

Evaluation of the NSW Indigenous Diabetic Foot Program for Health Workers whose primary role is with Aboriginal People in the Lower Mid North Coast.

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Table of Abbreviations

ACCHS	Aboriginal Community Controlled Health Service
CETI	Clinical Education & Teaching Institute
DART	Diabetic Foot Assessment of Risk Test
DFU	Diabetic Foot Ulcer
HNE	Hunter New England Local Health District (Formally HNEAHS – Hunter New England Area Health Service).
IDFP	Indigenous Diabetic Foot Program.
IRCST	Institute for Rural Clinical Services and Teaching
NSW	New South Wales
OOS	Occasions of Service
SARRAH	Services for Australian Rural and Remote Allied Health

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Abstract

Aim

The Indigenous Diabetic Foot Program (IDFP) provides education programs for both Health Workers and Aboriginal clients with diabetes. It includes education on foot complications for people with diabetes, a screening tool for identifying those at high risk and an education component to encourage self care. Whilst the program has been highly praised and implemented into health services across Australia, there is little evidence to ascertain if the program has been successful in improving the foot health of Indigenous people with diabetes. The aim of the project was to evaluate the effectiveness of the program as evidenced by Health Worker's perceptions of the education workshop and the integration of the screening tools into clinical practice.

Method

A pre and post evaluation design method was used. A one day workshop was delivered to Aboriginal Health Workers from the Hunter New England Local Health District and local Aboriginal Community Controlled Service (ACCHS) in the Lower Mid North Coast of NSW, a group of workers for whom the IDFP was developed. Workshop participants were invited to complete a pre knowledge questionnaire, followed by the same questionnaire after the completion of the workshop. A follow up knowledge questionnaire was sent out six months after the workshop along with an evaluation survey. Data obtained was analysed using descriptive statistics.

Results.

Eleven participants attended the workshop and all completed the pre, post workshop and post six month questionnaires. Four participants were employed by HNE and the remaining seven were employed as Health Workers by the ACCHS. The overall results found the knowledge base and confidence levels improved immediately after the workshop. The medium scores for the group as a whole: pre workshop 19, post workshop 31, post 6 months 27. Overall, there was an increase in the number of occasions of service for Aboriginal people using the HNE podiatry service in the Lower Mid North Coast Cluster. The screening form was implemented into clinical practice by 55% of the participants, all of whom were employed by the ACCHS and had a clinical component in their position.

Conclusion

The results indicate that the IDFP is a beneficial educational program for Aboriginal Health Workers but only those with a clinical component in their job description had incorporated the DART form into their clinical practice. Whilst these results indicate that more Aboriginal people are being seen by a podiatrist, there is no data to ascertain whether more Indigenous people are being screened for diabetic foot complications or whether the program has impacted on health outcomes.

Recommendations

The use of the DART form should be formally supported by service managers and incorporated into assessment packages used by Health Workers. Diabetic foot assessments/screenings should be incorporated into key performance indicators for health providers. Consideration should be given to employing Aboriginal Health Workers to work alongside podiatrists in community settings.

Key Words: Aboriginal Health, Diabetes, Foot, Screening, Education

Executive Summary

Context

It is well documented that type 2 diabetes is a growing problem in our community and the number of Indigenous persons diagnosed with this disease is much greater than in the non Indigenous population^{1,2,3,4}. The onset of the disease is also at a much earlier age and the resultant mortality rate of those with diabetes is highest between the ages of 34 and 54 yrs of age, which is 27-35 times higher than the non Indigenous population^{1,2,5,6}. This earlier onset also leads to the development of diabetic related complications at an earlier age. One of the most common complications is that of foot ulceration, leading to lower limb amputation.

The number of Aboriginal people having a stay in hospital due to diabetic foot ulcers or lower limb amputation is much higher than non Aboriginal people^{7,8}. The HNE service has one of the highest reported numbers of Indigenous people having a stay in hospital for those two complications in NSW^{4,5,6}. Evidence suggests that early intervention can help reduce the number of foot ulcerations, but first it is of paramount importance to identify those people at high risk of developing diabetic foot complications^{8,9,11,13}.

It is known that that Aboriginal people are less likely to have seen appropriate healthcare professionals such as podiatrists or received diabetic foot education⁷. The evidence also suggests that education material and resources which are culturally appropriate are vital when educating people in self management and disease processes⁸. The Indigenous Diabetic Foot Program (IDFP) was developed by podiatrist Jason Warnock in 2002, the program was designed to:

- ✓ Provide education for health workers about the complications of diabetes within the foot.
- ✓ Provide a screening tool for assessing the diabetic foot.
- ✓ Include an education model which enables the health workers to teach and empower patients to self care.
- ✓ Provide advice on referral pathways if further intervention is needed.
- ✓ Provide culturally appropriate resources.

In 2008 Services for Australian Rural and Remote Allied Health (SARRAH) and the Institute of Rural Clinical Services and Teaching (IRCST) provided funding for the development of 'Super Trainers' who could then deliver and begin the roll out of the IDFP to Health Workers in rural and remote NSW.

The aim of this research project is to evaluate the IDFP focusing on the screening tool and the education package delivered to Health Workers in the Lower Mid North Coast Area. In 2008 training was undertaken by healthcare professionals in order to start rolling out this program across NSW. There is little evidence to ascertain if the program has been successful in improving the foot health of Indigenous people with diabetes. More importantly, have Aboriginal Health Workers found the program a beneficial education tool and has the screening form (DART) has been implemented into everyday clinical practice.

Approach

An educational program with pre and post evaluation design method was used. A one day workshop was delivered to Aboriginal Health Workers who were employed with either HNE

or a local ACCHS in the Lower Mid North Coast Area. The IDFP was developed specifically for this group of health workers.

A pre workshop knowledge questionnaire was provided to participants, this was repeated at the conclusion of the workshop. A follow up knowledge questionnaire was sent out six months after the workshop along with an evaluation survey. Data obtained was analysed using descriptive statistics only, as the small number of participants did not allow for the use of comparative statistical methods. All participants voluntarily agreed to participate.

Ethical approval was given by the Hunter New England Human Research Ethics Committee in May 2010 and the Aboriginal Health & Medical Research Council in October 2010.

Results

Eleven participants attended the IDFP workshop in November 2010, the majority (55%) were clinical workers, the rest worked in health promotion only or a combined clinical and health promotion role. Of the 6 staff who had a clinical role, 5 were generalist nurses and 1 was a diabetic educator (RN) all employed by the ACCHS. The remaining 5 participants included 4 health education officers employed by HNE and 1 Health Worker (ACCHS). All participant roles involved working with Indigenous clients.

Overall the results found that the participants did increase their knowledge scores and confidence scores also improved. One notable difference was seen in the pre-post workshop comparison, where the lowest post score exceeded the highest pre-workshop score. Medium scores for the group as whole were pre workshop: 19, post workshop: 31, post 6 months: 27. Whilst there is a decrease in scores over time, the lowest scores on the post 6 month questionnaire were greater than the highest score gained on the pre knowledge questionnaire.

The participants all found the IDFP and the DART form to be beneficial. Information gathered from the post 6 months questionnaire found that 55% of the participants had used the screening tool in their clinical practice; interestingly all these participants were employed by the ACCHS and had a largely clinical role. These respondents indicated that the DART form was easy to use and a good tool for identifying those at high risk of developing foot complications. None of the participants had run a 'Look after your feet' workshop nor had they advised another health professional about the IDFP or the DART form.

