Addressing all aspects of the diabetic foot is probably best accomplished by establishing a multidisciplinary team [23, 24] to work through all stages of patient management.

In 1994, Williams [5] noted that in the area of quality of life had received little attention: “the lack of such information must rank as the most serious deficiency in our current knowledge of the impact of these disorders” (p. 22). Living with the prospect of a lifetime of behavioral adaptations, recurring ulceration, infection, and possible amputation has a substantial effect on patients. Health professionals must acknowledge the importance of this area of care to encourage patients to fully participate in prevention of further foot complications.

References