The Experiences of people in Northern Thailand living with Diabetic Foot Ulcers: A Descriptive Qualitative Study

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Abstract: Diabetic foot ulcers are a main cause of morbidity related to type 2 diabetes. Living with a diabetic foot ulcer has a significant impact on health-related quality of life and has a negative impact on daily living among people with the condition. The aim of this study was to explore the experiences of Thai adults living with diabetic foot ulcers using a descriptive qualitative design. Participants were recruited from the outpatient diabetes and foot clinic at a tertiary teaching hospital in Northern Thailand from January to April 2017. In-depth interviews were conducted with 13 participants using a semi-structured interview guide.

Thematic analysis was used to identify the participants' experiences and two themes were identified: 1) living with a diabetic foot ulcer and 2) managing a diabetic foot ulcer. The findings enhance the knowledge of healthcare professionals and the public to understand the experience of having diabetic foot ulcers and contribute to understanding how to manage a diabetic foot ulcer based on the participant's experiences in the Thai context. Nurses must provide knowledge and self-care skills as part of routine care to improve health-related quality of life for people with diabetic foot ulcers.

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Introduction

Diabetes Mellitus (DM) is a chronic disease that occurs due to an abnormality in the metabolism of protein, carbohydrate and fat. Primarily, the pancreas cannot effectively function to control blood glucose levels because of a deficiency of insulin being secreted or resistance to insulin or both and this results in hyperglycaemia.[1] Diabetes has become a major global public health problem. The International Diabetes Federation (IDF) has produced an estimate for 216 countries and territories on the rate of diabetes and anticipates that the number of people with diabetes will increase dramatically to 522 million by 2030.[2]

The impact of diabetes on health in Thailand is similar to other countries. Thailand is experiencing increasing numbers of people with diabetes related to poor diet, obesity, physical inactivity and an ageing

society.[3,4] Diabetes is now the fourth highest cause of mortality in all ages in Thailand and is rising in both males and females who die from complications related to high blood glucose levels.[4] Diabetic foot ulcers (DFUs) are the one of the major complications of diabetes mellitus resulting from damage to nerves in the foot due to microvascular and macrovascular changes.[5] The prevalence of DFUs has been reported to be as high as 15% in people with type 2 diabetes.[6] Foot ulceration can result in foot deformity, permanent disability and more often amputation.[7] It is reported in the USA, that more than 50% of all amputees have diabetes mellitus.[8] A DFU can cause a significant impact on the quality of life of patients' living with type 2 diabetes.

In Thailand, the National Health Examination Survey undertaken in Thai adults reported the prevalence of people with diabetes was 10.1%.[9] Complications from diabetes are a serious issue in Thailand particularly in relation to diabetic foot problems. A cross-sectional study of 593 patients with type 2 diabetes in one hospital in Thailand identified that the prevalence of DFUs was 3.4%.[10] In addition, 2.2% of patients had a history of amputation and 10.6% were identified as high risk of developing foot ulcers.[10] Reutrakul and Deerochanawong[3] reported that 15-26% of people with diabetes had foot problems, 22% were identified as high-risk of developing a foot ulcer during a comprehensive foot examination, and 5.9% had a previous history of DFU.

Literature review

Health-related quality of life (HRQOL) has been identified as a goal of health and well-being[11] and is the quality of life of an individual relative to their health or disease status. There are four dimensions which include physical, social, psychological, and spritual factors.[11] In Asia, a number of studies have investigated patients' perceptions of foot self-care practice, self-care behaviour and awareness, prevalence of risk factors in diabetic foot ulcers, ethnicity and the strategies used to prevent diabetic foot ulcers.[12-16] Linkages have been made between presence of DFU and low health related quality of life.[17] Chellan, Srikumar[16] found in their study of 203 participants (103 with DFU and 100 without DFU) that the incidence of DFU was inversely related ($p < 0.001$) to participants' practicing diabetic foot care.

Historically, Thailand has not had specialists who look after people with DFUs, with diabetic foot ulcers and infections being managed by surgeons or orthopaedists.[3] The lack of specialist care in Thailand is a major cause of the prevalence of DFUs. In research undertaken by Aekplakorn et al.[18] it was found that the prevalence rate of diabetes in Thailand is increasing. The estimated national prevalence of diabetes in Thai adults was 6.4% in 2013,[19] and is said to have been one of the top five common chronic diseases in Thailand.[20]

