

# A qualitative content analysis of self-treated diabetic foot problems in Jordan

Ma'en Zaid Abu-Qamar, Anne Wilson

**Previous research has demonstrated the importance of culturally oriented foot care. In order to develop appropriate foot care programmes, it is necessary to identify local patterns of diabetic foot problems. An analysis of data collected in a descriptive cross-sectional study of people with diabetes in Jordan found that 68 participants had provided narrative details on foot problems for which they had used complementary remedies. Foot problems identified by the participants were grouped into three main categories: irritant skin conditions, skin integrity and sensation. Diabetes health education programmes have the potential to teach people about their disease and how to self-manage their conditions, but also need to make patients aware that unwise use of complementary therapies may potentially worsen the disease process.**

Peripheral neuropathy and peripheral vascular disease related to diabetes cause a wide range of foot problems. Although the role of peripheral neuropathy is not clearly understood (Kalish and Hamdan, 2010), it causes nerve damage and is considered the primary contributing factor for impaired sensation and other problems (Ulbrecht et al, 2004). Peripheral neuropathy can increase sensitivity to pain, and the reported symptoms include burning, numbness and tingling (Jambart et al, 2011). This is due to degeneration of the sensory, motor and autonomic functions of the nervous system (Kalish and Hamdan, 2010). As a result, people with diabetes are at heightened risk of impaired motor function, reduced sensation and poor healing, and diabetic foot ulcers.

Previous research has demonstrated the importance of culturally oriented foot care (Abu-Qamar and Wilson, 2011). Therefore, to develop foot care programmes for use in local contexts, it is necessary to identify local patterns of diabetic foot problems.

Jordan has a high prevalence of diabetes, estimated as 17.1%, which is a 4% increase within a period of 10 years (Ajlouni et al, 2008). More recent data from Jordan documented a 92% increase in diabetes prevalence over an 11 year period.

However, it should be acknowledged that these recent figures are from a specific district in northern Jordan, Al-Mafraq (Irshaid, 2014). The country has an alarming prevalence of poorly controlled diabetes, which appears to be climbing – estimated to be 54% in 2008 and 65% in 2010 (Ajlouni et al, 2008; Khattab et al, 2010).

Poor diabetes control is believed to be integral in the development of peripheral neuropathy (Obrosova, 2009). People in the Middle East are more likely to have poorly controlled diabetes than those in Western countries, leading to a higher prevalence of diabetic peripheral neuropathy (Jambart et al, 2011).

Research on the diabetic foot in Jordanians with diabetes is scarce. Jordan has the third highest prevalence of diabetic painful peripheral neuropathy in the Middle East (Petropoulos et al, 2016).

Consequently, Jordan was chosen to conduct a study (Abu-Qamar and Wilson, 2012), designed to collect information to enhance the understanding of diabetic foot problems within the local context, reveal foot problems reported by Jordanians with diabetes and therefore inform decision making.

This article examines reports on foot problems which were identified by participants themselves and self-treated using complementary therapies. It

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## Article points

1. A study of people with diabetes in Jordan found that 68 participants had used complementary remedies for diabetic foot problems.
2. These problems fell into three main groups: irritant skin conditions, skin integrity and sensation.
3. Education programmes need to make patients aware that unwise use of complementary therapies may potentially worsen the disease process.

## Key words

- Complementary therapies
- Content analysis
- Self-care
- Ulceration

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is interesting to examine foot problems identified and treated by patients outside the professional healthcare context. Findings of this study can be translated to similar settings.

In Jordan, complementary therapies are practices transferred from generation to another with no supporting evidence. The use of complementary remedies is common in Jordan, especially in rural areas and when there is no response to conventional medical treatment. Recently, a few studies have examined the therapeutic effects of medicinal plants that can be used to treat certain conditions, but did not include diabetic foot problems. Importantly, complementary therapies in Jordan are often prescribed by untrained and unlicensed people (Abu-Qamar and Wilson, 2012).

**Methods**  
**Study design**

This research arose from a larger descriptive cross-sectional study investigating foot care services in Jordan. Participants (n=1,100) were recruited from eight healthcare facilities in the southern part of Jordan and one affiliated with a university in Amman. Details on ethical approval and recruitment have been published elsewhere (Abu-Qamar and Wilson, 2012).

