

Patient perceptions of barriers to attending annual diabetes review and foot assessment in general practice: a qualitative study

William Ju^A, Ibrahim S. Al-Busaidi^{A,*} , Helen Lunt^{B,C} and Ben Hudson^A 

For full list of author affiliations and declarations see end of paper

*Correspondence to:

Ibrahim S. Al-Busaidi
Department of Primary Care and
Clinical Simulation, University of Otago,
Christchurch, New Zealand
Email: ibrahim.al-busaidi@otago.ac.nz

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ABSTRACT

Introduction. Regular diabetic foot checks, at least annually, are important for early identification of risk factors and prevention of ulceration and amputation. To ensure this, most general practices in Aotearoa New Zealand (NZ) offer free annual diabetes reviews (ADRs) which include a comprehensive foot evaluation. However, attendance rates at these ADRs are low. **Aim.** To explore patients' perspectives on the barriers to attending ADRs and foot checks. **Methods.** Semi-structured interviews with people with type 2 diabetes who were overdue their ADR ($n = 13$; 7 women, 6 Māori) from two urban practices were conducted. Interviews were audio recorded and transcribed verbatim and then analysed using an inductive thematic analysis approach. **Results.** We identified three key themes demonstrating barriers to attendance: healthcare-associated factors (suboptimal clinician-patient relationship, not having a consistent general practitioner (GP)); patient-related factors (co-morbid health conditions, issues surrounding identity, and logistical issues); and systemic factors (COVID-19 pandemic, travel distance to the practice, unawareness of available foot care services). Participants' feedback focused on patient-centred approaches for improvements to service delivery, for example using online educational materials, and utilising culturally appropriate models of health including Te Whare Tapa Whā and Whānau Ora approach. **Discussion.** We identified several barriers to attendance, some of which are potentially modifiable. Addressing modifiable barriers and incorporating suggestions made by participants may improve access to the ADR and reduce non-attendance. Further participatory action research could explore these insights in ways that facilitate tino rangatiratanga (self-determination) and palpable action.

Keywords: annual diabetes review, attendance, barriers, diabetic foot, general practice, New Zealand, perceptions, primary care.

Introduction

People with diabetes are at greater risk of developing foot complications including ulceration and lower-limb amputation. Both diabetic foot ulcers and amputation result in significant morbidity and mortality, contributing to reduced quality of life and poor physical and psychological health.^{1–3} Early identification of the at-risk patient through regular foot checks is, therefore, crucial in the prevention of diabetic foot ulcers.⁴

In Aotearoa New Zealand (NZ), guidance from the NZ Society for the Study of Diabetes and Te Whatu Ora (Health New Zealand) aligns with international standards of diabetes care which recommend that all people with diabetes should receive at least a yearly comprehensive foot evaluation.^{4–6} Diabetic foot checks, which include foot inspection, neurovascular assessment and risk stratification, are performed in a primary care setting often as part of the annual diabetes review (ADR). The ADR also involves assessment of other diabetes-related complications and risk factors through measurements of blood lipid levels, urine albumin/creatinine ratio, estimated glomerular filtration rate (eGFR), blood pressure and other variables such as smoking status, hypertension, dyslipidaemia and HbA1C.⁷ The ADR is recommended and funded by the Te Whatu Ora as a quality standard for diabetes care in NZ.^{8,9}

WHAT GAP THIS FILLS

What is already known: Diabetes-related foot problems affect around one-third of people with diabetes in New Zealand. Early identification of the at-risk patient is crucial in the prevention of diabetic foot ulcers. Annual diabetes reviews (ADRs) delivered by general practice teams that include a comprehensive foot evaluation and risk categorisation are recommended by local and international guidelines.

What this study adds: People with type 2 diabetes identified important barriers to attending ADRs several of which are amenable to change. Participants provided suggestions on how to improve the delivery of the ADR in primary care, including the utilisation of Māori tailored models of care such as the Te Whare Tapa Whā model and Māori support workers.

