The lived experience of a foot burn injury from the perspective of seven Jordanians with diabetes: a hermeneutic phenomenological study

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ABSTRACT
Poor vision and poor pain sensation expose sufferers of diabetes to foot burn injuries. A phenomenological approach was used to illuminate the lived experience of those with diabetes who sustained foot burn injuries. Face-to-face unstructured interviews were conducted with seven patients recruited from health care facilities throughout Jordan. The interviews were digitally recorded, transcribed verbatim into Arabic, checked for accuracy and then analysed using thematic analysis. Our study highlights that household appliances are a major cause of foot burn injuries among the studied population and that culturally specific risk factors predispose Jordanians with diabetes to foot burn injuries, namely ablution for males and cooking activities for females. Participants sought health care when home remedies failed. Inconsistent management practices were identified among health care providers. Culturally specific health education programs should be made to raise patients’ awareness towards avoiding possible risks at home.

Key words: Burn • Cultural • Diabetic foot • Health education • Injury

INTRODUCTION
The coexistence of diabetes and a burn injury is a challenging issue worldwide because each condition has implications for the other (1). Nevertheless, no previous publications have reported specifically on the incidence of a foot burn injury among persons with diabetes. However, authors have reported that those suffering from diabetes are at greater risk because of resultant impaired pain sensation leading to unintentional injuries (2). Indeed, the alarming prevalence of diabetes at the global level, estimated for all age-groups worldwide to be 2.8% in 2000 and 4.4% in 2030 (3), increases the risk for foot burn injuries because of the resulted comorbidities. In Jordan alone, the prevalence of diabetes increased from 13% to 17.1% over a period of 10 years (1994 and 2004) (4).
A growing number of publications address the issue of burn injuries among people with diabetes. Several case reports (5–11) and one Australian study (1) focused on foot burn injuries, whereas others (12–15) addressed burn injuries in general. However, it is worth noting that an American study (14) reported a high-frequency of isolated foot burn injuries. Similarly, another American study (12) found not only a high incidence of foot burn injuries but also sufferers from diabetes were more likely to present with community acquired infections. Such scenarios suggest that those sufferers discover the occurrence of burn after the development of infection.

The Australian study cited above (1) attributed delay in presentation to peripheral neuropathy, a common complication of diabetes, that masks the sensation of pain. Clinicians’ reports have featured devastating stories of deep painless foot burn injuries (5,6,10,11). A common feature noted among these stories is that foot burn injuries result from patients’ behaviours. Specifically, patients sustained foot burn injuries because they use hot water or heaters to warm their cold feet (7,10,11) or because of prolonged walking barefoot on hot surfaces (sands or streets) (5,6,11). Such behaviours suggest that patients with diabetes have a poor understanding of diabetes and how to reduce the risk of burn injuries.

Insensate feet may lead to prolonged contact with hot mediums causing skin breakdown. Frequently not aware of what has occurred, patients discover belatedly that their feet have been burnt, often after the development of infection which increases the risk of poorer outcomes (1). A growing body of evidence documents poorer outcomes such as prolonged duration of hospitalisation, extensive use of intravenous antibiotics, complex management programmes and graft failures (1,5,7,10–13). Furthermore, extended outpatient follow-up is necessary in many circumstances; yet complete wound healing may not occur (13) with amputation resulting (5,9,11).

In summary, a wide range of evidence from clinical settings suggests that the coexistence of diabetes and a foot burn injury is a traumatic experience. However, such evidence was obtained from clinical reports; therefore, the obtained evidence reflects clinicians’ views, rather than those of people who have experienced the event.

Key Points

- a wide range of evidence from clinical settings suggests that the coexistence of diabetes and a foot burn injury is a traumatic experience
- such evidence was obtained from clinical reports; therefore, the obtained evidence reflects clinicians’ views, rather than those of people who have experienced the event
- this study investigated the ‘lived experience’, as it is coined in phenomenology, of a foot burn injury from the perspectives of people with diabetes

METHODS

A hermeneutic phenomenological approach was used as a framework for the study. This approach is classified within the interpretive paradigm, in which the researcher is fully engaged with the collection, and analysis, of data (17). Understanding of the lived experience results from dynamic interaction between the participants’ experience as a whole and the researchers’ understanding of that experience. In review, hermeneutic phenomenology moves beyond the concrete description of the experience, to understand the meaning of this experience from the realities of participants ‘their lived experience’ within the available body of knowledge.

