

An Exploration Of How Individuals Living With Diabetes Mellitus Access And Apply Foot Health Education To Prevent Diabetic Foot Complications: A Qualitative Descriptive Study

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Introduction

Education focused on foot health remains a priority for health-care teams as diabetes-related foot ulceration rates increase worldwide.¹ Persons with diabetes mellitus (DM) who develop loss of protective sensation, foot deformity and peripheral artery disease (PAD) are at greatest risk for complications including amputation.¹⁻⁴ In Canada, three million persons have DM and up to 20% will develop foot ulcers that may lead to amputation if not addressed.^{5,6} Armstrong and colleagues (2017) report the lifetime incidence rate of DM foot ulceration is, “19% to 34%, with a yearly incidence rate of 2%”(P2*).⁷ Of concern are foot ulcer recurrence rates. Researchers report that 40% recur in 12 months and 65% in three years.⁵

In Canada, foot screening and patient education is recommended by leading organizations including Diabetes Canada,^{6,8,9} Wounds Canada,¹⁰ the Canadian Podiatric Medical Association¹¹ and the Registered Nurses’ Association of Ontario.¹² Though recommended, there is no predictable path for persons with DM to obtain foot health information and education. Specifically, Diabetes Canada (2018) discussed the roles of physician, podiatrist, chiropodist and foot-care nurses when a person develops a complication such as in-grown toenails, callous, corns, or warts.⁸ The foot risk assessment (including footwear) is foundational to prevention and early identification of complications. Patel and colleagues (2022) sought to understand DM foot screening practices amongst clinicians. In a scoping review (n=21) they reported that in 12 months, only 53% of persons with diabetes received a foot examination by a health-care provider.¹³

Patient foot health education focuses on knowledge, behaviour and daily engagement in prevention activities, yet many lack knowledge and awareness of foot health.¹⁴ Researchers continue to identify the need for robust research to understand effectiveness of education (outcome measures).^{8,15} To understand the effectiveness of patient-centred foot health education, Manickum and colleagues (2021) completed a scoping review (n=58). They stated that though patients may have acquired varied knowledge about dia-

betic foot care, fewer practiced proper foot care such as conducting a daily foot care assessment, foot hygiene (washing and hydrating skin) and assessment for any foot skin injury (cuts, bruises, ulcers) or changes.¹⁶ As well, the ability for persons to manage foot care may be influenced by their health status, access to health-care services, access and ability to pay for foot care services and access to formal and informal support persons. Researchers (2022) furthered this work in a randomized control study (n=120) focused on foot care education. Results showed that face-to-face education improved patient foot care knowledge for those living with DM.¹⁷ Furthermore, in foot care education it is known that there are no improvements when the person is only given information without a focus on foot care skills,¹⁸ appropriate footwear and awareness of when to seek care.^{19,20}

Therefore, the aim of this qualitative study was to explore how individuals living with DM access and apply foot health education to protect their feet from DM related foot complications.

Framework Guiding This Study

This study was informed by the Expanded Chronic Care Model (CCM) organizational framework.⁶ The Expanded CCM framework includes a focus on population health and prevention efforts, social determinants of health, persons with chronic diseases learning self-management strategies (knowledge, skills, behaviour), delivery systems, decision support and clinical information.²¹ This was important as we wanted to understand how participants described receiving diabetes-related foot care education and explore what they applied to their foot health practice.

Methods

Participants: Participants included 14 adults (18+) living with type 1 and type 2 DM, from 16 months to 27 years. Participants were invited to describe their personal journey of caring for their feet and footwear and how foot health education played a role in their care decisions.^{22,23} We met participants in a place of their choice (home,

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library, coffee shop).²⁴ As data collection took place between September 2022 and April 2023, participants described their foot care practices before and during the pandemic. We adhered to provincial coronavirus guidance.

Procedures: Participants were recruited through posters in libraries, community bulletin boards, and social media posts. ‘Snowball’ recruitment was also employed as one adult invited another who they thought might wish to participate. Participants read or were given a research *Letter of Information and Informed Consent* (verbal, written) explaining the study purpose and that they would be asked about education received in relation to diabetic foot care, footwear, care practices, and how each participant interpreted and applied this information. As well, as part of the interview and discussion, participants were read and asked questions about peer-reviewed foot health information from Diabetes Canada’s *Foot Care*²⁵ and Wounds Canada’s *Diabetes, Healthy Feet and You* education pamphlets.²⁶ Data was transcribed verbatim and images of feet and footwear were taken. Research Ethics Board approval for this study was obtained. Qualitative semi structured interviews were conducted using web-based platforms, phone calls and face-to-face interviews (30-45 minutes).