On a more positive note it was found that occasions of service (oos) for Aboriginal clients utilising the HNE Podiatry service had increased from 7% (75 oos) in 2010 to 11% (108 oos) in 2011. This could be due to the number of referrals to the service being increased, as participants indicated that they now referred most often to a podiatrist rather than another health professional, but this can only be surmised.

Implications

The study highlighted that whilst the participants found the IDFP to be beneficial the uptake and implementation of DART form into routine screening has remained small. The program is not being utilised as widely as it could be and it is still unclear whether health outcomes have been changed due to the short time frame. What can be accepted is that the knowledge base and skills of the health workers who were involved in the education program has been improved. The study finds that whilst the program was enjoyable and enthusiastically welcomed more support needs to be provided to ensure it is sustainable and the desired outcomes are achieved.

Recommendations

- Service managers to formalise the use of the DART form in hospital and community settings. This may necessitate the DART being set up as an electronic template for medical records.
- Undertake 'look after your feet' workshops with both a health worker and podiatrist working together to help improve confidence and uptake of this component of the IDFP, as it is an important education program for the Aboriginal community.
- Diabetic foot screening/assessments need to become a key target area and implemented into best practice guidelines for diabetes care. In order for this to be achieved it may be necessary for KPI's to be implemented into public health podiatry services

Introduction

Research has found that education and early intervention can reduce the need for hospital admissions and reduce the number of lower limb amputations attributable to diabetes.^{1,2,8} The National Evidence Based Guidelines For the Management of Type 2 Diabetes have stated that a major priority is to identify people who are at high risk of lower limb amputation and implement strategies to prevent these events from happening. Studies have found that screening the feet of those diagnosed with diabetes is poorly undertaken^{8,10-13}, yet evidence^{8-10,12,13,16,17} suggests that it is crucial to reducing the number of diabetic foot complications such as neuropathic ulcers and amputations.

The number of Aboriginal people having a stay in hospital due to diabetic foot ulcers or lower limb amputation is much higher than non Aboriginal people^{7,8,13,18}. It is also reported that Aboriginal people are less likely to have seen appropriate healthcare professionals such as podiatrists or received diabetic foot education^{7,19}. Evidence suggests that education material and resources which are culturally appropriate are vital when educating people in self management and disease processes⁸. The Indigenous Diabetic Foot Program (IDFP) is one available resource that is aimed specifically at providing culturally appropriate education material and resources. The program was developed by podiatrist Jason Warnock in 2002, following his work with the Indigenous people of Palm Island. In 2008 Services for Australian Rural and Remote Allied Health (SARRAH) and the Institute of Rural Clinical Services and Teaching (IRCST) provided funding for the development of 'Super Trainers' who could then deliver and begin the roll out of the IDFP to Health Workers in rural and remote NSW. The IDFP was developed to:

- ✓ Provides education for health workers about the complications of diabetes within the foot.
- ✓ Provides a screening tool for assessing the diabetic foot.
- ✓ Includes an education model which enables the health workers to teach and empower patients to self care.
- ✓ Provides advice on referral pathways if further intervention is needed.

The aim of this research project is to evaluate the IDFP focusing on the screening tool and the education package delivered to Health Workers in the Lower Mid North Coast Area. In 2008 training was undertaken by healthcare professionals in order implement this program across NSW. There is little evidence to ascertain if the program has been successful in improving the foot health of Indigenous people with diabetes. More importantly, have Aboriginal Health Workers found the program a beneficial education tool and has the screening form (DART) been implemented into their everyday clinical practice.

The research will provide valuable information as to whether the program is an effective education product and one which can help improve health outcomes for the local Aboriginal community. This information will be useful to other health service providers as improving Aboriginal health and enhancing the management of chronic conditions such as Diabetes is of growing importance.

Background

Type 2 diabetes is becoming a problem of epic proportions: the number of people developing this disease is ever increasing. Australia has one of the largest growing diabetic populations in the world⁵. In 1996 Australia designated Diabetes as a National Health Priority Area; from this the National Diabetes Strategy was implemented in 1999. In 2004 it was estimated that almost 4.5% of the population had developed diabetes, but figures for the Indigenous population are not well recorded, so that number may be higher¹.

One of the most common and often devastating complication of Type 2 diabetes are foot ulcers, most often secondary to peripheral neuropathy. Diabetic foot complications are considered to be a major contributor for hospital stays. Complications such as chronic ulceration, may lead to a lower limb amputation, which not only has a large economic impact but more importantly on the quality of life and mortality of the patient^{13,14}.

Boulton (2010) states that globally every two hours there is a lower extremity amputation and in Australia 50-60 lower limb amputations are carried out each week all directly related to diabetic foot ulcerations¹⁶. Evidence also suggests that approximately 15% of the diabetic population will experience a foot ulceration, 70-90% of these will heal with appropriate treatment, but worryingly 34-70% of these ulcers will reoccur¹⁴

The Indigenous population of Australia has been found to have a much higher occurrence of Type 2 Diabetes than the non Indigenous people. Evidence suggests that this population has been found to experience one of the highest prevalence rates in the world, three to four times higher than Non Indigenous people¹⁻⁴. More worryingly the evidence¹⁻⁴ also suggests that the Aboriginal population develop diabetes at a much earlier age leading to earlier onset of associated complications, which increase the morbidity and mortality rate of this group. Aboriginal deaths associated with diabetes in the 35-54 year age group were 27-35 times higher than those in the same Non Aboriginal age group¹⁻⁴. Studies have also found the number of Aboriginal people having stays in hospital is disproportional to the number of Non Aboriginal people and for those living in rural areas the risk of developing complications with the feet and subsequent amputations are much higher.^{1-4,7}

Whilst the quality of life of a patient with a Diabetic Foot Ulcer (DFU) or lower limb amputation may be greatly affected, the economic cost to the health service is ever increasing and services are being stretched to the limit. Watson et al (2001) and Davis et al (2006) estimated the cost for looking after a person with a lower limb amputation had risen from \$120 thousand in 1994 to over \$170 thousand in 2000. In the UK it is estimated that 10% of the NHS's budget goes towards the cost of looking after those with diabetes and this is set to rise as the burden grows¹. The Diabetic Foot Toll Calculator (Australasian Podiatry Council)¹⁷ estimates the cost for diabetic foot complications in Australia including hospital bed days, amputations, deaths for 2011 will be \$612.5 million dollars with the current health system. However, they also estimate that a health service that incorporates podiatry managed multi-disciplinary care, the cost could be reduced to \$300.1 million. However, this toll calculator does not include the cost of education and prevention strategies nor the ongoing costs for managing foot ulcerations.

Studies have shown that education and early prevention can reduce the need for hospital stays and reduce the number of lower limb amputations.^{2,3,13} Ewald et al (2001) suggested that diabetic foot ulcerations were most often preventable and therefore more resources should be placed on early prevention interventions using evidence based practice, including education. In order to provide appropriate education about diabetic foot complications, those needing the information must be first identified⁸.