Ethics approvals were sought and obtained from Ministry of Health (MoH), Royal Medical services (RMs) and the University of Jordan hospital because these institutions are main providers of health care in Jordan. The recruited patients received verbal and written information on the study, and they gave their written informed consent for participation.

Unstructured face-to-face interviews were conducted to allow participants opportunity to articulate their experiences. Participants were given the opportunity to choose the time, date and setting for the interview, and whether to include family members or friends. Four participants chose to be interviewed in their houses; another participant preferred to be interviewed in his office. Two participants suggested being interviewed while they were in hospital.

Each interview lasted approximately 30 minutes, and was initiated with a broad
Foot burn injuries: a hermeneut phenomenological study of patients with diabetes

open-ended question (what is your story of the burn injury on your foot/feet?), which aimed to encourage the participants to verbalise openly their experiences with a foot burn injury and to express their views on the contribution diabetes made to that experience. Probing questions were used to clarify and expand participants’ responses. Examples of these questions were: What did you feel? What happened next?

All interviews were conducted in 2009 by the principal investigator because he and all participants were native Arabic speakers. All the interviews were recorded on a digital audio-recorder, transferred to, and securely stored on a laptop, transcribed verbatim in Arabic language, checked for accuracy and then coded for analysis. As the participants’ language was Arabic, excerpts were translated into English to support findings presented in this manuscript. The translation considered the cultural context of the interviews. To ensure the translation was understandable to people from different cultures, several discussions were held between the authors, who are from different cultures. The validation of back translation was used to obtain a comparable English version of the original excerpts. The translated excerpts were taken from different places of each individual transcript aiming to support the grasped meaning. Because of this, breaks in the text of the translated excerpts indicate (...), and repeated excerpts are provided to support different aspects of participants’ stories.

Participants
Initially, three burn units in Amman, the capital of Jordan, were approached to recruit adult participants who suffered from both diabetes and a foot burn injury. However, patients are not often hospitalised for a foot burn injury because of the high incidence of severe burn injuries and limited numbers of beds available in burn units. Accordingly, a newly established diabetic foot clinic in a large medical compound was also approached.

Unfortunately, clinic records did not contain details on the cause of foot ulceration making it difficult to identify patients eligible for participation. However, the staff were willing to advise the investigators when new cases of a foot burn injury presented. In addition, the principal investigator visited the clinic several times, which resulted in recruiting one participant. A surgeon from another (university) hospital advised that he had recently treated a patient with diabetes for a foot burn injury and offered to contact him. The patient agreed to participate, and was subsequently interviewed.

Assistance with recruitment was obtained from the staff of two hospital sites in the north and another two hospital sites in the south of Jordan. Administrators advised the principal investigator to visit surgical wards, where patients with burns may be admitted. This strategy resulted in recruiting one participant from each hospital site. Communication with nurses of a university affiliated health care centre resulted in recruiting a further participant. In review, six participants were recruited from six hospital sites throughout Jordan, whereas the seventh participant was recruited from a university affiliated health care centre.

Data analysis
Thematic analysis was used to analyse the transcribed interviews. Transcripts were read multiple times using different strategies in order to formulate a comprehensive understanding of the ‘lived experience’ of the coexistence of a foot burn injury and diabetes. The principal investigator initially read the texts in general to formulate a preliminary understanding, and then re-read the texts in-depth, to identify main concepts. Reading the texts was cyclical between reading of the text as a whole, and reading selected parts in order to identify similarities between the transcribed interviews. The identified similarities were used to develop themes and sub-themes. The developed themes and sub-themes were linked to each other to formulate a meaningful picture of the experience of a foot burn injury from the participants’ perspectives. Over several meetings, the investigators discussed extensively the emerged themes and sub-themes, while considering the original transcripts and the cultural context of the interviews. Such strategies assured the investigators that the emergent themes were consistent with the meanings of the original interviews and helped to ensure the integrity of the data throughout the course of the study.