Data Analysis

The researchers had no preconceptions of the emerging themes. The interview results were typed verbatim, read and re-read by the researchers in typed documents. Each was checked for accuracy. As DM is a life-long, complex disease, we analyzed the interview data across the continuum of time. The researchers kept field notes before and after interviews and used email and face-to-face meetings to discuss the study progress. Participants’ data was rich in detail and description of their personal experiences, care practices and their future vision for DM foot care and footwear in their community.

Data were then analyzed using ATLAS.ti²³®. Using thematic analysis, key messages emerged from the data.^{27,28,29} To increase trustworthiness

of the data, audit trails of our work were kept and findings were discussed by phone with five participants who wanted to know about the outcomes. We present the findings in a thematic story format identifying salient quotes from participants.

Results

Participants in this study included 14 adults (13 female, 1 male) ranging in age from 25 to 87 years. Participants described living with type 1 and type 2 DM, from 16 months to 27 years. Five lived with type 1 DM (two were newly diagnosed during the pandemic) and nine lived with type 2 DM (See Table 1). Participants were given peer-reviewed foot care information, a foot mirror and foot cream as a gift for participating in the full interview.

Results from the data analysis reveal a noticeable lack of consistency in how, when, where and by whom individuals living with diabetes receive foot health education. This inconsistency leaves many individuals at greater risk of developing diabetic foot complications. Findings were organized under four main themes:

- 1) Inconsistent acquisition of sound diabetic foot health education,
- 2) Footwear and foot care choices: Education takes a backseat to other factors,
- 3) Stress and fear: Always in the background and
- 4) Supports systems and family are important.

Theme 1: Inconsistent Acquisition Of Sound Diabetic Foot Health Education

Participants’ sources of knowledge of the importance of diabetes-related foot self-care varied widely and there were no consistent sources of foot care information (see Table 1). Several stated foot assessments were not done before the pandemic and it did not change after the pandemic (P5*, P7). Most described gaining knowledge about daily foot checks and foot care, “over time” and/or, “after some years being diagnosed”. Others described learning as, “eventually I learned” or “I learned after a

Table 1: Participants Characteristics

I.D. #	Gender	Age	DM Type 1	DM Type 2	Time with dx	Professional who told them about foot care/ footwear	Nail care provider	Footwear	Family History
1	F	53	x		27 years	Endocrinologist Family physician	Self-care	No special foot-wear	No
2	F	25	x		2 years	Diabetes Centre	Self-care Family-parent	Still learning, uses shoe inserts	X – with complications
3	F	46		x	20 years	Family physician Wound care nurses Orthopedic doctor	Self-care	No special foot-wear, learned after a foot ulcer	No
4	F	87		x	14 years	Family physician Nurse practitioner	Self-care Family-daughter Esthetician Circulation device Dr. Ho.	Wears Dr. Scholls shoes	X - with amputations
5	F	58		x	20 years	None	Self-care	Running shoes with liners	No
6	F	62		x	25 years	None	Self-care Esthetician	Wears inserts for flat feet & likes sandals	No
7	F	60		x	5 years	None	Self-care Esthetician	Sandals, sneakers & slippers	X – with amputations
8	F	66		x	2 years	None	Self-care Esthetician Daughter-nurse practitioner	New running shoes every 6 months	X - with complications
9	F	75		x	23 years	None	Self-care Family-daughters	Running shoes – “basic”	No
10	F	62	x		16 mos.	Podiatrist Diabetes Centre Orthotist	Self-care	Running shoes	X - with complications
11	F	50		x	14 years	Family physician	Self-care	Running shoes	No
12	M	70	x		5 years	Family physician	Self-care and wife	Walking shoes	No
13	F	45	x		18 years	Endocrinologist Podiatrist	Self-care Esthetician	Running shoes	X – with complications
14	F	82		x	18 years	Family physician	Self-care	Walking shoes	X – with complications

foot ulcer developed” from nurses at diabetes clinics, family members who had experienced an amputation, physicians, nurse practitioners, registered dietitians, neighbours, friends and

endocrinologists. The timing of footwear education was significant. Some participants received foot health education when they were first diagnosed with diabetes, one participant

stated, it was 12 years later (P1). Others did not remember receiving any foot care education. One participant new to their diagnosis stated, "I am still learning about foot and nail care, no one has really taught me anything yet" (P2). A few participants described not learning about foot care until, "someone else told me" or, "after there was a problem, an ulcer, a wound or bleeding". Some participants questioned why no one taught them about foot care and footwear until it was too late. They asked, "why is this not part of my diabetes care, how come a researcher had to tell me?" Many participants accessed diabetic foot information from the internet (home, library services). This form of searching increased during the pandemic. When asked, participants indicated that there were no specific health focused websites they preferred. Participants without internet access relied on family members to guide them.

