The Foot 38 (2019) 54–60

Contents lists available at ScienceDirect

The Foot

journal homepage: www.elsevier.com/locate/foot

Original Article

Establishing a multidisciplinary partnership integrating podiatric care into the Quebec public health-care system to improve diabetic foot outcomes: A retrospective cohort

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ARTICLE INFO

Keywords:
Diabetic foot ulceration (DFU)
Multidisciplinary team (MDT) approach
Podiatry
Podiatrist
Clinical management

ABSTRACT

Diabetic foot ulcers (DFUs) are one of the main complications of diabetes affecting many Canadians that need to be effectively managed. There is limited data concerning outcomes of Canadian patients with DFUs treated with a team approach in the public health system. Podiatrists are known to be key members of a multidisciplinary team approach to DFUs management, but in Quebec, Canada, they are only available in private practice. The aim of this study is to evaluate diabetic foot outcomes after integrating podiatric care into in-hospital wound care clinic settings. A 12-month retrospective cohort study was conducted into a new organization named the Pododiabetology University Center (PUC), which is described in this article. Healing rate and healing time were the outcomes measured. The analysis was performed by comparing data collected before and after the integration of the podiatrists. Preliminary results indicate that 73.2% of DFUs (n = 52) healed in an average of 19.8 weeks (time to wound closure). Previous data collected on 15 individuals before the integration of podiatric care showed a 27.3% of DFUs resolved in 44.6 weeks. The findings suggest that a patient with DFUs who receives wound care from a multidisciplinary team that includes a podiatrist can improve both their healing rate and time. An integrated multidisciplinary approach including podiatrists for patients affected by acute DFU is highly suggested in the literature in order to reduce the number of hospitalizations, amputations and financial burden, which are variables that could be evaluated in further studies.

1. Introduction

Diabetes is a worldwide disease with an increasing incidence. It afflicts 2.7 million Canadians, from which 345,000 will develop a diabetic foot ulcer (DFU). This is based on the lifetime incidence of DFUs, which is estimated at 15%–25% for people with diabetes [1,2]. The annual cost of DFU and related care is estimated at Can$21,371 per incident case [3]. The 5-year mortality rate following a DFU episode is between 43% and 55%, and up to 74% with a lower-extremity amputation [4]. The risk of death at 5 and 10 years is respectively 2.5 and 2 times higher for patients with DFUs than patients with diabetes but without a DFU. DFUs should be seen as a major warning sign for mortality in people with diabetes, and as such, they require closer monitoring and medical follow-up [5,6]. However, diabetic foot complications can be partially avoided by early detection and appropriate management strategies (wound care, offloading, education [7,8]). Proper preventive foot care is also a key management strategy for DFUs [9]. Although well documented in the guidelines, many patients with diabetes still do not receive preventive foot care prior to ulceration. Two reports from the Canadian Institute for Health Information (CIHI) highlight the priority for the management of DFUs and report several disparities in diabetic foot healthcare. Wounds are a heavy burden for the healthcare system and need more support in Canadian hospitals [10,11]. One strategy for the integrated foot care is the multidisciplinary team (MDT) approach. It has been shown to reduce DFUs, recurrences and amputations. Multidisciplinary healthcare centers in Europe and in the United States reported that this approach helped reducing amputation rates by 49%–85% [7,12–14]. As part of a MDT approach, podiatrists have been suggested to serve as “gatekeepers” for the prevention and management of diabetes-related foot complications. Integrated foot care programs also highlight their role in MDT approach [7,15]. Studies have demonstrated that the management of people with diabetes by a specialty multidisciplinary podiatric medical team and podiatrists is associated with lower rates of ulcerations and

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https://doi.org/10.1016/j.foot.2018.10.001
Received 26 June 2018; Received in revised form 4 September 2018; Accepted 2 October 2018

amputations, thereby reducing healthcare costs [16–18]. Podiatric cares in those with a history of DFUs can reduce high level amputation rates by 65–80% [19].

