



Patients' Perceptions of Reasons Contributing to Delay in Seeking Help at the Onset of a Diabetic Foot Ulcer

A Grounded Theory Study

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ABSTRACT

PURPOSE: The purpose of this study was to explore patients' perception of reasons contributing to delay in seeking help and referral to a wound care specialist at the onset of a diabetic foot ulcer (DFU).

DESIGN: Constructivist grounded theory study.

SUBJECTS AND SETTING: The sample comprised 30 individuals with active DFU attending a wound care clinic in southeastern Ontario, Canada.

METHODS: Participants were selected through purposive and theoretical sampling. Semistructured interviews were conducted with participants until no new properties of the patterns emerged. All interviews were transcribed, coded, and analyzed using methods informed by constructivist grounded theory.

RESULTS: The reasons contributing to delay to seek help and referral to a wound care specialist were (1) limited knowledge about foot care, (2) unaware of diabetic foot problems, (3) underestimation of ulcer presentation, (4) I thought I could fix it myself, (5) inaccurate diagnosis, and (6) trial and error approach by a nonspecialized wound care provider.

CONCLUSIONS: Study findings suggest that patients and primary healthcare providers need additional education regarding the management of diabetic foot disease and DFU.

KEY WORDS: Diabetic foot ulcer, Help-seeking behavior, Patient delay, Self-management, Time-to-treatment.

INTRODUCTION

Diabetes mellitus (DM) is among the top 10 causes of death globally.¹ Despite advances in technology and treatment, research indicates a 70% increase in prevalence since 2000. Diabetes mellitus is responsible for the largest rise (80%) in male deaths in the last 2 decades. While individuals with regulated DM can expect to live as long as a person without the condition, persons with poorly controlled diabetes may experience life-threatening complications such as diabetic foot ulcers (DFUs), decreased productivity, reduced health-related quality of life, and premature death.^{2,3} In addition, a recent retrospective case-control study reported that individuals with DFU have high risk for all-cause of and cardiac-related deaths than a match group of individuals with DM alone.⁴

Diabetes mellitus is an indicator of reduced life expectancy and functional impairment in older adults.⁵ For example, individuals who do not manage their glucose levels effectively, smoke, and do not exercise are likely to experience shorter life expectancy than those with DM who maintain stable blood glucose levels, adopt a healthy and active lifestyle, and refrain from smoking. Furthermore, unregulated DM may cause individuals to spend 1 to 2 years dealing with their poor health status and reduced health-related quality of life.⁵ Individuals with difficulty managing their DM often experience neuropathy and peripheral vascular disease increasing their risk of DFU.⁶ The risks that lead to DFU's formation could be minimized by the implementation of preventive measures to avoid or delay foot ulceration and start individuals with DFU on the right care pathway as recommended by best practices guidelines.⁷⁻¹¹

Healthcare providers treating individuals with DM should be aware of the natural history of diabetic foot disease; it is divided into 5 stages from normal foot (stage 1) to necrotic foot (stage 5).¹² The stages cover the entire spectrum of foot disease but emphasize the development of the foot ulcer as a pivotal event, demanding urgent and aggressive management. Diabetic foot care in all stages is enhanced from multidisciplinary management of mechanical, wound, microbiological, vascular, metabolic, and knowledge deficits.^{8,13,14} Achieving good metabolic control of blood glucose, lipids, and blood pressure is important, as is patient education to leverage the individual's motivation to care for his or her feet. Diabetic foot education should enhance knowledge, self-confidence, identification of

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early signs and symptoms of foot ulceration, and actions to avoid further damage.¹⁵ An important goal for clinicians is to enable persons with DM to engage in foot self-care prior to occurrence of a foot ulcer. If an ulceration does occur, comprehensive management is required to reduce the risk of further tissue damage and evolution of the wound to infection and necrosis.^{8,9} Comprehensive management is essential to reduce the number of lower extremity amputation (LEA).¹²