A recent study estimated that just over one-third (35%) of patients with diabetes had at least one or more diabetes-related foot problems, 13% of whom had a high-risk diabetic foot.¹⁰ In addition, 58% of lower-limb amputations in NZ are performed in people with diabetes.¹¹ Indigenous Māori with diabetes are 65% more likely to undergo a major lower-limb amputation compared to their counterparts of European/other ethnicity.¹²

Despite the high prevalence and burden of foot disease in people with diabetes, the rate of foot checks performed in general practice is low in some geographical areas in NZ.¹⁰ In Canterbury, NZ, unpublished data suggest that documented annual foot assessments occur in just over 50% of people with diabetes (Pegasus Health, pers. comm.). The perspectives of people with diabetes on ADRs have not been well studied. In this qualitative study, we sought to explore the barriers to attending ADRs in general practice for people with diabetes who were overdue for an ADR.

Methods

Participants

We recruited 13 participants from two urban general practices in Ōtautahi Christchurch, NZ (Table 1). Eligibility criteria included being ≥ 18 years of age with type 2 diabetes, enrolled in one of the selected practices at the time of recruitment for at least 1 year and having not attended their ADR in the previous 12 months.

Permission was initially sought from practice managers and clinical directors to help assist in recruitment in this study. Clinical directors of participating practices facilitated the identification of our target population; patients with type 2 diabetes who were managed by their GP teams and who had been invited to attend the ADR and foot check over

Table 1. Characteristics of participating general practice (GP) centres.

Characteristic	GP 1 N (%)	GP 2 N (%)
Total population	4282	5985
Female	2262 (52.8)	3223 (53.9)
Age ≥ 65 years	707 (16.5)	910 (15.2)
Māori	439 (10.3)	746 (12.5)
NZ European	3587 (83.8)	4100 (68.5)
Pacific Peoples	33 (0.8)	319 (5.3)
Other ethnicity	223 (5.2)	820 (13.7)
Deprivation (NZDep quintile 4 and 5)	635 (14.8)	2117 (35.4)

the past 12 months. Identified lists of patients were screened and overdue patients (defined as those who had not attended their ADR in the preceding 12 months) were identified and invited to participate in the study via email, text-messages, telephone, and face-to-face contact. Due to the disparities in diabetes care and outcomes for the indigenous population of NZ,^{10–12} Māori were intentionally oversampled. A stratified purposeful sampling method was used, designed to identify those with a range of ages, health status and to oversample those identifying as Māori. Participants were recruited until data saturation was reached, which was determined as and when no new themes from the interviews were identified.

Procedure

Eligibility of participants was first determined, and those eligible were recruited into the study. Written consent was obtained before any data collection started. Basic demographic data were collected through telephone encounters.

Individual semi-structured interviews were undertaken between November 2021 and January 2022 by the first author (W. J.), who was trained in qualitative interviewing. The interviews were either through telephone or videoconferencing (Zoom). An interview guide (Supplementary File S1) was used and contained a list of questions and topic areas to be covered. The interview guide was developed by the research team and subsequently piloted on a patient with diabetes attending one of the participating practices. A whānau ora approach, where the family is encouraged to also contribute to the interview, was used. Only one participant decided to include a support person in their interview. Field notes were taken during the interviews, and these were used to help the initial analysis of the data. After the interview, participants were offered a \$50 supermarket voucher as koha (gift). Repeat interviews were not carried out, and transcripts were not returned to participants for comments. Findings were not provided to participants.