Approximately half of the participants indicated that they had received some information about the importance of daily foot checks and nail care. They stated, "I know how to care for my toenails, I keep my nails trimmed and cleaned" (P4, P6, P11) or, "I do it all on my own". Other comments included, "I pay attention to the bottom of my feet for calluses or cuts"; "I use a mirror, some cream and have had some education using mirrors, creams, and education to aid in diabetic foot health (P5, P13, P14); "I also make sure, when my feet are dry, to moisturize and check them regularly with the mirror"; "I make sure that there's no calluses or cuts or bruising or discolouration" (P2-5, P9). Three participants with backgrounds in health-care professional education were knowledgeable about the risks and complications of DM and the importance of good foot care. Both acknowledged never receiving any formal teaching about foot care and footwear. They both felt they should have had foot care education and it should not have been presumed that they knew about risks because of their backgrounds. They both stated they were hesitant to ask questions as they were "trained" in health-care.

Even with some education, many participants remained uncertain regarding certain foot care practices. Contrary to recommended DM foot

care practices, eight participants (8/14) described soaking their feet in a basin of water and one described soaking their feet occasionally. Two participants described soaking their feet using a foot-soaker (commercial brand) and two added Epsom salts (magnesium sulfate) to the foot soak. One person described learning about foot and nail care and not soaking their feet, "after they experienced a foot ulcer and wore an offloading boot" (P3). Participants were further misinformed when individuals they considered professionals used non-recommended soaking practices. No participants were supported by Foot Care Nurses, and five participants received pedicures and nail care from estheticians (licensed and unlicensed). Of these, four had their feet soaked and cuticles 'pushed' off the nail bed as part of their nail care with the esthetician. One stated, "I told the esthetician that I have now been diagnosed with diabetes, and the foot soaks continued". The participant went on to say, "well I really did not know - not to soak my feet either, so it kept going on, so we were both wrong" (P7). During the pandemic, a few participants continued to visit their esthetician intermittently depending on availability of money and in line with the then existing pandemic guidelines for social distancing. Others who obtained nail care before the pandemic halted their foot care services, fearful of "their immune systems" (P13, P14).

Theme 2: Footwear And Foot Care Choices: Education Takes A Backseat To Other Factors

Education related to the proper footwear for individuals living with diabetes was only one factor among many that participants considered when choosing their footwear. Some participants stated there was no footwear education before the pandemic and it is presently the same. Some participants' footwear choices were based on preference, finances, seasonal weather demands, employment, social and sports activities. Some participants who were knowledgeable about proper footwear choices, lacing their shoes or using the Velcro closures, were committed to purchasing footwear that would, "keep my feet

healthy" (P10). They were aware of the risks of improper footwear. "I'm very careful about what I wear" (P3). "I know to wear proper footwear and if I see anything different, I go to the doctor" (P10). For some of the participants, running shoes or sneakers were their preference. "Yes, I wear a lot of sneakers." (P1, P5, P11, P12). "I wear my sneakers 90% of the time, I am very careful" (P5, P7, P14).

For other participants, there was a resistance to forgoing their preferred footwear choice and being confined to having to purchase *certain* running shoes to protect their feet. This focused footwear purchase was described as an obstacle and annoyance to seasonal weather and sports activities (P9-14). Seven participants preferred wearing a wide range of slippers, soft non-protective shoes, designer shoes, sandals and Crocs-style shoes. One described herself as a, "gambler with her foot health" taking chances that a foot complication would not occur, though she knew her footwear choices were not recommended. Others described wearing, "nothing, I like bare feet, or my slippers" to protect their feet (P1-3). In the heat of the summer, four participants described wearing sandals knowing they might cause harm (P6, P11-13). One participant noted, "knowledge can be

accepted and integrated, or ignored and sometimes I ignore things and a lot of the time I do go bare feet even though I know I am not supposed to" (P11).

For many participants, cost was a major obstacle to following foot care and footwear advice. The costs of going to a foot care specialist and accessing and affording footwear that would protect their feet was a tension-filled discussion for many. Persons living on a fixed income describing themselves as, "retired, seniors and living on a disability pension" expressed that foot care and diabetic shoes should be funded properly. They suggested provincial or federal funding. "It is just too much; \$45.00 for nail care and then shoes. It is just too much, so I wear what I can afford" (P5).

Another participant noted, "Foot care nurses are expensive and we only have a few here, around here. You know where I don't have to drive too far, fuel is expensive and the nurses are about \$45.00-55.00 CDN so I go to the esthetician as they are cheaper at \$22.00-35.00 approximately" (P7).