Ideally, a DFU is treated at its onset to avoid further damage and deterioration; healing is anticipated to take around 12 weeks.¹⁶⁻¹⁸ Research findings indicate that delay in care, including early management of a DFU, increases the risk of impaired healing, infection, hospitalization, and LEA.¹⁹ In fact, investigators have identified strong relationship between severity of a DFU and delay to access specialized care. Earlier detection and intervention by both the patient and the primary practitioner have been identified as a predictor for foot ulcer healing. Nickinson and colleagues¹⁹ completed a systematic review that identified multiple factors resulting in delays in seeking appropriate treatment including poor patient health-seeking or self-care behaviors, inaccurate healthcare assessment, and barriers to referral and treatment. Additional barriers to diabetic foot care are neuropathy with loss of protective sensations, age-related changes such as vision impairment, comorbid conditions such as compromised joint mobility, and motivations to implement self-care practices.¹⁵ Impaired cognitive function may prevent early detection of DFUs and delay decision making related to seeking care; it may also be linked to limited recall of diabetic foot education.²⁰⁻²² Care may also be delayed due to the extended time required to attain a referral to a diabetic foot and nail care or wound care specialist.²² When delays occur, patients with DM may engage in self-treatment. Research suggests that using and trying different over-the-counter treatment at the onset of a DFU is prevalent.²³

The data showed in this article extend our previous study that examined the pathway individuals with DFU took to engage in self-management to achieve wound healing.²⁴ Most of them ($n = 20$, 67%) did not seek help at the onset of DFU (phase 2 of the pathway) and ended up with ulcer deterioration (phase 3 of the pathway). On the other hand, individuals ($n = 10$, 33%) who sought help at the onset of DFU experienced delays of approximately 4 weeks to 3 months before referral to a wound care clinic. This article expands previous work in this area²⁴; specifically, we explored participants' perceptions of reasons resulting in delays when seeking help and referral to a wound care specialist at the onset of a DFU.

METHODS

We used an existing data set from a constructivist grounded theory study that uncovered the phases of engagement in self-management of DFU.²⁴ Qualitative data were analyzed using constructivist grounded theory study and symbolic interactionism; grounded theory is a systematic but flexible methodology used to construct hypotheses and theories via collection and analysis of qualitative data.²⁵ Symbolic interactionism is a method of analyzing how a participant's current situation (in this case having a DFU) occurred and his or her experience with this situation is influenced by interpretations of the past experiences. It allows researchers to examine the reasons why participants delayed seeking help and referral to a wound care specialist at the onset of DFU.

Recruitment of participants was led by the first author (I.G.C.) who visited a wound care clinic in southeastern Ontario, Canada, caring for patients with DFUs. Participants were selected through purposive and theoretical sampling. Purposive sampling was used to identify participants who met the following inclusion criteria: (1) a confirmed medical diagnosis of a DFU for at least 2 months, which ensured enough experience to reflect on the process of taking care of DFU; (2) aged 18 years or older; (3) able to speak and read English and discuss their experiences of living with a DFU; and (4) willing to engage in active self-reflection and self-disclosure about their experience of living with and managing DFU. Theoretical sampling was conducted to guide simultaneous processes of data collection and analysis until data saturation was achieved. Study procedures were reviewed and approved by the Queen's University Health Sciences and Affiliated Teaching Hospitals Research Ethics Board (TRAQ File #6020520) before recruitment, as was informed consent by participants. We ensured confidentiality by using pseudonyms instead of participants' real names.

Study Procedures

Interviews were conducted after obtaining informed consent in a private room in the wound care clinic. Methods used for data collection included one-on-one intensive interviews, memo writing, field notes, and the researcher's journal. Semi-structured interviews were conducted until no new properties of the patterns emerged. Interview times ranged from 36 minutes and 41 seconds to 1 hour and 42 minutes. All interviews were audiotaped and transcribed verbatim by a professional transcriptionist and verified for accuracy by the first author who entered each of them into NVivo version 11.4.1 (QSR International, Melbourne, Australia).

DATA ANALYSIS

Data collection and analysis occurred concurrently in a cyclic process that began with initial coding and proceeded to focused coding. While one researcher (I.G.C.) collected and coded the data, the confirmability was certified through an intense audit of the transcripts and codes by two other researchers (D.T. and P.C.) and by an external researcher from the field of sociology who conducted cross-coding to evaluate accuracy and whether the findings, interpretations, and conclusions were supported by the data.