Research assistants interviewed the participants

Table 1. Demographic characteristics (n=68).	
<b>Gender</b>	
Male	38 (56%)
Female	30 (44%)
<b>Employment</b>	
Housewife	24 (35%)
Retired	21 (31%)
Employed	14 (20%)
Unemployed	8 (12%)
<b>Smoking status</b>	
Current or previous smoker	26 (39%)
Non-smoker	40 (59%)
<b>Education</b>	
Illiterate	21 (31%)
Semi-illiterate (some education, can read and write)	3 (4%)
Primary or high school	30 (44%)
Tertiary education	9 (13%)
NB Total of some variables is less than 100% because some responses were not collected.	

who had consented to take part in the study. The interviews were guided by a semi-structured questionnaire and aimed to collect data on a wide range of foot care aspects, such as foot hygiene, shoes and nail care. The questionnaire also collected participants’ health profiles and demographic data. During the interviews, 68 participants provided narrative details on foot problems for which they had used complementary remedies (Abu-Qamar and Wilson, 2012).

Content analysis was used to summarise and interpret the interview data and describe the foot problems explained in the narrative responses. An identification number was given to each questionnaire, and then the responses were copied into a designed sheet from which the details were inserted into a Word document to facilitate data analysis. Accuracy of the insertion was checked independently against the original questionnaire text.

Keywords related to the purpose of using complementary therapies were identified in the narrations. These were grouped into categories of foot problems. The process of finding the keywords was multifaceted and the approaches included reading the narrations individually in different sequences using hard copies as well as electronic copies of the Word documents.

**Results**  
**Participants’ demographic profile**

Participants’ demographic characteristics are shown in *Table 1*. The age of participants ranged from 20 to 91 years with a mean of 59 years.

Participants were asked to elaborate on foot problems for which they used complementary therapies sourced outside the professional healthcare context. Out of 68 responses, 24 (35.3%) did not provide details on the purpose of using complementary therapies. Analysis of the 44 responses revealed a wide range of foot problems that were categorised into three main groups: irritant skin conditions, skin integrity and sensation problems.

**Types of complementary therapies**

Complementary therapies identified in this study include: wormwood (*Artemisia monosperma*), dried olive leaves (oleuropein), olive oil, sage, henna, chamomile and other herbs. More details

on these complementary therapies are available in the previous publication (Abu-Qamar and Wilson, 2012).

### Irritant skin conditions

Participants reported two forms of irritant skin conditions, eczema ( $n=1$ ) and fungal infections ( $n=4$ ).

Eczema was mentioned in one response. Four participants said they used complementary therapies to treat or prevent fungal infections. One participant said complementary therapy “was used as a precautionary action to prevent fungus”. In the other three cases, treatment of acute fungal infection was the purpose. One participant mentioned pasting “henna on the feet to treat fungus”. Another participant reported that the treatment was non-beneficial: “I used herbs for fungus, and I have not had benefits from them.”

### Skin integrity

Topical remedies were used to treat problems relating to skin integrity – ulcers, injuries or corns – in 18 (26.5%) participants.

In 11 (16.2%) responses, the reported purposes were treatment of ulcers or wounds. Of these, six participants mentioned the words wound or injury, with responses including “for wounds of the feet”, “treating a post amputation wound” and “on the wound that resulted from amputating my [toe]”. Disinfection was cited in three narrations:

“To disinfect wounds.”

“To disinfect the feet when they incur an injury.”

“Yes, I wash them [the feet] with water and disinfectant.”

One participant reported healing occurred after a topical application “on the dead wound which was on my foot; it healed”.

Four participants indicated that they used complementary therapy to treat ulcers. These ulcers could be new (“for the treatment of the new foot ulceration”) or fissures (“for feet fissuring, from the herbalist”). One participant did not add details about the ulcers, other than to say “treats ulcerations of the feet”.

In seven responses, the removal of corns was the reason for seeking complementary therapy. Details were brief without information about when the treatment was sought or/and the frequency of usage.

### Sensation problems

This category incorporated pain, hotness and softness. In eight responses, treatment of foot pain or numbness was the purpose of using complementary remedies. The responses contained a range of details including: the problem, purpose of using the treatment, name of the remedy and method of application (Table 2).

### Discussion

This paper reports on a range of foot problems that were self-treated with complementary therapies by Jordanians with diabetes. Therapies used included olive oil, sage, wormwood, henna, chamomile and herbs.

