DIABETIC FOOT CARE: DEVELOPING CULTURALLY APPROPRIATE EDUCATIONAL TOOLS FOR ABORIGINAL AND TORRES STRAIT ISLANDER PEOPLES IN THE NORTHERN TERRITORY, AUSTRALIA

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ABSTRACT: Evidence shows that Aboriginal and Torres Strait Islander people have the highest national percentage of morbidity in relation to diabetes. Aboriginal and Torres Strait Islander people also suffer the greatest risk of amputation as a complication of diabetes. This participatory action research project sought to discover the opinions of a range of people, including registered nurses, general practitioners, Aboriginal health workers, cross-cultural liaison officers and Aboriginal and Torres Strait Islander people with diabetes. Focus groups provided valuable information regarding relevant issues of foot care education in the Northern Territory. The emergent themes included communication issues, educational resources, changing behaviour and other practical resources required for health education. The themes provided evidence of the inherent issues of foot care for Aboriginal and Torres Strait Islander people and guidance for the development of a visual educational tool. The results have lead to the development of a foot care educational tool that will be used by health-care professionals and clients in urban, community, rural and remote areas. The use of a participant action research process will ensure that the educational tool will be owned by Aboriginal and Torres Strait Islander People and health-care professionals.

KEY WORDS: Aboriginal and Torres Strait Islander people, diabetes, foot care, acute and community health care, health education.

INTRODUCTION

The indigenous population of Australia experiences a disproportionate level of disease and has one of the highest prevalence rates of type 2 diabetes in the world. Recent estimates suggest rates between 7 and 8.8% for males and between 7.2 and 11.6% for females. In the Australian population as a whole, the estimates are more in the range of 3.7 and 3.9% for males and females, respectively.1 Furthermore, from 1985 to 1994, diabetes mortality rose sharply among indigenous Australians, at a rate of 9.6% per year for males and 5.4% per year for females.2 This rise in the number of recorded deaths is likely to be reflective of several factors, including an increased awareness of the condition and better
Diabetes and complications in Aboriginal people

In the Western world, diabetic foot problems have been reported as the most common complication of diabetes. Diabetes-related foot problems may result in hospitalisation and sometimes necessitate surgical intervention, which can lead to a lifetime of disability and a diminished quality of life. Relative to people without diabetes, people with diabetes are at greater risk of developing foot ulcers or infection if they have any of the following conditions: peripheral neuropathy, peripheral vascular disease, injury, structural deformities, or a history of previous ulcers or infections. The known risk factors leading to amputation are those listed previously, as well as renal disease, retinopathy and poor glycaemic control.\textsuperscript{3,4,10}

The diabetic foot has been defined by the World Health Organization (WHO) as infection, ulceration and destruction of deep tissues associated with loss of pain sensation and various degrees of peripheral vascular disease in the lower limb (p. 155).\textsuperscript{5}

Of primary concern is peripheral neuropathy, which increases the risk of amputation 5–15-fold.\textsuperscript{6} Half of all amputations in the United States involve patients with diabetes. There are no specific published data available on amputation rates in the Australian population or comparative data available for the indigenous and non-indigenous populations. Based on USA amputation rates, it is estimated that there are 3000 diabetes-related amputations each year in Australia, at a cost of A$15 000 per episode (p. 156).\textsuperscript{5}

In the Northern Territory, Markey et al. identified that almost 2% of people with diabetes who were admitted to hospital from 1993 to 1996 had amputations.\textsuperscript{2} Furthermore, nearly 7% of 165 Aboriginal people with diabetes admitted to the Alice Springs hospital from 1984 to 1986 had amputations of limbs or digits because of bacterial infection.\textsuperscript{8}

Given that the indigenous population of Australia is disproportionately afflicted by diabetes, it is highly probable that they are also suffering a disproportionate number of amputations; however, further research would be required to substantiate and clarify this figure. Facts such as these highlight the need for action to reduce the rate of foot problems and associated complications. Results of previous research from Edmonds et al.\textsuperscript{9} and Reiber et al.,\textsuperscript{10} for example, indicate that appropriate, culturally sensitive education can reduce complications significantly.

Education, foot care and people with diabetes

In Australia, there are several educational tools, literature and other resources available to demonstrate good foot care,\textsuperscript{7,11,12} however, despite the availability of resources, none are specifically designed to be used to educate Aboriginal people in the Northern Territory in a culturally effective way. Reiber et al. compared the amputation risk of patients who had received formal diabetes education with those who had no formal education and identified a threefold increase in amputation risk in the latter group.\textsuperscript{10} Similarly, studies by Nicolucci et al. found that a lack of formal diabetes education accounted for a fourfold increase in the risk of developing foot complications.\textsuperscript{13}

A long-term study by Humphrey et al. provides further evidence of the importance of education and health promotion.\textsuperscript{14} The study was conducted over a 12-year period, following the introduction of a dedicated foot care clinic in Nauru. The clinic was supported by a national health promotion program known as the Nauru ‘Love your feet’ campaign. The research indicated a 50% reduction in the incidence of first lower extremity amputations. Following that research, it has been suggested that similar initiatives may be significant in reducing diabetes-related foot complications in the Aboriginal and Torres Strait Islander peoples of Australia (p. 159).\textsuperscript{5}

Education therefore plays an integral part in the prevention of foot care problems for people who have diabetes. To be truly effective, the education must be designed to be effective for the group of people that it is aimed at. The present paper describes research conducted by the Northern Territory University Centre for Clinical Nursing and Research, which aimed at developing appropriate, culturally sensitive educational material on foot care for Aboriginal and Torres Strait Islander peoples in the Top-End of the Northern Territory.

