

COMPARING HEALTH OUTCOMES OF RURAL AND URBAN DIABETES PATIENTS: AN AUDIT OF A MĀORI HEALTH PROVIDER



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Key words

Diabetes, Māori, health care centre, rural, urban.

Aim

THE AIM of this study was to explore whether diabetes management is influenced by proximity to health-care providers for rural and urban patients with either type 1 or type 2 diabetes mellitus. There is no internationally recognised definition of a “rural” area; however traditionally, rural is defined as an area where people reside which is not included in the definition of urban (Stats NZ, 2020). For the purpose of this study, the definition of rural is where patients live outside a 5km radius from their health-care provider.

Introduction

The health-care centre providing the context for this study is a charitable trust Māori health provider. The centre has four general practitioners (GPs), registered nurses (RNs), community health workers and administration support staff. It administers several community district health board (DHB) contracts. This Māori health provider serves an enrolled population identified as being 91 percent high needs – high needs being defined as Māori, Pacific and/or of quintile 5 deprivation (Crampton et al., 2020). Of the enrolled population, 78 percent are Māori, 5 percent Pacific, and 17 percent are other ethnicities (Lane, 2016).

The health centre has a contract to support patients with type 1 and type 2 diabetes mellitus. The nurses’ role in this service model allows for resource flexibility in organising care support under a kaupapa Māori framework (Kapuaahiwalani-Fitzsimmons, 2015). The role involves annual diabetes reviews, goal-setting with patients and whānau, home visits and working closely with other kaupapa agencies such as Te Arawa Whānau Ora and Tāne Takitu Ake programmes.

Background

The prevalence of diabetes in New Zealand is projected to increase by 70-90 percent over the next 20 years, with those from deprived areas affected the most (Diabetes New Zealand, 2021). For New Zealand Māori, the prevalence of diabetes is twice that of non-Māori (Ministry of Health, 2018). Also Māori often have more co-morbidities and long-term conditions than non-Māori (Ministry of Health, 2015). This trend is a recognised equity concern in the New Zealand

health system (Sharples et al., 2018). While it may be argued that access to health care is less equitable for rural populations, rurality in itself does not necessarily lead to rural-urban disparities (Smith et al., 2008). As Smith et al. note, rurality may increase the effect of other disparities such as ethnicity, socio-economic factors, lack of transportation and distance from health services. As health professionals, it is always important to take stock of current practice and to regularly assess whether there are any barriers in the way health care is delivered.

Primary care has an important role in diabetes management and in addressing inequities in health care. Research suggests the use of primary care combined with community services is linked to a reduction in hospital admissions (Hiscock et al., 2008). A New Zealand study by Lawrenson et al (2010) showed the main source of education on diabetes is general practice. Access to quality health services and education is imperative to good health and wellbeing. However, for the population of New Zealand and in particularly for Māori, there are still barriers in accessing health services (Ministry of Health, 2019). This study will evaluate if proximity to health centres could be a barrier for patients.

The locational proximity or travel time to a health provider can influence health-service delivery and engagement of health users. Research has shown that distance from a health-care provider can influence patients’ health outcomes (Blattner et al., 2020). Patients living in urban settings are more likely to experience cardiovascular disease, asthma, arthritis and cancer than rural patients (Sharples et al., 2018). While there is no difference between diabetes prevalence, rural males are less likely to access general practice services except for cases of accidents or poisoning (Sharples et al., 2018). It is thought rural patients may experience barriers to accessing a health centre due to their social deprivation, the travel time, transport, financial constraints or work commitments. These barriers can have an impact on healthy self-management.

Methods

A quantitative audit was undertaken in an urban Māori health-care provider. Clinical records of 372 patients with type 1 or type 2 diabetes (as defined in accordance with the New Zealand Group Guidelines [Ministry of Health, 2012]) were examined and data retrospectively collected from a 12-month period. Information collated included diabetes type, gender, age, year of diagnosis, visits to their primary Māori health provider and hospital visits, including referrals to other primary-care services. The patients’ records were also checked for incidence of depression, gout, cardiovascular risk and chronic obstructive pulmonary disease (COPD), or other respiratory conditions. Bio-marker data such as medications, blood pressure and HbA1c levels was gathered. Geographical and general information collated included deprivation quintile, whether the patient was a community services card user and their proximity to the Māori health provider.