Data analysis

All interviews were audio-recorded and transcribed verbatim by WJ. NVIVO (Release 17.1, QSR International) was used for data management. An inductive thematic analysis was used to analyse the data. Analyses were done whilst interviews were taking place, and also involved the process of data immersion as two authors (WJ and ISA) relistened to audio files and read and re-read the transcripts as the interviews were completed. After three interviews were completed, two members of the research team conducted a preliminary thematic analysis as outlined by Braun and Clarke, which involved familiarisation with the data and initial coding.¹³ Following this, the research team discussed their ideas of the initial codes, themes (developed from initial codes) and sub-themes present within the interview and agreed upon an initial thematic map. This thematic map was then used to analyse the following interviews with revisions being made in a recursive manner as an ongoing process during the analysis, as new themes and sub-themes were identified from the following interviews.¹⁴ To maintain consistency, one researcher (WJ) coded and analysed all interviews. The study was reported using the COREQ checklist (Supplementary File S2).¹⁵

Reflexivity

WJ brought an outsider perspective as a senior medical student who has not worked in any of the participating medical centres. ISA is a male general practice trainee and researcher with an BMedSc (Hons) degree who brings an insider perspective, and expertise in diabetes-related foot disease research. HL (Doctor of Medicine) is a female diabetes physician and educator, with extensive diabetes research experience who brings an outsider perspective. BH is a male general practitioner, researcher and educator who is involved at the leadership level in primary care in Christchurch, NZ. At the time of data collection, both ISA and BH were working at the two participating medical centres but were not directly involved in participant recruitment or their clinical care. Both ISA and BH were unaware of who the participants chosen were as patient recruitment was conducted by WJ. While WJ and ISA have received education regarding whakawhanaungatanga and Māori models of wellbeing, no Māori researchers were involved in this study, so it is possible that this may have impacted the project, for example, in the interview dynamics and data analysis.

Ethics

Māori consultation was conducted, and ethical approval was obtained from the University of Otago, Christchurch (H21/141).

Results

Thirteen out of 22 people who had not attended their ADR and foot check and were able to be contacted agreed to participate in the study. Interviews averaged a mean of 44.3 min (range 20–70). Around half (46.2%) of participants were Māori. Six participants (46.2%) had no end-organ complications. The mean ($\pm$ s.d.) diabetes duration and HbA1c were 11.8 ± 8.1 years (range 1–21.9) and 60.3 ± 18.3 mmol/mol (range 43–113), respectively. Participants' demographic and clinical characteristics are displayed in Table 2.

Overall, the explanations for non-attendance comprised three main themes which were further divided into sub-themes. These main themes were healthcare-related factors, patient-related factors, and systemic factors.

Healthcare-related factors

A major factor affecting participants' decision to attend the ADR was healthcare and system related, this included those who did not receive an invitation to the ADR and those who reported that their suboptimal relationship with their healthcare provider dissuaded them from attending the clinic.

Of those who reported that they had not received an invitation to the review, one reported that they thought this was largely due to their diabetes not being severe.

Yeah, I don't think that I've actually been told about any services. I know there are diabetes services because I used to have diabetics [patients with diabetes] in the rest home and I know the diabetes centre used to come out and see them, so I know that's there but because I... am just a low diabetic person, it probably hasn't really warranted that or there wasn't a need for it. (pt4, New Zealand European female, age group ≥ 70)

Some patients mentioned that a previous poor experience with a healthcare provider, dissuaded them from attending the clinic. One patient stated that they felt upset that their healthcare professional would give contradicting statements and that they felt they were not advocated for properly.

No, but I don't want to attend the diabetes clinic because of my nurse. My nurse was telling me one thing, and then telling me another... She's supposed to be my advocate, she doesn't tell me one thing and then tell my doctors something totally different. (pt7, New Zealand European female, age group 50–59)

Several respondents commented that they felt that clinicians had patronising views of patients.

[Clinicians] see through a lens, a filter, that suggests that if a person is ill, they also have a diminished capacity to understand. (pt10, New Zealand European male, age group ≥ 70)

Table 2. Characteristics of study participants.