The experiences of Thai adults living with diabetic foot ulcers need to be explored in context. Religion and spirituality are the core to Thai beliefs. Some rural Thai people also believe in traditional healing, black magic, herbal remedies and supernatural causes of illness.[21] These beliefs may impact on the experiences of people living with type 2 diabetes. This is supported by previous studies among people with type 2 diabetes in Thailand which have identified many factors that impact upon daily living such as culture, belief, religion and education level.[14,22-24] Diet also impacts upon managing type 2 diabetes and preventing complications. In Thailand, most people eat food with rice or glutinous rice that is high in carbohydrates. In addition, there are many kinds of tropical fruits, including durian, ripened mango, lychee, longan, orange, pineapple and rambutan,[22] that people eat all year round. These fruits contain high amounts of carbohydrates that impact on optimal glycaemic control. There is a limited amount of literature exploring the experience of Thai adults living with diabetic foot ulcers. In addition, little is known about how people with DFUs in Thailand

access and then use information from health care professionals about managing their diabetes and wound care. In this study, qualitative interviews were conducted among people with DFU's to provide a deeper understanding of the specific context of DFU's on health related quality of life.

This study was undertaken as part of a doctoral dissertation exploring health related quality of life among people with type 2 diabetes in Northern Thailand. The project used a sequential, mixed methods design to examine health related quality of life, self-care skills and knowledge of diabetes among people with and without diabetic foot ulcers. The research reported in this paper constitutes phase two of the project which used qualitative data to explore the lived experiences of people with diabetic foot ulcers.

Aim

The aim of this study was to explore the experiences of Northern Thai people living with diabetic foot ulcers in Northern Thailand and strategies they used to manage their diet and wound care.

Methods

A descriptive qualitative research approach was used to explore the in-depth, rich experiences of people living with diabetic foot ulcers in Thailand. This approach was chosen to enable the researcher to gather, analyse and interpret the experiences, realities and meanings from the participants in this research in a way that is culturally appropriate and uses subjective experiences of their lives to construct knowledge and build understanding on this research question.[25,26]

Sample and Setting

Participants were recruited from the outpatient clinic at a large teaching hospital in Uttaradit province in Northern Thailand during the three-month period from January to April 2017. All participants were recruited from a larger study examining health-related quality of life of diabetic people with and without foot ulcers that was undertaken as part of a doctoral dissertation.

Participants were recruited if they met the following inclusion criteria: participated in phase 1 of this study; aged over 18 years; diagnosed with type 2 diabetes; had one or more diabetic foot ulcers; and agreed to participate. People who had a cognitive impairment were unable to consent to participate, and people who could not speak Thai were excluded. Participants were approached by a trained research assistant who provided information to potential participants who met the inclusion criteria during a routine check-up at the outpatient clinic. If they agreed, the researcher then contacted the participants by phone and made an appointment for an interview either at their home or their next appointment at the outpatient clinic. All participants were informed of the study and written consent was obtained prior to participating in the interview.

Ethical consideration

This study was approved by the Human Research Ethics Committees of the University of Wollongong (HE16/209) and Uttaradit Hospital (7/2017) prior to data collection. Information about the study was read out to all participants, and each participant provided verbal and written consent to participate in the study. All data was de-identified using pseudonyms and stored in an electronic file with password protection as per NHMRC Guidelines.[27]

Data collection

Interviews were conducted in the Thai language at each of the participant's home. The interviews were semi-structured with the question guide developed from a pilot study of 10 people and a systematic literature review. The interviews began with general questions to build rapport and confidence between interviewer and the interviewee.[28] The interview guide contained open-ended questions, and in-depth questions such as: "How did you feel after you were informed by the doctor that you had a foot ulcer

because of DM?", How would you describe your quality of life after your diagnosis with diabetes mellitus?", "How have you changed your diet since you were diagnosed with diabetes mellitus?", and "How do you live with your foot ulcers?" Based on the patients' narratives, and descriptions, topics were explored in depth with probing and clarifying questions which were used to gain additional details about the phenomena being examined.

Recruitment of participants continued until data saturation was achieved.[29] Thematic mapping was used to assess for data saturation at the completion of interviews. The research team identified data saturation at 10 interviews and an additional 3 interviews were held to ensure that no new information was obtained. The interviews were conducted over 30-50 minutes and were recorded and transcribed verbatim. Patient name, personal details and any other identifying data were omitted during transcription. Field notes were made after each interview. Confidentiality was maintained at all times by using pseudonymous, de-identifying data and secure storage of all data.

Data analysis

Thematic analysis was undertaken in this study using a constructivist orientation using Braun and Clark's[30] guidelines for thematic analysis. The following six phases of thematic analysis were used:

Phase 1: The Principal Researcher (PI) transcribed all audio recorded interview data verbatim in Thai. The data was then discussed with an experienced qualitative expert who is bilingual (Thai and English) to ensure translation accuracy. The PI then read and re-read the data several times to achieve familiarisation.

Phase 2: Coding. Two researchers identified data that was considered pertinent to the research questions and coded all data items line-by-line in Thai to ensure the sense of meaning was retained.

