Quality of life aspects associated with diabetic foot ulcers: A review

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Article points

1. Living with a diabetic foot ulcer has an impact on the quality of life of an affected individual.
2. There are four main quality of life aspects, which are social, physical, psychological and economic.
3. It is essential that patients with a diabetic foot ulcer be managed adequately by the multidisciplinary team, with the aim of maintaining a good quality of life.

Key words

- Diabetes ulceration
- Instruments
- Measurement of health-related quality of life
- Multidisciplinary management

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It has been reported that people with diabetes have a poorer quality of life (QoL) than people without chronic illness (Rubin and Peyrot, 1999). Diabetic foot ulcers are one of the major complications associated with diabetes and have been shown to impact hugely on an individual's QoL (Rubin and Peyrot, 1999). Foot ulcers pose a major burden for many individuals. This may also include the family and friends of the person with diabetes, as many assist in wound care and support the individual in coping with related physical and emotional suffering (Brod, 1998; Vileikyte, 2001). This article explores the various QoL aspects associated with diabetic foot ulcers and their impact on both the affected individual and the caregiver. It also considers some of the instruments used to measure health-

Approximately 15% of all individuals with diabetes will experience a foot ulcer at some point in their lifetime (Mayfield et al, 1998). It has been noted that 5.3% of people in a UK population have suffered from a current or previous foot ulcer (Kumar et al, 1994).

A foot ulcer can affect QoL by impinging upon the following four aspects: social, psychological, physical and economical. Many authors have reported that study participants experience impaired QoL with a diabetic foot ulcer; in particular reduced mobility has been noted as a major factor, as well as adapting to a lifestyle change (Brod, 1998; Ashford et al, 2000; Ribu and Wahl, 2004).

The social aspect

Numerous studies have indicated that people's daily, social and family life, as well as partaking in leisure activities, was affected when they presented with a diabetic foot ulcer (Brod, 1998; Ashford et al, 2000; McPherson and Binning, 2002; Ribu and Wahl, 2004). In a pilot study by Brod (1998), all individuals (n = 14) with diabetes and their caregivers (n = 11) reported an impaired QoL. This was due to reduced mobility experienced while adapting to a change of lifestyle that led to added pressure and burden on the individual's immediate family members and their caregivers, causing conflict and tension. A study conducted by Ashford et al (2000)

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1. The majority of people with diabetic foot ulcers report impaired QoL, particularly in their daily and family life.
2. Various studies have revealed that people subjected to a diabetic foot ulcer face many psychological and emotional effects.
3. A significant number of individuals faced frustration, anger and guilt resulting from restrictions that the illness placed upon them.
4. Footwear is a major factor, in that many people disliked the type of shoes that they were required to wear in a study by Ashford et al (2000).
5. A vast amount of research has been carried out during the last decade, which has shown that living with a diabetic foot ulcer has a significant impact on people's employment opportunities.

looked at the QoL of people (n = 21) with diabetic foot ulceration, and reported that many depended on their family and friends to carry out tasks that they were not able to perform (for example, dressing the ulcer and attending appointments). This sometimes resulted in family relationship problems. All individuals reported that loss of mobility meant that they were unable to perform everyday tasks, such as shopping or bathing.

Interestingly, a recent phenomenological perspective study conducted by Watson-Miller (2006) revealed that people (n=6) with a diabetic foot ulcer did not report any social isolation. It should be noted that this study had a very small number of participants and these results are therefore not comparable to findings reported in other studies that did note the problem of social isolation (Kinmond et al, 2002; Ribu and Wahl, 2004).

The above research reveals that the majority of people reported impaired QoL, particularly in their daily and family life (Brod, 1998; Kinmond et al, 2002; Ribu and Wahl, 2004). Of notable interest was the Watson-Miller (2006) study that highlighted the importance of holistic assessment as a requirement in assessing people's QoL. The study also emphasised that healthcare professionals need to be aware of the difficulties that people who present with diabetic foot ulceration encounter.

The psychological aspect

Various studies have revealed that people subjected to a diabetic foot ulcer face many psychological and emotional effects. The major concern highlighted in the literature reviewed was that people's immobility led to various emotions (Brod, 1998; Kinmond et al, 2002; Watson-Miller, 2006). Brod (1998) noted that a significant number of individuals faced frustration, anger and guilt resulting from restrictions that the illness placed upon them. Depression was another symptom noted (Brod, 1998). However, positive aspects were reported including the development of closer relationships with the individual's partner or spouse, as they appreciated the support given to them (Brod, 1998). Caregivers often reported being angry and frustrated as the individual's illness was a life-long condition. However, the caregivers reported positive outcomes as they were made aware of the importance of foot ulcer prevention, and had an awareness of the emotional needs of the person with the ulcer.