Validity in the research design was assured by several measures. The participants were purposively recruited from different health care facilities in Jordan. Consistency in the way
of data collection and analysis was established by one person (the principal investigator) who conducted and transcribed the interviews. Decisions were made mutually between the investigators to maintain transparency of the decision-making process throughout the study, and to ensure coherence between the research question and principles of the methodology used to underpin the study. Examples of such mutual decisions include when data saturation was achieved, and the cyclical approach of data analysis with translation and back translation of the excerpts (18).

Data saturation (the point at which the researcher realised that key information become repetitive among participants) was achieved after interviewing seven participants and therefore, conducting further interviews was considered unnecessary (19).

RESULTS
Participants characteristics
Seven participants (four males and three females) accepted to take part in the study. Although the participants told different stories about how their feet were burned, all occurrences resulted from household appliances. Specifically, female participants sustained injuries while preparing food, and males incurred burn injuries while washing their feet during ablution (the religious wash for Moslems) or while sitting in front of a gas heater during winter (Table 2). One participant sustained a burn injury to his right foot from a hospital’s radiator when he was admitted for the treatment of a burn injury of his left foot (Table 2). Two participants mentioned that they had a history of previous foot burn injuries resulting from heaters in the case of a male participant (Abu-khaldun), and from cooking activities in the case of a female participant (Umm-Falah) (Table 2). Given evidence are presented in Table 2, it is reasonable to conclude that, within the Jordanian context, although indoor accidents are a common risk for foot burn injury among persons with diabetes, cooking activities pose extra risks to females, whereas risks for males were from other hot household appliances (hot water and hot services).

Discovery of the burn
When participants described how their burn injuries were discovered, a common comment was that they had not believed their feet being

Table 1 Participants demographic characteristics

<table>
<thead>
<tr>
<th>Participants</th>
<th>Age (years)</th>
<th>Gender</th>
<th>Duration of DM (years)</th>
<th>Recruitment facility</th>
<th>Burned foot</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu-Khaled</td>
<td>69</td>
<td>M</td>
<td>4</td>
<td>UHc</td>
<td>Right</td>
</tr>
<tr>
<td>Abu-Waleed</td>
<td>52</td>
<td>M</td>
<td>10</td>
<td>MOH</td>
<td>Right</td>
</tr>
<tr>
<td>Abu-Salem</td>
<td>69</td>
<td>M</td>
<td>29</td>
<td>RMs</td>
<td>Left and right</td>
</tr>
<tr>
<td>Umm-Haitham</td>
<td>60</td>
<td>F</td>
<td>Not sure</td>
<td>MOH</td>
<td>Right</td>
</tr>
<tr>
<td>Umm-Falah</td>
<td>57</td>
<td>F</td>
<td>14</td>
<td>RMs</td>
<td>Left</td>
</tr>
<tr>
<td>Abu-Khaldun</td>
<td>55</td>
<td>M</td>
<td>22</td>
<td>UH</td>
<td>Right</td>
</tr>
<tr>
<td>Umm-Hamed</td>
<td>53</td>
<td>F</td>
<td>Newly diagnosed</td>
<td>RMs</td>
<td>Left</td>
</tr>
</tbody>
</table>

M, Male; F, Female; DM, diabetes mellitus; MOH, Ministry of Health; RMs, Royal Medical services; UH, University Hospital; UHc, University Health care centre.
## Table 2 Story of the accident