The National Evidence Based Guidelines for Management of Type 2 Diabetes¹⁸ state that all those with diabetes should have a foot assessment at least once a year, every six months if found to be at a higher risk of developing foot complications. Whilst there is little research on how frequent foot screening should be undertaken, studies have found that that it is of vital importance that it is carried out in order to identify those at high risk of developing foot problems^{9-11,14,15,16}. Unfortunately, studies^{9-11,14} have found that foot assessments are not routinely carried out and the patient uptake of this exam is extremely poor. Compared to eye and kidney tests, the foot assessment does not rank high among priorities.^{11,15}

It is believed that uncontrolled blood glucose levels, diagnosis of diabetes greater than ten years, poor socio-economic factors all play a part in the resultant damage of the long peripheral nerves, usually in the hands and feet^{13,16}. Due to the slow onset of loss of feeling the majority of people will not realize they have lost sensation, have difficulty detecting the difference between sharp and blunt, or lost the pain sensation until they develop a wound on the foot or experience a burn. Therefore regular foot screening to identify those at high risk is of paramount importance and studies have shown that by carrying out regular assessments and introducing early prevention strategies the number of amputations can be decreased.^{12,13,15,16}

The need for culturally appropriate education material is extremely important when educating Indigenous people in self management and disease processes. The National Evidence Based Guidelines for Education in Type 2 Diabetes¹⁸ states that “*culturally tailored diabetes education has a positive impact on diabetes knowledge, self management behaviors, and clinical outcomes.*” Unfortunately, there are limited appropriate resources available for Aboriginal people.^{2,3,17}

The IDFP was designed to provide evidence based educational resources, specifically for Aboriginal Health Workers and Indigenous people with diabetes. The program has both a workshop component and photographic resource material for both Health Workers and their clients. The workshop is run by a Super Trainer, providing Health Workers education about diabetic foot complications, how to identify those who may be at high risk, how to provide effective management strategies and provide prevention education to the community. The long term aim is to help reduce diabetic foot ulceration, lower limb amputations and improve health outcomes in Aboriginal communities. The program was not designed to take the place of podiatrists but to help those in rural and remote areas where access to these services are limited. The program was designed with input from the people of Palm Island in Queensland.

Studies have found that Indigenous communities would like access to podiatrists and foot health education, but little research available to indicate if resources which are available are being used^{2,3,18,19}. Schoen et al (2010) conducted a study comparing three different resource sets, the IDFP was found to be the preferred material. Another study in the Pilbara region of Western Australia found the IDFP to be a beneficial program for both health workers and clients who were at end stage renal disease²¹. They found that the use of culturally appropriate resources increased the interest from Health Workers and clients alike. Staff at the dialysis unit found patients had an increased awareness of their feet and the benefits of self-care. In the Western Desert demand for podiatry services was increased. Importantly they found the inter-rater reliability for the screening form to be high.

The IDFP has been implemented into Health services in Queensland, the Northern Territory and Western Australia and whilst feedback has been positive^{18,19}, there is no information available to ascertain whether:

1. Is the program being used, specifically the screening form, which is an evidence based gold standard method of screening the feet
2. Have Aboriginal Health workers found the program to be beneficial.

The objective of this study was to evaluate the IDFP and determine if the implementation of this program would benefit Health Workers whose primary role involves working with the Indigenous communities of the Lower Mid North Coast and their clients.

Hypothesis

The implementation of the IDF program will

- ✓ Increase the number of Aboriginal people being screened for diabetic foot risk factors.
- ✓ Reduce the number of diabetic foot complications such as ulceration and lower limb amputations in the community.
- ✓ Decrease the number of hospital admissions for foot complications.
- ✓ Increase the skill base of Aboriginal Health Workers.
- ✓ Provide an education model for Aboriginal Health Workers to implement in the community.

Null Hypothesis

The implementation of the IDF program will have no impact on the Aboriginal population of the Lower Mid North Coast.

Methodology

Study Design

An educational program with pre and post evaluation design method was used. A one day workshop was delivered by the author to Aboriginal Health Workers who were employed with either Hunter New England Local Health District or a local ACCHS in the Lower North Coast Area. The IDFP was developed specifically for this group of health workers.

A knowledge based questionnaire was developed as there was not an appropriate one available; this was piloted at an IDFP workshop run the previous year. The questionnaire also incorporated questions about participant's levels of confidence with certain aspects of diabetic foot assessments.

The pre workshop knowledge questionnaire was provided to participants, this was repeated at the conclusion of the workshop. A follow up knowledge questionnaire was sent out six months after the workshop along with an evaluation survey. Due to the small sample size descriptive statistics were used to represent the data obtained.

Due to difficulty recruiting participants the first scheduled workshop was postponed.

The workshop conducted in November 2010 was expecting larger numbers, but due to heavy rains and flooding in the area on the day of the workshop many participants could not attend. Due to work commitments it was not possible to arrange a repeat workshop. The workshop was held in the Aged Care & Rehabilitation Services Education Room in Taree

Participants

The participants all volunteered to be a part of the program. They consisted of health workers (Aboriginal Health Education Officers, Nurses, Allied Health Workers) who primarily work with Aboriginal People. Participants were recruited to attend the education program by sending general flyers to health sites across Lower Mid North Coast and service managers were contacted via email with the program details to be forwarded to their staff

Ethics

Ethical approval was given by the Hunter New England Human Research Ethics Committee in May 2010. Ethical approval was also granted by the Aboriginal Health & Medical Research Council in October 2010.

Funding

Funding was obtained through the Rural Research Capacity Building Program run by the Clinical Education and Training Institute (CETI).

Conflict of Interest

No conflict of interest is declared.

Results

Eleven participants attended the IDFP workshop in November 2010, the majority (55%) were clinical workers, with the rest working in health promotion or a combined role of health promotion and clinical. Of the 6 staff who had a clinical role, 5 were generalist nurses and 1 was a diabetic educator (RN) all of whom were employed by ACCHS. The other 5 participants were health education officers (HNE) and a Health Worker (ACCHS). All participant roles were with Indigenous clients and conducted within either an ACCHS or HNE.

Of the eleven participants, five had received diabetic foot education previously. The majority of participants had been working with Indigenous clients for several years, 8 of the 11 participants had been in their current role for longer than 2 years. However, 2 participants were relatively new to their jobs (figure 1). Most participants estimated that 50-80% of their patients had diabetes. Three participants, whose roles were health promotion, advised they were not sure, all commented that their roles were not clinical so they did not ask their clients specifically which conditions they had. (figure 2).

Figures 3 to 5 represent pre workshop diabetic foot screening practice. Information gathered found that the vast majority of participants did not routinely screen the feet of their diabetic patients, with 8/11 (73%) of participants reporting no screening and 2/11 reporting intermittent screening (see figure 3). However, the rate of referrals for foot screening was high, with 9/10 (90%) of participants reporting referral on as their primary method of management of foot conditions. One participant did not refer on and one participants did not answer the question (see figure 4).

Figure 1: Number of years in this role

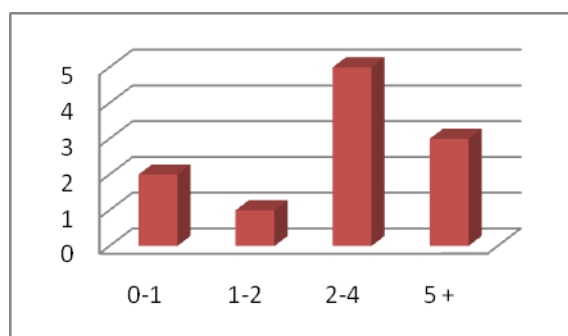


Figure 2: Estimate of the percentage of Diabetic patients seen by participants in their current role.