In other countries, the role of podiatrists becomes increasingly important with the implementation of guidelines and DFU cares algorithms [8,20]. Canadian best practice recommendations from Wounds Canada suggest that patients identify appropriate healthcare professionals and services, and consult a podiatrist according to their level of risk of having an acute DFU. They also suggest that all members of the team should be in one location. Patients with disabilities, which include many patients with diabetes, need further support [21]. There is thereby a problem of accessibility to a podiatrist in Quebec's public health system. To the authors' knowledge, podiatrists are mainly available through private practice, and there is no podiatrist working as part of an in-hospital primary care team for diabetic foot complications in Quebec. The present study hypothesized that the accessibility problem is linked to the lack of recognition of the profession by the public health system, the fact that the profession is not well known by the population, and the fact that diabetic foot care can be expensive in the private sector. Therefore, a podiatrist working in a hospital is more easily accessible and improves the outcomes on the DFUs, as stipulated in the literature [7,12,16–18,22]. The main objective of this study was to discuss the podiatrists work within a MDT approach for debilitating outcomes of DFUs. This study also aimed at evaluating diabetic foot outcomes after integrating podiatric care into an in-hospital wound care clinic settings. Healing rates and healing time were the outcomes measured. Then, the analysis was performed by comparing data collected before and after the integration of the podiatrist into the team. Also, an objective was to describe the establishment of a diabetic foot care team within in-hospital wound care clinic (WCC). This team, called the Pododiabetology University Center (PUC) includes a podiatrist at the Centre de santé et de services sociaux du Nord de Lanaudière (CSSSNL). This study involves the first data about the inclusion of a podiatrist into an in-hospital WCC setting of Quebec's public health system for DFUs outcomes in people with diabetes.

2. Methods

2.1. Description of the setting for a multidisciplinary partnership

The Wound Care Clinic (WCC) was established in 2006 at the CSSSNL. DFUs were a frequent and recurrent cause of consultation at WCC and multidisciplinary work was required for an optimal management, especially for offloading strategies, which are gold standard practices for evidence-based medicine [21]. WCC staff used to refer to external resources, such as private practice podiatrists and orthotists for the management of this aspect of wound care, and worked with the Local Community Service Center (CLSC) for support in wound care and follow-up. In 2014, a collaboration agreement was established between the CSSSNL and the Université du Québec à Trois-Rivières (UQTR), the only training school for podiatrists in Quebec, and both institutions designed the PUC's operation model. While the hospital has provided access to its facilities, patients, human and material resources, UQTR lent podiatric resources, in the form of a teaching podiatrist with 3 to 4 interns per week. UQTR also allowed accessibility to low-cost offloading devices through an on-campus podiatric clinic. A letter was sent to all physicians practicing in the CSSSNL area to inform them that the WCC had integrated the PUC. Fig. 1 describes the organizational chart of the WCC and PUC with the specific team's members in the setting. In the WCC, nurse (stoma therapist) coordinate the MDT. The nurse evaluates the patients with the collaboration of a physician. Following evaluation, the nurse may refer to internal resources according to the patient's need (infectiologist, vascular surgeon, etc.) and to external resources if necessary (offloading, wound care follow-up, etc.). In the PUC organization, patients admitted to WCC for DFUs are being evaluated and managed by the podiatrist and the interns in podiatry as a