The first stage of the coding process included the initial (idea-by-idea) coding that generated 529 codes and was identified by action or in vivo words as recommended by Charmaz.²⁵ The second stage included focused coding used to explain more substantial segments of data. During this stage, redundant codes were collapsed into categories. Therefore, about 250 codes were grouped into the 5 phases of the theory and the 6 categories of the factors influencing engagement in self-management of DFU.²⁴ The result of this coding process coupled with successive levels of abstraction through comparative analysis and memo-writing led to the inductive generation of categories and concepts. To ensure the usefulness, rigor, and quality of this grounded theory study, we followed the 5 criteria suggested by Charmaz and published in our previous study with a brief description of how they were met.²⁵

RESULTS

The sample comprised 30 individuals living with diabetes attending a wound care clinic in Ontario, Canada, between

April and August 2017; demographic and pertinent clinical characteristics of study participants are summarized in Table 1. The majority were male ($n = 20$, 67%), married ($n = 21$, 70%), and living with their family ($n = 23$, 77%). Their ages ranged from 46 to 97 years (mean: 64.43 years); most participants had type 2 DM ($n = 23$, 77%) and had lived diabetes for at least 5 years ($n = 18$, 60%).

The waiting period taken to seek help and be referred to a wound care specialist varied from weeks to months. As a result, most participants ($n = 20$, 67%) experienced DFU

progression and 6 (20%) had undergone amputation of a toe or a foot.

Four main themes emerged regarding reasons why participants delayed seeking help and referral to a wound care specialist at the onset of DFU. These themes are divided into 2 categories. The first category comprised the reasons related to participants' delay in seeking help; they were (1) limited knowledge about foot care, (2) unaware of diabetic foot problems, (3) underestimation of ulcer presentation, and (4) I thought I could fix it myself. The second category comprised factors related to delay in referral to wound care specialist: (1) inaccurate diagnosis, and (2) trial and error approach by a nonspecialized wound care provider. A summary of the categories and factors and relevant quotes is presented in Table 2.

TABLE 1.
Sociodemographic and Pertinent Clinical Characteristics of Participants

Characteristics	Frequency (N = 30)	Percentage
Sex		
Male	20	67
Female	10	33
Age, y		
<65	12	40
≥65	18	60
Marital status		
Married	22	73
Non married	8	27
Living situation		
Alone	7	77
With family	23	23
Level of education		
Primary school	6	20
Secondary school	12	40
Post-secondary school	12	40
Employment status		
Employed	7	23
Retired	15	50
Government income support	8	27
Diabetes type		
Type 1	7	23
Type 2	23	77
Duration of diabetes mellitus, y		
<5	12	40
≥5	18	60
Ulcer duration, mo		
2-7	16	53
8-12	6	20
>12	8	27
Amputation		
Yes	6	20
No	24	80

Reasons Contributing to Delay in Seeking Help: Limited Knowledge About Foot Care

Study participants shared that the onset of DFU happened progressively, followed by a variety of foot changes such as loss of sensations in the feet, foot deformity, calluses, blister, or trauma. Their lack of understanding about the signs and symptoms of diabetic foot changes contributed to DFU and contributed to delays in seeking professional help. Rather than seeking assistance from a healthcare provider, respondents attempted to care for the DFU at home using over-the-counter products. Participants also indicated that they did not know that they needed to engage in routine foot self-care to avoid skin damage, seek care from a provider at the onset of a DFU, and referral to a foot care or wound care specialist when a DFU occurred.

Although, some participants had been told that peripheral neuropathy and foot deformity were related to diabetes, they did not seem to have understood the dangers of changes in the feet among persons living with DM. For example, one participant thought that neuropathy would only prevent him from feeling both superficial and deep sensation: "Neuropathy messes with your balance and, again, you don't feel ... It's strange, you don't feel everything here, but if I step on a stone, I know it. Confusing." Another participant reported a similar experience with loss of protective sensation resulting from neuropathy. "Before that I never really had problems with my feet other than neuropathy. I don't have a lot of sensation, although if I was to step on a small pebble or something, I can feel it in my feet. I think the neuropathy is more on the outside. I don't know how to explain it. I still have feelings in my feet in a deeper type of thing. I can tell when I am walking on something that's hurting my foot or something."