Two participants with extended health insurance were able to afford diabetic socks, a podiatrist foot care fee and diabetes-related footwear. "I have some extended health benefits, so I go



to a podiatrist. It costs me about \$8.00 after my benefits kick in. So, it's quite generous. I think we have \$800.00 a year of coverage a year" (P13). Some participants thought provincial and federal disability benefits, "should also cover diabetes foot care and shoes" (P7). Another reported that they knew they needed help, yet, "I had to pay for it. I've been on unemployment benefits for most of this year, so I've got no help at all with my nail care" (P4). Two persons stated, "I'm on social assistance, so you don't have any coverage for that" (P4, P13). Two participants noted, "so, the shoes might not be expensive, but the insoles are" (P7) and "the insoles alone were \$400.00" (P3).

Theme 3: Stress And Fear: Always In The Background

Independent of the quality and quantity of diabetic foot health education received, participants appeared aware of the potential for serious foot complications. A dominant theme described by the participants was fear - fear of neuropathy, ulcers and fear of amputation. For some participants, this was a motivator to follow prescribed foot care and footwear advice. For others who were restricted by finances or other factors, these fears still prevailed. Many participants described in detail a family member (immediate or remote) who lived with diabetes and foot complications. Some described how they thought there were genetic links between family members and the disease. One participant stated, "I don't want to end up in a wheelchair...I'm not losing my feet...I have to live and care for my children" (P7). "I could still lose my foot if the ulcer doesn't heal and things don't go right, but there's still a chance of amputation down the road, I know that..." (P3). "...I know Granny lost her leg...that could happen to me" (P6). For some participants, fear of the unknown was motivating to conduct foot care: "I am always worried they're going to be cut and I'm not going to know. So that's why I check them, my feet, so often" (P2, P4, P6, P12, P14). Regarding neuropathy, "I have a sister who has neuropathy and has cut her feet and been unaware of it, so that is why I look at my feet" (P2). Participants described an underlying fear of the unknown and

that, "one small unnoticed abrasion, could turn into amputation" (P14). One described, "I am a bit concerned right now because I feel I might have a bit of neuropathy" (P12). Others feared walking on the sand and beaches and that "we could walk on a huge rock and I wouldn't feel it, then there would be problems" (P2, P3, P12).

For some, fear was slightly magnified during the pandemic when face-to-face visits with their health-care provider were limited. All participants stressed that face-to-face visits were preferable to discuss their diabetes care, "not online". During the pandemic, most visited with a health-care provider using a web-based platform. Some were independent in linking to the call, others relied on the library services, or had a neighbour, family member or friend come to their home and set up the call with the provider. They also related that foot care checks, when done, "should be face-to-face". Two participants (P2, P14) described having regular foot screening conducted by their health-care professional before the pandemic. None of the participants described having their feet checked while using a web-based platform.

Theme 4: Supports Systems And Family Are Important

Many participants spoke about the importance of having a social support system as a necessity to help them follow-up on recommended diabetic self-care practices including foot care and footwear. Social support came in the form of partners, family, friends, neighbours and social and spiritual groups, as these were people they could rely on for support. Support persons helped with essentials such as obtaining food, maintaining their housing situation, running errands, removing snow, driving to medical appointments and cleaning their home. Some social support persons purchased new footwear for participants as they could not afford new shoes. Some family members helped with personal care.

One participant described, "I have what you call it? Thickened nails? I never had that before in my life and the nails started getting really thick with 'the diabetes'. When my daughter comes up from another province, she cleans them and tells my

other daughter who helps me, how to care for them, it is a team effort" (P9).

Another participant stated, "I moved in with one of my daughters during the pandemic...for help, you know, it was easier" (P4). Family support was particularly important during the pandemic when most people were unable to visit care providers. Participants attempted to manage on their own, conducting, "nail trimming and filing at home... well you know, to the best of my ability" and, "my daughters were in my safe zone, so they helped me" (P4, P5). Many described lack of access to footcare specialists, but in reality, they knew they would not go to the specialist as they already knew they could not afford the shoes or liners that would be recommended (P3, P5-7).

Finally, social support included accessing the internet and computers offered through the local library, depending on the pandemic guidelines. This was important as some participants could not access or afford internet services or computers (tablet) in their home setting. Some relied on family members to search for health information and/or to set up the medical/nurse appointment through a web-based platform. Participants reported that no specific sites were accessed for foot health and footwear guidance.