Characteristic	N = 13 ^A
Gender	
Male	6 (46%)
Female	7 (54%)
Mean age $\pm$ s.d., (Range) years	58.7 $\pm$ 8.4 (45–78)
Age category	
≤ 49	1 (7.7%)
50–59	7 (53.8%)
60–69	3 (23.1%)
≥ 70	2 (15.4%)
Ethnicity	
Māori	6 (46.2%)
NZ European	6 (46.2%)
Other	1 (7.7%)
Highest level of education	
Secondary	8 (61.5%)
Tertiary	5 (38.5%)
Employment	
Employed	8 (61.5%)
Retired/beneficiary	5 (38.5%)
Deprivation (NZDep quintile)	
1 (least deprived)	5 (38.5%)
2	1 (7.7%)
3	2 (15.4%)
4	2 (15.4%)
5 (most deprived)	3 (23.1%)
Community service card (CSC) ^B status	
Yes	4 (30.8%)
No	9 (69.2%)
General Practice (GP) centre	
GP 1	6 (46.2%)
GP 2	7 (53.8%)

^AValues are presented as *n* (%) unless otherwise specified. s.d., standard deviation.

^BThe CSC is a means-tested benefit card (indicates low income) that entitles healthcare users to higher levels of government payment for general practice services (consultations and prescriptions), thereby reducing co-payments.¹⁶

Patient-related factors

Some of the participants reported that their decision not to attend the annual review stemmed from individual factors. These included competing personal demands (including conflict with work and other activities of daily living, co-morbid mental health conditions, forgetfulness, personal identity issues and being in current good health).

Out of the seven participants that mentioned how competing personal demands was the main barrier to access, many reported having to be absent from work as the main reason for non-attendance at the ADR.

I mean, as I say, I can go [to the appointment]. The thing is that it's very hard to get time off work... (pt5, Māori male, age group ≤ 49)

Other patients had varying working schedules that did not adhere to the traditional 9-to-5 workday, which meant that attending the clinic could be difficult.

I have to have things planned in advance quite a bit to make sure that I can get to these things. As I say, next week until Christmas, I am doing nights, but as soon as we roll over to Christmas to Boxing day, I am then doing days, where I start at 5 in the morning and don't finish until 6 or 7 at night. And I am a relief driver... so I can't get anybody to fill in. (pt5, Māori male, age group ≤ 49)

Several patients suggested that having a flexible medical practice opening hours and clinic scheduling time would encourage them to attend the clinic.

Maybe if they had it either open earlier in the morning or later at night. (pt11, New Zealand European female, age group 50–59)

Mental health was also raised as a barrier to attending the ADR, and this ranged from co-morbid conditions to anxiety around the possibility of a significant finding being found.

I was getting anxious, I wasn't either here or there about making my appointment, so my motivation was really low.... (pt2, Māori female, age group 50–59)

I get anxiety about appointments anyway, that they will tell me something that I don't wanna hear. You never know, when you go there they might find something wrong with my feet, they might need to be chopped off or stuff like that. (pt6, Māori male, age group 50–59)

For one patient, diabetes was a personal issue that affected the way that they perceived themselves and how others perceived them.

Yeah, it's about denial... and perception... My perception is that I'm always well you know. And it's a perception for my kids, and everyone around me... I like the idea of people always seeing me as being active. And, you know, being around and helpful and all this kind of stuff. Being sick makes me vulnerable, and I don't want people fusing over me. (pt1, Māori male, age group 50–59)

One patient mentioned how because she felt well in the current moment, this dissuaded her from attending appointments.

I never go to the doctors very often. I always class myself as being a pain doing that and I keep feeling good health. You know if you don't feel well... You can tell when you're ok. (pt4, New Zealand European female, age group ≥ 70)

Systemic factors

Five participants commented on factors that lay outside their control, which were divided into the COVID-19 pandemic, the physical distance to one's practice and issues with transportation.

One patient remarked on the ongoing COVID-19 pandemic as a barrier to attending the annual nurse-led diabetes review.

[I'd be thinking about] well, at the moment, COVID [is a barrier] ... (pt1, Māori male, age group 50–59)

People with diabetes commented on how it was important to them that they were physically close to their medical centre, and how transport was a large barrier to accessing proper care.