Data were analysed using Chi-square testing and likelihood ratios.

The average age of people whose clinical records were included in the study was 57 years, with 54 percent male and 46 percent female. Of this group, 74 percent lived in urban areas and 26 percent lived rurally. The majority, or 69.6 percent, lived in quintile 5 (Crampton et al., 2020). Proximity to the health-care provider was divided into two categories – those who lived 0 to 4.9km from the provider (urban) and those who lived further than 5km away (rural). Data were then analysed for a difference between the two groups in terms of diabetes management (using the above bio-markers), clinical interventions and degree of social deprivation. Because this study was an audit of clinical records, ethical approval was not required. All patient information was anonymised to protect patient privacy.

Results

The results showed approximately a quarter of the patients with diabetes registered with the service lived in rural areas, with the rest living in urban areas. The HbA1c bio-marker of 64mmol/L or less is used to indicate suitable management of diabetes (Ministry of Health, 2012). There was only a marginal difference in HbA1c levels between the rural and urban patients. Interestingly, those patients with an HbA1c of greater than 100mmol/L lived less than 5km from the health provider, ie were urban patients. This suggests that, for those living close to this health centre, proximity does not greatly influence their management of uncontrolled HbA1c levels.

There was no statistical difference between cohorts for those prescribed insulin, statins and angiotensin-converting-enzyme inhibitors, which would indicate prescribed medications are used equally between the cohorts. Looking at visits to allied health professionals by the rural and urban groups, 1 percent more of the urban patients had had their retinal screen appointments, but more patients from the rural cohort visited the podiatrist. It could therefore be argued that those living rurally were no less deprived than the urban population. However other health indicators showed that twice as many patients were diagnosed with depression in the rural sector than the urban sector.

Discussion

People with diabetes experience poorer health outcomes and have higher unmet health needs (Ministry of Health, 2019). Māori, Pacific and Asian ethnic groups are at even higher risk. Resources to manage and treat diabetes are a substantial cost to the New Zealand health system. Some studies have found differences in health outcomes between urban and rural populations. For example, Obertova et al. (2016) identified that men from rural areas in Midland region health-care practices were less likely to be screened with a prostate specific antigen (PSA) test, and more likely to present with an elevated PSA result. Therefore, when working with rural patients, it is important health professionals assess what is working well and what areas need improving.

While this study shows patients living rurally were able to access the health provider and allied community health services, they were more likely to have a diagnosis of depression than those patients living in urban areas. This result contradicts the findings of other studies regarding outcomes for those living in rural areas. (For example, Mavoia et al [2019] found evidence of a possible link between natural environments and the emotional health of adolescents.) Further research into how rural patients cope with depression could prove valuable for health professionals.

Deprivation was greatest for those patients living closer to the Māori health provider, yet there was little difference between the rural and urban cohorts in overall diabetes management. It could be argued that the closer cohort, living within a reasonable distance to their general practitioner services, should have better health outcomes than their rural equivalents due to better access (Reid, et al., 2016). It could also be argued that distance may not be as relevant to better health outcomes and therefore other factors that improved health outcomes may need to be investigated. This study shows some positive outcomes in biomarkers between both cohorts, suggesting that distance from patient to health-care provider is not in itself an indication of potential disparity, but distance may exacerbate the impact of other disparities (Smith et al., 2008).

Recommendations

This study showed there was minimal difference in health outcomes between rural and urban diabetes patients, but did highlight areas for further research and recommendations. These should include:

- A follow-up study to examine why there is little difference between the urban and rural cohorts.
- Further research into levels of healthy literacy in the two cohorts in relation to health outcomes.
- An exploration of possible improvements to the current diabetes health-care delivery models in primary care.

Conclusions

Primary health care services are obliged to assess the effectiveness of their service delivery. This study indicates access to a health-care centre, in terms of distance, is not necessarily a barrier to diabetes management and good health outcomes. Perhaps a greater barrier to health outcomes is social deprivation and health literacy. The findings of this study identify possible areas for further exploration – firstly, assessing the patients' health literacy pertaining to diabetes management and secondly, researching how distance may exacerbate other disparities such as ethnicity, socio-economic factors, and access to transportation. Exploring these recommendations may help health professionals improve service delivery and ensure that the patient is at the centre of care.

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Conflicts of interest

The author declares no conflict of interest in this research.

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