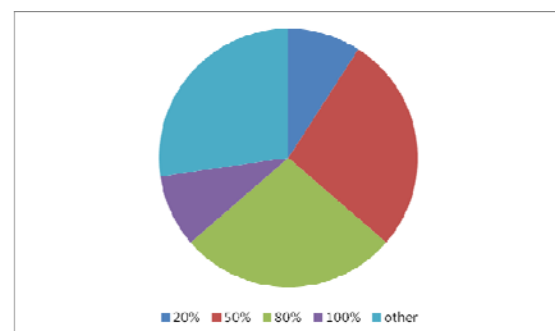


Figure 3: Percentage of workshop participants reporting routine foot screening (pre workshop).

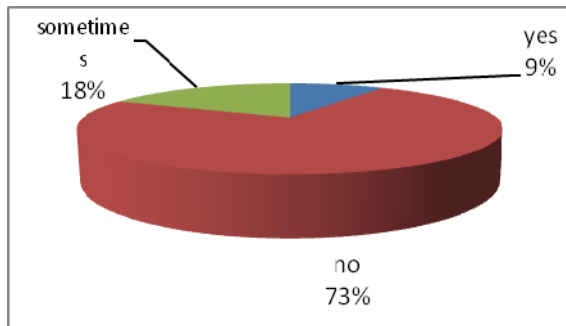


Figure 4: Number of participants who reported referring onto other health professionals for foot screening (pre workshop).

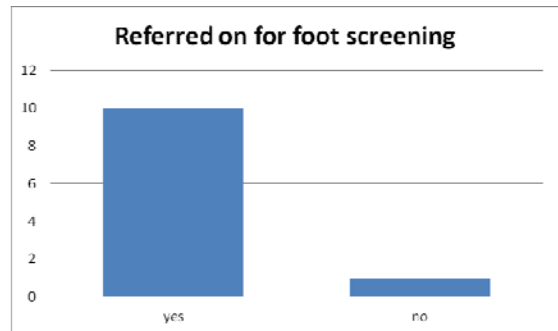
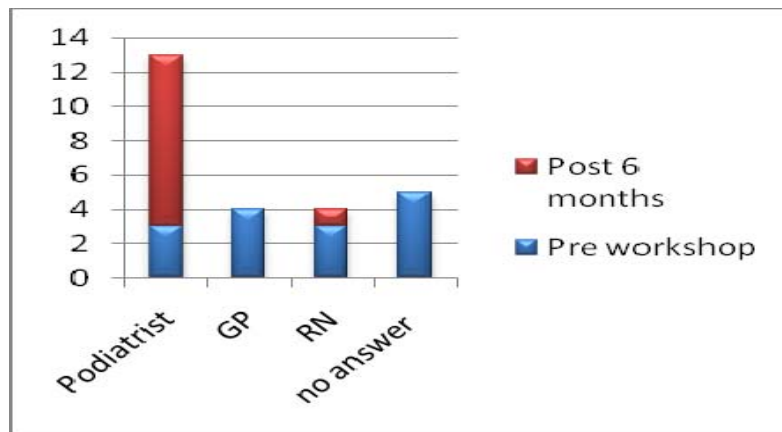


Figure 5 indicates referral trends before and six months post the workshop with an increase in referral patterns to podiatrists after education.

Figure 5: Referral trends pre and post workshop (6month).



The results of the pre, post workshop and post 6 months questionnaire show that each participant did increase their knowledge base. The overall results are outlined below in figure 6. The highest possible score was 36.

Figure 6: Participant total scores for the pre, post and post 6 month knowledge test

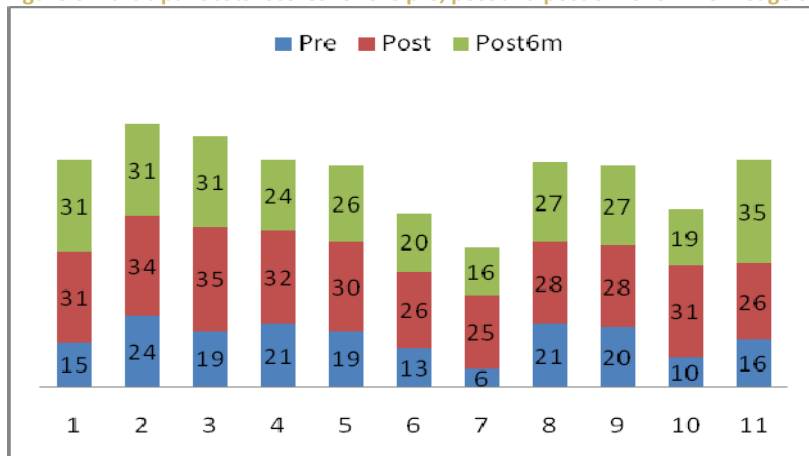
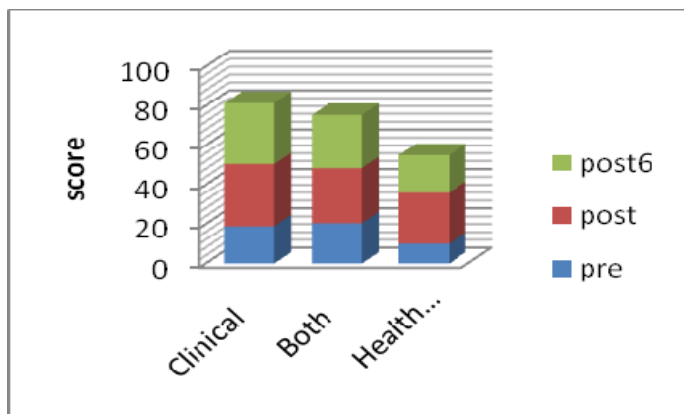


Figure 7 shows the scores attained by the different staff roles. The results indicated that those who worked in both a clinical and health promotion role and those whose role was purely clinical had a smaller increase in knowledge immediately after the workshop. This would indicate that they already had previous knowledge base of the subject, whereas those in the purely health promotion role had a large increase in knowledge after the workshop therefore indicating a poor knowledge base to start. The results also showed that those in health promotion had a larger drop in knowledge retention.

Figure 7: Breakdown between disciplines



Outlined in figure 8 the median scores indicate which questions illustrate the largest variation in answers but also the rise in knowledge base and confidence levels after the workshop with a small drop 6 months post workshop

Figure 8: Median total group scores for each question, with the range of variation in scores indicated.

