

A patient-led audit of diabetic foot disease knowledge and practices among patients with diabetes and at high risk attending an urban tertiary referral centre

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Key words

- Foot care practices
- Patient and public involvement
- Risk identification
- Risk reduction

Article points

1. Knowledge of good foot care practices does not necessarily result in protective behaviours
2. Patients need to have been provided with the correct information in order to engage with protective foot care practices
3. Family and patient participation in audit and quality improvement initiatives is important in empowering those with diabetes mellitus to actively engage in their care.

Authors

Details on page 29.

Using patient and public involvement (PPI) in research priorities is a relatively new area of research and clinical practice (Wilson et al, 2015; Sacristán et al, 2016). Such PPI initiatives have enabled effective collaborations between researchers and healthcare teams in the development of effective interventions for audit, quality improvement and research (O'Donnell et al, 2019). The study presented here arose as a result of such a collaboration between healthcare providers (HCP) and PPI groups, which aimed to look at the importance of knowledge and behaviours in the prevention of diabetic foot ulcers (DFU) as suggested by guidance (Bus et al, 2020). A survey was designed between PPI and HCPs in a large urban diabetic foot clinic to identify the knowledge and behaviours of patients at high risk for developing foot disease. Fifty patients were recruited to complete the survey over a 9-month period from the diabetic foot clinic. The results showed that while the general knowledge of diabetes control was good the specific details of foot disease complications are poor, thus suggesting that 'at risk' individuals may present too late to specialist services either due to a lack of knowledge or by a lack of behaviour. This view supports the opinions of both HCPs and PPI groups that while knowledge is present, it may not be sufficient in those 'at risk' which may not translate to changes in behaviour that could potentially prevent DFU development.

Diabetic foot ulcer (DFU) is a full-thickness wound penetrating through the dermis located below the ankle in a person with diabetes (Armstrong et al, 2011). The lifetime incidence of DFU may be as high as 25% (Apelqvist, 2018) and there are numerous risk factors for DFU reported in the literature (Rossboth et al, 2020). The most significant risk factors being a history of disease, the presence of peripheral arterial disease (PAD), and peripheral neuropathy (PN) (Crawford et al, 2020). It has estimated that up to 75% of DFUs may be preventable with the correct intervention to control risk (Bus and van Netten, 2016).

The recommendation is for a combination of risk identification, appropriate use of footwear, integrated footcare and education in people with diabetes to reduce the prevalence of DFU (Bus et al, 2016; 2020). According to the American Diabetes Association (ADA), patient education is an essential element of diabetes care to prevent acute complications and reduce the risk of chronic complications (ADA, 2020). Studies have demonstrated that knowledge about diabetic medications, diet, exercise, glucose monitoring and foot care is necessary to effectively self-care diabetes (Alhaik et al, 2019) Part of this effective self-care is the need to be aware of the actions which increase

the risk of DFU and how to prevent this. A study in Nigeria indicated that, of the total patients with diabetes mellitus (DM), 30.1% had good knowledge of diabetic foot care, 23.9% recorded a satisfactory score and 46.0% had poor knowledge of diabetic foot care. Moreover, only 10.2% had good practice of diabetic foot care, 40.3% had a satisfactory score, and 49.4% had a poor practice of diabetic foot care. It also determined that poor knowledge is the major contributing factor for poor practice of foot care (Amogne et al, 2011; Desalu et al, 2011).

Van Netten et al (2020) shares their opinion that education as a tool can improve knowledge or adherence to foot care behaviour. It is mostly useful when targeted at patients at risk, i.e. patients with at least peripheral neuropathy (van Netten et al, 2020). Although Van Netten and colleagues (2020) shares their opinion that structured education may improve the behaviour of patients. There is no supportive evidence that structured education improves patient behaviour practice (Dorresteyn et al, 2014; van Netten et al, 2020).

According to the International Working Group for the Diabetic Foot (IWGDF), people with diabetes, in particular IWGDF risk I or higher should learn how to recognise foot ulcers and pre-ulcerative signs and be aware of the steps they need to take when a problem arises (Bus et al, 2020). The NICE guidelines (2015) state that information should be provided and clear explanations given to people diagnosed with diabetes and/or their families or carers when diabetes is diagnosed, during assessments and when problems arise. Patients should be given basic foot care advice with the importance of footcare stressed, what footcare emergencies look like and what to do, told who to contact and given footwear advice (NICE, 2015). Both the NICE guidelines (2015) and the IWGDF (2019) clearly state the standard patients need to meet regarding knowledge of their diabetic foot disease.