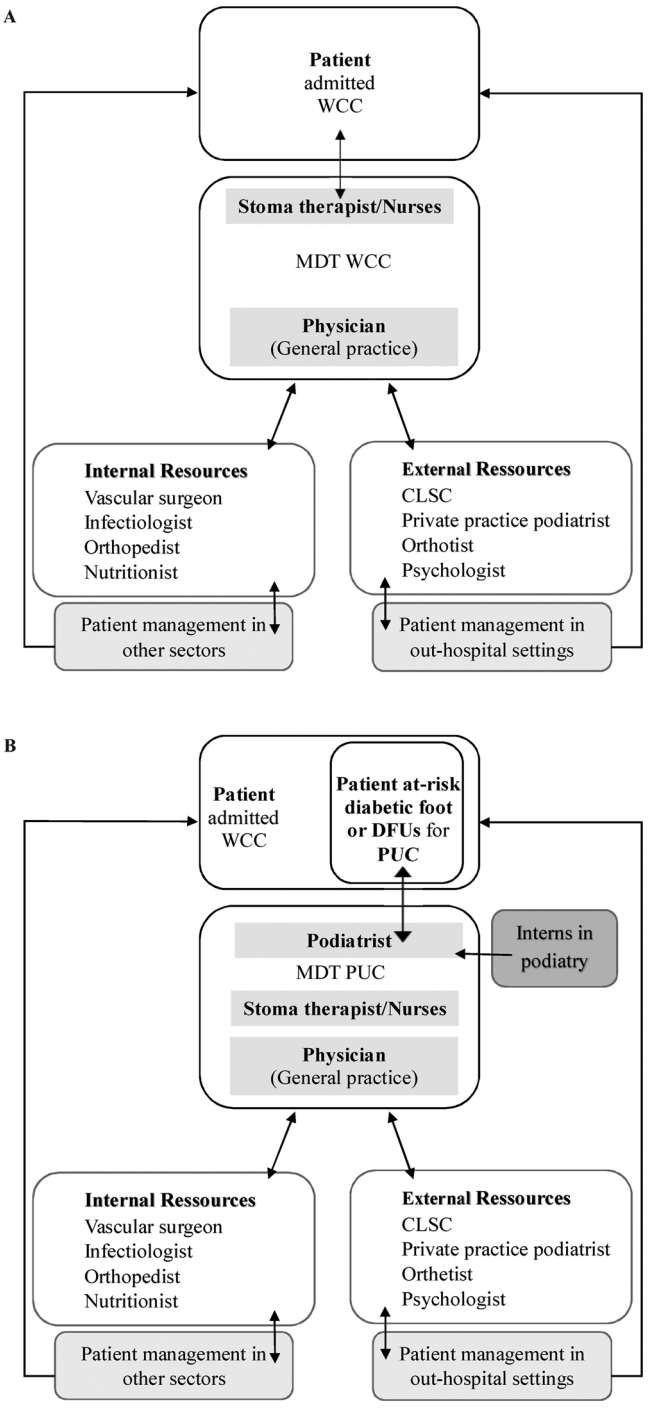

Fig. 1. Organizational chart of the wound-care clinic (WCC) (A) and of the Pododiabetology University Center (PUC) (B). Arrows represent the trajectory of references and show the interactions between the patient, different professionals and services. The dotted arrow represent triage of the at-risk diabetic foot for DFUs cases from WCC administrative support staff.

coordinator of the MDT. Then, the podiatrist collaborates with nurses, stoma therapist and physician of the WCC. The podiatrist can also refer to internal or external resources if it is needed as in the WCC. However, it is important to specify that the offloading modalities will be delivered directly at the PUC which is different for the WCC that they usually refer to external resources. There is usually a follow up to the offloading treatment every two weeks. This allows for better adherence to treatment and for adjustment of offloading treatment modalities according to patient's adaptation. Thereby, the core of the MDT in the WCC is the

nurse stoma therapist and is the podiatrist in the PUC and they are working in the same level of collaboration with other caregivers in both settings.

2.2. Data source, study population and sample

This retrospective cohort study was conducted in a Quebec (Canada) public hospital (CSSSNL) located in the Lanaudière area. Data from medical charts were used for the study, but remained the property of the CSSSNL. The hospital ethic committee approval (194-R, CSSSNL) was obtained and an agreement was established for the data extraction and diffusion. The present research did not require the educational institution ethics committee agreement (UQTR), since the podiatric practice is governed by the law of the province of Quebec, no medical procedure has been performed for the purpose of research and there was no patient enrolment. Medical charts of patients admitted to the CSSSNL between May 01, 2014, and April 30, 2015, were extracted from the database and reviewed by the authors. It was also decided to extract data from the medical charts of patients who had been admitted to the WCC between May 01, 2011, and April 30, 2012, as a comparative because no podiatrist was working in the PUC at this time. It was also the last year that WCC operated without a podiatrist and in 2014, the MDT and the PUC was well established.

The records included were those of adult patients, male or female (over 18 years old) with type I or type 2 diabetes, whose cause of admission was a DFU. A DFU was defined as a full-thickness break in the skin occurring on the plantar surface of either foot (sole, hallux and toes) [8]. Patients had to have received multidisciplinary wound care for DFUs in the WCC or PUC during the selected periods. Comorbidities such as smoking, neuropathy sensory (diagnostic with Semmes-Weinstein 10 g monofilament and vibration testing with the 128-Hz tuning fork), microvascular and macrovascular disease, hypertension, dyslipidemia, renal failure and previous amputation were also extracted. These comorbidities are potential confounders that are interacting with the healing process. The exclusion criteria were: other types of wounds (for example venous ulcer or arterial ulcer) even though they were treated in the WCC or PUC. Patients must have had at least two medical appointments with the WCC or PUC (initial evaluation and re-evaluation) and at least one DFU management intervention during the first evaluation appointment to be included in this study.