Phase 3: Searching for themes. This phase involved analyzing all collected codes (Thai version) and identifying similarities and relevance to the research questions. This phase was iterative and involved reviewing all codes in a continuous process of searching for meaning. Thematic mapping was used for visualising and considering the linkages and relationships between themes.

Phase 4: Reviewing themes. Two researchers re-checked the relationship for both the coded extract and the full data set. This ensured the themes accurately reflected what was evident in the data set as a whole.[30] During this phase, the researchers developed initial thematic mapping by grouping codes with similar content into categories and grouping categories with similar concepts into themes. Following translation of all themes and extracts into English, this process was checked to ensure congruence of the extracts with the themes.

Phase 5: Defining and naming themes. The preliminary thematic mapping was translated into English and presented to the full research team which then explored the naming of themes, the choice of extracts and discussed how each chosen extract supported theme development and demonstrated meaning.

Phase 6: Writing up. The PI selected the extracts from each theme to illustrate meaning in each theme. The extracts clearly identified important concepts within the theme and presented a lucid example of the point being made in the English version.

The data analysis process was carried out manually by tabulating, listing, grouping, and mapping the data in Microsoft Word version 2010®. The data was presented to the full research team multiple times to ensure that themes were a true reflection of the participant's experiences (individually and collectively) and that the extracts used to explore each theme were illustrative of the data.

Trustworthiness

Trustworthiness and integrity have been described by Koch,[31] Crowe et al.[32] and Sandelowski[33] for addressing rigor and validity of qualitative research and included the concepts of credibility,

dependability, and transferability.[34] **Credibility** refers to confidence in the truth of the data and interpretation from the researcher. This study used mapping for visualising the linkages and relationships between themes. Initial thematic mapping was developed by two authors in Thai and then confirmed by two authors in English. The final thematic mapping was agreed by all researchers. **Dependability** involves ensuring that the data collection and data analysis procedures are worthy of trust. The interviews were transcribed verbatim in the Thai language by the PI and the transcription process was checked for accuracy by listening to excerpts of the MP3 recording by another author who speaks the Thai language. Furthermore, the process of naming themes was checked for the identification of categories and themes. Finally, all the excerpts were translated into English, checked for accuracy of translation with three researchers and then discussed with all researchers. **Transferability** refers to whether the findings can be applied to other settings or groups.[31,35] To enhance transferability, this study carefully recruited participants who were currently living with one or more diabetic foot ulcers. Even though qualitative data is not easily generalised to large groups it can be used to build knowledge and understanding of the experiences of Thai people who have diabetic foot ulcers.

Findings

A total of 40 participants were approached to participate in interviews. Twenty six participants declined to participate for a range of reasons and one potential participant passed away. Thirteen patients were interviewed in this study: seven females and six males. The mean age was 63.46 years old (range 52-76 years). Six participants had foot ulcers that were classified by the Wagner classification system as grade 1 and seven participants had grade 2 foot ulcers. The Wagner Classification system is widely used to grade diabetic foot ulcers and is primarily based on the wound depth, the presence and location of wound infection and has grades ranging from 0 to 5.[36] All participants had completed primary school level education and all were Buddhists. The characteristics of the participants are summarised in **Table 1**.

Table 1 The demographic characteristics of participants

Pseudonyms	Age Gender	Marita status	Prior/ current occupation	Level of Education	Wagner grade of current DFU(s)	History of previous DFU(s)	History of amputation for DFU(s)
Ban	70 F	Married	House wife	Primary school	2	No	1st toe nail at the right foot
Chee	52 M	Married	Butcher	Primary school	2	No	No
Dan	76 M	Married	Farmer	Primary school	1	No	No
Fang	64 M	Divorce	Farmer	Primary school	2	Yes	1st and 2nd toe nail at both left and right foot
Kat	70 F	Married	House wife	Primary school	1	No	No
Makam	65 F	Widows	House wife	Primary school	1	No	No
Pakad	52 F	Single	Labour	Primary school	2	Yes	5th toe nail at left and right foot
Pete	61 F	Widows	House wife	Primary school	1	Yes	No
Pitoon	64 M	Married	Labour	Primary school	1	No	No
Rat	62 F	Married	House wife	Primary school	2	Yes	1st and 2nd toe nail of right foot
San	57 M	Married	Farmer	Primary school	2	Yes	No
Sawang	68 F	Married	Farmer	Primary school	1	No	No
Team	64 M	Married	Unemployed	Primary school	2	Yes	BK amputation at left leg 2nd and 3rd toe nail of left foot

Note; M = Male; F = Female

Themes

Data analysis identified two themes. The first theme "Living with diabetic foot ulcers (DFUs)" included four subthemes: Physical impacts of DFU; Emotional impacts of DFU; Socio-economic impacts of DFU; and Managing diet. The second theme explored concepts around "Managing a diabetic foot ulcer (DFU)".