METHOD

The aim of the present project was to develop a visual educational tool on foot care for Aboriginal and Torres Strait Islander people with diabetes. The objectives were to:

1. Convene a series of focus group discussions in Darwin (and telephone and mail-outs to comment on work done in the East Arnhem and Katherine regions) for general discussion about diabetes concerns of foot care.
2. Record and tape information from the focus groups and thematically analyse the transcribed data.
3. Convene a final face-to-face workshop in Darwin with teleconference facilities to provide feedback to participants and confirm information.

Participatory action research methods were used to meet the aims of the project. This style of research promotes collaboration between the researchers and participants to identify and solve problems in order to promote change. The process is one of systematic inquiry and does not require the researchers to be experienced. In essence, the professionals and non-professionals involved become coresearchers. For this research project, two focus groups were organised to identify problems and issues related to the prevention of foot complications for Aboriginal and Torres Strait Islander people with diabetes. The research focus groups were formed from a range of health professionals, including general practitioners, community health nurses, Aboriginal health workers, cross-cultural liaison officers and Aboriginal and Torres Strait Islander clients who have experienced diabetes and associated foot problems. The focus groups were multidisciplinary and representative of each of the groups mentioned previously. The number of professionals involved was opportunistic rather than representative in equal numbers. They became part of the research team and were involved in confirmation of the themes and provided feedback on the development of the educational flip-chart. Issues addressed within the focus groups were: (i) diabetes in general; (ii) foot care problems and concerns; and (iii) a review of existing educational tools for foot care in diabetic people. Also discussed were the strategies required to develop a relevant and culturally appropriate educational tool. Tape-recordings of each focus group meeting were obtained and subjected to thematic analysis after being transcribed.

Themes emerging from focus group meetings

The main themes that emerged from the focus group meetings and are shown in Fig. 1 and summarised in Table 1.

DISCUSSION

Deciding on the best way to get ‘the message’ across was discussed during each of the focus group meetings. Aboriginal and Torres Strait Islander people as a cultural group are multifaceted, with many languages and cultural variations. The choice of language and medium to be used in the educational resources is therefore paramount to achieving successful outcomes. Based on the success of previous pictorial flip-charts and advice that the target group are uncomfortable with new educational media, there was general consensus from the focus groups that the use of graphics and artwork to promote good foot care would be more effective and accessible than a text-oriented package. The artwork is central to the success of the educational flip charts and has been used to develop a visual story that follows the themes emerging from the research. Initiating the educational process within Aboriginal and Torres Strait Islander communities is essential in ensuring the success of the educational package and program.

![Diagram](image-url)
This will be facilitated through Diabetes Australia (Northern Territory) in liaison with those involved in the focus groups. Aboriginal health workers are generally regarded as the most suitable people to initiate discussions on foot care within communities. Their role in the educational process will be very important, particularly in remote communities. Workshops were suggested as a forum for introducing Aboriginal health workers to the educational package. Further workshops for clients and families as well as other health-care workers will also assist with the promotion of the packages and, in effect, good foot care for people with diabetes.

The design of the educational packages formed a good part of the discussion within the focus groups. The educational packages must be appropriate to the cultural background of community members and must also be effective in teaching people the main issues related to diabetes and foot complications. The packages will be aimed not only at clients with diabetes but also their families, Aboriginal health workers, community health nurses and general practitioners. Posters and complementary flip-charts were suggested overall by the focus groups as the best materials to deliver a visual educational package. The posters and the flip-charts will outline a story that discusses control of diabetes in general, prevention of foot complications for people with diabetes and has an emphasis on seeking advice early rather than waiting until the problem is more difficult to resolve. In essence, the flip-charts emphasise the need for prevention rather than cure. While all Aboriginal and Torres Strait Islander people with diabetes who are considered to be at risk of amputation should be educated on preventative measures, all people with diabetes should have access to a similar level of education to stimulate lifetime behaviour patterns aimed at preventing foot disease. Such education needs to be culturally appropriate, age appropriate and language appropriate. The aims of the educational process will ultimately be to change behaviour and, in effect, people’s attitudes to the care of their feet.