2.3. Interventions on DFUs

All patients were managed in accordance with best-practice guidelines established by the Canadian Association of Wound Care (CAWC), known today as Wounds Canada, as well as the guidelines established by the International Working Group on the Diabetic Foot (IWGDF) in MDT approach [8,21]. However, interventions on DFUs were very heterogeneous from one patient to another. Divergences in interventions can lead to research bias, which explains why therapeutic interventions cannot be assessed in this study. Then, the difference brought by the establishment of the PUC was assumed to be of the podiatrist interventions at the hospital, supported by UQTR. By the nature of his formation, the podiatrist knowledge in physiopathology and biomechanics of DFUs, podiatrists have a preventive approach based on the underlying cause of DFUs. In PUC, they provided a local access to offloading devices at CSSSNL such as total contact cast, removable offloading devices (such as surgical shoes, and Aircast and custom made insoles, etc.). They are also trained in preventive foot care (nails and calluses) which are often related to UPD problems which nurses do not systematically manage in WCC.

For all patients, the usual care was provided; a specific patient-based wound care was then provided, with different durations, using local and systemic modalities. Wounds were evaluated at each visit, and interventions were based on each evaluation according to the guidelines. The number of follow-up visits (one to 28) and the time between appointments were also very different between patients and were dependent on each case and patient's need. Podiatrists cannot prescribe antibiotics in the Province of Quebec, so patients with bone infections (osteitis) were treated systematically with antibiotics in the management in WCC or PUC. Patients were sometimes integrated in WCC or PUC without knowing if there was an underlying osteitis and were treated after their first evaluation. Follow-up visits were also planned depending on the resources' availability. The education strategies (time, exposition, modalities) are not specified in the medical records, but all patients received basic education tips about topics such as glycaemic control and diabetes self-management. Educational emphasis on DFU cares and sustained preventive foot care to diminish the risk factors leading to DFU recurrence and amputation has been done in the PUC by a podiatrist. Offloading devices, which were not always present for the management strategies, were also different and used with a variety of onset and duration. The devices were given on site by PUC. No data was available on adherence to treatment. There is also a lot of heterogeneity on the patient exposure to the different team members and internal and external resources. Obviously, patients had access to a podiatrist in-hospital resources only at the PUC and they were widely exposed (at least 30 min per visit) to this professional (see Fig. 1 for the organizational chart). The retrospective cohort and the heterogeneity of intervention parameters limit the control of research variables, so the podiatric intervention in the PUC was used as a global intervention to measure the effect on the outcomes.

2.4. Outcomes measures

The first outcome of this study is the DFU healing rate in a one-year period (May 01, 2014, to April 30, 2015), for DFUs treated in the PUC, which MDT approach including podiatric interventions. DFUs were considered healed if there was complete epithelialization with restoration of functional integrity [23]. The other outcome was the healing time, in weeks, for the management of DFUs from diagnosis to closure during the period of the study. If the DFU never closed during the study period, the maximum time was used.

2.5. Statistical analysis

Demographic data were reported using descriptive statistics. Healing rate as a categorical variable (heal; yes/no) was reported as percentages. Healing time, in weeks, as a continuous variable, was presented as a mean with a standard deviation. For the healing rate, we tested the difference between the two sources of independent data (May 01, 2011, to April 30, 2012, and May 01, 2014, to April 30, 2015), by using the chi-square adjusted model. For the healing time on 52 weeks, a truncated mean with a correction by the winsorized statistical measure of central tendency was tested. A classic Z-test of mean comparison was performed on the winsorized means. This correction helps avoiding an underestimation of healing time, which considers the maximum time of the study for DFUs that never healed. P value < 0.05 was considered statistically significant. Statistical analyses were performed by SPSS Statistics v. 24 (IBM, USA) and manual calculation (winsorized correction). Patients with DFUs that had an incomplete follow-up, and deceased patients were considered having unhealed DFUs and were included in the analyses based on the worst-case scenario. Statistical tests used the sample size (n) for calculations, and the number of UPDs was sometime greater than one. In these individual cases, means were calculated and used for data analyses.