I think access is important, so I think if your GP or medical centre is physically closer to you, you are more likely to go there. (pt2, Māori female, age group 50–59)

Several participants mentioned how due to a lack of personal transport, they found it difficult to make it to the clinic.

At the moment, transport [is a barrier], because I have a broken car and I can't ride the bus. (pt6, Māori male, age group 50–59)

Improving delivery of diabetes foot care education and protective services

People with diabetes described several of their preferred methods and interventions to improve the delivery of footcare education and services in primary care (Table 3). Participants of Māori ethnicity also provided specific suggestions on how to improve the ADR provided to Māori with diabetes in the community (Table 3, items 3–6).

Discussion

Summary of main findings

We identified three broad barriers to attending the ADR. These include healthcare-related (eg suboptimal clinician-patient relationship), patient-related (eg comorbid health conditions, issues surrounding personal identity, and logistical issues), and systemic factors (eg COVID-19 pandemic and distance to the medical centre).

Table 3. Suggested methods to improved footcare education and services in primary care.

#	Recommended method	Supporting quotes and keywords
1	Foot education delivered face-to-face by a healthcare professional, including primary care teams	'Face to face, I find better. Right, I'm just that type of person.' (Māori male, age group 50–59) 'talking with healthcare professionals.' (NZ European female, age group 50–59) 'one-on-one preferably.' (Māori male, age group ≤ 49) 'I would definitely start with a conversation with the nurse or the or the GP or the specialist.' (Latin American female, age group 50–59)
2	Providing educational materials, online resources, and utilising online patient communication portals	'Pamphlets', 'anything visual', 'probably video clips', 'educational video', 'written notifications or written types of information', 'apps', 'links', 'diabetes society website', 'going online', 'I'm happy to receive emails or I think ManageMyHealth has a journal, and I would use it' (several participants)
3	Use of non-technical language during communication	'... so maybe explaining in plain English, ...' (Māori female, age group 60–69)
4	Utilising the Te Whare Tapa Whā model and Whānau Ora approach	'... [Te Whare] Tapa Wha model is key to working with Māori people, it gives you the holistic approach the cultural awareness, and it also gives you more confidence in dealing with people, if you aren't used to working with Māori.' (Māori female, age group 50–59) '... like whānua ora especially coming from a teaching background perspective, we tend to incorporate that especially at the early levels.' (Māori female, age group 50–59)
5	Patient-centred approach to care provision	'I'm one of the people [who] say everybody is on the starting page and the finishing page of their own medical saga...' (Māori male, age group ≤ 49)
6	Māori health workers and kaiāwhina	'In terms of working with Māori, it would be good to have Māori working with their own people for a start. Then Māori are more likely to take advice from people from their own cultural background' (Māori female, age group 50–59)

We were also able to identify several strategies to improve the delivery of the ADR in primary care. This included using non-technical language for communication; speaking face-to-face to a medical professional, including other members of the primary care team such as a nurse; the use of online resources to provide supplemental information; the use of cultural models of care and culturally competent professionals; improving access to care by having flexible hours and having a patient-centred model of care such as the Te Whare Tapa Whā model and Whānau Ora, which help provide a comprehensive model of care that is inclusive of Māori values surrounding Hauora/wellbeing.

Comparison with previous research

A previous NZ study has investigated the barriers that surround the uptake of the ADR suggest that issues with transportation, conflict with work and life obligations and a lack of motivation were all key factors which contributed to non-attendance at the ADR.¹⁷

Evidence surrounding diabetes initiatives similar to the ADR, such as education sessions, also suggest other barriers which can be broadly divided into patient and healthcare-associated factors. Patient factors included a lack of perceived benefit of the programme, poor health literacy and thus late presentation to seek care, the shame and stigma associated with a diabetes diagnosis, an inability to attend the appointment due to social determinants of health such as housing and transportation (distance to the clinic) and secondary comorbidities such as retinopathy and neuropathy which made it difficult to assess one's state.^{18–20} Healthcare-associated factors included healthcare providers being more focused on glycaemic control which was deemed to be more important than foot care and the importance of initiatives not being stressed enough.^{21,22} We found some of these themes in addition to further factors including the importance of continuity of care and therapeutic relationship, and the effect of COVID-19 upon the uptake of healthcare.