Theme 1: Living with Diabetic Foot Ulcers (DFUs)

Participants reported consequences related to their physical, emotional and socio-economic experiences as well as managing their diet.

Sub-theme 1: Physical impacts of DFU

Participants described a range of different experiences related to the physical component of their life. Many of them experiences energy and mobility limitations such as not being able to walk comfortably and getting tired easily. This sub-theme describes the experiences of people living with DFUs relating to physical dimensions.

A. Energy and mobility limitations

Diabetic foot ulcers (DFUs) created a physical energy limitation for participants. Some reported that they were unable to maintain 100% of energy levels and were always easily tired: *"My energy is never up to 100%. I always feel like I have 60-70% of my strength. Every time I work I feel tired."* (Kat). One participant described this experience of limited energy and mobility as causing breathing difficulties when trying to overcome these limitations.

> *My energy level is very low and everything I do makes me feel tired. Even if I wish to do small things it will make me very tired. When I worked, my breathing became heavy and it was hard to inhale.* (Sawang).

> *I can walk around the house, but I find doing any type of housework is difficult. This is due to constant muscle ache. I'm unable to work due to constant muscle pain.* (Dan).

The permanent disability from amputation due to DFUs influenced the limitation of movement. Some participants used orthotics for support while they were walking and many also mentioned they had to walk carefully to avoid new foot ulcers.

> *...Right now, I can't walk properly. I need the help of a walking stick to get around. I can't walk for a long distance. I'm scared of falling, and if I fell, I would be in trouble.* (Pakad).

B. Foot protection

Protecting the feet became an important consideration for most participants. In Thailand, the hospital provides shoes for people who have foot deformities or are at a high risk of developing foot ulcers. However, these shoes were not considered comfortable by many participants. One participant had an amputation below the left knee and of the toe nail on the right foot. He used a prosthesis on his left leg and wore a diabetic shoe on his right foot but reported that he remained uncomfortable when he walked. Hence, the diabetic shoe was not a successful choice for protecting his feet.

> *I quite rarely wear the diabetes shoes the hospital provided. The reason is that they are quite thick and uncomfortable for me. I then found sandals that are a good fit and comfortable for me.* (Team).

This was a familiar experience for other participants who tried to purchase other shoes for their everyday use. One participant had lost the sensation in his feet so he chose to wear sandals. *"I select nice shoes such as sandals but not slippers. I select shoes/ sandals that are not too big or too small"* (Rat). Participants described how the weather in Thailand (which is hot and humid), makes sandals are more popular choice than the heavy shoes provided by the hospital.

Participants described how families who could afford to buy special shoes often did so. *"My daughter*

bought special shoes for me. They have nodules in each one to massage my feet as I walk" (Ban).

Similarly, participants talked about using special protective mechanisms. "*I used the cotton bag to protect the wound on my feet from the dust. My young brother made the bag for me. I use it when I go out or when I go to see the doctor at the hospital."* (Ban). Some participants also used special socks. *"I wear a special sock that will protect my feet from dust and water. It is not totally waterproof, but it does work for me"* (San).

Sub-theme 2: Emotional impacts of DFU

Having a DFU had a significant impact on the mental health of participants and were associated with negative emotions such as fear and worry about requiring an amputation. Many participants described feeling overwhelmed and troubled at the thought of leg amputation. One participant had experienced partial toenail amputations and was unable to walk or work.

> *What can I do? I have had both big toe nails amputated. I thought, it is just only my toe nails and not my legs. If it was my legs I would not be able to walk or work.* (Fang).

Participants frequently expressed the impact of fear on their mental health and wellbeing. Two participants described their "anxiety" when they had new foot ulcers, the fear being that these wounds might result in long term healing problems and even the possibility of amputation.

> *If I get foot ulcers they should be dressed immediately. If not it will cause trouble. I am very fearful of amputation. Diabetic foot ulcers are not small ulcers but very deep wounds.* (Kat).

> *I have had diabetic foot ulcers for 2 years* (frowned heavily). *All this time I am worrying about amputation. The doctor x-rayed me and, lucky me, it wasn't infected to the bone. There is no need for amputation.* (Pete).

Interlinked with this fear was a feeling of depression, particularly when it related to having DFUs that were hard to heal.

> *I'm so bored* (made a long sound). *So, I've no idea how to deal with diabetic foot ulcers. If I'm going to die, I'll die* (sad eyes). *I've lived with diabetic foot ulcers for many years.* (Dan).