Foot problems identified by the participants were grouped into three main categories: irritant skin conditions, skin integrity and sensation. This is different from a previous study which reviewed medical notes and reported four categories: dermatological, neurological, musculoskeletal and vascular (Tantisiriwat and Janchai, 2008). A reason for the variation in categories is that in the current study, the names of the categories reflected the participants’ views and the scope of the study was different to the case note review cited above.

### Diabetes education

Diabetes education programmes aim to teach people about their condition, to manage blood glucose for optimal control, and carry out self-care. Delivering education that is tailored for the individual needs of each patient will maximise benefits from these programmes. Tailoring should include the content of the educational material and method of delivery in the local cultural context. For example, illiterate patients require different methods of health education, possibly involving family members and/or peers to help in delivering the message to the patients.

Foot pain is a common complaint among people with diabetes, because peripheral neuropathy increases sensitivity to pain (Obrosova, 2009). It would be beneficial to increase patients’ awareness of the role of good blood glucose control in reducing the incidence and the severity of diabetes complications (Inzucchi et al, 2012).

Education programmes should highlight the negative consequences of using heat therapy, hot

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**Table 2. Sensation problems**

Quotes	Key words		
	<i>The problem</i>	<i>Application method (if known)</i>	<i>Remedy (if known)</i>
"I use olive oil to massage the right foot when I feel numbness and pain."	Numbness, pain	Massage	Olive oil
"For numbness and foot pain, cold water compresses containing a mixture."	Numbness, pain	Compresses	Cold water, mixture
"Soak it [the foot] in sage when I feel pain."	Pain	Soak	Sage
"Baths of sage or wormwood when I feel severe pain."	Severe pain	Baths	Sage, wormwood
"I use henna on the feet to soften them."	Soften	–	Henna
"Henna on the legs to alleviate heat."	Heat	–	Henna
"Olive oil to moisturise and treat itching."	Itching, moisturise	–	Olive oil
"Sage and chamomile because it gives freshness to the foot."	Foot freshness	–	Sage, chamomile
"Medicinal herbs to treat numbing feet."	Numbing feet	–	Medicinal herbs
"Pain in foot, I went to a traditional healer."	Pain	–	–
"To reduce pain."	Pain	–	–
"For foot pain."	Pain	–	–
"When I used to feel tired, and pain in my foot."	Tired, pain	–	–
"When feeling tired and fatigue and hotness in the feet."	Tired, fatigue, hotness	–	–

household objects (such as foot spas) or hot water bottles for numbness, because of the danger of burns (Thng et al, 1999, Jose et al, 2005). Participants in this study reported their use of complementary remedies to treat numbing feet, itching, alleviate heat and/or moisturise the feet.

Health education programmes should also include information on the correct treatment of fungal infections, the importance of appropriate footwear and keeping toenails short.

The importance of ongoing management to reduce the chance of infection should be stressed. For example, diabetes increases the likelihood of fungal infection because high blood glucose level encourages fungal growth, and suppresses the immune system (Santhosh et al, 2011; Islam et al, 2006). Patients should be warned that if fungal infections are not treated, cellulitis and secondary

bacterial infection may develop (Bristow and Spruce, 2009).

Patient education should emphasise the importance of correct daily practice to reduce the chance of foot problems. Furthermore, the education programmes will increase patient awareness that routine health examinations should also be sought, so that minor symptoms, which are difficult to recognise by patients themselves, will be identified in a timely manner (Bristow and Spruce, 2009).

A previous analysis of the responses from the current study found that lower limb amputation occurred when foot problems were treated with complementary remedies outside the professional healthcare context (Abu-Qamar and Wilson, 2012). It is of concern that participants sought treatment at an advanced stage of diabetic foot disease without

having received previous professional assistance because unwise use of complementary therapies may potentially worsen the disease process.

Other research has claimed that before seeking medical advice patients often try household items, including chemicals with damaging effects (Shankhdhar et al, 2008). Therefore, patients' awareness of safe practices should be increased to prevent undesirable outcomes such as amputation (Edmonds and Foster, 2005).

### Strengths and weaknesses

Foot problems identified in this study were self-reported by a small number of participants without confirmation of the diagnoses by healthcare professionals. The interview-based nature of the study suggests that participants' responses might not be exactly recorded, not fully understood, or misinterpreted. However, the qualitative nature of the study can be considered a strong point as it allowed the participants' voices to be reflected in the study findings.

