Equity in statin use in New Zealand

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ABSTRACT

INTRODUCTION: Preventive medications such as statins are used to reduce cardiovascular risk. There is some evidence to suggest that people of lower socioeconomic position are less likely to be prescribed statins. In New Zealand, Maori have higher rates of cardiovascular disease.

AIM: This study aimed to investigate statin utilisation by socioeconomic position and ethnicity in a region of New Zealand.

METHODS: This was a cross-sectional study in which data were collected on all prescriptions dispensed from all pharmacies in one city during 2005/6. Linkage with national datasets provided information on patients' age, gender and ethnicity. Socioeconomic position was identified using the New Zealand Index of Socioeconomic Deprivation 2006.

RESULTS: Statin use increased with age until around 75 years. Below age 65 years, those in the most deprived socioeconomic areas were most likely to receive statins. In the 55–64 age group, 22.3% of the most deprived population received a statin prescription (compared with 17.5% of the mid and 18.6% of the least deprived group). At ages up to 75 years, use was higher amongst Maori than non-Maori, particularly in middle age, where Maori have a higher risk of cardiovascular disease. In the 45–54 age group, 11.6% of Maori received a statin prescription, compared with 8.7% of non-Maori.

DISCUSSION: Statin use approximately matched the pattern of need, in contrast to other studies which found under-treatment of people of low socioeconomic position. A PHARMAC campaign to increase statin use may have increased use in high-risk groups in New Zealand.

KEYWORDS: Ethnic groups; New Zealand; prescriptions; socioeconomic status; statins

Introduction

Ischaemic heart disease is the second leading cause of death in New Zealand.[1] In New Zealand,[2] as elsewhere,[3,4] people from lower socioeconomic groups have higher mortality rates for cardiovascular disease. In New Zealand, Maori and Pacific peoples are at higher risk of cardiovascular disease, particularly in middle age, independently of socioeconomic position. In 2000–2004, Maori males in the age group 45–64 years had 3.01 times and females 4.39 times the death rate for non-Maori from ischaemic heart disease.[5]

A range of strategies (including preventive medications, such as statins) are used to reduce cardiovascular risk. Studies in the late 1990s and early 2000s suggested significant under-treatment of coronary heart disease (CHD) risk.[6,7] In New Zealand, only an estimated 40% of people eligible for statins received treatment, with significant inter-regional variation (with Tairawhiti, the region involved in this study, having low rates of use),[8] and lower rates of use amongst Maori and Pacific peoples.[9] Internationally, and in New Zealand, some evidence suggests that people of lower socioeconomic position are less likely to receive

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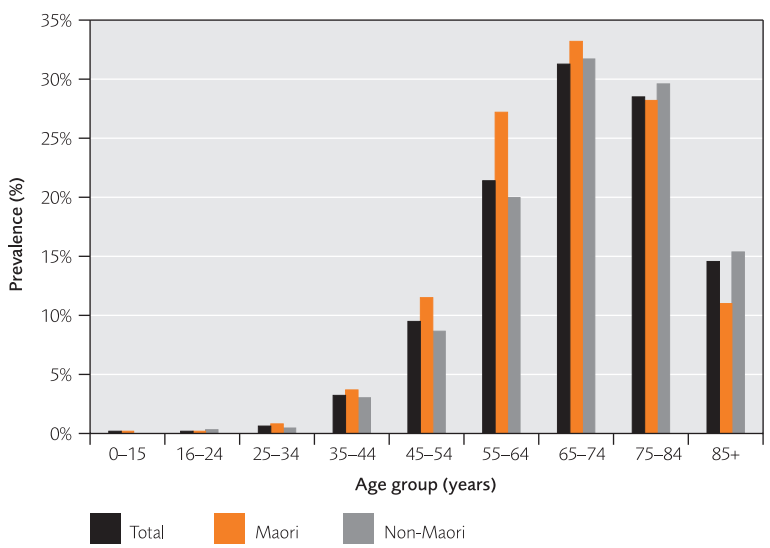
statin prescriptions,[10,11] or to receive fewer statin prescriptions.[12] Other studies however, have not reported this.[13]

PHARMAC and statins in New Zealand

In New Zealand, PHARMAC (the Pharmaceutical Management Agency) has a significant impact on access to medicines. The government is the major funder of prescribed medicines, so PHARMAC uses the government's monopsony position to control expenditure and to maximise the availability of medicines within a fixed budget.[14,15] Suppliers have a strong incentive to have their products funded by PHARMAC, and PHARMAC uses this to extract concessions, such as lower prices. PHARMAC's initiatives have been very successful in driving down prices for pharmaceuticals. Reference pricing (where the subsidy paid for each of a group of drugs is set at the price of the cheapest one in the group) has been one of PHARMAC's key strategies.[15] PHARMAC also has a variety of tools available to limit the number of expensive drugs prescribed, such as requiring prescribers to apply for a Special Authority prescription.[15] In the case of statins, reference pricing and other tools were used to restrict expenditure in the early 2000s.