Despite these negative emotions, participants described their coping strategies such as staying calm and reducing stress from unhealed DFUs. Most participants had DFUs that were unhealed for longer than six months. One participant described how coping strategies were used. The first one he called "Phlong". *"Phlong is like be calm or not think in the negative way"* (Team). The strategy of "Phlong" was used to focus thinking in a positive way and help calm oneself. Other participants reflected similar experiences, particularly when calming themselves to reduce the stress or engaging in positive thinking.

> *I have to be calm and be happy. If I am thinking too much it will cause me stress. Then I do not think too much. I do enjoy what I am doing. When I feel tired, I then take a break for a minute then continue working in my garden or with my housework.* (San).

Another strategy was called "Thum Jai" (think positive) which was used in isolation or in combination with "Phlong". One participant described the way she used these as an easy and effective way to stay calm and reduce stress in her case.

> *Just let it be. I might not suffer at all. If it's going to happen, I will just let it happen. My advantage is that I am not easily stressed. So, it will not bother me anymore. Actually, it has not happened to me for very long. When I "Thum Jai"* (think positive) *it goes away.* (Rat).

As a coping strategy, "Phlong" and "Thum Jai" appeared to alleviate the personal loss that people experienced due to stress from unhealed DFUs. It is culturally appropriate to use these strategies to assist with calming their mind as all participants were Buddhists. In addition, these strategies appeared to lead to positive thinking and stress management activities. Even though, "Phlong" and "Thum Jai" are culturally specific strategies for Thai people who practice Buddhism, they may provide some insight into strategies that can be successful in other cultures.

Sub-theme 3: Socio-economic impacts of DFU

Participants commented that they had to make lifestyle changes on a daily basis. A significant impact was when they described not being able to participate normally in a social setting. Sometimes the reason for social isolation and withdrawal from social events related to embarrassment. Even participating in a community event for a short time caused personal discomfort, withdrawal from the environment and/or interactions and a desire to stay home.

> *Everyone is looking at me. I'm afraid that they feel I am disgusting. Well, I decided to stay at home rather than socialise with them. Also, I just joined their event for a short time then I returned home.* (Pete).

Participants described the impact that having a DFU had on their ability to work and or participate in their usual household activities. One participant had to stop work and wait until the foot ulcers healed. This was because he was afraid to get them dirty and they would take longer to heal.

> *Normally, I would do work every day, such as farming or gardening. But diabetic foot ulcers are a big problem for me* (point to his right foot). *I can't go anywhere because of diabetic foot ulcers. I am afraid to get them wet because that will make them hard to heal. I have to wait at home till they are healed.* (Fang).

A further lifestyle change was caused by a limited capacity to work due to low energy levels which resulted in low income. For example, a participant described the impact having a DFU had on his income. *"Every year I make baskets for sale. However, since 2015 I lacked the energy to do anything and have no income."* (Dan).

Some participants reported that they needed to change their lifestyle because of amputation from previous DFUs infection. Having a DFU affects a person's normal life which makes resumption of normal activities difficult. Even though the government provides funding for people with disabilities in Thailand, participants reported that it was not enough. *"I receive the funding for disability for 800 baht/ month* (~ US$ 25.58) *from the government but it is not enough for me. I need to do work at home to cover my daily expenses"* (Pakad).

The majority of participants described that social support was crucial for the management of DFUs. This included peer groups helping each other such as giving advice, caring, and taking care on a daily basis. The most common type of support described was assisting in preparing food, assitance with outings or to see the doctor, and visiting in the home.

> *My relatives, neighbours and communities come to visit quite often. Somedays we do not see each other. Then they will come and see me, or ask someone near my house if I am ok.* (Dan).

Professional supports from nurses or doctors were also described as necessary to manage their DFUs. The local nurses followed up the patients after they were discharged from hospital. *"Sometimes, the local nurse visits me and dresses my wound"* (Pete). Some participants went to see their family doctor for a check-up and assistance with controlling blood glucose levels. *"I always follow the suggestions of my family doctor"* (Ban). Despite the social withdraw described previously, participants received social support

in a variety of different ways. These included professional support by nurses or doctors, community peer groups, and families.

Sub-theme 4: Managing diet

Dietary management for people with DFUs is important to achieve glycaemic control. Managing portion size appeared to be the most challenging concept for most participants. Participants described how they tried to reduce the quantity of tropical fruits, desserts, and rice. Even though they knew about impact of tropical sweet fruits on their blood glucose level, it was difficult for them to reduce their consumption of them.

> *I ate a cluster of cultivated bananas and 4 durians. Then my blood sugar level was 400* (mg%). (Pitoon).

> *I ate durian a lot, then my blood sugar level was high almost 450* (mg%). (Ban).

> *I eat oranges, santols, mangosteens, rambutans everything too much* (haha). *Then I know my blood sugar will be so high. For example, oranges, when I eat them, they are so good and feel fresh. The doctor told me to reduce the quantity.* (Kat).