In a study by Kinmond et al (2002), a phenomenological approach using semi-structured interviews was conducted with people with diabetes (n = 21) who presented with ulcers. The sample consisted of 15 males and was aimed at the psychosocial aspect of QoL. It was reported that most of the participants highlighted negative effects on their social roles and activities owing to the foot ulcer. One individual reported that the immobility following 3.5 years to rest the affected foot ulcer led to such unbearable depression that he begged for an amputation; however, this was not considered an option.

The physical aspect

Data from many small studies have revealed that foot ulcers have a significant impact on people's physical health, particularly in terms of reduced mobility as discussed above. Ashford et al (2000) investigated the physical life of people with diabetes (n = 21) who presented with foot ulceration through semi-structured interviews using a phenomenological approach. It was found that footwear was a major factor, in that many people disliked the type of shoes that they were required to wear. This study highlighted how females felt that their femininity was undermined by therapeutic footwear. However, this study assessed only a relatively small sample size and there was an uneven distribution between males (n = 15) and females (n = 6); therefore, the results may not be as accurate in proving that footwear is a real issue compared with those from larger scale studies. An earlier study emphasised the importance of footwear and noted that wearing protective shoes for more than 60 % of the time during the day can reduce the ulcer relapse rate by more than 50 % compared with

shorter wearing times (Chantelau and Haage, 1994).

The economic aspect

A vast amount of research has been carried out during the last decade, which has shown that living with a diabetic foot ulcer has a significant impact on people's employment opportunities, and poses extra financial constraints upon them. Recent studies have revealed that there are financial difficulties that people with a diabetic foot ulcer face (Brod, 1998; Ashford et al, 2000; Ribu and Wahl, 2004). These include employment problems, as around 50 % of individuals are no longer in work as a result of their foot ulcer (Brod, 1998). The remaining 50 % of this population reported that their career prospects were limited (Brod, 1998). The financial costs associated directly with a foot ulcer, which include travelling to the hospital for appointments, increased use of the telephone and buying additional footwear, must also be considered. Brod et al (1998) found that many individuals feared losing their jobs and failed to follow appropriate advice given initially, but eventually had to realise that their feet were of paramount importance. In an article by Kinmond et al in 2002, people reported that the lack of employment was more than a financial hardship, with effects including the feeling of a significant sense of deep loss.

Reiber et al (1998) conducted a review that indicated the requirement for careful decision making prior to treatment of diabetic foot ulcers. The study was aimed at helping healthcare professionals to establish effective treatment plans, which will provide people with adequate care that is financially viable. This, in turn, should result in people receiving high-quality care, which has the potential to improve their functional status and QoL. Such treatments may include debridement, off-loading devices (for example, Aircast boots) or wound dressings that are intended to improve limb viability and therefore increase wellbeing (Reiber et al, 1998). However, the above aspects may not always be a success and can occasionally impair the individual's functional status instead of improving his or her QoL. An economic evaluation of the cost of diabetic foot ulcers has been carried out by Currie et al (1998) who noted the high costs incurred with the diabetes complications. More recently, Girod et al (2003) carried out a retrospective study (n=239) and noted that the average monthly costs for the treatment of foot ulcers were €697 for outpatient care and €1156.20 for hospital care (day treatment and short stays). Vileikyte (2001) has indicated that adapting a multidisciplinary approach and using intensive interventions can help prevent foot ulceration in people with diabetes. If this was carried out, people may not experience impaired QoL in the various domains previously highlighted.

Instruments used to measure health-related quality of life (HRQoL)

Many studies have used various instruments to assess HRQoL issues associated with diabetic foot ulcers. Measuring HRQoL involves generic and disease-specific instruments (Reiber et al, 1998; Tennvall and Apelqvist, 2000). Generic instruments involve the use of measures that are appropriate across health and illness groups, and therefore they allow these to be compared. The generic instruments include the Nottingham Health Profile (NHP), the EuroQol (ED-5D) and the Medical Outcomes Study Short Form-36 (SF-36; Keinanen-Kiukaanniemi et al, 1996). The SF-36 is an internationally accepted reliable measure of HRQoL in people with diabetes. There are also disease-specific instruments, such as the Diabetic Foot Ulcer Scale (DFS), which is specific to people with diabetes (UKPDS, 1999).

The disease-specific instruments provide a greater description of the disorder's characteristics and related physical, emotional and social function (Reiber et al, 1998). The DFS is a widely used instrument that measures specific factors that affect people's lives as a result of having a foot ulcer (such as physical health, daily activities and emotions;

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1. The financial costs associated with a foot ulcer, travelling to the hospital for appointments, increased use of the telephone and buying additional footwear, must be considered.
2. Careful decision making is required prior to treatment of diabetic foot ulcers.
3. Measuring HRQoL involves generic and disease-specific instruments.
4. The generic instrument involves the use of measures that are appropriate across health and illness groups.
5. The disease-specific instruments provide a greater description of the disease characteristics and related physical, emotional and social function.

