ORIGINAL SCIENTIFIC PAPER

ORIGINAL RESEARCH: RURAL ECONOMIC

The price of 'free'. Quantifying the costs incurred by rural residents attending publically funded outpatient clinics in rural and base hospitals

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ABSTRACT

INTRODUCTION: Rural living is associated with increased costs in many areas, including health care. However, there is very little local data to quantify these costs, and their unknown quantity means that costs are not always taken into account in health service planning and delivery.

AIM: The aim of this study was to calculate the average time and travel costs of attending rural and base hospital outpatient clinics for rural Central Otago residents.

METHODS: A survey of 51 people attending rural hospital outpatient clinics. Individual costs in terms of travel and time were quantified and an average cost of both rural and base hospital attendance was calculated.

RESULTS: The average travel and lost time cost of attending a rural outpatient clinic was NZ$182 and 61% of respondents reported this cost had a significant effect on their weekly budget. The average cost incurred by residents associated with a base hospital attendance in Dunedin was NZ$732.

DISCUSSION: This study data show that costs are substantial and probably higher than most people might expect for both rural and base hospital attendances. It seems likely that these costs are a potential barrier to service access. However, the full implications of the personal costs incurred by rural residents in accessing health services are largely unstudied and therefore remain unknown in New Zealand.

KEYWORDS: Rural health; access to services; cost; New Zealand

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Introduction

It is generally understood that living rurally is likely to carry increased costs in several areas, including accessing health care. However, there is very little data to quantify this cost, and the unknown cost quantity means it is often not taken into account in health service planning and delivery. The aim of this study was to calculate the average 'out-of-pocket' cost, in terms of time and travel, for rural residents attending rural and base hospital outpatient clinics.

Dunstan Hospital is a community-owned, publically funded rural hospital that serves a population of ~27,000 people in the Central Otago and Lakes area. The population is spread over an area of over 50,000 km^2, with three main population centres at Wanaka/Hawea, Cromwell and Alexandra/Clyde, (≈90 km, 30 km and <10 km from Dunstan Hospital, respectively). Local communities include relatively large numbers of retired people and thus the population contains a relatively high

proportion (≈20%) of people aged ≥65 years (data supplied by Central Otago Health Services Ltd). The deprivation indices for census area units in the Dunstan catchment range from two to seven. While these areas are generally not regarded as having high levels of social deprivation, this does not mean that social deprivation does not exist in the region; disposable income can be an issue for many older residents.

Approximately 20 different specialist clinics are held at Dunstan Hospital, but for attendances at specialist clinics not held at Dunstan Hospital, or when the timing of rural clinics is not suitable, most people must travel an additional 400 km round trip to the Southern District Health Board (DHB) base hospital in Dunedin. Low numbers of people living in other hospital catchments also attend Dunstan outpatient clinics. Currently, approximately 4000 people attend Dunstan Hospital outpatient clinics annually.

Methods

Outpatient staff offered the survey to all people attending the Dunstan outpatient department until >50 responses had been gathered. It was emphasised that participation was voluntary and the responses were anonymous. Respondents were also informed that the results were intended for possible publication. Completion of a survey form was thus taken as implied consent to use the data. As all responses were voluntary and anonymous, ethical approval was not sought.

Methodology similar to that previously used in overseas studies was used to calculate an average cost for each type of attendance.[1–3] Respondents were asked how far they had travelled to the clinic, if they needed a person to accompany them to the clinic, if they (or their companion) had to take time off work to attend the clinic and if they ever attended outpatient clinics at the base hospital. They were also asked if attending had a 'significant impact on their weekly budget'.

The data were collated and analysed using the current Inland Revenue Department (IRD) mileage rate (obtained from the IRD website) to determine the costs of travel,[4] and the Automobile Association online travel time calculator was used to obtain standard travel times for the distances in question.[5] The current New Zealand average hourly wage of NZ$26.78 (obtained from the Statistics New Zealand website) was used to calculate the cost of the time off work associated with each appointment.[6] Although the mean individual income in some areas within the Dunstan catchment is above the national average, we used the New Zealand average so that our data might be applied nationally. To recognise the considerable number of unpaid hours associated with clinic attendances, a 'dollar value' for unpaid hours was derived using national household income for all New Zealand residents (NZ$600 per week, NZ$15/h). This was multiplied by the time per appointment (travel time plus 45 min to account for waiting time, time in clinic and associated procedures).

To check the results were representative of typical outpatient attendances, we compared results with a 'validation cohort' derived from a previous survey using the same questions (but collected without demographic data on age and sex of respondents) carried out on a week when different OP clinics were held.

WHAT GAP THIS FILLS

What is already known: Living rurally is associated with increased costs in accessing health care, but there is very little data that quantifies these costs. The unknown quantity of these costs means they are often not taken into account in health service planning and delivery.

What this study adds: The costs incurred by rural people attending publically funded outpatient clinic have been quantified and are substantial. Cost may be a barrier to health service access, especially in areas with high levels of social deprivation. Providing services in rural locations produces substantial savings for individuals in rural communities.