Some participants also learned from their experiences about over consumption of tropical fruits. One reported that he developed foot ulcers during the durian season and he could not manage his urge to eat the fruit.

> *I get foot ulcers during durian season around July. Also, I sell the durian and eat it while I travel from place to place. Probably, this is the reason I have high blood sugar levels.* (San).

Participants described other foods they avoided. They called them "ahan sa lang" (These are foods which are not recommended for diabetes). Participants described how they tried to avoid these foods which included fermented foods high in sodium and gas. Dietitians recommend that people with DFUs also avoid bamboo shoot, acacia, pickles, fermented fish, and beef.[37] Some of the participants described their experiences after eating prohibited foods.

> *Beef, I don't eat it anymore. My toe nail was amputated because of it. When I ate it my toe nail became blistered. After, this it became an ulcer. So, I stopped eating beef.* (Pakad).

> *The cause of her hospital admission was she ate beef and acacias. Finally, it blistered and then became an ulcer with much pus.* (Pete).

The majority of the participants agreed that dietary control was beneficial and described how they reduced the quantity of their consumption of carbohydrates and sweets.

> *I tried to reduce the amount of dessert and sweet foods. Previously, I ate one small bowl but at the moment I eat only 1-2 spoons.* (Chee).

> *I ate sticky rice around 10 baht* (~ US$ 0.32) *reduced from 20 baht* (~ US$ 0.64). (Pitoon).

Similar strategies were used for desserts and rice. Because Thai people normally eat jasmine rice or glutinous rice every meal, participants described how they reduced the quantity of what they consumed. *"I only ate one ladle of rice and that's it. I don't eat more than one ladle of rice"* (Fang).

Blood glucose fluctuations such as hyper- and hypoglycaemia are a common complication in diabetes mellitus. However, optimal glycaemic control should ensure that the symptoms are not experienced very often. Participants described how having hypo and hyperglycaemia was a problematic experience for them and narrated their strategies for self-management and identifying the signs and symptoms of hyper and hypoglycaemia.

> *When my blood sugar level is high, I felt I was staggering, my vision was blurred. I couldn›t*

see the TV screen clearly especially letters. It seemed like I was blind. (Pitoon).

When my blood sugar level is low, it is all sweaty at the back of the neck (pointing to his neck) *and also my forehead. It was just like I had stepped out of the shower.* (Pitoon).

When my blood sugar level is high, I feel exhausted and can't do anything. (Kat).

Other participants shared their strategies to protect against hypoglycaemia.

When I get low blood sugar I need to eat something. Then I went to have some ice cream, just one scoop. The sweating stopped and was gone. (Pitoon).

Hyper and hypoglycaemia are serious complication in diabetes and indicate poor glycaemic control. Participants developed their own strategies to manage these complications.

Theme 2: Managing a diabetic foot ulcer

All participants described several ways to manage a DFU, including following advice from health professionals, using herbal remedies, and for some people using local wisdom and/or traditional healing.

All participants had a DFU that required wound care. Participants were also focused on looking after themselves to avoid getting new foot ulcers. The standard procedures of wound care were applied by most participants. Saline solutions, alcohol and betadine were widely used for dressing wounds. *"I'm using an alcohol and saline solution for wound dressing. I then cover the wound with gauze. I do this every evening after showering"* (Fang).

It was apparent however, that some of the participants misunderstood how to dress a wound and used alcohol directly on the wound. *"Normally, I used alcohol and saline dressing every day at home. I used a cotton bud with saline to clean my wound then paint with alcohol every day in the morning and evening"* (Pakad). This participant had lost some of the sensation in her feet and could not feel any irritations from alcohol but expressed that she felt cleaner with the use of alcohol.

Most participants learnt how to dress their wounds from nurses by using antiseptic solutions. *"I cleaned my wound every day with antiseptic solution and saline. I follow the instruction that I've learnt from nurses"* (Kat). Some participants could afford to buy additional supplies for wound healing. Hydrogel was the most common product used to supplement routine wound care prescribed by nurses. Several participants described how they used hydrogel.

It's like a jelly. After I cleaned my wound, I always put it in. Then, paint the alcohol around and cover with gauze. (Sam).

It's like a jelly. It was stimulating and my wound healed quickly. My son bought it for me from Bangkok. I used it after cleaning wound in the usual way. (Team).

Complementary wound care was also used by many participants. In the Thai culture, people use herbal oil remedies to maintain health and well-being. Some participants believed that these could help them to improve numbness in the wound and reduce wound size.

By applying herbal oil remedies to my feet there has been a big improvement. The numbness has gone and the wound size has shrunk. (Pitoon).