Figure 1. Prevalence of statin use by age and ethnicity (percentage of population)



PHARMAC also attempts to manage demand for medicines by improving prescribing and educating patients. In the case of statins, PHARMAC launched a campaign called One Heart Many Lives (OHML), to reduce cardiovascular risk, including increasing the use of statins in high risk groups. This was piloted in two cities (including the site of this study) in 2003 and then introduced throughout the North Island in 2004.[16] The programme included three components:

1. a social marketing campaign that aimed to personalise and familiarise heart disease, and encourage use of screening and lifestyle changes (with some emphasis on prescription medicines);
2. community provider projects in Porirua and Gisborne (the study city) in 2005, which involved screening high priority men, enrolling them in risk-reduction programmes (in the study city this ran alongside other cardiac-focused initiatives in general practice); and
3. collaboration between PHARMAC and the district health boards, providing support for primary care training and screening.

The aim of this study was to investigate patterns of statin utilisation by socioeconomic position and ethnicity in a region of New Zealand, against the backdrop of PHARMAC policies and programmes.

Methods

Data from community pharmacies were used in order to include all medicines prescribed, regardless of whether they were funded by the government or not. The study was carried out in Gisborne, a small regional New Zealand city. Gisborne was chosen because it is more than a one-hour drive from any other town with a pharmacy (so it can be assumed that almost all prescriptions for all inhabitants will be dispensed in Gisborne). It also had enough variation in socioeconomic position (as measured by the New Zealand Index of Socioeconomic Deprivation 2006—NZDep2006[17]) and in ethnicity (47% Maori and 54% European), and sufficiently large numbers in the population groups being compared to allow meaningful analysis of the

prevalence of prescription medicine use. During the study period the population of the Gisborne area was 44 860.

Consent was gained from the community pharmacy owners and the manager of the hospital pharmacy. Ethical approval for the study (Ref. NTX/06/09/111) was given by the Northern X Regional Ethics Committee, subject to strict procedures for protecting patient confidentiality.

Data on all dispensings from community pharmacies for the period 1/10/2005 to 30/9/2006 (651 190 dispensings) were extracted along with 2939 dispensings from the hospital pharmacy to ambulatory patients. After removal of records not referring to identifiable individuals or for fees only (i.e. records where no medicine was dispensed), the dataset consisted of 619 264 dispensing records. The methods are more fully described elsewhere.[18]

National Health Index numbers (NHIs) assisted with the process of identifying discrete individuals and finding demographic information about them. Probabilistic matching methods, using an individual's full name, date of birth, gender and health identifier (if recorded), were used to identify records belonging to the same individual across pharmacies. Matching yielded records for 38 027 individuals with addresses locating them within the Te Tairawhiti region in which Gisborne is located. Age and gender were obtained from the pharmacy records if they were present. Otherwise, this was obtained from the NHI dataset using patient identifiers where possible.

As pharmacies do not record ethnicity, this information was solely sourced from the NHI dataset. Socioeconomic position was estimated using the NZDep2006. This is an area-based measure of deprivation combining nine variables from New Zealand's five-yearly census that reflect eight dimensions of deprivation.[17] The index is created for small areas built from one or more contiguous meshblocks. Meshblocks, containing around 90 people, are the smallest geographical units defined by the central government statistics agency, Statistics New Zealand. The NZDep2006 scale runs from 1 to 10, where, for example, a value of 10 indicates that the meshblock is in the most deprived 10% of small areas in New Zealand. NZDep2006 information was available for 99.9% of the total New Zealand population in 2006.[17] In this study, the meshblock identification number of area of usual residence of respondents was attached to the corresponding NZDep2006 score for the area.

Results are presented as percentages. Inferential statistics were not used as entire population data were collected.

WHAT GAP THIS FILLS

What we already know: Some previous studies have found that patterns of medicines use (including statins) do not match patterns of need. Maori and people of low socioeconomic position in New Zealand have higher levels of cardiovascular disease, and attempts have been made by PHARMAC to increase statin use amongst these groups.