Discussion

Persons living with diabetes report wide-ranging sources of foot health and footwear information. None were consistent and not all credible or current. Some foot health information came from formal health-care providers such as nurses at diabetes centres, physicians, podiatrists and foot care specialists and some came from informal sources such as friends, family stories and experiences, estheticians and internet searches. Despite some having knowledge of diabetes risk factors and being able to thoroughly describe family and friends' issues of amputation, hospitalization, infection and death, not all participants engaged in preventative foot health practices or made proper footwear choices. Similar to our previous research, some were distanced from the responsibility of daily checking their feet and being fitted for protective footwear.³⁰ As well, few could



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describe receiving or taking part in regular foot health screening, being referred for therapeutic footwear, or an activity program as part of their health care provision.^{1,2} Most stated foot assessments were not a priority for their health-care provider before the pandemic and this did not change during the pandemic.

Some participants described diabetes risk factors, signs and symptoms and the natural history of developing wounds or ulcers, when their foot care and footwear choices were not ideal. When reviewing best practices foot health care information^{25,26} most described not knowing about not soaking their feet and they wondered why foot health information was not presented to them by their health-care providers in a timely and regular manner.³¹ Some believed in and engaged in preventative foot and nail care,³² and some relied on family members to check their feet and provide foot care. Participants described varied foot self-care practices from engaging in no foot care, checking weekly or monthly to daily foot checks. One participant had a mirror to view their feet. When travel for foot care services outside of their home community was recommended, many were not able to attend this referral. However, we also learned that some participants knew of the risks and of what to do to prevent foot complications and preferred to gamble with care decisions – consciously taking the risk.

Participants also reported on a variety of sources of footwear. Most purchased footwear based on availability of shoes in the community in which they lived and based on price (\$20.00 approximately).³³ Some relied on family members to check their feet and to purchase new footwear, mostly without a fitting or measurement of the feet. Some footwear was mailed to participants and the fit was not checked, just the size. Generally, few were focused on footwear being professionally fitted as they knew this service was not readily available in the community. As well, without being able to access this service, the participants miss out on the important education that occurs with footwear specialists.³⁴ Also, when travel was necessary, taxi costs or costs including access to a vehicle, fuel and an accompanying

support person were a barrier for participants, some of who would most often not attend the out-of-town consultation.³⁵ Several wore the same running shoes or Crocs-style throughout all seasons and did not wear seasonal (winter) footwear to protect their feet. Most discussed comfort, preference and the heat of closed-toed footwear.^{36,37} Some participants wore what they wanted to wear and did not heed proper footwear choices though they could describe the consequences.

Persons living with diabetes have a responsibility to engage in care, learn about their condition, seek health information and act upon the recommendations.³⁸ Yet, fear may interfere with learning about complications.³⁸ Fear is defined as, “the bad feeling that you have when you are in danger, when something bad might happen, or when a particular thing frightens you”.³⁹ Fear of foot trauma, infection, amputation, hospitalization and death were well-described by most participants.^{40,41} Fear of a lower leg amputation was common, often in relation to a family member or a community member.⁴² This is important as women are more likely to be anxious about diabetes complications.⁴³ Yet understanding and addressing why most participants, though fearful, do not fully engage in preventative foot care practices and choose proper footwear is essential.⁴³ Shifting the culture of giving patients education alongside supporting their mental health and well-being is critical.^{44,45} Identifying and screening for fear early in the diagnosis phase may help health-care providers intervene more effectively.⁴⁶ More research is needed to understand the complex social, motivational and economic issues surrounding this issue.⁸

Strengths And Limitations

The findings of this study were drawn from a relatively homogeneous group of participants residing in Eastern Canada and therefore may not be generalizable to the experiences of all individuals living and working with DM. Similar studies with larger groups of participants living with diabetes would help to establish a broader view and greater understanding of how individuals access and

apply foot health education to prevent diabetic foot complications.

Conclusion

This small qualitative study captured participants' descriptions of their accurate working knowledge of the progression of diabetes-related foot complications that could occur. Despite richly describing the potential risks and severity of complications, the reticence to fully engage in preventative foot care practice and footwear choices was evident. Therefore, persons with DM search for and obtain foot care and footwear care and information from a wide variety of sources, not all credible. Health-care providers were not a consistent or accurate source of information, nor was all education timely or relevant.

The need to proactively conduct foot risk screening and to stratify risk results in discussion with the person and their family or care providers is essential. Clinicians need support and training on diabetes foot screening and how to communicate this across the trajectory of health care. For example, if a person is screening in a community physicians' clinic, how is that communicated to the person and family and/or diabetes centre and how and where are the best and most accessible financially affordable services? 

*NB: P designates participant (see Table 1).

