Foot complications among diabetics in Tonga

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Introduction

Diabetes mellitus is an increasing problem in Tonga.[1] Population based research showed an urban-rural gradient,[2,3] associated with increased consumption of refined energy densed food, decrease of physical activity levels, and increased sedentary occupations.[4,5,6] For many years, there has been special diabetes clinics, patient education and prevention programmes in response to this problem.[7] However, there has been anecdotal evidence that foot sepsis and other complications of diabetes have not been curbed.

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In 1993 a Diabetes Centre was established at Vaiola Hospital, Tongatapu to focus and intensify activities on diabetes. In its first three years, over 1200 cases of mostly maturity onset diabetes were registered at the Centre. The staff includes a medical officer, two dietitians and two nurses. The diabetes clinics are held three times per week.

This paper reports a rapid research project on screening for foot complication among diabetics at the Diabetes Centre. This study was conducted to quickly asssess the need for a foot management programme among diabetics.

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Methods

Patients attending the Diabetic Centre over a period of three weeks were examined by one of the authors (Dr Vivili) using a foot screening check list developed before the study. The examination followed the check list looking for foot ulcer, toe deformity, foot abnormality, toe-nail problems, muscle weakness, absent pulse, vibration sense and history of numbness. The criteria used were the standard medical definitions as appropriate to the examination technique.

Results

The Diabetes Centre register provided data on the magnitude of the study population. Table 1 shows the number of old and new cases by year. It was estimated that the register underestimate diabetes by 5 cases for everyone registered. The cases recorded were only those coming to Vaiola Hospital. This excluded private practitioners, other hospitals and health centres (about 40% of the total population). Operation data showed 60 amputations for diabetic foot sepsis in 1987-1992 (10 cases per year) compared to 10 in 1993-1995 (3.3 cases per year).

The study sample was 72 diabetics with 52 (72%) males and 20(28%) females. Only one visit per patient was recorded. Table 2 shows the distribution by diagnosis of foot problem. The range of the duration of diabetes was from one to 38 years with a mean of 7.1 years. On the average, there was at least one foot complication per diabetic examined.

Discussion

The indication for peripheral neuropathy was most common. The crude method used suggest that the rate may be higher because much of peripheral neuropathy is subclinical and mildly symptomatic.[8] An earlier screening effort at the Diabetes Centre, using a different method, showed 30% of patients with peripheral neuropathy.[9]

The findings from this study suggest higher foot complications among the Tongans than the Pacificans in Auckland

Table 1. Number of old and new diabetics registered, by year

Year	No. of new diabetics	No. of old diabetics
1993	33	380
1994	43	271
1995	42	296
1996	114	262
Total	232	1209

[10] and minority Americans.[11] Pacificans in Auckland suffering from diabetes showed a higher rate of serious foot complications (9.4%) than Europeans (3.9%) and Maori (5.5%)[12] The admissions for diabetic foot problems costed Middlemore Hospital over NZ $600,000 per year.[13] Amputations among American black people (0.9%), Europeans (0.6%) and Pima Indians (2.2%)[11] are much lower than the experience of the Tongan diabetic (5%) in this study. Therefore, foot care must be an important component of Diabetes Centres' activity.

The small sample size (1% of the register) and the non-random selection of participants are the main limitations of this study. Biases from the crude diagnostic methods will also affect the results and comparability with other studies.

In spite of the limitations, this cheap and rapid research approach have provided adequate information for designing the integration of foot examination and management to the Diabetes Centre activities. The regular assessment of the diabetics' feet has become a special task for the clinic. A health education jingle have been developed to focus on foot problems - "give diabetes an inch and it will take a foot". The need for a podiatrist and health educators have been identified.

Conclusion

Rapid assessment have identified the probable magnitude of foot problems among diabetics at this Centre. The method was cheap , crude and timely. It provided information for programme improvement, estimating the size of the problem and the need for health education. This study can form the basis for a more comprehensive and universally comparable research project on the foot complications of diabetics in Tonga

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Table 2. Distribution of diabetics screened by diagnosis

Diagnosis	Numbers*	Rate of foot problem (%)
Foot ulcer	10	14
Amputations	4	5
Toe deformity	1	1
Ingrown toenail	10	14
Muscle Weakness	2	3
Absent Vibration Sense	20	28
History of numbness/tingling	27	38
Total	74	103

** Some diabetics had more than one foot complications*

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Diabetes education centres are an established part of diabetes management around the world and serve a vital role in lowering admission and readmission rates and reducing morbidity and mortality resulting fron diabetes.

Hon. V. Tangi (*Reference 7 above*)