Knowledge of a condition does not however, always translate to behaviour (Thoolen et al, 2009). Sustained behaviour change which is usually self-reported is difficult to quantify across the population (Ruggiero et al, 1997; Khairnar et al, 2019). In order for effective risk reduction in DFD to occur, any

education provided to those with DM needs to change behaviour to mitigate risk factors as improvement in knowledge may not have an impact on behaviour (Rönnemaa et al, 1997; Marrero et al, 2013; Stolt et al, 2020). Any programme should be individualised and utilise tools that impact behaviour change that build upon effective relationships between patients and HCPs (Fardazar et al, 2018; Binning et al, 2019; Coffey et al, 2019).

Patients cannot be expected to engage in appropriate preventative practices unless they have been provided with the correct education. (Coffey et al, 2019). Qualitative data suggest that while provision of such education motivates individuals to change their behaviours, such behavioural change is often accelerated following first-hand experience (Coffey et al, 2019).

The study presented here arose as a result of such engagement between HCPs and patients in this area and was proposed by the diabetic foot patient involvement group (PPI) in a large academic teaching hospital. The PPI group felt that patients with DM are unaware of the significance of foot disease. This is the first time the suggestions of the PPI group has informed a study of this nature. This practice supports that of patient empowerment reported in the literature (Vayena, 2014; Sacristán et al, 2016).

Patient and public involvement and inclusion in research is a relatively new concept (Hogg, 2007; Wale et al, 2021). The idea of patients led research is a newer concept further. The diabetic foot PPI group in this institution met with the research team to discuss priority setting for audits in diabetic foot disease. The strong opinion of the PPI group was that patients who are at risk of diabetic foot disease are not fully aware of the risks associated with their behaviours. In contrast, the HCPs felt that the information is provided and that the patient with diabetes does not implement the necessary behaviours. It has been noted that there is often a mismatch in the views of patients and researchers about research priorities (Petit-Zeman et al, 2010).

As a result of these discussions between PPI and HCPs in diabetic foot services the following study was proposed and conducted and the

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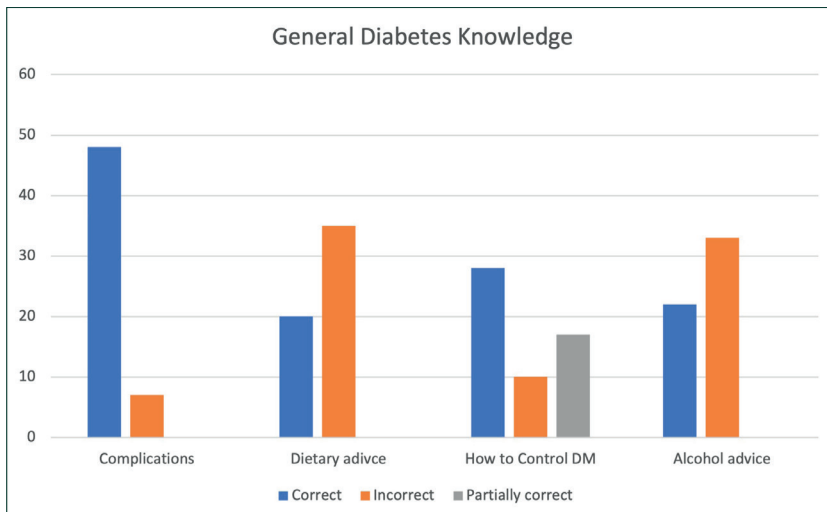


Figure 1. General diabetes knowledge.