3. Results

After examination of the charts identified at the CSSSNL, 67 patients, managed in both settings, were found to meet the inclusion/exclusion criteria. Of these, 15 and 52 patients were treated respectively in the WCC and in the PUC. From this last group, after incomplete

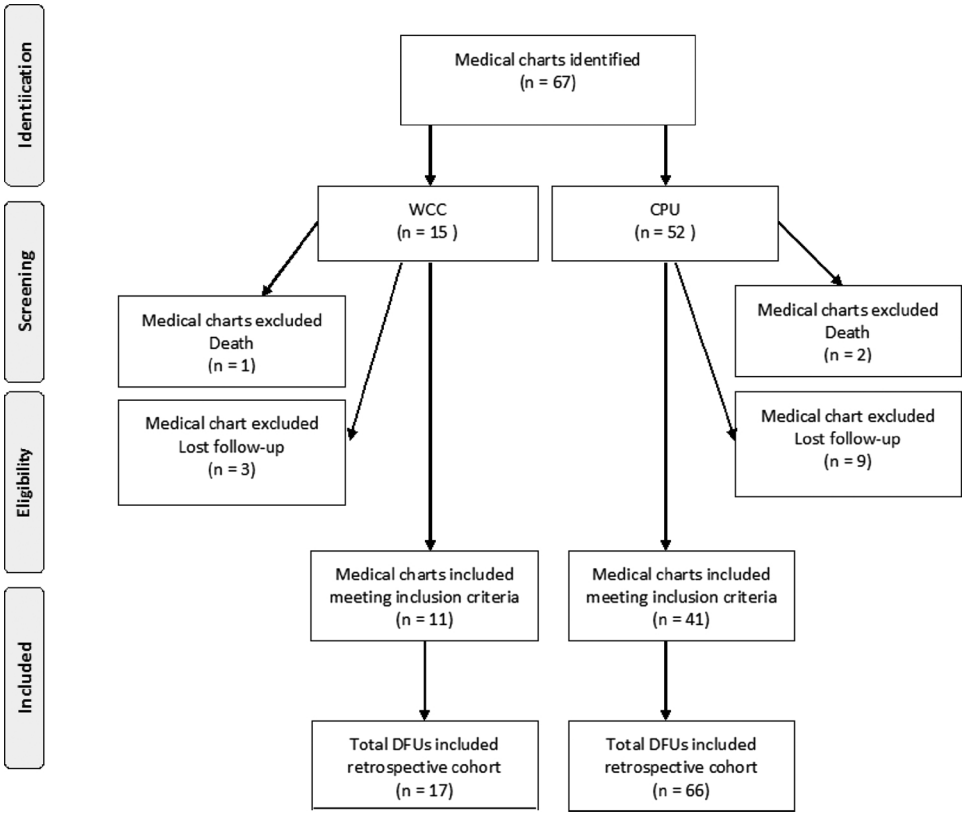

Fig. 2. Flow diagram for retrospective data included in WCC (2011–2012) and in PUC (2014–2015). In some patients, the number of DFUs is greater than one which explains the difference between medical charts included versus the number of DFUs included.

data management (lost to follow up and death), 11 patients with a total of 17 DFUs, and 41 patients with a total of 66 DFUs, respectively for WCC and PUC, whose data were used for the statistical analysis. A flow diagram of the included retrospective data is presented in Fig. 2. Baseline demographic data of these patients are represented in Table 1. The majority of patients from both cohorts were men (about 70%), but had a mean age of 53 years for the 2011–2012 cohort and of 65 years for the 2014–2015 cohort. Despite this, there was no significant difference in age and sex among patients in the two different care settings when the patients lost to follow up and deceased patients are withdrawn, which allows comparing the data for analysis with the postulate of podiatric intervention in the PUC as a global intervention to measure the effect on the outcomes. The majority of patients had diabetes type 2, and the predominant comorbidity in both settings was neuropathy. The majority of DFUs were 1A or 2A or 3B according to Texas University (TU) classification for diabetic foot which including 82.4% of DFUs in WCC and 92.4% in PUC [24]. Osteitis were present in two DFUs for each settings. Ischemic DFUs accounted for 5.9% in WCC and 4.5% in PUC.