Our findings from this research highlight key barriers that patients face in attending their ADR. Several of these barriers are amenable to change, such as the clinician-patient relationship and maintaining the same healthcare professional over time, which highlight the importance of the therapeutic relationship that is developed within general practice (whakawhanaungatanga). The clinician-patient relationship is important to be prioritised given that stress and anxiety were reasons for non-attendance. Empathy and reassurance about the ADR being beneficial may help improve uptake. Further research could explore the aspects of this relationship which could help promote the uptake of the ADR. Some participants also stated that they were unaware of the ADR, which suggests a potential gap in knowledge that could be communicated to them by their primary care team (eg a text message prompt). Several patients also stated an inability to attend appointments

due to their prior obligations, which suggests that flexibility in opening hours may improve uptake of the ADR.

Strengths and limitations

This study has many different strengths. We were able to gain the perspective of the patients missing out on an important service, giving us a clearer picture of the real reasons why access is either too difficult or not a priority. Crucially, we were able to interview Māori patients (nearly 50% of our participants), allowing us to learn more about barriers preventing this under-served group, who experience inequitable diabetes-related outcomes, from accessing the ADR. This contrasts with most other previous studies which focused mainly on selecting from populations of patients with diabetes, and not specifically for those who did not attend a particular intervention, or focused on interviewing healthcare workers.^{3,18,21,23,24} A previous cross-sectional questionnaire-based study sampled patients with diabetes who had not attended an annual review; however, this study had a significantly low response rate (38%), compared to our study (13 participants out of 22 invited, 59%).¹⁷ In addition, this study was conducted using a questionnaire rather than through an interview process. The qualitative design adopted in our study better allowed participants to truly have their say.

The participants in this study came from a range of different backgrounds, being selected from practices that had different socioeconomic levels, thus leading to a broader insight into different perspectives. Diabetes and its complications are more common among Māori, (as well as in the Pasifika and Asian populations), than non-Māori, and Māori and Pasifika have been shown to be under-served by the NZ health system.^{10–12} It was, therefore, important for this study that Māori were over-sampled, and we intentionally oversampled for Māori patients who did not attend their ADR to achieve this. This allowed us to gain some insight into the perspective of the Māori patients and allowed them to give suggestions on how best to tailor the ADR services for them. Further participatory action research could explore these insights in ways that facilitate tino rangatiratanga (self-determination) and palpable action. Although the Pasifika population is not represented in this study, some of the findings may still be applicable.

This study is not without limitations. We were unable to reach many of the patients who were initially identified as eligible ($n = 22$), and thus we might have missed the perspectives of other patients who might have had different reasons for non-attendance. However, we continued recruitment and data collection until we reached data saturation.²⁵ Although we were able to reach data saturation, we recognise that further interviews may have helped identify further ideas.

Although a research Māori consultation was undertaken at the outset of the study, it should be noted that no Māori researchers were part of the study team. The final draft

manuscript was, therefore, reviewed by a Māori primary care researcher to ensure that its recommendations and conclusions are culturally appropriate and responsive to Māori.

Conclusion

We identified several barriers to attendance, some of which are potentially modifiable. Addressing modifiable barriers and incorporating suggestions made by participants may improve access to the ADR and reduce non-attendance. Further research is required to examine how best to tailor healthcare services to help alleviate the burden of disease within this population.

Supplementary material

Supplementary material is available [online](#).

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Author affiliations

^ADepartment of Primary Care and Clinical Simulation, University of Otago, Christchurch, New Zealand.

^BDepartment of Medicine, University of Otago, Christchurch, New Zealand.

^CDiabetes Centre, Christchurch Hospital, Christchurch, New Zealand.