Results

The female/male ratio of the 51 respondents was 49:51. Respondents were asked to indicate their age by decade, and the results were as expected for the local population (Table 1). The survey was completed in 2 days, suggesting a reasonably high response rate, and the geographical

Table 1. Age of respondents

Age (years)	<20	20–30	31–40	41–50	51–60	61–70	71–80	81–90
Percentage of respondents	0	0	4	6	27	26	27	10

distribution of respondents approximated the relative geographical distribution of the catchment population, so there did not appear to be a response bias towards people travelling furthest for their outpatient appointment.

Travel costs

The respondents travelled a total of 4964 km for their index Dunstan outpatient clinic visit (mean distance travelled = 98 km (range 2–460 km)). In addition, 15/51 respondents had had another attendance for radiology or laboratory tests associated with the index clinic visit, adding another 1386 km to the total distance travelled for the 51 clinic visits. The median distance travelled was 93 km and the average distance travelled for each of the 51 clinic appointments was 124 km. At the IRD rate of NZ$0.77/km, the average travel cost of an OP attendance was NZ$96. The average distance travelled per attendance in the validation cohort was 108 km (travel cost of NZ$83/visit).

Wages cost

Fifteen of the 51 respondents had taken time off work, and 9/51 respondents were accompanied by someone who had taken time off work. These 24 people reported they had taken a total of 5250 min off work (range 90–480 min). In addition, 756 min of waged time was lost during visits for tests associated with the index appointment. The average cost of lost wages per visit was calculated at 109 min/visit, comprising 63 min 'patient' time, 40 min additional person time and 15 min additional visit time.

Table 2. Effect of distance on costs

Distance travelled (km)	<50	51–100	101–150	>150
Percentage of respondents	35	29	4	32
Average cost (NZ$)	49	97	301	272

At the current New Zealand average wage of NZ$26.78/h, the dollar value was NZ$52.22 per outpatient visit. The equivalent figures for the validation cohort were 121 total minutes and NZ$53.92 per visit.

Unwaged time lost

Thirty-six of 51 respondents had not taken time off work, which was expected given the high percentage of people aged > 65 years in the local population and in outpatient populations in general. In addition, 20 people were accompanied by a person who had not taken time off work. Although unpaid, the time of these people is not without value. Average unpaid time associated with index visits totalled 77 min for clinic visits, 52 min for companion time and 14 min for other visits associated with index clinic visits – a total of 143 min (2.38 h) unwaged time per visit. The conservative estimated dollar value of this time equates to NZ$34.80 per visit (137 min and NZ$33.38, respectively, for the validation cohort).

Individual effects

For individual patients, distance was the major determinant of costs. The 36% of respondents who travelled over 100 km for their appointment incurred the highest costs (Table 2).

Effect of costs: A total of 31/51 respondents (61%) reported that the index visit cost had 'a significant effect' on their usual weekly budget. Of these, 19/31 (61%) reported a small effect, 8/31 (26%) a moderate effect and 4/31 (13%) a large effect. No one reported ever having missed an appointment due to the cost involved. One person made an unsolicited comment indicating they could '*neither justify nor afford*' the cost of a visit to Dunedin. Overall, 8% of respondents reported having received financial assistance for the index clinic visit.

Additional cost of travel to Dunedin: Sixty-five percent of respondents reported having travelled to Dunedin for an appointment (on average two to three times/year). Most (78%) reported that they travelled with a companion (whereas 58% of people attending Dunstan clinics were accompanied).

The distance from Clyde to Dunedin is 200 km. As 8% of respondents lived on the 'Dunedin side' of Dunstan Hospital, slightly reducing the average additional distance for a trip to Dunedin, the additional travel cost was NZ$302 for the round trip. The calculated travel time for the round trip was 5 h 30 min. Additional time is required for parking, walking to the appointment, waiting time, clinic time and associated testing or procedures. In practical terms, a trip to Dunedin means at least an 8 h day off work, thus we have 'capped' the calculated time for a Dunedin OP appointment as 8 h for all patients (because although for many people the time involved may be significantly greater, for others, a Dunedin visit may also involve some other discretionary activity).

The waged and unwaged time costs of a Dunedin visit were calculated in the same fashion as those shown above for Dunstan visits.

The length of a trip to Dunedin means that many people prefer to stay overnight in Dunedin, especially when clinic visits are scheduled early or late in the day, or in winter when road conditions in the early morning or late evening make travel unappealing. In this study, 39% said they 'always' stayed overnight and 52% sometimes stayed overnight. Some people may stay with friends or relatives, but we have added a consideration for accommodation to the average cost of a Dunedin clinic attendance by assuming 50% of visits involve paid accommodation at an average rate of NZ$120/night (a typical cost of Dunedin accommodation).

Table 3 summarises total and component costs of outpatient clinic appointments for rural Central Otago outpatients.