<table>
<thead>
<tr>
<th>Participants</th>
<th>Translated excerpt</th>
<th>Key words</th>
<th>Concepts</th>
<th>Sub-themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umm-Harithm</td>
<td>... a neighbor, had a wooden stove. ... I went to bake whole grain bread. ...</td>
<td>Baking</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I rested my foot on the hot ash. I felt like warmness. It was nice, it was not</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>hurting. If it was hurting, I should remove my foot.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female participants</td>
<td>Umm-Falah Hot water splashed, splashed on my left heel. I was boiling cabbage.</td>
<td>Contact with hot pot</td>
<td>Cooking</td>
<td></td>
</tr>
<tr>
<td>Umm-Hamed</td>
<td>I cooked at home. ... took the whole pot to join my husband's family on a dinner.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I fixed the hot pot between my feet while in the car, and it burnt my feet.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male participants</td>
<td>Abu-Khaldun I nearly finished ablution. I dosed the cold water instead of closing the hot one, so boiling water poured directly onto my foot.</td>
<td>Ablution</td>
<td></td>
<td>Indoor accidents</td>
</tr>
<tr>
<td>Abu-Khaled</td>
<td>When I did ablution, may be the water was warmer than needed.</td>
<td></td>
<td>Ablution</td>
<td></td>
</tr>
<tr>
<td>Abu-Waleed</td>
<td>Sitting on the floor watching the television. ... I exposed my foot to a gas heater. ...</td>
<td></td>
<td>Ablution and heater</td>
<td></td>
</tr>
<tr>
<td>Abu-Salem</td>
<td>The participant: I was sitting on a chair watching the television. ... besides a gas heater.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The wife: in the morning his leg was red and inflated. ...</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The participant: I was hospitalised. When asleep at night. I put my toe on the radiator. The burn made a cavity in my toe.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3 Discovery of the burn

<table>
<thead>
<tr>
<th>Participants</th>
<th>Translated excerpt</th>
<th>Key words</th>
<th>Concepts</th>
<th>Sub-themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Umm-Haitham</td>
<td>After I finished baking, I did ablution and prayed, went to bed, nothing was</td>
<td>Did not know</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>wrong. In the morning, they (my feet) were swollen, every bubble like this (large</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>and hard) . . .</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Umm-Falah</td>
<td>I did not feel anything, my sister in law told me that my leg was swollen.</td>
<td>Did not know, Burn found by</td>
<td>Absence of pain sensation, accidental discovery</td>
<td></td>
</tr>
<tr>
<td></td>
<td>The daughter: she saw the swelling, she did not feel it.</td>
<td>someone else.</td>
<td>of the burn by others</td>
<td></td>
</tr>
<tr>
<td>Umm-Hamed</td>
<td>I was attempting ablution for the night prayer. I removed my socks . . . the burn</td>
<td>Did not know</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>was swollen. I thought it was a blister from the shoes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abu-Khaled</td>
<td>During the morning pray, I noted a wet spot on the sole of my foot. I did not care</td>
<td>Family, did not care</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>about it. When I removed the socks, blood and water were draining and the foot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>was very swollen.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abu-Salem</td>
<td>The wife: in the morning, his leg was red and swollen, . . . went to doctors . .</td>
<td>Wife, morning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>hospitalised.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>The participant: at night, I put my toe on the radiator . . . in the morning there</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>was a cavity . . . my toe was swollen and burnt.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abu-Waleed</td>
<td>After 2 or 3 minutes, I went to the kitchen to pick up something. My leg/foot did</td>
<td>Wife, cavity in my foot</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>not feel normal. I told the wife that a cavity occurred in my foot. I showed it to</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>my wife; she said your foot is blistered.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abu-Khaledun</td>
<td>Boiling water poured directly onto my foot, . . . I saw my skin burst open by itself.</td>
<td>Immediately</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
burned and the burn injuries were discovered incidentally (Table 3). One participant (Abu-Salem) discovered a burn injury on his right foot when he awoke from sleeping beside a radiator during hospitalisation for a burn injury of his left foot (Table 3). Another participant (Abu-khaldun) discovered his foot burn immediately because he saw his skin sloughing when boiling water was poured directly onto his foot (Table 3).

From Table 3, it is evident that the sensation of pain does not necessarily alert people to the fact they have sustained an injury.