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References

1. Bus SA, Sacco ICN, Monteiro-Soares M, Raspovic A, Paton J, Rasmussen A, et al. International Working Group of the Diabetic Foot. Guidelines on the prevention of foot ulcers in persons with diabetes. *Diabetes Metab Res Rev*[Internet]. 2023 Jun[cited 2023 Sep]. Available from: <https://iwgdfguidelines.org/guidelines-2023/>
2. Bus SA, Sacco ICN, Monteiro-Soares M, Raspovic A, Paton J, et al. Guidelines on the prevention of foot ulcers in persons with diabetes (IWGDF 2023 update). *Diabetes Metab Res Rev*[Internet]. 2023 Jun[cited 2023 Sep]. Advance online publication. Available from: <https://pubmed.ncbi.nlm.nih.gov/37302121/> DOI: 10.1002/dmrr.3651
3. Dorresteijn JAN, Valk GD. Patient education for preventing diabetic foot ulceration. *Diabetes Metab Res Rev*[Internet]. 2012 Feb[cited 2023 Sep];28(1): 101–6. Available from: <https://pubmed.ncbi.nlm.nih.gov/22271733/> DOI: 10.1002/dmrr.2237
4. Edmonds M, Manu C, Vas P. The current burden of diabetic foot disease. *J Clin Orthop Trauma*[Internet]. 2021 Feb[cited 2023 Sep];17: 88-93. Available from: <https://pubmed.ncbi.nlm.nih.gov/33680841/> DOI: 10.1016/j.jcot.2021.01.017
5. Diabetes Canada. Diabetes in Canada[Internet]. 2023[cited 2023 Sep]. Available from: <https://www.diabetes.ca/advocacy---policies/advocacy-reports/national-and-provincial-backgrounders/diabetes-in-canada>
6. Diabetes Canada. Clinical practice guidelines for the prevention and management of diabetes in Canada 2018. *Canadian Journal of Diabetes*. 2018;3(S1- S1-S227). Available from: <https://guidelines.diabetes.ca/cpg>
7. Armstrong DG, Boulton AJ, Bus SA. Diabetic foot ulcers and their recurrence. *N Engl J Med*[Internet]. 2017;Jun[cited 2023 Sep];376:2367-2375. Available from: <https://pubmed.ncbi.nlm.nih.gov/28614678/> DOI: 10.1056/NEJMra1615439
8. Embil J M, Albalawi Z, Bowering K, Trepman E. Foot care. *Canadian Journal of Diabetes CJD*[Internet]. 2018 Apr[cited 2023 Sep]; 4 (1): 222-227. Available from: <http://guidelines.diabetes.ca/docs/CPG-2018-full-EN.pdf>
9. Bril V, Breiner A, Perkins BA, Zochodne D. Neuropathy. *CJD*[Internet]. 2018;Apr[cited 2023 Sep]; 42(1): 217-221. Available From: <https://pubmed.ncbi.nlm.nih.gov/29650100/> DOI:10.1016/j.jcjd.2017.10.028
10. Botros M, Kuhnke J, Embil J, Goettl K, Morin C, Parsons L, et al. Best practice recommendations for the prevention and management of diabetic foot ulcers. In: *Foundations of Best Practice for Skin and Wound Management. A supplement of Wound Care Canada*[Internet]. 2017[cited 2023 Sep]; 68. [under revision]. Available from: <https://www.woundscanada.ca/docman/public/health-care-professional/bpr-workshop/895-wc-bpr-prevention-and-management-of-diabetic-foot-ulcers-1573r1e-final/file>
11. Canadian Podiatric Medical Association. Welcome. 2023[cited 2023 Sep]. Available from: <https://www.podiatrycanada.org>
12. Registered Nurses' Association of Ontario. Assessment and management of foot ulcers for people with diabetes [under revision]. 2013. Available from: <https://rnao.ca/>