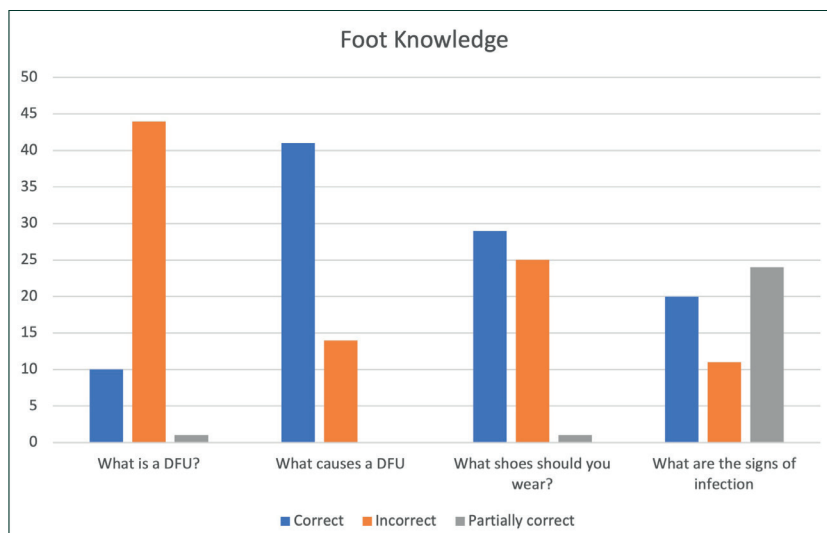


Figure 2. Foot knowledge.

purpose of this audit is to gauge knowledge of diabetic foot care along with foot protective practices in a high-risk diabetic foot clinic.

Aims

The primary aim of this audit was to investigate the knowledge and behaviours of diabetic foot disease among patients with diabetes mellitus (DM) attending an urban tertiary referral centre.

Methods

A survey was developed to assess foot knowledge and practices in collaboration between the PPI group and HCPs. The survey was assessed for validity through the wider PPI network. Patients

attending the high-risk diabetic foot clinic were invited to complete the survey. Data collection occurred during 2020/2021 and was impacted by the COVID-19 pandemic.

The questionnaire and its purpose was explained to participants before they gave consent. As the survey completion was completely anonymous no ethical approval was deemed necessary although the project was registered with the research and innovation office and classified as an audit.

Results

Fifty-five patients were recruited during 2020/2021. Reduced face to face attendance during COVID-19 delayed recruitment. The survey consisted of 20 questions about the overall management of diabetes, as well as specific questions related to pedal risk factors and the behaviours employed by the participant. The questions were written as multiple choice and phrased in a manner so as not to influence the participants as to the right or wrong answer. For each question, there was a selection of wrong answers.

There were four type of questions asked. Firstly, those relating to knowledge of diabetes (n=4; Figure 1); Secondly those related to behaviours associated with diabetes e.g following dietary advice (n=5; Figure 2); thirdly those relating to footcare knowledge (n=4; Figure 3); and finally, those relating to footcare behaviours (n=7; Figure 4). These responses were classified as either correct response, incorrect response or when both correct and incorrect responses were selected, these were classified as partially correct responses.

General DM knowledge

Among the participants there was good knowledge of the complications of diabetes (n=48), how to manage the overall condition of diabetes was less consistent although most participants understood some of the elements required (n=45). The overall management of diet was less well understood among participants with only 36% understanding the need for lifelong dietary awareness (n=20). The lifestyle behaviour smoking cessation was

well understood although this was less evident around the use of alcohol. Among the questions related to knowledge of foot problems, there was a lack of understanding about what is a DFU and the signs of infection, although the causes of DFU and the correct footwear was better understood. There was good concordance in this cohort with taking medications, this rate of adherence to recommended practices was reduced when applied to exercise and lowest in regards to adherence to dietary advice. In terms of understanding the behaviours needed to prevent DFU or to reduce the risk these were less well understood. The practices of how to deal with injury, and report changes to foot appearance were the most well understood.

Discussion

Patients with diabetes attending outpatient services have good foot care knowledge and practice but lack understanding of when to seek help in a foot emergency and what a foot emergency is. This is seen by their lack of understanding of the signs of infection and DFU. The reasons for this warrant further exploration although this may be related to a lack of education provision in the high-risk cohort as many patients do not understand their risk status (Walton et al, 2021). It is reported that self-management is consistently given at the time of DM diagnosis but may benefit from reinforcing throughout the DM journey (Weller et al, 2017).

This study suggests that targeted foot behaviour education may be indicated within the high risk cohort in order to arrest the development of DFU. Indeed, if individuals with DM cannot identify what a DFU is or when it is complicated by infection this means that there will be a delay in accessing care. Such delays in accessing care have been shown to give poorer outcomes (Manu et al, 2018).