Discussion

The costs of accessing services is often mentioned in rural health, but has not previously been well quantified. The costs of outpatient and hospital attendance are often raised during DHB community consultation, but while these costs remain unquantified, it is difficult to know exactly how well they are appreciated by health service planners. While the exact methodology used can be debated,[7] we have been carefully conservative in estimating costs, and the methods used represent 'real world' costs in that they are similar to reimbursements (for example) that DHB employees would receive for equivalent travel. Our data show that costs are substantial and possibly higher than might be expected for both rural and base hospital attendances.

As the survey was completed voluntarily, there is a potential for a 'response bias', in that people feeling disadvantaged by the costs of travel might be more likely to respond. The fact that there was a relatively high response rate and that the geographical distribution of responses matched that expected from the catchment population, suggests there our results are not unduly biased by this effect.

In this study, we have calculated an average cost of a clinic visit to compare costs of rural and base hospital outpatient attendances. The average cost to Central Otago residents for a Dunedin outpatient attendance is (at least) four-fold higher than the average cost of a Dunstan outpatient visit. However, costs are not shared equally across all attendees and people travelling over 100 km incurred costs substantially above the average we calculated.

There is very little information about rural communities' perceptions of reasonable health service delivery. In 1993, South Island rural communities were asked what they considered to be reasonable travel times for particular health services.[8] 'Medical and surgical services – visiting specialist clinics, medical and surgical

Table 3. Average cost per clinic visit appointment

	Dunstan	Dunedin*	Difference
Travel cost	96	398	302
Paid time	52	115	63
Accommodation	–	60	60
Sub total	148	573	425
Unpaid time	34	159	125
Total	**182**	**732**	**550**

All values are presented as NZ$.

* Assuming any additional laboratory tests/radiology are conducted at Dunstan Hospital. Some people will have to travel to Dunedin for some specialised tests/investigations and this will significantly increase the average cost of a Dunedin attendance, but this amount has not been captured in this survey.

diagnosis and procedures for day patients' were included in the list of services that 'should be accessible to 90% of residents within 1-h of travel time'. This represents a one-way distance of ~80 km. Assuming similar attitudes are held today, Dunstan Hospital clinics would qualify as acceptable for almost all Central Otago residents, whereas Dunedin clinics would not.

Dunstan is one of the more distant rural hospital sites in New Zealand, and thus the costs calculated in this survey probably represent the upper end of the spectrum when compared to other areas of the country. However, the individual cost of attending base hospital clinics will be applicable to the more geographically remote residents of any DHB. We could not find any recent data quantifying outpatient attendance costs in other rural areas, although studies on telemedicine have emphasised the costs of rural attendances.[9,10] Similar studies from Australia have involved more remote populations, and although inflation and slightly different methodologies make direct dollar comparisons difficult, these studies found proportionally similar differentials in attendance costs of rural and base hospital outpatient clinics.[1]

Rural people must make a significant financial investment to access their 'free' health care, especially when multiple appointments and/or visits to base hospital clinics are involved. The high cost of both rural and base hospital services means that consultations with visiting private specialists can be less expensive than publically funded appointments. This creates an incentive for private specialists to provide outpatient services in more distant rural centres, but may also raise issues of potential conflict of interest if these same specialists have a say in deciding which publically funded clinics are held in rural areas.

The costs we studied can also be understood as costs to the regional economy. Currently, ~4000 people are seen annually at Dunstan Hospital outpatient clinics. Based on these figures, the loss of Dunstan clinics would result in a NZ$2.2 million annual loss to the Central Otago region. As 65% of respondents had also travelled to Dunedin for (usually) multiple outpatient visits per year, there are considerable potential savings to the region if more outpatient clinics can be provided locally.

We have been intentionally conservative in generating average costs, and for many people, the true costs of a visit will be considerably higher than our calculations. Over half (61%) of all respondents reported that the cost of local outpatient attendances at Dunstan Hospital 'significantly affected' their weekly budget (in 24% of cases, the effect was rated as moderate or large), but only 8% reported being entitled to financial assistance to attend these clinics.

An obvious weakness of this study is that we have not been able to survey the people who cannot afford to attend, and thus may be underestimating the true cost burden. Qualitative studies have found that the cost of outpatient attendance is an issue for rural people with chronic obstructive pulmonary disease.[11] In rural areas with high levels of social deprivation, distance is more likely to affect access to health services. It is possible that health professionals' awareness of costs involved may subliminally effect the decision-making associated with referrals for rural people. There is local evidence that service utilisation rates for some distant services are lower in rural areas,[12] but the reasons for this have yet to be determined.

While there is evidence from Australia that rurality mainly affects health outcomes by exacerbating the effects of social deprivation,[13] evidence for this effect in New Zealand is lacking, possibly because the studies have not yet been conducted. Although 'timely and equitable access for all New Zealanders to a comprehensive range of health and disability services, regardless of ability to pay' is a guiding principle of the New Zealand health strategy,[14] the implications of the substantial personal costs incurred by rural residents to access these health services remains largely unknown in this country.

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COMPETING INTERESTS
Dr Fearnley, Prof Kerse and Dr Nixon state they have no potential conflicting interests arising from this work.