**Health care**

**Seeking health care**

A common report from participants was that despite finding the burn injuries, health care was sought after infection had developed. Although she tried a home-made remedy, Umm-Haitham reported her decision to seek health care because her toes looked, as she stated, like “potato cooked in a pressure cooker” following the application of a home-made remedy. Umm-Haitham had continued to work as usual following the burn injury. Umm-Haitham reported:

> I went to the fruit farms and stayed until 12 midday. I went back home, I did ablution, prayed and then I brought a home-made remedy and I applied it on the burn. Next day, when I touched the nail, it dropped down with the surrounding tissues. Another nail was infected and very swollen. After 4 days, I went to hospital.

Similar to Umm-Haitham, Umm-Hamed used a burn ointment prescribed for her husband and sought medical care after infection developed.

> I did not do anything Next day, the blister ruptured by itself, water poured out. I used an ointment, my husband was using it . . . , but the ointment did not work. After 10 days, I went to the doctor. It (the burn) was annoying me very much; even it became infected and smelly.

Dissimilar to Umm-Haitham and Umm-Hamed, Umm-Falah did not use anything to treat the burn. But similarly, health care was sought after 1 week because her entire leg became swollen.

> After one week, all my leg became swollen . . . they sent me to hospital.

The wife of one participant (Abu-Salem) reported that when Abu-Salem rose from bed, she noted that his foot was very swollen, and they sought health care. The wife stated “in the morning his leg was red and swollen . . . went to doctors and was hospitalised.”

Similar to Abu-Salem, Abu-Waleed sought medical advice the next morning. Abu-Waleed noted a blister on his foot at night but he thought it was a simple issue that would heal itself, as was the case with a similar blister.

> I did not care about it because I had experienced a similar one before, which disappeared by itself. I thought this one would be so. But on this occasion, it woke me up. It was too hard and very, very large, making a lot of pressure. In the morning, I went to a private doctor.

Of the two participants who sought immediate health care, Abu-khaled’s action could be attributed to the fact that his son was a nurse.

> I started treatment because, as you know, my son Emad is a nurse, he sent me to the military hospital.

In view of the above evidence, it is evident that Jordanians do not often seek health care until their disease becomes visibly serious, and/or when a family member considers the injury serious and specialised care needs be sought.

**Quality of care**

Analysis showed how participants experienced difficulties receiving optimal and consistent care within the same health care institution.

Umm-Haitham narrated her painful story about two different campuses of the same hospital, where each campus was sending her to the other one for care.

> . . . I went to Basma’s hospital. They said you have to go to Badieh’s hospital (another
people who live in Amman are from the evidence presented, it is reasonable to conclude that there are discrepancies in the care provided. Specifically, people who live in Amman are more likely to receive optimal care, and to have access to specialised professionals earlier than those in the periphery of the country.

Key Points

- from the evidence presented, it is reasonable to conclude that there are discrepancies in the care provided.
- people who live in Amman are more likely to receive optimal care, and to have access to specialised professionals earlier than those in the periphery of the country.

A more dramatic story was reported by Umm-Falah who had experienced care from three institutions in 1 year and ended up with her leg amputated.

Umm-Falah: they admitted me (staff of a university affiliated hospital) for about one month.

The daughter: she underwent more than one surgery. . . it (the leg) became okay.

Umm-Falah: I went home.

The daughter: but, the wound was open, and she was disinfecting it . . . visiting the hospital for follow up for around one year. However, she stopped, in the last period, because the financial waiver expired. She continued follow up in the local governmental hospital (belonging to MOH) but the provided care was not that good.

Umm-Falah: in last Ramadan (the ninth month in the Islamic calendar during which Moslems practise their religious fasting, about 1 year following the participant’s accident), my leg was annoying me. I was febrile and sleeping all the time. I went to the local governmental hospital, they referred me here (hospital belonging to RMs). They amputated my leg.

Abu-Salem’s was hospitalised for 40 days, and an additional burn happened to the other foot while in hospital. While interviewing Abu-Salem, good family support was evident.

The participant: We hospitalised. The doctor came and ruptured the bubbles.

The wife: He stayed in the hospital for 40 days.

The wife: When the kids are not here, I do dressing to his feet at home. I use that salty water I don’t know its name . . .