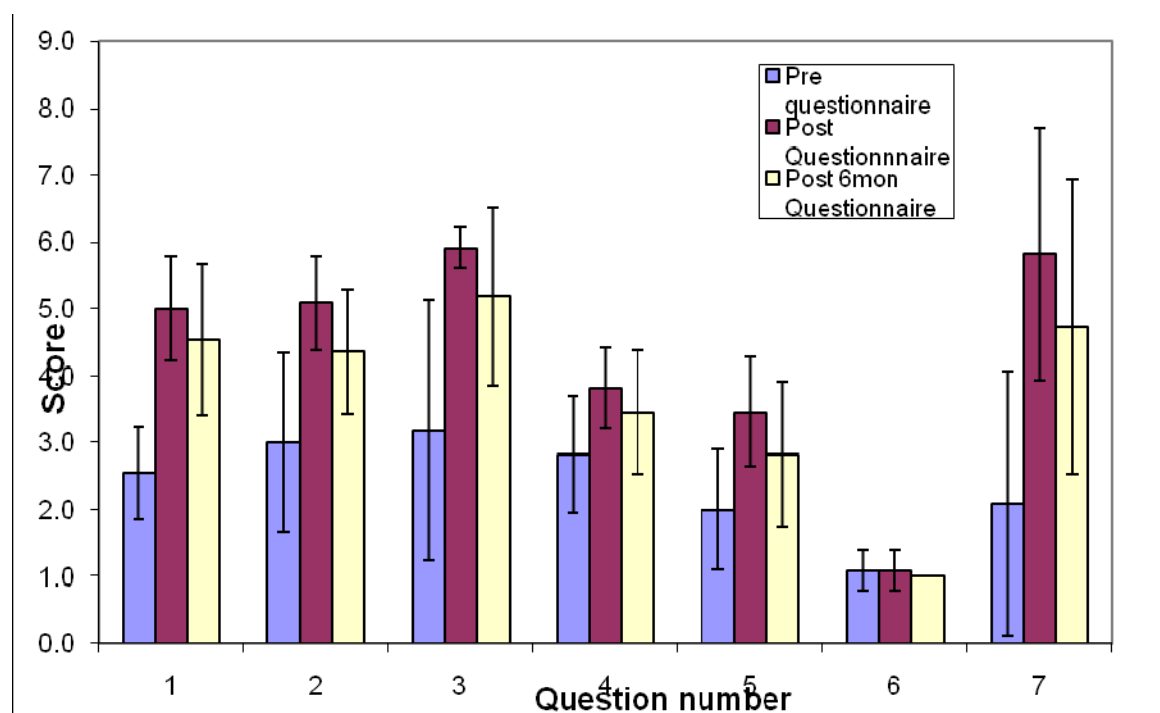
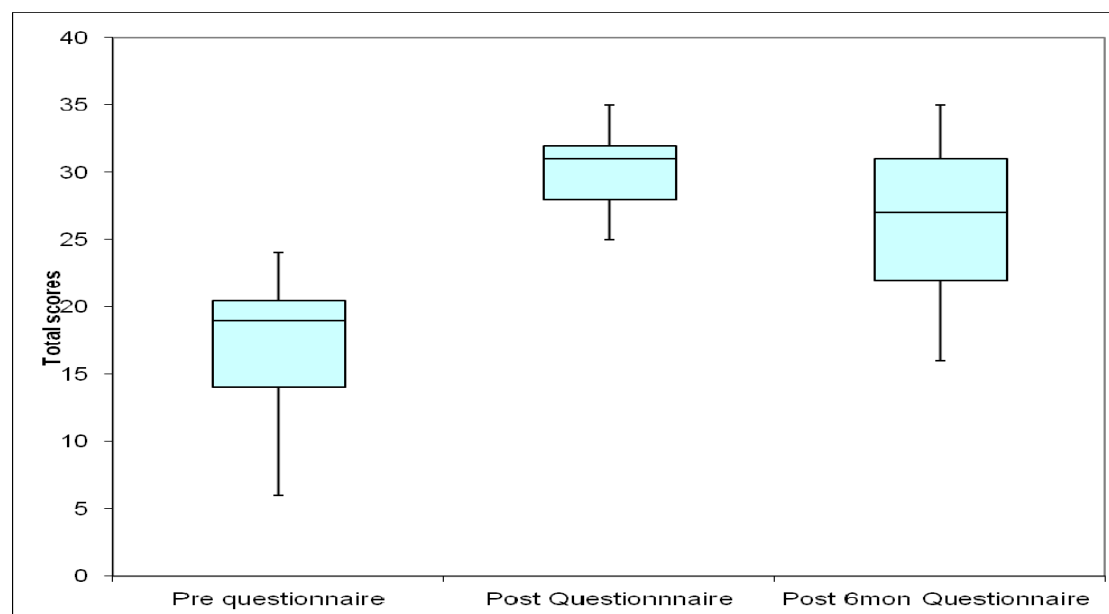


Figure 9 represents the combined total group score, a box plot was chosen as it allows the range, median scores and patterns of data to be seen. The central line indicates the medium score, with the upper box margin indicating 3rd quartile and the lower box margin at the 1st quartile. Error bars indicate maximum and minimum scores. This can illustrate changes in data behaviour; in this case it allows us to see the increase and decrease of group scores as well as the range of scores. This is important where the number of participants is small and statistical analysis is unable to be completed, as we can see all the variables.

Figure 9: Box Plot of total questionnaire response scores pre-workshop, post- workshop and at 6 month follow up.



As seen above the lowest post workshop knowledge score is higher than the top score in the pre knowledge/confidence test. This indicates that all the participants demonstrated an immediate increase in their knowledge base. The graph also shows the range of scores were largest in the pre and post 6 month questionnaire, however the range of median scores in the post workshop questionnaire were much smaller indicating that those who scored low marks in the pre knowledge questionnaire improved their total score and those who had already shown they had a good knowledge base were also able to increase their marks.

A small dip in total scores can be noted in the post 6 month questionnaire marks. The box plot median line is almost at the centre indicating that the majority of the scores were evenly distributed; however the range of scores was large, indicating that some participants scored high and others scored low.

As part of the post workshop evaluation, participants were asked a number of questions about the usability of the IDFP and whether they would use the screening tool (Dart Form) and conduct 'Look After Your Feet Sessions'. One participant failed to complete half the evaluation questionnaire

- 9 out of the 11 participants advised they would use the Dart Form, 1 said maybe and 1 participant failed to answer the question.

- 2 participants would carry the forms and monofilament with them, 4 would conduct specific foot screenings and 4 ticked the 'other' box.
- 6 participants advised they would conduct 'look after your feet' sessions with clients, 1 said no and the 3 other participants ticked maybe.
- Asked if they now felt confident to do the above sessions 4 indicated yes and 6 maybe.

The results of the post 6 month evaluation questionnaire indicated that all 11 participants felt the IDFP had benefited them, see table 1. However, it was noted that none of the participants have passed information about the DART form onto other health professionals.

Table 1: Beneficial properties of the IDFP.

	Yes	No
Is the IDFP still beneficial?	11	0
Have you used the Dart Form?	6	5
Have you found the Dart form beneficial to your service?	9	2
Have you recommended the DART to other health professionals	0	11

Overall, those that had used the DART form found it easy to use (figure 10) and five participants classed it as 'very good' at identifying those with factors which indicated they had feet at high risk of ulceration. The participants who had used the DART form in their clinical practice, three used it occasionally and three used it on all patients needing a diabetes check up. It must be noted that not all participants answered the questions in the evaluation questionnaire.

Figure10: How easy is the DART form to use?