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1. People with diabetes treated with tablets had significantly lower QoL levels than the general population in a study by Keinanen-Kiukaanniemi et al (1996).
2. The diet-controlled group had significantly higher QoL in all six domains of the Nottingham Health Profile than people on drug or combined treatment.
3. People with foot ulcers had a significantly poorer QoL than those who had experienced an amputation, as many individuals feared the recurrence of ulceration, infection and potentially life-long disability.
4. There are many instruments used to measure HRQoL. Several are specific to diabetic foot ulceration and are very useful in assessing the overall wellbeing of patients and, in some cases, their caregivers.

Abetz et al, 2002).

When combined, the generic and disease-specific instruments provide a better indication of the person's problems, and take into account changes in treatment regimens. These have been widely used in several diabetic foot studies (Reiber et al, 1998; Tennvall and Apelqvist, 2000; Nabuurs-Franssen et al, 2005) and are discussed in further detail below.

Generic and disease-specific instruments

A well-validated generic instrument has been used in many studies for people with diabetes, which includes the MOS Short-Form General Health Survey in its several forms (SF-36, SF-20 and SF-12). A study by Reiber et al (1998) used the 'Rand SF-36' instrument, which consists of eight domains and 36 questions looking at areas of physical and mental function. The SF-36 was distributed to people with diabetes (n = 302) who presented with foot ulceration. The results of this study indicated that people with a foot ulcer have significantly lower physical and social function in all eight domains compared with those without.

The DFS has been used in various studies (Abetz et al, 2002; Ribu et al, 2006) and is a reliable, disease-specific and effective instrument used to measure the HRQoL in people with diabetic foot ulcers. This scale has advantages over the SF-36 as it is able to discriminate between people with a healed ulcer and those with current ulcers. In contrast to this tool, the SF-36 is only able to discriminate between people who do and do not have an ulcer (Reiber et al, 1998).

The NHP instrument is a well-validated generic questionnaire that was assessed in a smaller study by Benbow et al in 1998. However, Keinanen-Kiukaanniemi et al (1996) examined the effect of QoL outcomes in various treatment groups of people with diabetes using the NHP, which consists of various domains as previously detailed. This large study, conducted in Finland, analysed the QoL issues associated with various treatments prescribed for individuals with diabetes (n = 1804), including diet, drug and combined therapy (drug and insulin). It was reported that people with diabetes treated with tablets had significantly lower QoL levels than the general population. The diet-controlled group had significantly higher QoL in all six domains of the NHP than people on drug or combined treatment. This study reported that people's QoL depended on the type of treatment regimen they followed. However, the study failed to state whether or not these individuals had developed microvascular complications as maintaining adequate glycaemic control has been shown to reduce these effects (Stratton et al, 2000).

Much work has been carried out by Vileikyte regarding quality of life and psychological aspects of diabetes and its complications (Vileikyte and Boulton, 2000; Vileikyte, 2001; Vileikyte et al, 2003, 2004, 2005). A recent study by that author used The Hospital Anxiety and Depression Scale (HADS) to assess symptoms of depression in patients with diabetic neuropathy (n=494). The results of this work noted the association between this complication and depressive symptoms (Vileikye et al, 2005).

A review authored by Price in 2004 assessed HRQoL of people with diabetes with foot complications. The main findings indicated that people with foot ulcers had a significantly poorer QoL than those who had experienced an amputation, as many individuals feared the recurrence of ulceration, infection and potentially life-long disability. This indicates that people with foot ulceration may need support to cope with any future complications that they may develop.

Conclusion

Overall, it has been noted that the QoL of people with diabetic ulceration and their families or caregivers has been significantly affected in all aspects. There are many instruments used to measure HRQoL. Several are specific to diabetic foot ulceration (Abetz et al, 2002), and are very useful in assessing the overall wellbeing of patients and, in some cases, their caregivers.

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1. It is essential that a multidisciplinary approach for effective treatment and care is delivered. This will enable an immediate and significant improvement in people with diabetes' QoL.

Management of diabetic foot ulcers requires effective treatment and patient compliance in order to promote wound healing; in turn, improving people's lifestyles and QoL. It is evident from the literature that there have only been relatively small studies conducted in relation to the QoL of people with a diabetic foot ulcer. Large-scale studies are further required to examine how significant diabetic foot ulceration really is, and to establish if whether additional support is required for this group.

It is therefore essential that healthcare professionals realise that when treating an individual with a diabetic foot ulcer, a holistic approach is required to assess the overall impact of chronic ulceration. This article has reported that coping with a diabetic foot ulcer is a traumatic time for people and their families and caregivers. Therefore, it is essential that a multidisciplinary approach for effective treatment and care is delivered. In the authors' opinion, this will enable an immediate and significant improvement in people with diabetes' QoL. ■

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