Umm-Hamed also had a positive experience in that she received care from a diabetic foot care nurse within a large medical compound. Following 6 months of treatment in the diabetic foot clinic, complete healing occurred.

I went to the city (King Hussein Medical Centre). . . . It appeared that I had diabetes. They cleaned the wound thoroughly, put antiseptics and dressing, and then I went home. After 3 days, when I back to the medical city for follow up, I visited the emergency, and they sent me to Mohammad (the diabetic foot care nurse). Mohammad told them that my leg is infected. They hospitalised me for 4 days. I continued visiting Mohammad’s clinic for about 6 months and the wound healed 100%.

Under pressure from people around him, Abu-Waleed sought help from the local governmental hospital, despite an initial lack of trust in the care provided. Abu-waleed had originally approached the local hospital because he was dissatisfied with the standard of treatment received from several doctors.

The doctor advised to drain it. I went to another doctor who treats cases with diabetes, he gave the same advice. Then, I went to a surgeon in the governmental hospital, who decided to drain it from up and down. The water drained and I felt the skin relax and the pressure on my foot and toes has gone. It stayed around 2–3 days, it became inflated and my leg swollen and looking not nice. When, the doctor was making dressing on my foot by chance a consultant saw my foot who advised hospitalisation for optimal care and antibiotic therapy with tight control of blood glucose level. . . . I was not trusting the governmental hospital. But in the light of my foot pressure, I said okay, and this is a consultant. I stayed in the hospital for 9 days. I found the governmental hospital a very good one.

Abu-khaldun expressed dissatisfaction with the way his foot burn was managed in the emergency department. He believed that with such a burn injury hospitalisation was necessary.

They put dressing on it, and they gave me cream and they said you have to come to the outpatient clinics tomorrow. I was surprised they did not admit me as an emergency case. Next day, I came to see Dr. Saleem, who is the plastic surgeon; he got upset. He said you have infection, you need hospitalisation.

From the evidence presented, it is reasonable to conclude that there are discrepancies in the care provided. Specifically, people who live in
Amman are more likely to receive optimal care, and to have access to specialised professionals earlier than those in the periphery of the country. In addition, hospital staff have different views on how a foot burn injury sustained by a patient with diabetes should be managed.

DISCUSSION
This particular study is, to our knowledge, the first to investigate foot burn injuries from the lived experience perspective of persons with diabetes. The ensuing discussion is structured to highlight the Jordanian milieu of the lived experience within the cultural context of the sustained accidents.

The cultural context
The findings of the study correspond with evidence obtained from patients’ records (1,15,20) and case reports (7,11), that foot burn injuries resulted mainly from household activities such as cooking and washing feet during ablution. Diabetes literature from other cultures reports other causes of indoor accidents such as hot water bottles (7,20), falls in the shower or bath (12,15), individual self-care practices (using boiling water or electric massager to improve circulation to the numbed feet) (11), plus therapeutic footbaths (8). Our findings expand the list that the American Diabetes Association considers possible home hazards to people with diabetes (21). Specifically, our findings highlight culturally specific hazards for Jordanians.

As reported in the literature, all participants but one realized belatedly that their feet had sustained burn injuries. Only one participant immediately discovered the occurrence of the burn injury. This participant had a reported history of previous burn injuries, which had obviously not prevented re-occurrence. This suggests that the participant was not taking special precautions to prevent the recurrence of a burn injury to his/her feet.

As is typical with diabetes, participants discovered their injuries not because of pain sensation, but because they or others noticed blisters or swelling. As such, participants’ comments on how they realized that their feet were burned are consistent with reports that people with diabetes sustain unperceived foot burn injuries (7,20,22). Importantly, this study highlights certain issues, namely that foot burn injuries occur and/or discovered as part of cultural activities. Accordingly, there is an opportunity for health professionals in Jordan to implement culturally appropriate education programs for patients and family members, and designed to establish diabetic foot preventive self-care behaviours. Promoting the concept of self-management can be reinforced by training patients how to maintain personal safety of their feet during activities of daily living, for example, wearing protective (water proof) shoes, while at home to avoid contact with splashed of hot water and regular examination of the feet during ablution.