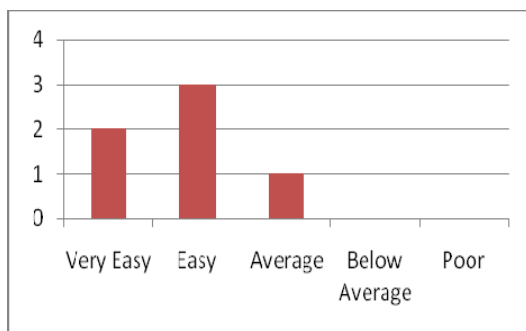
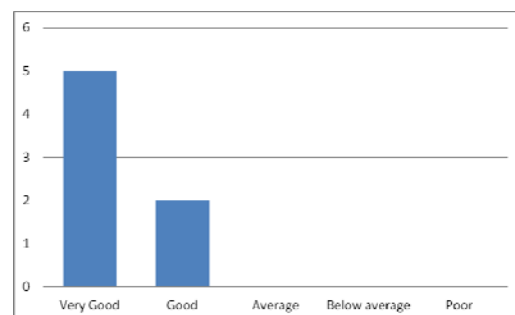


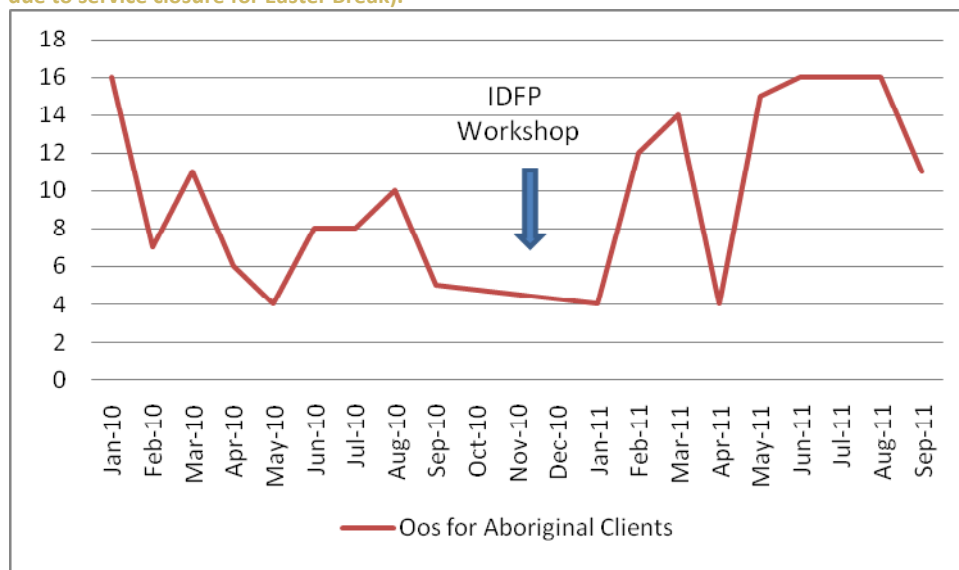
Figure 11: Participants rating of the DAFT form as a tool for identifying high risk feet.



None of the participants had conducted 'Look after your feet sessions', with lack of time indicated as the main reason.

Occurrences of service (OOS) data was collected from the HNEAHS podiatry service in Taree. As seen below in figure 11 overall the OOS for Aboriginal clients of this service increased following the workshop. As previously seen in figure 5 participants advised they were now referring to podiatrists more than other health service professionals. This result is a positive reflection on the IDFP workshop.

Figure 11: Occasions of service for Indigenous patients attending the Aged Care Podiatry Service (April figures dipped due to service closure for Easter Break).



Discussion

The aim of the project was to not only increase the knowledge and skill base of the local Aboriginal Health workers, but to also improve the health, specifically the foot health of local Aboriginal people with diabetes. From the results it is possible to show that the knowledge base of the participants has been improved, the group have learnt new skills and their confidence in undertaking diabetic foot screening has increased. Unfortunately, it is not possible to ascertain whether the health outcomes of the local Indigenous population have been improved due to the small sample size and the time required identifying improvements in health outcomes. Further studies, looking at hospital stays, OOS from the regions hospitals, community health settings and ideally GP practices would need to be undertaken to give a definite answer.

A positive result from the study was the change in referral patterns from those that attended the workshop. Participants indicating that podiatrists are their first choice for managing foot problems. Whilst the study cannot show if the number of foot screenings has increased, this may be an indication that screening habits are changing. A further study looking at the screening habits and number of diabetic foot assessments completed by health professionals would be of benefit in the future.

What can be ascertained is the number of occasions of service for Aboriginal and Torres Strait Islanders has improved since the workshop was run. The number of OOS has increased from 75 (7%) in 2010 to 108 (11%) in 2011, in the HNE Taree area. Whilst not a large number, it must be noted that since the workshop one of the local ACCHS's have employed their own podiatrist which has resulted in many of those previously attending the clinic in one area now ceasing to attend at the HNE Aged Care Podiatry Service. However, the positive increase in OOS for the Aged Care podiatry clinic indicated that the number of people attending had increased. Overall, this is a very please outcome for IDFP as it seems to indicate that the number of Aboriginal people attending podiatry clinics in the Lower Mid North Coast have increased.

The positives that have arisen from the project are along with the increase in OOS and the increase in knowledge and understanding surrounding foot complications in diabetes was the positive feedback of the IDFP. All participants found the program to be beneficial and have taken that knowledge into their workplace. The participants are now indicating that they are increasing referrals to podiatrists. They all found the DART form easy to use and a good way to highlight those who may be at risk of developing foot complications.

Of those that used the DART form all were employed by the ACCHS and had a role that was largely clinical. Those employed as Health Education Officers all advised in the evaluation survey that their job description prevented them from doing clinical work, including assessments.

It was noted the one question that was answered correctly by all participants in the pre knowledge survey was 'how often should diabetic foot screening be undertaken: annually or every six months if considered high risk of developing foot complications'. Yet evidence advises foot screening is poorly undertaken. This seems to be a contradiction in terms of what we as health professionals know, what is expected from national guidelines and what is actually implemented.

Another interesting fact that was to come from this project was that not one participant advised another health professional about the DART form, considering that all participants found it to be very beneficial. This could lead us to surmise that whilst in theory it has been found to be a useful tool, until it is formally integrated into work practice it will be under utilised.

The 'Look after your feet' aspect of the program which delivers both an education component and empowerment to self care was not undertaken by any of the participants. The most frequent barrier noted was 'lack of time'. It seems that whilst diabetic foot health is of great concern more work needs to be done to incorporate this education formally into the work environment. It was disappointing that none of those working solely in health promotion had undertaken this section of the IDFP, as whilst most cited that they were unable to carry out 'clinical' work, this section of the program is deemed education.

Lack of time was a barrier to both running the client focused footcare sessions and foot screening, whilst it must be noted the participants are employed in extremely busy roles. The cost and time implications of treating diabetic foot complications such as chronic ulcers or lower limb amputations are extremely high^{1,8,13} and include a wide range of health professionals¹⁷. Studies have found that early education and prevention strategies can reduce the numbers of wounds and in the long run, will help reduce cost implications for the health services^{8,9,10}.

It was also noted that those whose main role is health promotion, had the lowest overall knowledge base and retained the least information. This could be due to their current scope of practice which is outside of diabetic health care and focussed on other areas of health such as mental illness/domestic violence etc.

Limitations & Strengths

Limitations of the study included the author's lack of experience designing questionnaires, the pilot study did not highlight any design faults, but once analysis of the questionnaires was undertaken, it was apparent the questionnaire could have been improved. The fault mainly lay with the layout of the questionnaires, which made data retrieval complicated, coding of questionnaires and scores given were difficult also due to the varying styles of questions. Further questions around the diabetic foot complications which are commonly seen would also have been useful, as participants were able to leave certain areas blank, indicating they were aware of the conditions, but not giving specific answers. It would also have been beneficial to gain perspectives from participants on the cultural appropriateness of the program.