These participants' lack of knowledge and understanding of the warning signs of neuropathy affected their health-seeking behaviors and prevented them from reaching out to a foot care specialist to implement preventive measures. Their limited knowledge and understanding about neuropathy and the risk for DFU formation prevented them from engaging in routine diabetic foot care. Data analysis indicated that all participants stated that they did not receive formal education about foot care and how to prevent diabetes foot disease. As a result, most did not make the association between the onset of DFU with diabetes.

Unaware of Diabetic Foot Problems

Although progression of diabetic foot disease was present indicating an elevated risk for DFU, study participant expressed that they were unaware of the relevance of these developments

TABLE 2.
Summary of Categories, Themes, and Supporting Quotes

Categories	Factors/Themes	Supporting Quotes
Reasons contributing to participants' delay in seeking help	Limited knowledge about foot care	<i>Through my diabetic education, they don't mention ulcers.</i> <i>Not much more than take care of your feet. It was a very simple instruction ...</i> <i>Nothing, any prevention or what to look for or anything like that and I had hammer toes.</i>
	Unaware of diabetic foot problems	<i>I burnt my toe on a heater.</i> <i>I thought it was just a cut, 'cause it was very little, but it wouldn't heal.</i> <i>I didn't associate what I have now with diabetes.</i>
	Underestimation of ulcer presentation	<i>It was tiny, tiny little black spot.</i> <i>I didn't think it was that big a deal.</i> <i>It didn't seem to be anything to be too worried about at the time.</i>
	I thought I could fix it myself	<i>You know those corn removers.</i> <i>I put a, uh, one of those little bunion plasters on my little toe.</i> <i>I just started putting the Polysporin.</i>
Reasons contributing to delay to be referred to a wound care specialist	Inaccurate diagnosis	<i>For a long time, they didn't know what it was.</i> <i>I went to the surgeon and he did a biopsy on it.</i> <i>I had four that looked at my foot and they all decided it was cellulitis.</i>
	Trial and error approach by nonspecialized care provider	<i>My family doctor put water on it.</i> <i>They tried different antibiotics.</i> <i>I went to the doctor and he tried different salves.</i>

and did not implement preventive measures to avoid DFU, even after an ulceration occurred. Instead, most participants reported that they did not associate the onset of DFU with diabetes and ignored the ulcer until they realized that it was not resolving. As one participant described his or her experience, "It's funny, at the beginning, I didn't associate what I have now with diabetes. To me, that was just a callus that I ignored or whatever, because I've always had very good sensation in my feet. I've always had hairs growing on my toes. I was told as long as I've got hair growing on my toes, I have good circulation and things are fine. It wasn't until this thing wouldn't go away that I started associating it with the diabetes. Yeah, certainly I was aware of the challenges with diabetes and your feet, well, all your extremities and that."

Although, symptom onset is an important clue that preventive measures must be instituted, participants did not seem aware of the magnitude of high risk for the development of DFU. For example, one participant stated that he was unaware that neuropathy caused loss of sensation, resulting in an accidental burn when placing his foot near a heater during cold weather. He stated, "I burnt my toe on a heater, 'cause I found it awful cold.' I plugged in the heater and put my feet close to it and I fell asleep. I burnt my big toe and they couldn't get it healed. So, I went to the hospital to ask them about it." This participant's experience illustrates that the loss of protective sensation caused by peripheral sensory neuropathy associated with a lack of understanding and awareness of diabetes foot disease led him to unconsciously place his foot at risk. In addition to peripheral neuropathy, foot deformity and foot trauma are also risk factors leading to DFU onset. For example, once participant stated, "I had developed a callus, large callus. They were trying to bring it down, but it wasn't. It was getting big-

ger and bigger partially because, as you can see, naturally, my foot lays this way. It's twisted in my shoes."