I applied toothpaste on her wound (her daughter). *It seemed to heal quickly. Currently, it is not dry. There is a lot of pus on it. She was admitted to hospital for dressing the wound every day. (Pete).*

Similarly, participants described how family members were often seeking a herbal drink for them for controlling blood glucose levels and improving wound care. *"My grandson bought the herb* (tea) *to*

me for reducing the blood sugar levels. I tried to drink it but it doesn't work" (Dan). In some cases participants described the herbal remedies as affective but they also expressed caution in using this method of controlling blood sugar levels.

> *Some neighbours visited me and recommended some herbs. They said the herbs would reduce my blood sugar levels. It works for them. Currently, the neighbour has 110* (mg%) *of her blood glucose. The herb looks like grass with small white flowers. Oh! When I first drank it. I urinated a lot and it was painful.* (Ban).

> *Pak Chaing Da* (type of herb). *This herb gives me complications when I drink it. I get hypoglycaemia after I drink it for two days. Please be careful.* (Ban).

Furthermore, local wisdom influenced participants who had a strong belief in faith healing. This lead to some participants seeking the help of a holy doctor who was considered able to heal through the use of herbs and holy water.

> *If I go to see the doctor and drain the pus the wound would become infected. Then I wouldn't go. I only go to see the holy doctor... I did not do anything. I just drank the holy water then the wound become dry.*(Makam).

The belief in the holy doctor (spiritual healer) is an alternative for people who do not believe in conventional treatments for DFUs. One participant had experienced a wound which was not healing and the doctor planned to amputate his leg. This participant turned to the holy doctor for help. *"I thought the holy doctor may help me. I went to see holy doctor, because the doctor told me to accept amputation. The holy doctor chewed the cumin and put it into the wound... When I went to the primary care unit the nurse told me not to put anything into the wound because it may cause an infection"* (Fang). Consequently, his wound became infected and the doctor needed to debride his wound to drain the pus. Fang had long-term dressings undertaken in the hospital and the primary care unit. Eventually the infection was cleared and he did not have to have an amputation.

In summary, participants described how modifying their everyday life experiences became difficult when they were diagnosed with a DFU due to old habits being hard to change, uncertainty about the benefits of changing diet and the reality and inconvenience of daily foot ulcer management procedures. Transition and life events had a significant effect on their HRQOL and diabetes control, which in turn affected their wound healing.

Discussion

This study explored the experiences of adults in Northern Thailand who are living with DFUs. The findings contribute to the understanding of the consequences and experiences of DFUs based on their experiences and perceptions. In addition, the findings provide information on the application of evidence-based practices in the Thai context for people living with a DFU. Most of the themes found in this study are common to diabetes populations with a negative and/or positive impact, e.g. limited energy and mobility, cultural impact, spiritual impact, and self-care management.[22-24,38] However, there were themes identified which are unique to the Thai population. All participants described how their old habits were hard to change. Furthermore, the emotional state, lifestyle and belief of local wisdom were key elements experienced by individuals who had poor self-care management practices and poor wound healing.

Living with DFUs

Most participants, particularly people with DFUs, are affected both physically and mentally. Consistent with European studies[39-41], all participants reported low HRQOL which had an impact on their

physical functioning, role emotional, role physical and general health. Similarly, this study found that DFUs cause limitations in energy and mobility, and mental state which had a negative impact on work and everyday activities. The fear of amputation was a significant burden that impacted on people's emotions. Therefore, both physical and mental impacts should be considered when planning care for people with DFUs.

Another challenge for a healthcare provider is providing appropriate advice about diet glycaemic control. Previous eating habits are difficult to change among people with DFUs attempting to manage their blood glucose levels. This is supported by Lundberg and Thrakul[24] who describe diet as challenging to change. Moderation in eating is consistent with following the Buddhism concept of moderation. In this study people with DFUs tried to control their diets by moderating their diet and avoiding prohibited foods. This included not overeating, managing portion sizes, avoiding drinking alcohol and promoting healthy behaviours by reducing the quantity of rice and dessert.

DFUs are widely considered to be a severe complication of diabetes which causes impaired mobility and mortality.[42] In the Thai context, Buddhism is the core principle of Thai beliefs. The Buddhist philosophy can support individuals to adopt coping strategies which can assist lifestyle changes and lead to a calmer way of being. This study found that the coping strategies of "Phlong" and "Thum Jai" were effective among people with DFUs. This may be because it reduced their feelings of stress, worry, and fear. Thus, healthcare providers need to understand the impact of cultural beliefs and cultural backgrounds as a basis for assisting patients to apply these strategies for improving HRQOL.