In general, the 2011–2012 cohort had more comorbidities than the sample size than in the 2014–2015 cohort. There were also more smoking patients in WCC. In terms of wounds, the predominant site of DFUs was submetatarsal for both cohorts (37.9% and 52.9%). The majority of UPDs were located at the midfoot (64.7%) for WCC patients and at the forefoot, including either toes or hallux (48.5%) in the PUC. Clinical interventions were performed on 17 DFUs for the 2011–2012 cohort within 81 consultations, with an average of 5.4 consultations per DFU. For the 2014–2015 cohort, 66 DFUs were treated within 435 consultations and an average of 8.4 consultations per DFU. The median number of consultations per DFU is higher in PUC. The median is respectively 4 and 6. This means that patients in the PUC usually received more clinical interventions. Dispersion of data is substantially the same, but the minimum time of healing is respectively 5 and 1 weeks for WCC and PUC.

The healing rates of DFUs and healing time in the two care settings are presented in Table 2. After a one-year window of DFUs management in CSSSNL in the PUC, the healing rate was 73.2%. The previous data from the WCC cohort showed a healing rate of 27.3%. There was a significant difference between the two cohorts ($\chi^2 = 39.817$, $p < 0.05$). The one-year healing time for all DFUs treated was 44.56 weeks in the WCC. It was significantly shorter at the PUC with a mean healing time of 19.82 weeks ($p < 0.001$). The mean DFU healing time was significantly shorter in the PUC compared to the WCC (24.67 weeks in the WCC compared to 16.83 weeks in PUC ($p < 0.001$).

4. Discussion

Preliminary results from this retrospective cohort study show a trend toward an improvement of healing time and healing rate in the PUC management of DFUs than in the WCC. However, this discussion nuances this finding. From a general point of view, DFU management is complex and often requires the expertise of a variety of specialists in MDT approach, including podiatrists, to achieve optimal outcomes [25]. Recent studies have shown that a MDT care approach improves healing rates and amputation-free survivals in patients with lower extremity wounds. Specialty diabetic foot clinics reduce the incidence of DFUs and amputation in high-risk patients [26–29]. Thereby, the findings correspond with this scientific literature, although limitations were identified.

First, an experimental limitation is the heterogeneity of interventions (exposure, duration, intensity) because of lack of documentation in medical charts. Clinical information was sometimes incomplete, and the authors dealt with this known issue. It was assumed, for the needs of the data analysis, that the podiatric intervention in PUC as a global intervention and the only difference between both cohorts. Although it would be a hasty conclusion to completely justify the outcomes improvement only by the presence of podiatrists, the results observed in

Table 1
Patient characteristics.

	2011–2012	2014–2015
Age (years old)		
Mean ± SD	53.3 ± 2.8	64.9 ± 1.7
[Min, max]	[36, 72]	[30, 98]
Tertiles n (%)		
T_1(18–40)	2 (13.3)	1 (1.9)
T_2 (41–59)	6 (40.0)	34 (65.4)
T_3 (≥60)	7 (46.7)	17 (32.7)
Gender n (%)		
Male	11 (73.3)	37 (71.2)
Female	4 (26.7)	15 (28.8)
Comorbidities n (%)		
Smokers	2 (13.3)	2 (3.8)
Neuropathy (sensory)	13 (86.7)	42 (80.8)
Microvascular disease	3 (20.0)	10 (19.2)
Macrovascular disease	3 (20.0)	15 (28.8)
Hypertension	11 (73.3)	19 (36.5)
Dyslipidemia	11 (73.3)	13 (25.0)
Renal insufficiency	6 (40.0)	18 (34.6)
Diabetes type 1	2 (13.3)	2 (3.8)
Diabetes type 2	13 (86.7)	50 (96.2)
Osteitis	2 (13.3)	2 (3.8)
Amputation	1 (6.7)	2 (3.8)
Recurrence	1 (6.7)	4 (7.8)
Site of ulceration n (%)		
Total forefoot	4 (23.5)	32 (48.5)
Toes	2 (11.8)	15 (22.7)
Hallux	2 (11.8)	17 (25.8)
Total mid-foot	11 (64.7)	27 (41.0)
Submetatarsal (1–5)	9 (52.9)	25 (37.9)
Mid-tarsal	2 (11.8)	2 (3.1)
Rearfoot	2 (11.8)	7 (10.6)
Heel	2 (11.8)	7 (10.6)
TU classification		
1A	12 (70.6)	52 (78.8)
2A	2(11.8)	7 (10.6)
3A	0 (0)	2 (3.0)
2B	2 (11.7)	0 (0)
3B	0 (0)	2 (3.0)
1C	1(5.9)	1 (1.5)
3C	0 (0)	2 (3.0)
Total of consultations	81	435
Mean ± SD	5.4 ± 1.1	8.4 ± 1.0
[Min, max]	[1, 17]	[1, 28]
Median	4	6