Behaviours

While the behaviours in this cohort of patients were good in some areas, they were lacking in others. The most consistent behaviour was that of taking medication with 87% reporting compliance with medication taking. This may be facilitated by the fact that in Ireland

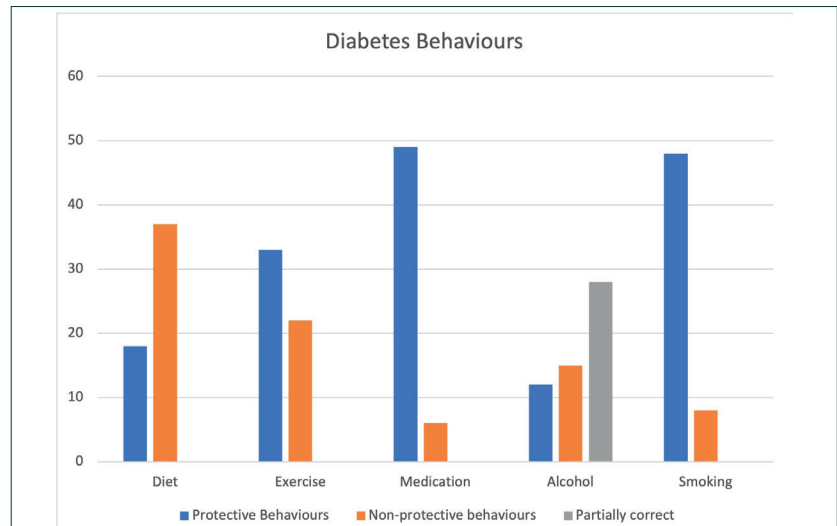


Figure 3. Diabetes behaviours.

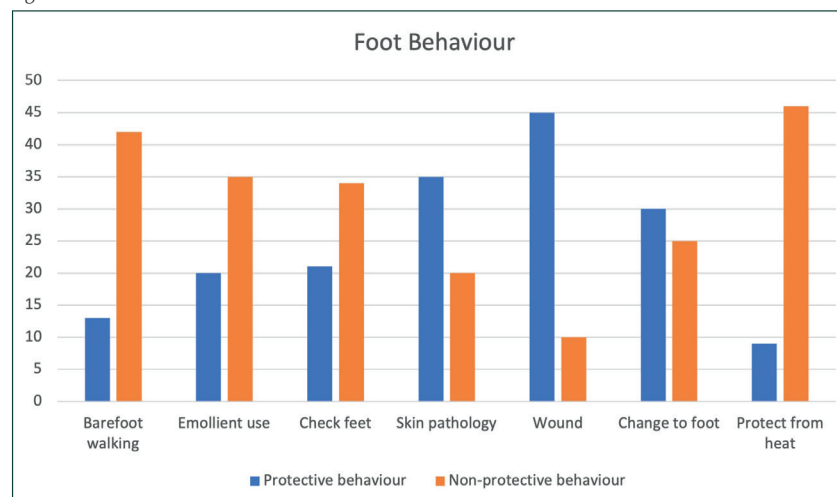


Figure 4. Foot behaviour.

medications for DM are provided free of charge to all patients with DM. The situation may not be the same in countries where this is not the case.

This cohort report good understanding of DM and foot care practices. Given that delay in accessing care contributes to poor outcomes, the lack of knowledge of ulceration or infection in this cohort causes concern (Manu et al, 2018).

PPI inclusion in research and audit planning

The involvement of patients and their families in the planning of services, developments, research and quality improvement is an area that

is growing in significance. This small project has shown that the inclusion of patients in the panning of audits such as this has the ability to direct resources to areas of significance for them which is important to improve quality of life (Vayena, 2014; O'Donnell et al, 2019). While the advent of shared decision making in healthcare has been widely supported, the inclusion of patients in designing research is less well supported (Sacristán et al, 2016). The results in this study supported the opinions of the PPI group which were not shared by the clinical team in initial discussions thus suggesting that patients with their lived experience have valid contributions to make in research design. The need for research to address patient priorities and the experience of living with the disease is paramount (Simacek et al, 2018).

Limitations

This audit of knowledge and behaviours of those attending a DFU clinic is limited by the use of non-validated questionnaires and its self-reported nature. The results elicited will only be applicable to this small cohort in this geographical location but is worth considering in other cohorts.

Conclusion

This study shows that knowledge of protective behaviours does not always correlate with changes in behaviours. This study supports the use of PPI to inform audit and research practices. ■

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