- bpg/guidelines/assessment-and-management-foot-ulcers-people-diabetes-second-edition
13. Patel J, Zamzam A, Syed M, Blanchette V, Cross K, Albalawi Z, et al. A scoping review of foot screening in adults with diabetes mellitus across Canada. *Can J Diabetes*[Internet]. 2022; Jul[cited 2023 Sep];46(5). Available from: <https://pubmed.ncbi.nlm.nih.gov/35644783/> DOI: 10.1016/j.jcjd.2022.01.004
 14. Nemcová J, & Hlinková E. The efficacy of diabetic foot care education. *J Clin Nurs*[Internet]. 2014 Mar[cited 2023 Sep];23(5-6): 877–882. Available from: <https://pubmed.ncbi.nlm.nih.gov/23875608> DOI: 10.1111/jocn.12290
 15. Goodall RJ, Ellauzi J, Tan MK, Onida S, Davies AH, Shalhoub J. A systematic review of the impact of foot care education on self efficacy and self care in patients With Diabetes. *Eur J Vasc Endovasc Surg*[Internet]. 2020 Aug[cited 2023 Sep];60(2): 282–292. Available from: <https://pubmed.ncbi.nlm.nih.gov/32660807/> DOI:10.1016/j.ejvs.2020.03.053
 16. Manickum P, Mashamba-Thompson T, Naidoo R, Ramklass S, Madiba T. Knowledge and practice of diabetic foot care: A scoping review. *Diabetes Metab Syndr*[Internet]. 2021 May[cited 2023 Sep];15(3): 783–793. Available from: <https://pubmed.ncbi.nlm.nih.gov/33838615/> DOI: 10.1016/j.dsx.2021.03.030
 17. Manickum, P., Madiba, T., Ramklas S. The effectiveness of diabetic foot-care education in a South African regional hospital: A randomized controlled trial. *J Endo, Metab Diabetes in South Africa*[Internet]. 2022 Apr[cited 2023 Sep]; 27(1): 20–31. Available from: <https://journals.co.za/doi/full/10.1080/16089677.2021.1980972>
 18. Yokota K, Hayashi Y, Kurata J, Fujita, A. Effectiveness of a self-foot-care educational program for prevention of diabetic foot disease. *Scientific Research*[Internet]. 2019 Jan[cited 2023 Sep]; 11 (9):19. Available from: <https://www.scirp.org/journal/paperinformation.aspx?paperid=89750> DOI: 10.4236/health.2019.111002
 19. Schaper NC, van Netten JJ, Apelqvist J, Bus S A, Hinchliffe RJ, Lipsky BA. et al. (2020). Practical Guidelines on the prevention and management of diabetic foot disease (IWGDF 2019 update). *Diabetes Metab Res Rev*[Internet]. 2020 Mar[cited 2023 Sep];36(1). Available from: <https://pubmed.ncbi.nlm.nih.gov/32176447/> DOI: 10.1002/dmrr.3266
 20. Mishra S C, Chhatbar K C, Kashikar A, Mehndiratta A. Diabetic foot. *BMJ*[Internet]. 2017 Nov[cited 2023 Sep];16: 359. Available from: <https://pubmed.ncbi.nlm.nih.gov/29146579/> DOI: 10.1136/bmj.j5064
 21. Barr VJ, Robinson S, Marin-Link B, Underhill L, Dotts A, Ravensdale D, et al. The expanded chronic care model: An integration of concepts and strategies from population health promotion and the chronic care model. *Hosp Q*[Internet]. 2003[cited 2023 Sep];7(1): 73–82. Available from: <https://pubmed.ncbi.nlm.nih.gov/14674182/> DOI: 10.12927/hcq.2003.16763
 22. Polit DF, Beck CT. *Nursing research: Generating and assessing evidence for nursing practice*, Philadelphia: Wolters Kluwer; 2012.
 23. Sandelowski M. Whatever happened to qualitative description? *Res Nurs Health*[Internet]. 2000 Aug[cited 2023 Sep];23(4): 334–340. Available from: <https://pubmed.ncbi.nlm.nih.gov/10940958/> DOI: 10.1002/1098-240X(200008)23:4
 24. Lincoln YS, Guba, EG. *Naturalistic inquiry*. CA:Sage: 2005.
 25. Diabetes Canada. *Foot care: A step toward good health*[Internet]. 2018[cited 2023 Sep]. Available from: <https://guidelines.diabetes.ca/docs/patient-resources/foot-care.pdf>
 26. Wounds Canada. *Diabetes, healthy feet and you*. 2023. Available from: <https://www.woundscanada.ca/docman/public/diabetes-healthy-feet-and-you>
 27. Braun V, Clarke V. Reflecting on reflexive thematic analysis, *Qualitative Research in Sport, Exercise and Health*[Internet]. 2019 Jun[cited 2023 Sep];11(4): 589–597. Available from: <https://www.tandfonline.com/doi/abs/10.1080/2159676X.2019.1628806?journalCode=rqrs21> DOI: 10.1080/2159676X.2019.1628806
 28. Braun V, Clarke V. One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*. 183:328–352, DOI: 10.1080/14780887.2020.1769238
 29. Braun V, Clarke V. Conceptual and design thinking for thematic analysis. *Qualitative Psychology APA Psych Net*[Internet]. 2022[cited 2023 Sep];9(1): 3–26. Available from: <https://psycnet.apa.org/record/2021-45248-001> DOI: 10.1037/qap0000196
 30. Walsh A, Kuhnke JL. (2023 in press). Prioritizing the prevention of diabetic foot disease: We each have a role to play. *Canadian Journal of Nursing Research*.
 31. van Netten JJ, Lazzarini PA, Armstrong DG, et al. Diabetic Foot Australia guideline on footwear for people with diabetes. *J Foot Ankle Res*[Internet]. 2018 Jan[cited 2023 Sep];15(11). Available from: <https://pubmed.ncbi.nlm.nih.gov/29371890/> DOI: 10.1186/s13047-017-0244-z
 32. Vincent-Edinboro RL, Onuoha P. Beliefs and self-reported practice of foot care among persons with type II diabetes mellitus attending selected health centers in east Trinidad. *Egypt J Intern Med*[Internet]. 2022[cited 2023 Sep];34(92). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9758455/> DOI: 10.1186/s43162-022-00180-2
 33. Chicharro-Luna E, Ortega-Avila AB, Requena-Martínez A, Gijon-Nogueron G . Fit for purpose? Footwear for patients with and without diabetic peripheral neuropathy: A cross-sectional study. *Prim care diabetes*[Internet]. 2021 Feb[cited 2023 Sep];15(1): 145–149. Available from: <https://pubmed.ncbi.nlm.nih.gov/32863150/> DOI: 10.1016/j.pcd.2020.08
 34. Tadinada, R, DuBourdieu, C, Khan T, Armstrong DG. Diabetic foot risk classification and shoe recommendations: Lessons from SALSA at Rancho Los Amigos. *The Diabetic Foot Journal*[Internet]. 2020[cited 2023 Sep];23(4): 64–69. Available from: <https://diabetesonthenet.com/wp-content/uploads/pdf/dotn41651c64838e4467194134feaf0e18f7.pdf>
 35. Waters N, Holloway S. Personal perceptions of the impact of diabetic foot disease on employment. *Diabetic Foot J*[Internet]. 2009[cited 2023 Sep];12: 119–130. Available