What this study adds: Statin use appeared to match need more closely than has been found in some other studies and for other medicines. The study shows the key role that PHARMAC plays in shaping medicines use in New Zealand.

Results

A total of 25 254 prescriptions were dispensed for statins in the study year, which is 4.1% of the total prescription medicine dispensings in the study city. Eight percent of the population (3421 people) received at least one prescription for a statin over this period. Apart from a very small number of prescriptions for simvastatin with ezetimibe, simvastatin and atorvastatin were the only statins dispensed, with 91% and 9% of the market, respectively. Statin use increased strongly with age until the age band 65–74 years, and then declined after this age (Figure 1).

This pattern held for both Maori and non-Maori (Figure 1). At age groups up to and including 65–74 years, Maori were slightly more likely than non-Maori to receive a statin prescription. After age 75 years, Maori were slightly less likely than non-Maori to receive a statin prescription.

The pattern by age and socioeconomic position was more complex (Figure 2). Until the age band of 45–54 years, those living in the least deprived

areas were least likely to receive a statin, and those in the most deprived were most likely to receive a statin. However, for those in the 65–74 years and 75–84 years age bands, those in the most deprived areas were least likely to receive a statin.

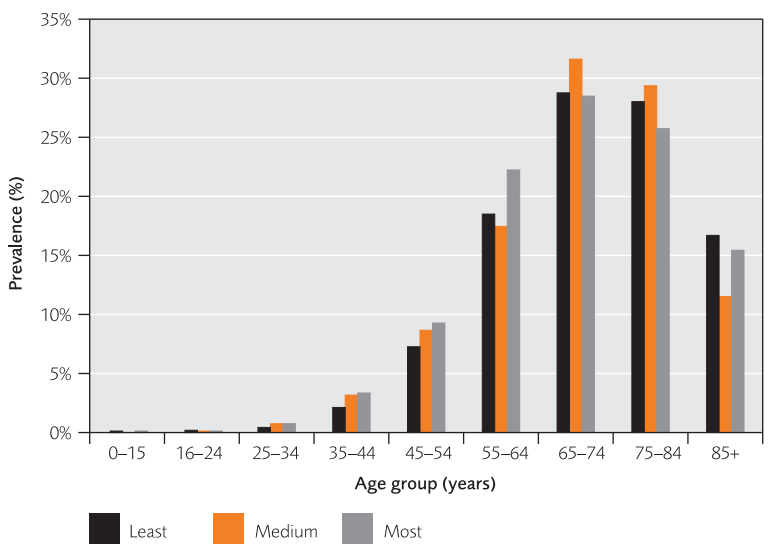
Discussion

During the study year, statins comprised 4% of the medicines used and 8% of the population used statins. Simvastatin was by far the most commonly used statin. Statin use increased with age until the age of 75 years. Use by socioeconomic position did not form a clear pattern, but the prevalence of statin use was higher amongst Maori, particularly in the age group where cardiovascular disease risk is much higher.

Strengths and limitations

A study of this nature cannot investigate whether statins are prescribed appropriately. The study provides information on medicines dispensed, which may or may not be consumed. Discontinuation of statin use is widespread,[19] although it is likely that most people who stop taking statins do not pick up their prescriptions and, therefore, may not be represented in the study dataset. Community pharmacy databases provide a complete record of medicines actually dispensed and this is an advantage over reimbursement databases used in other drug utilisation studies[7,20] that do not include prescriptions that are paid for privately. The study relied on data from a central repository (the NHI national dataset) to identify people's ethnicities, and some studies have found problems with the accuracy of this data.[21] The ideal study design would have been a time series rather than cross-sectional, but the earlier lack of ethnicity data on prescriptions and the extremely time-consuming nature of the study made this impossible. The study city was far enough from other towns that almost all prescriptions for the inhabitants would have been dispensed in the city. It is not possible to know how generalisable the findings are to other New Zealand towns and cities, although it does provide some suggestive evidence about the impact of policy on prescription medicines use. The study city is in some senses an extreme case: with a very high proportion of Maori in the population, with some areas of high socioeconomic deprivation. This is likely to be why the OHML campaign included this area. This area could be seen as a test case: if statin levels can be raised in high-risk groups there, it is likely to be possible in other areas.