Another major limitation was the small number of participants; unfortunately recruitment was difficult, which caused the postponement of the first scheduled workshop. Given extra time a larger number of participants registered for the workshop, however in the days leading up to the workshop, the region was affected by flooding and heavy rain and unfortunately many were unable to attend. Due to the short time frame and work commitments it was not possible to reschedule.

The strengths of the project included building closer relationships with the mainstream health service and Aboriginal Medical Services. Whilst the number of participants was small, all participants returned their six month follow up questionnaires. Overall, the IDFP was seen to be a beneficial program and all participants advised they would attend again and have used knowledge gained from the program to help their clients. This is in agreement with the study conducted by Bandaranaike²¹ in the Pilbara region, whilst they did not evaluate the DART form, overall the program was found to benefit clients and health workers were able to implement the IDFP into their clinical practice.

Conclusion

Whilst the findings of the project could not accept all the hypotheses, they do suggest that the program can help increase the number of Indigenous people being seen in a podiatry clinic. The education/knowledge components of the program are utilised and participants have increased their skill level. All participants found the IDFP to be a beneficial program; however the uptake of DART form is limited. The project also found that whilst the program is enthusiastically welcomed, on-going support for the Health Workers who are to take control of the program is needed to keep the momentum going.

To capitalise on the increased confidence and new skills gained by the participant's ongoing support from skilled health professionals such as podiatrists is needed. This collaborative approach would see increased uptake of screening, enhanced preventative care with tangible benefits for health workers and clients alike. Early identification of people at high risk of developing foot problems and appropriate education models are the key to reducing the number of these devastating foot complications.

Recommendations

A positive outcome from this project has been the highlighting the areas where services could be improved and where more research and service development should be undertaken. Recommendations are outlined below:

- Diabetic foot screening/assessments need to become a key target area in best practice guidelines for diabetes care and in order for this to be achieved it may be necessary for KPI's to be implemented into public health podiatry services.
- Service managers to formalise the implementation of the DART form in both hospital and community settings. Design an electronic version of the DART form, which would enable it to be used more effectively, especially useful for clinicians who use electronic systems.
- Implement 'Look after your feet' education sessions undertaken by both a podiatrist and health worker. Whilst the participants advised they were confident enough to undertake this, support maybe required to help put into this into action, this would enable a collaborative approach to be undertaken.
- Encourage the roll out of this program more widely. In 2006 those undertaking the 'Train the Trainer' program were encouraged to roll out the program, this has been poorly undertaken across NSW.
- Further research into the number of diabetic foot assessments/screening undertaken by GP practices, private podiatrist, NSW Health Services, ACCHS's to determine if those found to be at high risk of developing foot complications are receiving early interventions and prevention strategies. In the long term how is that affecting the numbers of lower limb amputations and hospital stays for ulceration.

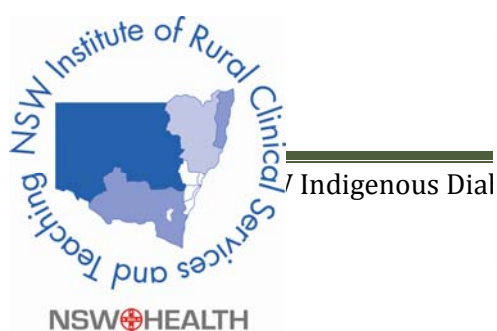
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## Appendix 1



HUNTER NEW ENGLAND  
NSW HEALTH

**The Indigenous Diabetic Foot Program.**

**Pre Knowledge Survey.**

Name (print):

Contact details:

Please circle: Male / Female

- 1) In your job, what is your primary role?
- a) Health Promotion i.e. Education/group sessions etc
  - b) Clinical (Health Worker, Nurse etc)
  - c) Both
    - i) Percentage of each role played in your job.
      - (a) Health Promotion.....%
      - (b) Clinical ..... %
  - d) Other (please specify) .....
- 2) How long have you been in your current role?
- a) 0 – 1 year
  - b) 1 – 2 years
  - c) 2 – 4 years
  - d) 5 years plus
- 3) What percentage of your clients have diabetes?
- a) All
  - b) 80%
  - c) 50%
  - d) 20%



e) Other \_\_\_\_\_

4) Have you had previous training regarding foot problems caused by diabetes?

a) Yes

b) No

i) If yes, what kind of training was it? i.e. Diabetes Education, part of nursing course/degree etc

\_\_\_\_\_

5) On the scale below how would you rate your **general knowledge** about diabetic foot complications: (Please circle one answer)

|           |           |      |         |               |      |
|-----------|-----------|------|---------|---------------|------|
| Excellent | Very good | Good | Average | Below Average | Poor |
|-----------|-----------|------|---------|---------------|------|

6) How confident are you with identifying problems in the feet?

(Please circle one answer)

|                |           |      |              |      |                 |
|----------------|-----------|------|--------------|------|-----------------|
| Very Confident | Confident | Good | Satisfactory | Poor | Don't see feet. |
|----------------|-----------|------|--------------|------|-----------------|

7) Have you heard of the health conditions outlined below: If you answer yes, please provide a few signs /symptoms associated with the condition:

a) Peripheral Neuropathy                      yes/no

\_\_\_\_\_

b) Peripheral Vascular Disease              yes/no

\_\_\_\_\_

c) Charcot Arthropathy                        yes/no

\_\_\_\_\_

d) Ulceration                                      yes/no

\_\_\_\_\_

e) Corns                                              yes/no

\_\_\_\_\_

f) Callus                                              yes/no

\_\_\_\_\_

8) When you see clients that have diabetes do you ask them about their feet?

- a) Yes
- b) No
- c) Sometimes

9) Do clients tell you about problems they maybe having with their feet?

- a) Yes
- b) No
- c) Sometimes

10) How confident do you feel discussing foot problems?

|                |           |             |                    |               |
|----------------|-----------|-------------|--------------------|---------------|
| Very Confident | Confident | Good Enough | Not very Confident | Don't discuss |
|----------------|-----------|-------------|--------------------|---------------|

11) Do you do foot screening/assessments for you clients that have diabetes?

- a) Yes (go to question 12)
- b) No
- c) Sometimes
  - i) If no or sometimes, do you refer them to someone else?
    - 1. Yes
    - 2. No
  - ii) If Yes, who do you refer the client to? (tick answer which apply, you may tick more than one)
    - 1. GP
    - 2. RN Nurse
    - 3. Podiatrist
    - 4. Other (please specify)\_\_\_\_\_

12) How confident do you feel when screening/assessing the feet?

|                        |                |           |             |                       |
|------------------------|----------------|-----------|-------------|-----------------------|
| Extremely<br>Confident | Very Confident | Confident | Good Enough | Not very<br>Confident |
|------------------------|----------------|-----------|-------------|-----------------------|

13) How often should people with diabetes have their feet assessed or screened?

- a) Every 6 months
- b) Once a year
- c) Every two years
- d) Every five years
- e) Never

14) Do you talk to clients about them looking after their feet themselves?

- a) Yes
- b) No
- c) Sometimes

15) What type of self-care advice do you suggest?

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16) What do you hope to gain from today's workshop?