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36. Elakashif MML, Mahdy AY, Elgazzar SE. Evaluating the effect of establishing protocol for secure practice of diabetic foot patients regarding their needs, concerns, and medication use: A quasi-experimental study. Saudi J Biol Sci[Internet]. 2021 Jun[cited 2023 Sep];28(6): 3343-3350. Available from: <https://pubmed.ncbi.nlm.nih.gov/34121871/> DOI: 10.1016/j.sjbs.2021.02.081
37. Reddie M, Shallal C, Frey D. A scoping review of footwear worn by people with diabetes in low- and middle-income countries: Implications for ulcer prevention programs. Glob Health Sci Pract[Internet]. 2023 Apr[cited 2023 Sep];11(2). Available from: <https://pubmed.ncbi.nlm.nih.gov/37116930/> DOI: 10.9745/GHSP-D-22-00392
38. International Diabetes Federation & International Working Group on the Diabetic Foot. Time to act. (n.d.). Last accessed July 24, 2023. Available from: https://www.worlddiabetesfoundation.org/sites/default/files/Diabetes%20and%20Foot%20care_Time%20to%20act.pdf
39. Oxford Learner's Dictionary. Fear. 2023. Available from: https://www.oxfordlearnersdictionaries.com/definition/american_english/fear_1
40. Bishop A. Stress, social support and coping with a diabetic foot ulcer. Diabet Foot J. 2007;10(2): 76–82.
41. Upton D, Upton P. Psychology of wounds and wound care in clinical practice. New York: Springer; 2013.
42. Wukich DK, Raspovic KM, Suder NC. Patients with diabetic foot disease fear major lower-extremity amputation more than death. Foot & Ankle Specialist. 2018;11(1): 17-21. DOI:10.1177/1938640017694722
43. Taylor EP, et al. Design and development of a scale measuring fear of complications in type 1 diabetes. Diabetes Metab Res Rev. 2005;21: 264–70.
44. Kuhnke JL, Botros M, Hoover J. Mental health and patients living with diabetic foot complications. Wound Care Canada. 2020;18(2). Available from: <https://www.woundscanada.ca/docman/public/wound-care-canada-magazine/2020-vol-18-no-2/1731-wcc-summer-2020-v18n2-final-p-36-44-mental-health/file>
45. Hillson, R. Fear in diabetes. Pract Diab. 2020;40: 3-5. Available from: 10.1002/pdi.2462
46. Wang Y, Yu Q, Zeng Z, et al. Predictors of fear of diabetes progression: A multi-center cross-sectional study for patients' self-management and healthcare professions education. Front Public Health. 2022;10: 910145. DOI:10.3389/fpubh.2022.910145