Findings of the present study have limited information on the consequences of using complementary therapies for the treatment of diabetic foot problems. Consequences of complementary therapy usage were mentioned by only two participants, one reported the non-beneficial use of complementary therapy and the second reported healing as a treatment outcome. However, other research reported amputation as an outcome of using complementary therapies (Abu-Qamar and Wilson, 2012). Therefore, additional research is required to explore outcomes of using complementary applications for painful diabetic peripheral neuropathy, as well as benefits of health education.

### Conclusion

Foot problems reported in this manuscript are common complaints among people with diabetes as well as among the general population, especially older people. Therefore, people may consider such problems to be minor issues, and underestimate how serious they can be in those with diabetes.

Treatment outside the professional context may be sought from traditional healers, including the use of homemade remedies.

Diabetes education programmes have an important role in raising patients' attention to

the importance of regular foot inspection in order to discover minor foot problems and access the appropriate treatment from a healthcare professional. Additionally, non-professionally recommended self-treatment is an unsafe practice that in all probability will aggravate minor foot problems. ■

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- Abu-Qamar MZ, Wilson A (2011) Foot care within the Jordanian healthcare system: a qualitative inquiry of patients' perspectives. *Australian Journal of Advanced Nursing* **29**(1): 28–36
- Abu-Qamar MZ, Wilson A (2012) Qualitative content analysis of complementary topical therapies used to manage diabetic foot in Jordan. *Afr J Tradit Complement Altern Med* **9**(3): 440–50
- Ajlouni K, Khader YS, Batiha A et al (2008) An increase in prevalence of diabetes mellitus in Jordan over 10 years. *J Diabetes Complications* **22**(5): 317–24
- Bristow I, Spruce M (2009) Fungal foot infection, cellulitis and diabetes: a review. *Diabet Med* **26**(5): 548–51
- Edmonds ME, Foster AV (2005) *Managing the Diabetic Foot*. 3rd ed. Blackwell, Oxford.
- Inzucchi SE, Bergenstal RM, Buse JB et al (2012) Management of hyperglycemia in type 2 diabetes: a patient-centered approach. Position statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD). *Diabetes Care* **35**(6): 1364–79
- Islam LN, Hossain M, Zahid MS (2006) Complement mediated bactericidal activity and humoral immune response in type 2 diabetes mellitus. *International Journal of Diabetes and Metabolism* **14**(2): 92–7
- Irshaid F (2014) Prevalence of insulin-treated type 2 diabetes mellitus in northern Jordan: life style, familial inheritance and maternal influence. *European Scientific Journal* **10**(12): 366–80
- Jambart S, Ammache Z, Haddad F et al (2011) Prevalence of painful diabetic peripheral neuropathy among patients with diabetes mellitus in the Middle East Region. *J Int Med Res* **39**(2): 366–77
- Jose RM, Vidyadharan R, Roy, DK, Erdmann M (2005) Hot water bottles and diabetic patients – a cautionary tale. *Br J Gen Pract* **55**(512): 222–3
- Kalish J, Hamdan A (2010) Management of diabetic foot problems. *J Vasc Surg* **51**(2): 476–86
- Khattab M, Khader YS, Al-Khawaldeh A, Ajlouni K (2010) Factors associated with poor glycemic control among patients with type 2 diabetes. *J Diabetes Complications* **24**(2): 84–9
- Obrosova IG (2009) Diabetic painful and insensate neuropathy: pathogenesis and potential treatments. *Neurotherapeutics* **6**(4): 638–47
- Petropoulos IN, Javed S, Azmi S et al (2016) Diabetic neuropathy and painful diabetic neuropathy in the Middle East and North Africa (MENA) region: Much work needs to be done. *Journal of Taibah University Medical Sciences* **11**(4): 284–94
- Santhosh Y, Ramanath K, Naveen M (2011) Fungal infections in diabetes mellitus: an overview. *International Journal of Pharmaceutical Sciences Review and Research* **7**(2): 221–5
- Shankhdhar K, Shankhdhar LK, Shankhdhar U, Shankhdhar S (2008) Diabetic foot problems in India: an overview and potential simple approaches in a developing country. *Curr Diabet Rep* **8**(6): 452–7
- Tantisriwat N, Janchai S (2008) Common foot problems in diabetic foot clinic. *J Med Assoc Thai* **91**(7): 1097–101
- Thng P, Lim RM, Low BY (1999) Thermal burns in diabetic feet. *Singapore Med J* **40**(5): 362–4
- Ulbrecht JS, Cavanagh PR, Caputo GM (2004) Foot problems in diabetes: an overview. *Clin Infect Dis* **39**(Suppl 2): S73–82

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