Table 2
DFUs healing rate and healing time.

	2011–2012	2014–2015	p Value[c]
N	11	41	
Healing rate: n (%)	3 (27.3)	30 (73.2)	< 0.05*
Healing time (weeks)[a] ± SD	24.7 ± 11.0	16.8 ± 14.4	< 0.001*
[min, max]	[5, 43]	[1, 44]	
Healing time (weeks)[b] ± SD	44.6 ± 4.6	19.8 ± 15.9	< 0.001*
[min, max]	[5, 52]	[1, 52]	

[a] Includes healed ulcers only.
[b] Includes all ulcers.
[c] Chi-square adjusted model test for healing rate and classic test Z for healing time.
* Statistically significant.

this study were, indeed, mostly linked to their joining the PUC. Patients had more clinical exposure interventions in PUC (mean consultations by DFUs and median), which could influence the outcomes in favor of intervention in accordance with guidelines. The nature of clinical interventions may also have been different and have had diverse effects on the outcomes, according of their level of evidence to manage DFUs [8,21]. Indeed, with what we know about the PUC organization, the improved outcomes of DFUs could be related with the offloading strategies in-hospital setting and close follow up with patients associated with the presence of podiatrist in the MDT. The PUC patients are given their offloading modalities during consultations, they are being explained how to wear it, and a strong emphasis is being put on convincing patients to wear it at all time. The PUC also offers a wider variety of offloading modalities compared with the WCC, including half shoes and total contact casting. It has been shown that dispensing offloading modalities and demonstrating to patients how to use it during consultations improves DFUs outcomes [30,31]. In the WCC, MDT referred to external resources for offloading strategies. Guidelines from Wound Canada relate the clinician's lack of knowledge regarding the role of plantar pressure peaks and mechanics in physiopathology of DFUs, the lack of resources to acquire proper footwear or orthotics and to fit or prescribe appropriate offloading devices [21]. In addition, PUC patients have been more often exposed to the professional (linked to the number of consultations), so this can affect the effectiveness of patient education and self-management. Preventive foot care (nails and calluses) were also managed by podiatrists according to the patients' needs. Studies have shown that educational focus, ongoing professional foot care of 1–3 months and properly fitting footwear as effective strategies to manage DFUs [7,9,32,33]. These interventions are inherent to podiatric practice [34].

Second, retrospective data and experimental design suggest the presence of selection bias and information bias. The increased number of people meeting the inclusion criteria for 2014-2015 (n = 52) versus 2011–2012 (n = 15), considering a similar prevalence of DFUs for the area between the two periods, may relate a misclassification bias. The real amount of DFUs (diagnosed and managed) might have been underestimated in both settings, particularly in the WCC. As a matter of fact, we suggest that the trajectory of care for DFU was better defined in the PUC than in the WCC because of the additional resources that brings the podiatrist in the in-hospital MDT. This supports the literature of the leading role of podiatrists in DFUs management MDT and the need to define care trajectories for DFUs [13,35]. This also influences the outcomes, and no data in the medical charts collected allowed the analysis of this effect. What it is known by the description of the PUC multidisciplinary partnership is that the trajectory of care for a patient admitted in the PUC was defined by the MDT, including the podiatry interns and their professor who carried out consultations in PUC, follow up every two weeks (when it is possible) on adherence to offloading. A letter was sent to all the physicians of Lanaudière's area announcing the creation of PUC with its target clientele and the arrival of a podiatrist in the hospital for evaluation and support. That could explain a certain convergence of DFUs cases (number of patients treated by PUC compared to WCC). In the WCC, hospital workers were aware of the WCC, but since all types of wounds were treated, the waiting time was long and several patients were treated in other care settings, for example during hemodialysis treatment by the nurses in this unit. No special communication was reported for WCC. Missing data about adherence to treatment is also a bias.