Figure 2. Prevalence of statin use by age and socioeconomic deprivation (percentage of population)



The rate of use of statins reported here was higher than that reported in earlier New Zealand data.[8] In an earlier pilot study, statins comprised only 2% of medicines dispensed.[11] Metcalfe reported only 6321 dispensings of statins in Te Tairawhiti in 2000. The higher level of use of statins in the present study is likely to be due to increasing evidence internationally about the effectiveness of statins,[22] and to specific changes in New Zealand. In the early 2000s, statin prescribing was complicated by the need for special authority approval for each prescription, and frequent changes in availability and pricing of statins. By the time of the study, prescribing of simvastatin had become straightforward, without the need for special approval; the funding of statins had become more stable, and two statins were consistently available. The OHML campaign to increase statin use in particular groups is also likely to have increased use overall. Few other

studies give the proportion of the general population treated with statins, particularly over time. During the 1990s, Thomsen et al. reported that the proportion of people taking statins in a Danish province rose from 0.5% to 2.0% of men, and 0.4% to 1.4% of women.[23]

The impact of funding decisions on prescribing in New Zealand is illustrated by simvastatin's extremely large market share (91% of all statins dispensed). Simvastatin was the only fully funded statin during the study period. While studies in other countries have also found that simvastatin is the most commonly used, its market share was much smaller (31% of a population of older people in the US,[24] 43% in Denmark and 43% in Italy[25]). These studies report use of a much wider range of statins, and substantial use of statins (lovastatin and pravastatin) that were not available or very uncommonly used in New Zealand.[24,25]

Previous studies have found that although people of lower socioeconomic position experience higher levels of coronary heart disease (CHD), they are less likely to receive statins.[23,26,12,11] Other researchers have found that relatively affluent patients receive more secondary prevention medicines.[12] Patients of higher socioeconomic position and better education may have greater expectations about their health care and thus be more likely to demand preventive medicines. User charges for primary care visits and for prescription medicines also reduce poorer people's access.[27,28] Using the same dataset, similar results were found for other medicines: those with higher needs received fewer medicines.[29,30] In the study reported here, patterns of statin dispensing appear to more closely mirror need, with no clear gradient by socioeconomic position, and higher rates of use amongst Maori. Before the study was conducted, it was not possible to link prescriptions to ethnicity data, so no baseline data on use by ethnicity was available, except for that from Special Authority prescriptions before March 2000, which showed that Maori had only 0.39 relative risk of receiving statins compared with New Zealand Europeans.[9] The results do, however, show room for improvement in matching prescribing to need. Socioeconomic position is an important predictor of cardiovascular risk, so people of lower socioeconomic position should have higher rates of use of statins. The difference between use amongst Maori and non-Maori should probably also be greater than it is, given the much higher risk of heart disease amongst Maori.

Patients of higher socioeconomic position and better education may have greater expectations about their health care and thus be more likely to demand preventive medicines

There are several reasons why the prescribing found in this study may more closely match needs than those found for other drugs, and in other settings. Earlier results for statins in New Zealand[11] are likely to reflect the extraordinarily complex arrangements for funding and availability of statins in earlier years. PHARMAC argued that the aim of the reference pricing of statins was to facilitate widespread access by driving down prices.[9] Confusion about which statins and which brands required Special Authority prescriptions, which were fully or partially subsidised, and which were currently available in New Zealand may have had the opposite effect, however. This effect may have been more pronounced for lower-income patients, who may have been less willing to risk starting a medicine where ongoing funding was not assured. General practitioners may also have been less likely to suggest statins to patients who they knew or perceived to be in this situation. By 2005/6, the availability and funding arrangements for statins were more consistent, so this was likely to no longer be a factor in prescribing decisions.

PHARMAC's OHML campaign may have increased prescribing of statins to people in high-need groups. The campaign was a response to reported disparities in statin prescribing. An evaluation of the programme[16] reported greater increases in statin prescribing for Maori and Pacific peoples in pilot areas than those in control areas. This is an important achievement in terms

of reducing disparities in access to medicines for high-risk groups.

The results of this study show the crucial role that PHARMAC plays in prescribing in New Zealand. Earlier lower levels of statin use amongst people of low socioeconomic position were likely to be due to instability in funding arrangements and availability of statins. Simvastatin, as the only fully funded statin, dominated the market. By the time of the study, more stable funding and wider availability of statins, combined with PHARMAC's campaign to increase awareness of heart disease and the role of preventive treatments, may have increased use in high-risk groups. This study draws attention to the crucial role that funders play in providing access to medicines. Proactive initiatives may be necessary to ensure that high-risk groups access preventive medicines, and this study suggests that these can be effective. Further research is needed in other countries to explore the policies needed to ensure that medicines use matches need.

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COMPETING INTERESTS
Shirley Keown is employed by Turanga Health, which has been sponsored by PHARMAC for a sporting event, and whom PHARMAC approached to work on a One Heart Many Lives project.

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