During discussions within each focus group, the question, ‘can behaviour change?’ was addressed. Behavioural change is very difficult to facilitate and requires some form of motivation for the people involved. The involvement of Aboriginal and Torres Strait Islander clients as well as

<table>
<thead>
<tr>
<th>Emerging theme</th>
<th>Points discussed in relation to theme</th>
</tr>
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<tbody>
<tr>
<td>Communication</td>
<td>Good communication is essential to promote good foot care for diabetic clients</td>
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<tr>
<td></td>
<td>Deciding the best methods of communication in a multilingual situation</td>
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<td></td>
<td>Who are the most appropriate people to initiate discussion and communication on the issues?</td>
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<tr>
<td></td>
<td>The use of graphics to communicate and promote issues involved</td>
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<td></td>
<td>Workshops to promote the story and educational packages to clients, families, Aboriginal health workers</td>
</tr>
<tr>
<td></td>
<td>and other relevant people</td>
</tr>
<tr>
<td>Educational resources</td>
<td>Should be accessible</td>
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<tr>
<td></td>
<td>Need to identify the best types of educational resources to meet the needs of Aboriginal and Torres</td>
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<td></td>
<td>Strait Islander people</td>
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<td></td>
<td>Posters identified as appropriate resource if Aboriginal artist used to design and develop them</td>
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<td></td>
<td>Flip-chart identified as appropriate educational resource, again with Aboriginal artist to design and</td>
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<td></td>
<td>develop it</td>
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<td></td>
<td>Three-fold story identified for flip-chart:</td>
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<td>Strong control of diabetes</td>
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<td></td>
<td>Prevention of foot complications</td>
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<td>Emphasis on seeking advice early</td>
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<tr>
<td>Can behaviour change?</td>
<td>Behavioural change is difficult to facilitate</td>
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<tr>
<td></td>
<td>Motivation for change must be there</td>
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<tr>
<td></td>
<td>Education can be used to promote change</td>
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<tr>
<td>Other practical resources required</td>
<td>Foot assessment form</td>
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<td></td>
<td>Shoes</td>
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</table>
 Aboriginal health workers does in part empower these participants to pass the message on. As Humphrey et al. emphasise, heightened awareness of prevention and knowledge of health promotion by Aboriginal and Torres Strait Islander peoples living in remote communities will enhance their power to act in health-related situations. The fatalistic acceptance by many remote peoples that complications automatically follow the onset of diabetes may be avoided through heightened awareness. Educational packages can be valuable in providing information, promoting awareness and, through this awareness, empowering and motivating people with diabetes to address any concerns at an early stage. The aim of the educational package in itself is therefore to provide knowledge, promote awareness and initiate motivation within the client group. It is hoped that through time, motivation for effective foot care will be provided by the self-evident improvements in general health among Aboriginal and Torres Strait Islander people who have diabetes.

An issue that arose during the focus group meeting was the perceived need for foot assessment forms to be used by community health nurses, particularly in remote areas. The provision of such a form would provide autonomy for community health nurses, as it would assist in the completion of their assessment of Aboriginal and Torres Strait Islander people with diabetes. The consistency and soundness of the form are important considerations during development and, of course, the form should link in with existing programs. The emergence of this suggestion during the focus group meetings is certainly relative to good foot care for Aboriginal people, however, it is not within the scope of this present research to develop, promote and evaluate the foot assessment form. This issue will be followed up separately from the development of the educational package. Another factor discussed during the group sessions was the fact that many Aboriginal and Torres Strait Islanders, particularly those in remote communities, do not have access to the basic resources that are essential for effective foot care. The use of shoes to protect the feet would be promoted through the educational package, however, during the discussions it was suggested that protective shoes are often not readily available in remote communities. The use of mirrors to inspect feet was also suggested, however, after further discussions it was decided this would not be advised in the educational package because of the risk of injury associated with broken mirror glass. To ensure the success of the educational promotion, the researchers recognised the need to ensure that the appropriate resources required for effective foot care must be readily available.

The educational tool for Aboriginal and Torres Strait Islander foot care is being developed in the form of a flip-chart. This is a colourful picture book with minimal writing, using language that is easily understood by those who will be using it. An Aboriginal artist has been contracted to hand-draw appropriate artwork to use throughout the flip chart. The completed graphic artwork will be scanned into a computer and published with the appropriate text. Desktop publishing will allow access to multiple copies at a low cost. Each publication will be laminated to protect it from damage and extend its use. The flip-chart will be distributed to all those who participated in the project, throughout the Royal Darwin Hospital, to each remote community within the Northern Territory and will also be available through Diabetes Australia (Northern Territory). Once the educational tool has been in use for 6 months, a collaborative evaluation of the tool will be conducted.

CONCLUSION

Aboriginal and Torres Strait Islander peoples have one of the highest prevalence rates of diabetes in the world. The literature gives evidence of the educational imperative for minimising morbidity and mortality for people living with diabetes. Issues such as communication, access to appropriate educational resources, the challenges of changing behaviour and other practical resource requirements, such as foot protection and ways to inspect feet, all suggest that the process of participatory action research is the most appropriate way to ensure that relevant themes are identified. Utilisation of a collaborative, change-focused research process in developing a culturally appropriate educational tool for Aboriginal and Torres Strait Islander people will hopefully ensure its relevance to, and ownership by, those who stand to gain most by its use.

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Research and Territory Health Services and the Northern Territory University Human Research Ethics Committee.

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