Third, the two cohorts might not have equivalent population because several factors can influence the outcomes, even if they can both be statistically compared. In fact, the comparative cohort of 2011–2012 seems to include sicker patients, according to demographic data. It is known that the prevalence of comorbidities and risk factors for chronic disease such as diabetes tend to increase with age; however the mean age in the comparative cohort is about 10 years old younger [36]. The age can play a role in the outcomes especially influenced by vascular disease [37]. Regarding hypertension, the PUC group, with about 37% of high blood pressure, is inconsistent with literature, where about 69% of patients with diabetes also have high blood pressure [38]. Co-founders such as comorbidities like smoking and microvascular disease, patient compliance to treatments and ulcer location also influence the healing process and the healing time of DFUs [7,33,39,40]. According to TU DFUs classification, deeper, ischemic and infected DFUs are more complicated to heal. The both group may not be comparable in term of ulcer localization (more in midfoot for WCC and in forefoot for PUC)

and there is more osteitis in the 2011–2012 group compare with the sample size.

Finally, DFU recurrence and the number of amputations between both cohorts are similar and not statistically significant. The percentage of recurrence in the PUC is low (7.8%) compared to the fact that after a first DFU episode, the risk of recurrence is about 30–87% [33]. The number of amputations is also low for both settings regarding published clinical data on amputation which estimates that 8–10% of people with DFU will require an amputation within a year [41,42]. This is clinically significant and in favor of the PUC regarding CSSSNL patients who experienced less amputation and less recurrence than the theoretical values. The overall time to heal of DFUs was not recorded because of the one-year window of this study and the retrospective source of data, but could be meaningful in another experimental protocol. Even if the experimental design of the present study is descriptive and highlights mainly the involvement of podiatrists in Quebec hospital wound care teams, we achieve the primary purpose to describe the new organization of PUC, an innovative initiative clinical management for DFUs in Quebec. In accordance with the scientific evidences and clinical guidelines, the role of podiatrists and their implication on DFUs management need to be better defined in Canada and in healthcare systems. A strength of this study is that it reveals the pertinence of having podiatrists involved in the first-line treatment of DFUs. A study from Ontario about the management of DFUs in an interprofessionnal organization which includes chiropodist (podiatrist in Ontario) had similar conclusions than our study [29]. PUC is the first Quebec partnership between podiatrists and a primary WCC of the public healthcare system. According to our knowledge, this has not been done previously in Quebec.

5. Conclusions

In conclusion, with the consideration of methodological flaws, this study's results show a certain effect on healing rate and healing time of DFUs, in favor of podiatric interventions for in-hospital setting in collaboration with other healthcare workers on this issue. It validates our initial research hypothesis. A practitioner with the podiatrist's field of competence should be integrated into hospital structures and MDT for treating DFUs. This would be complementary to the needs to cover good practice recommendations for the management of diabetic foot. Further studies should follow this one because of its possibilities of for new evidence-based medicine and niche opportunities. Data are needed to reinforce these results in terms of which specific interventions influenced outcomes and to avoid methodological bias as much as possible by controlling population and experimental variables. This innovative and practical approach can help develop new Canadian evidences in this field and support existing resources.

Acknowledgments

The authors wish to thank the WCC of the CSSSNL for their precious collaboration, especially Luce Martineau and Dre Marie-Frédérique Thibeault, and the podiatrists and students from UQTR in the PUC for their implication. We also thank Louis Laurencelle for his valuable help for the statistical analysis.

Author Contributions

VB contributed to the conception and design of the study with LC, analyzed the data, interpreted the results and drafted the manuscript. SH created the PUC and contributed to data collection. LC and SH revised the manuscript critically and gave final approval for the version to be published.

Conflicts of interest

None.

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