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## Appendix 2



### Indigenous Diabetic Foot Program: Post Workshop Knowledge Survey

Participant Name:

Following the workshop, how would you now rate the following??

- 1) On the scale below how would you rate your **general knowledge** about diabetic foot complications: (Please circle one answer)

|           |           |      |         |               |      |
|-----------|-----------|------|---------|---------------|------|
| Excellent | Very good | Good | Average | Below Average | Poor |
|-----------|-----------|------|---------|---------------|------|

- 2) How confident are you with identifying problems in the feet?  
(Please circle one answer)

|                |           |      |         |      |                |
|----------------|-----------|------|---------|------|----------------|
| Very Confident | Confident | Good | Average | Poor | Don't see feet |
|----------------|-----------|------|---------|------|----------------|

- 3) Have you heard of the health conditions outlined below: If you answer yes, please provide a few signs /symptoms associated with the condition:

a) Peripheral Neuropathy                      yes/no

\_\_\_\_\_

b) Peripheral Vascular Disease              yes/no

\_\_\_\_\_

c) Charcot Arthropathy                        yes/no

\_\_\_\_\_

d) Ulceration                                      yes/no

\_\_\_\_\_

e) Corns yes/no  
 \_\_\_\_\_

f) Callus yes/no  
 \_\_\_\_\_

4) How confident do you feel discussing foot problems?

|                |           |             |                    |               |
|----------------|-----------|-------------|--------------------|---------------|
| Very Confident | Confident | Good Enough | Not very Confident | Won't discuss |
|----------------|-----------|-------------|--------------------|---------------|

5) How confident do you feel when screening the feet of a person with diabetes?

|                            |                       |                  |                    |                           |
|----------------------------|-----------------------|------------------|--------------------|---------------------------|
| <b>Extremely Confident</b> | <b>Very Confident</b> | <b>Confident</b> | <b>Good Enough</b> | <b>Not very Confident</b> |
|----------------------------|-----------------------|------------------|--------------------|---------------------------|

6) How often should people with diabetes have their feet assessed or screened?

- f) Every 6 months
- g) Once a year
- h) Every two years
- i) Every five years
- j) Never

7) Do you think you will discuss foot care with clients more often now?

- a. Yes
- b. No
- c. Maybe

8) What self-care advice do you suggest for clients with diabetes?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_

**Appendix 3:**



**Indigenous Diabetic Foot Program: Post Workshop Knowledge Survey – 6months**

Participant Name:

9) On the scale below how would you rate your **general knowledge** about diabetic foot complications: (Please circle one answer)

|           |           |      |         |               |      |
|-----------|-----------|------|---------|---------------|------|
| Excellent | Very good | Good | Average | Below Average | Poor |
|-----------|-----------|------|---------|---------------|------|

10) How confident are you with identifying problems in the feet?  
(Please circle one answer)

|                |           |      |         |      |                |
|----------------|-----------|------|---------|------|----------------|
| Very Confident | Confident | Good | Average | Poor | Don't see feet |
|----------------|-----------|------|---------|------|----------------|

11) Have you heard of the health conditions outlined below: If you answer yes, please provide a few signs /symptoms associated with the condition:

- g) Peripheral Neuropathy      yes/no \_\_\_\_\_
- h) Peripheral Vascular Disease      yes/no \_\_\_\_\_
- i) Charcot Arthropathy      yes/no \_\_\_\_\_
- j) Ulceration      yes/no \_\_\_\_\_
- k) Corns      yes/no \_\_\_\_\_
- l) Callus      yes/no \_\_\_\_\_

12) How confident do you feel discussing foot problems?

|                |           |             |                    |               |
|----------------|-----------|-------------|--------------------|---------------|
| Very Confident | Confident | Good Enough | Not very Confident | Won't discuss |
|----------------|-----------|-------------|--------------------|---------------|

13) How confident do you feel when screening the feet of a person with diabetes?

|                     |                |           |             |                    |
|---------------------|----------------|-----------|-------------|--------------------|
| Extremely Confident | Very Confident | Confident | Good Enough | Not very Confident |
|---------------------|----------------|-----------|-------------|--------------------|

14) How often should people with diabetes have their feet assessed or screened?

- k) Every 6 months
- l) Once a year
- m) Every two years
- n) Every five years
- o) Never

15) Do you think you will discuss foot care with clients more often now?

- a. Yes
- b. No
- c. Maybe

16) What self-care advice do you suggest for clients with diabetes?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_

**Appendix 4:**



**Indigenous Diabetic Foot Program: Evaluation Survey at 6 months.**

Participant Name:

1. Do you still feel the IDFP was beneficial to you?

- a. Yes
- b. No: please comment

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c. Maybe: please comment

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2. Have you used the DART form in your workplace:

- a. Yes (go to question 3)
- b. No (please outline barriers you may have faced)
- c. Sometimes (as above)

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3. How have you been using it in your workplace?

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4. How often do you use it?

- a. On every patient who comes in for a general diabetes check up?
- b. Occasionally, when a patient mentions problems with their feet?



c. Other (please specify)

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5. Have you found it beneficial to your clinical service? (please tick one answer and give a comment)

- a. Yes
- b. No
- c. Maybe

Comments:

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6. How easy have you found the DART form to use?

|           |      |         |               |      |
|-----------|------|---------|---------------|------|
| Very easy | Easy | Average | Below average | Poor |
|-----------|------|---------|---------------|------|

7. On the scale below how beneficial has the DART form been at identifying those with high risk factors for foot complication?

|           |           |      |         |               |      |
|-----------|-----------|------|---------|---------------|------|
| Excellent | Very good | Good | Average | Below Average | Poor |
|-----------|-----------|------|---------|---------------|------|

8. For clients who are found to be high risk on the DART form, what is your general management plan for them?

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9. Have you recommended the DART form to any other health service providers?

- a. Yes : who? \_\_\_\_\_

b. No

10. Have you conducted any 'look after your feet sessions'?

- a. Yes
- b. No (go to question 13 )

11. If you answered yes to question 10:

- a. How many sessions have you run? \_\_\_\_\_
- b. Are these:
  - i. group sessions
  - ii. individual (client only)
  - iii. other (please specify) \_\_\_\_\_

12. Do you believe the clients found the session helpful?

- a. Yes
- b. No

13. If you answered No to question 9, what barriers have prevented you from doing so?

- a. Not enough time
- b. Not confident enough to run a session
- c. No interest from clients
- d. Other \_\_\_\_\_

14. Do you think it would be beneficial to run the IDFP workshops?

- a. Once a year
- b. Every two years
- c. Every three years
- d. Once is enough

To evaluate the IDFP accurately I would be very grateful for any additional comments you may feel appropriate:

## Appendix 5:



### Participant Consent Form

#### Evaluation of the NSW Indigenous Diabetic Foot Program for Health Workers who primarily work with Aboriginal People in the Lower Mid North Coast.

#### Researcher/Chief Investigator:

- Esher Townsend

#### Ethics/Reference Number:

- To be confirmed

#### Consent Statement.

- I have read the 'Participant Information Sheet' and fully understand what the research project involves.
- I agree to participate in the above research project and give my consent freely.
- I understand that I can withdraw from the research program at anytime, without affecting my relationship with Hunter New England Area Health staff now or in the future.
- I understand that my involvement is confidential and no information about me will be used in anyway that reveals my identity.

Name (print): \_\_\_\_\_

Contact Details: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_