Managing a DFU

This research has provided insight into the management of DFUs in the Thai context. Surprisingly, there were a large amount of variations in wound care practices identified in this study. Local wisdom and cultural beliefs had an impact on DFU management. Participants' beliefs appeared to impact on their disease and wound healing.[24] This study found that treatment from a holy shaman was associated with chronic wound healing and/ or severe infection. It is noted that the healthcare provider should be aware of a person's spiritual/ cultural beliefs so that they can assist the individual in getting appropriate treatments in conjuction with their beliefs.

This study is a part of a larger piece of research which has explored the HRQOL among Thai adults living with DFUs in Northern Thailand. The results of this qualitative study have explored the lived experiences of people living with and managing their DFUs and the impact this can have on HRQOL.

Limitations

This study involved a small sample of participants in only one province of Thailand. As a result caution should be taken in generalising these findings to other populations. The diversity of partipants (ages, educational levels and treatment of diabetes) made comparisons between participants difficult but this diversity also provided a rich overview of how DFUs impact on HRQOL among Thai adults. Further research should be undertaken to explore the impact of social and cultural norms among people with DFUs and the impact this has on everyday living, wound healing, wound management strategies and HRQOL.

Conclusion and Implications for Nursing Practice

The findings of this study provide additional knowledge for persons working in diabetes clinics who are providing foot care and diabetes management for people with DFUs. Understanding the lived experiences of Thai people with DFU's will assist health care professionals to ensure that cultural and

spiritual beliefs are considered when developing a collaborative plan of care for individuals with DFU's. In addition, this study provides insight into the actual wound management practices used by Thai people who have a DFU. This knowledge can be used to improve education practices and ensure self-care management strategies are understood by people with DFUs who manage their own wound dressings at home. Additional training for health care professionals working in diabetes foot care may be required to improve service delivery to ensure improved outcomes for people with DFUs in Thailand.

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ประสบการณ์ของผู้ที่เป็นแผลเบาหวานที่เท้าที่อาศัยอยู่ในภาคเหนือของประเทศไทย: การศึกษาวิจัยเชิงคุณภาพแบบพรรณนา

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บทคัดย่อ: แผลเบาหวานที่เท้าเป็นหนึ่งในภาวะแทรกซ้อนของโรคเบาหวานชนิดที่ 2 การมีชีวิตอยู่กับแผลเบาหวานที่เท้ามีผลกระทบต่อคุณภาพชีวิตอย่างมีนัยสำคัญ และยังส่งผลกระทบทางลบต่อการใช้ชีวิตประจำวันของผู้ที่เป็นแผลเบาหวานที่เท้า การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาประสบการณ์ของผู้ที่เป็นแผลเบาหวานที่เท้าที่อาศัยอยู่ในภาคเหนือของประเทศไทย โดยใช้การศึกษาวิจัยเชิงคุณภาพแบบพรรณนา ผู้เข้าร่วมโครงการวิจัยถูกคัดเลือกจากคลินิกเบาหวานผู้ป่วยนอก และคลินิกเท้าที่โรงพยาบาลระดับตติยภูมิในภาคเหนือ ตั้งแต่เดือนมกราคม ถึงเดือนเมษายน พ.ศ. 2560 ผู้ที่เป็นแผลเบาหวานที่เท้า จำนวน 13 คนถูกสัมภาษณ์เชิงลึกตามแนวคำถามสัมภาษณ์แบบกึ่งโครงสร้าง และวิเคราะห์ข้อมูลโดยใช้กระบวนการวิเคราะห์กระบวนทัศน์ ผลการวิจัยพบว่า ประสบการณ์ของผู้ป่วยเบาหวานชนิดที่ 2 ที่เป็นแผลที่เท้าสามารถจำแนกได้เป็น 2 แบบ คือ 1) การใช้ชีวิตของผู้ที่มีแผลเบาหวานที่เท้า และ 2) การจัดการแผลเบาหวานที่เท้า ผลการวิจัยในครั้งนี้เป็นแหล่งข้อมูลเพื่อให้เกิดความเข้าใจประสบการณ์ของผู้ที่มีแผลเบาหวานที่เท้า แก่ทีมสุขภาพและบุคคลทั่วไป อีกทั้งยังจะเป็นประโยชน์ต่อการจัดการวางแผนการดูแลผู้ที่มีแผลเบาหวานที่เท้าในบริบทของคนไทย การพยาบาลในมิติการป้องกันจึงเป็นเป้าหมายสูงสุดที่ถูกนำมาพิจารณา เพื่อช่วยพัฒนาคุณภาพชีวิตของกลุ่มคนที่เป็นแผลเบาหวานที่เท้า

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คำสำคัญ: แผลเบาหวานที่เท้า การดูแลแผล คุณภาพชีวิตกับสุขภาพ การวิจัยเชิงคุณภาพ การจัดการดูแลตนเอง

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