Only a few participants associated poor circulation as a contributing factor to the onset of DFU. However, they appeared to have gained this knowledge after facing foot deterioration and attending a wound care clinic where the wound care specialist answered their questions and provided one-on-one education to avoid further damage.

Underestimation of Ulcer Presentation

Most participants attributed the "real onset" of foot ulceration as a "tiny hole" that did not seem relevant. As one participant noted, "It ... [appeared] about three weeks [before seeking help]. It didn't look bad or anything, I was just wondering why it wasn't healing." Another participant delayed seeking help from his primary provider for "a couple of months or something like that." A third participant described waiting until changes in the appearance of the DFU prior to seeking help, "I went for a long period of time before I was back in here. In that time, the callus built up to a point where it was like a pebble on my toe. When I was walking, underneath it was getting affected. When I finally came in and they took the callus off there was a wound. Now I've had this wound on my toe ever since." The waiting period taken to seek appropriate help varied from weeks to months.

The lack of awareness and information also led participants to be unconcerned about the occurrence of a DFU that was small in size. One participant recalled, "I didn't perceive it as a really big problem. You know, it's a, um- you know, it was tiny then, tiny little black spot. It was ... Eh, it was gonna heal sometime." Another also perceived size as indicating lack of significance; she stated, "I went to bed, no problem at all,

got up the next morning, and it was still a tiny hole.” She went on to recall, “When I pulled the skin off and realized that I shouldn’t have done that, I thought, ‘Okay, that’s not good ... I pulled the sheets up and thought, ‘I’ll just go to sleep and it’ll be fine. I’ll stay in bed, no problem.’ This was in the evening sort of thing. The next day, it was still there, so I thought, ‘I better phone my doctor to find out what I should do, if I have to do anything about it.’ I went to my own doctor and she’s the one that started all this.”

I Thought I Could Fix It Myself

After noticing foot problems such as a painful callus, small blister, or tiny hole in their foot, participants attempted to engage in self-management practices that were often not appropriate for management of a DFU. Instead, they used different “salves” such as callus remover, foam, antibiotic ointments, and plasters. As one participant described self-management, “You know those corn removers? Somebody said, ‘Oh, that’s plantar wart or’ Cause you could see the ulcer, and right in the middle of it was a dot. And I didn’t know nothing about So I went and got one of them and I put that on it and totally made it worse. So anyways I kept it up, kept it up, and then it started opening up.”

A female participant described attempting different self-treatments in the beginning. However, when the DFU became infected, she tried another type of over-the-counter product. This product also failed to promote healing of the DFU and may have contributed to deterioration of the DFU. As she described it, “Then my third toe became quite infected. And I had um, like a foul I had, I thought um I put a, uh, one of those little bunion plasters on my little toe. Well of course that wasn’t a good idea. So, a tiny wound became a big wound on my little toe.”

Antibiotic ointments, usually available over the counter, were frequently used for self-management of DFU. However, participants found it helped only for a short period of time. As one participant recalled, “I had two ulcers, two little ones. I just started putting the [bacitracin/polymyxin B ointment] and then they went away for a while, but later became a big wound.”

Another participant described months of trialing various products in an attempt to heal her DFU. “I was using [bacitracin/polymyxin B ointment] and cleaning it and bandaging it That probably went on for a few months. Me trying to look after it. And then, it was my ... I lived, at that time, with my brother and his wife and she seen me fixing it and she just went, ‘You gotta go to the doctor’s. You’re never going to get that fixed. Something’s wrong.’ So, I did. But I would have still tried to fix it if she hadn’t of seen it unless something were to happen and I would have had to go.” This participant further reported that she did not seek any advice from the pharmacist. Ultimately, the participant indicated that it took all winter long (approximately 5 months) before realizing that self-management was not healing her DFU. Even then she reported that she contacted her family physician only after her sister-in-law advised her to do so.

One participant who delayed in seeking help while trying self-treatment for a long period experienced an irreversible outcome, amputation of a toe. After learning from this mistake, the participant indicated a strong desire to warn others to avoid self-management of DFU. As this participant stated, “But the thing is, never use over-the-counter stuff. You should

ask the doctor about what he uses because I would still have my right toe on my right foot if I hadn’t used that cream.”