Participants sought health care when the consequences of the unperceived injuries became markedly noticeable (e.g. swelling of the entire leg). Similarly, published data reports that people with diabetes often delay seeking medical advice because they do not realise the occurrence of burn injuries (12–15,23). Other participants of this study sought health care when home management (use of either ointments prescribed to other family members or use of home-made mixtures) failed to overcome the injuries. In other words, participants of this study sought medical advice belatedly, even after discovering a burn injury. This supposition could be explained from two perspectives; first the participants lack understanding of the seriousness of a foot injury sustained by a person with diabetes, second, the common custom among Jordanians is to seek health care to treat serious or painful illnesses. Studies from other countries in the Middle-East have reported the severity of illness as a strong predictor of health care seeking behaviour (24) for cultural issues, which are beyond the scope of this manuscript (25).

Health care: inconsistent management
Our study found discrepancies in the care provided. Specifically, people who live in Amman are more likely to receive optimal care, and to have access to specialised professionals earlier than those in the periphery of the country. Indeed, the health care system in Jordan is a hospital-oriented system making it difficult to provide optimal care to people who live outside major cities. Another explanation that should be considered is that providers of
health care in Jordan are belonging to different institutions suggesting variations in the quality of care provided.

Within the context of diabetes literature, it is documented that health care professionals often do not pay enough attention to feet of those with diabetes because of a lack of training (26). It is a matter of concern that a participant in this study sustained a burn injury to his foot from a hospital radiator during admission. Indeed, it is reported that patients are at an increased risk of accidents during hospitalisation, where falls represents the main accidents (27). A few publications have documented burn injuries to infants because of a lack of attention to ensure safety of a baby when the nurse went to help another seriously ill child (28), or to ensure correct water temperature when bathing a child (29). Accordingly, it could be reasonable to conclude that hospital staff failed to take adequate precautions to maintain patient safety with the use of a radiator.

Literature has documented that educational campaigns would improve physicians’ adherence towards screening feet of people with diabetes (30).

Our study showed that hospital staff have different views on how a foot burn injury sustained by a patient with diabetes should be managed. One explanation for such different views is that clinicians from different professional backgrounds are involved in diabetic foot care suggesting differences in their views. Currently, it is widely believed that optimal foot care services should be provided by professionals from different disciplines within a coordinated team (31). The literature has documented several successful examples of the effectiveness of multidisciplinary team in reducing the incidence of diabetes-related amputations (31,32). Accordingly and because of the prevalence of diabetes in Jordan, this study recommends that the health care system in Jordan seriously considers establishing diabetic foot care clinics outside the capital, Amman. In addition, educational campaigns by health care providers to improve adherence towards diabetic foot care would enhance the concept of foot safety within the Jordanian context and requires educating both patients as well as health care professionals. In doing so, the professionals would pay more attention to the feet of diabetes sufferers, who would develop self-care management behaviours.

LIMITATIONS
The obtained results cannot be generalised to the broader population because of the limitations of small sample size and the possibility of misunderstanding in translation. In addition to the small sample size, the actual interview time was relatively short suggesting limited hours of transcripts under examination. Accordingly, the participants’ understanding of diabetes was not addressed nor were participants given a chance to express their views on the contribution diabetes made to their burn injuries. A final limitation to be mentioned is that of investigator bias where a researcher can impose false findings through misinterpretation of the transcribed interviews.

CONCLUSION
The reported study highlights culturally specific aspects of indoor burn injuries sustained to feet of Jordanians with diabetes. Cultural aspects should be considered in preventive programs, where washing the feet five times a day is an integral part of Moslems’ faith, to a large extent, is a woman’s responsibility. Patients and also their families should be educated that feet of persons with diabetes should be kept away from hot mediums (water and other household appliances). In so doing, the risk for a foot burn injury would be reduced. Accordingly, particular attention should be paid towards making the health information accessible to all people wherever they may live. There is a need for patient and health professional education to improve health outcomes and health practices. Considering the limitations of this study, additional research should be conducted to verify the obtained results in a broader Jordanian context and by using other methodologies.

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