Reasons Contributing to Delayed Referral to a Wound Care Specialist: Inaccurate Diagnosis

Participants who sought help described additional delays prior to referral to a wound care specialist due to diagnosis of the DFU by their primary healthcare providers. For example, one participant sought help from her family physician and a surgeon who performed a biopsy to determine the etiology of her foot ulceration. She recalled, “... like I said, I’ve been to my family doctor a couple of times. For a long time, they didn’t know what it was. I went to the surgeon ... who I worked with and did a biopsy on it, he took fluid from it, it didn’t grow anything, you couldn’t see it. Everything was negative.”

A second participant was misdiagnosed by 4 healthcare professionals. She was treated for cellulitis for months and believed that she was the first to realize that her condition was not cellulitis. As she described the situation, “I had four doctors that looked at my foot and they all decided it was cellulitis. And I told each one of them in turn, it’s not cellulitis. I’ve had cellulitis. This is not cellulitis. And I even said to one of them, ‘Is cellulitis not an infection?’ And they said, ‘Yes’ And I said, ‘Then why is my foot not hot? Because when you have an infection it’s hot.’ But this seemed to get, was much worse. Uh, for one thing they went months treating me for cellulitis I didn’t have. I didn’t have cellulitis. And the more I was on that foot of course some, and it all swelled up, stretches the skin.”

Trial and Error Approach by Nonspecialized Wound Care Providers

Another reason to delay in being referred to the right professional was due to a trial and error approach by some primary care providers. One participant stated, “My family doctor patched it up, covered it up, bandaged it up and I mean, it was sore but they put guards on it, not guards but bandage and at first, they put water on your foot and apparently this went on for I don’t know, three or four months. They put water on it. They covered it with water just to clean it up. When you are diabetic you are not supposed to have water on your feet so I’ve been told after three months.”

While on the journey toward engagement, one participant described being prescribed different types of antibiotics that delayed her from receiving appropriate treatment from a wound care specialist. This inappropriate intervention contributed to ulcer deterioration and pain managed by opioid analgesics. As she recalled, “They tried different antibiotics and that didn’t work. I got to the point where I was on oxycodone for years” Although some participants identified the onset of a DFU and promptly sought help, their primary healthcare providers did not seem knowledgeable about the appropriate care pathway for diabetic foot disease. As a result, there were delays in referring participants to a wound care specialist.

DISCUSSION

Study findings revealed reasons participants delayed seeking help at the onset of DFU. We found that participants have limited knowledge and awareness about diabetic foot disease. This lack of knowledge led them to underestimate the significance of a DFU. Instead of seeking help, many

participants used over-the-counter or home remedies at variance to the care pathway recommended by Canadian best practices recommendations and international best practice guideline.^{8,9,10,13} Similarly, many primary healthcare providers failed to diagnose DFU and treated the lesion without identifying the wound as a DFU. The period of delay prior to seeking assistance from a healthcare provider or be referred to a wound care specialist varied from 4 weeks to 3 months.

Although participants experienced a variety of changes related to diabetic foot disease and DFU development, their lack of foot care knowledge and lack of awareness about foot disease presentation resulted in delays seeking care from healthcare providers and referral to a wound care specialist. A recent systematic review investigating the identification, causes, and outcomes of delays in the management of DFU also identified lower socioeconomic status as a barrier to engaging in health-seeking behaviors.¹⁹ Evidence also shows that knowledge of correct foot care at the first signs and symptoms of DFU can postpone ulcer development and LEA.²⁶

Even after noticing presence of a DFU, participants engaged in self-management practices because they thought that the ulcer would heal without seeking professional care. Older adults are the largest consumers of over-the-counter medications in North America and research indicates that attempting self-management of DFU is prevalent.²⁷ Participants' decisions to try or not to try self-treatment were influenced by their beliefs and previous experiences, along with the influence of friends and family, availability, accessibility, and affordability of resources. Similarly, self-treatment decisions have been reported for decades and described by several grounded theory studies.^{28,29}

Study participants' attempts at self-management highlight perceptions that diabetic foot disease and DFU do not carry the risk of serious consequences. Previous qualitative studies indicate that perceptions on the seriousness of a sign or symptom prompted individuals to the extremity decision to seek professional care.^{29,30}

Even the relatively small proportion of participants who sought health upon the onset of DFU experiences delays in referral to a wound care specialist due to inaccurate diagnosis and attempts at ineffective treatments before referral. This finding indicates that many primary healthcare providers lack knowledge to properly diagnose DFU and activate the pathway recommended in current treatment guidelines.⁹⁻¹² Our findings are consistent with findings of prior studies exploring reasons for delays in receiving care for diabetic foot disease and DFU despite evidence-based guidelines.^{29,31} A similar situation seems to be occurring in other places as described by a recent systematic review that also identified the inaccurate wound etiology and barriers to referral and treatment within the care pathways as causes of the delay to place patients on the right care pathway.¹⁸

Unfortunately, not all healthcare providers are aware of best practice guidelines used for diabetic foot disease and DFU.³² Findings from one qualitative study indicated that primary healthcare providers may be unconcerned about foot care problems that may have contributed to delays in receiving prompt assistance at the onset of a DFU.³⁰ In a call for action paper published in the *Diabetic Foot Canada Journal*, the authors emphasized the actions needed to manage

diabetic foot disease and DFU among primary healthcare providers.³²

Evidence indicates that there are not enough wound care clinics across Canada to handle existing demand for wound care specialists.³² Nevertheless, findings from our previous study indicated that persons with diabetes and DFU received little information about diabetes and its consequence, which may have prevented them from being on top of their care to avoid diabetes complications.^{15,24} Findings from this study indicate that this misinformation took the shape of underestimation of DFU seriousness, and misdiagnosis of DFU, leading to delays in prompt referral to a wound care specialist and initiation of effective treatment.

Implication for Practice, Policy, and Research

This study's findings identified several reasons for delay in seeking help and being referred to wound care specialist at the onset of DFU including a lack of knowledge among study participants and primary healthcare providers about diabetic foot disease and DFU. We recommend educating both groups concerning preventive foot care for persons with DM and prompt care when a DFU or any ulceration occurs in this vulnerable group. Specifically, we recommend educating persons with diabetes and their families to recognize the first signs and symptoms of a DFU and request referral to a wound care specialist regardless of the size of their wound.

Study findings also inform education and health policy about the importance of improving access to educational programs related to prevention and management of DFU and to wound care services. For example, the North West Local Health Integration Network (LHIN) report states that Northwestern Ontario (Canada) communities present the highest rate of diabetes compared with the rest of the province.³³ Likewise, these communities also have a higher rates of hospitalizations related to skin/soft tissue infection and LEA among those living with diabetes and peripheral arterial disease. This situation requires innovative approaches such as increased use of telehealth in wound care in order to improve timely access to wound care specialists and ensure that right care is delivered at the right place, by the right provider, at the right time.

The results of this qualitative study offer a number of hypotheses that should be evaluated in large-scale quantitative studies. For example, findings from our study suggest that seeking help is influenced by presenting symptoms, beliefs concerning the size of a foot ulceration, and the absence of adverse consequences if the DFU is not promptly and effectively managed. If confirmed, these findings can guide development of additional education for patients with diabetes and education or guidelines developed specifically for primary healthcare providers for diabetic foot care and prevention of DFU.

CONCLUSION

These findings revealed that the reasons for delay in seeking help at the onset of DFU are related to not only patients' aspects but also healthcare providers' lack of knowledge about DFU presentation. These reasons reflect the need for healthcare providers to follow best practice recommendations and guidelines for DFU prevention and management and avoid delay in placing patients at the right care pathway. The lack of adherence to the best practice guidelines contributed to inaccurate diagnosis and attempts of unsuccessful treatments

before referral to a specialized wound center. This finding indicates that many primary healthcare providers lack knowledge to activate the pathway recommended in current treatment guidelines. Additionally, these findings indicated the unawareness of the individuals with diabetes about foot problems leading to underestimation of foot ulcer presentation, poor health-seeking behaviors, and hence devastating outcomes.

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