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Rising levels of New Zealand medical student debt
Antonia Verstappen, Phillippa Poole

ABSTRACT

AIM: There is little recent data on the debt levels accrued by New Zealand medical graduates. We aimed to quantify the level of student loan debt accrued by medical graduates upon completion of their medical degree, and to investigate the association of New Zealand Government Student Loan (GSL) debt with gender and age.

METHODS: At graduation each year from 2006–2015, students from one New Zealand medical programme were invited to complete a career intention survey that included information on levels of GSL debt and the number of income sources used.

RESULTS: The overall response rate was 83.8%. On average, 92% of domestic students reported having some student loan debt, with 28% a debt of $90,000 or more. The proportion of students reporting a student loan debt of $90,000 or more increased over the period of the study (P<0.0001). While older students were more likely to have a larger student loan debt than younger students, there was no difference in debt levels by gender. Students with larger student loans were more likely to rely on a larger number of financial sources to fund their studies.

CONCLUSIONS: New Zealand medical students are carrying higher levels of student loan debt year on year. The effect of this on the future medical workforce is not certain; however, this could be negative if graduates choose to enter careers that are more highly paid over areas of high need. The full impact of large loans on individuals and the health system will take years to determine.

Medical students, like other tertiary students in New Zealand, contribute around a quarter of the full cost of their tuition. There are two medical programmes in New Zealand, based in Auckland and Otago, which are of six years duration. Both admit school leavers as well as about a third with a prior degree. In 2016, the annual fee for a full-time New Zealand citizen or resident (domestic) student in years two to six of the medical programme at the University of Auckland was $14,787.60. Domestic students in year six are eligible for a stipend of $26,756, in acknowledgment of their contribution to health care delivery. Annual course fee increases have typically been 4% per annum, although the maximum allowable increase is to be 3% per annum from 2016.

For domestic students, New Zealand Government student loans (GSLs) may be used to cover compulsory student fees, course-related costs up to the value of $1,000, and living costs up to $176.86 per week. From 2005, GSLs have attracted no interest unless a student is overseas for six months or more. Loan repayment begins with paid employment. From 2011, the Government introduced changes to GSLs so that students could borrow for no more than seven equivalent full-time student years (EFTS). This was relaxed slightly in 2015 for medical students with a prior degree who became limited to eight EFTS. This would cover a bachelor's degree and a further five years of medical study.

Concerns have been expressed as to how debts accrued by medical students impact on individuals and their careers. In 2001, New Zealand medical students estimated their average student loan debt was $60,000 to $70,000, with significant positive correlations between the predicted debt size and future medical career intentions, specifically an intention to practise medicine overseas. The actual debt level was not quantified in that study. Another New Zealand study found 55% of doctors in their first year of medical practice post-graduation (PGY1) considering leaving...
The country due to student loan debt, and 43% reported student debt influencing their choice of specialty. Debt may also impact on individual wellbeing, with large proportions of New Zealand medical students reporting that they experience worry as a result of their student debt. In 2008, Auckland medical graduates reported the average burden of GSL (but not total debt), was $63,880 for students with a student loan, with 33% having a GSL debt over $75,000. In contrast to other studies, debt was not reported by them to be a major factor in career intentions.

There is limited international evidence regarding influence of debt on student career choices. Several studies show that a preference for general practice is more likely to be associated with smaller medical student debts. However, much of this evidence comes from the US, where student debt levels are higher, with less evidence from comparable health and education systems, such as the UK and Australia.

The present study seeks to update the New Zealand situation on medical student debt, with aims to:

- describe the patterns of debt of New Zealand medical students over the past decade;
- analyse whether demographic factors such as age and gender are associated with the size of GSL.

**Methods**

Since 2006, all medical students at the University of Auckland have been invited to participate in the Tracking Health Professional Students and Graduates Project (TP). The purpose of the TP is to support the development of an appropriate range of health care professionals for New Zealand’s health needs through informing curriculum and workforce planners regarding career trends and factors important in career choice. Ethics approval for the study was granted from the University of Auckland Human Participant Ethics Committee in 2006 and remains current.

The questionnaire for medical students at the end of their programme is comprised principally of questions around anticipated future career intentions and investigates factors that may influence those career decisions, including levels of student debt. Students indicate their GSL debt at the time of the survey by selecting from a table arranged in $15,000 increments. Furthermore, they indicate what financial sources they had accessed from a given list, but not the amount for sources other than GSL. All data were anonymised prior to analysis. Individual cohort years and ages were combined into larger categories to reduce the chance of individual student identification, and to simplify the analysis. Continuous data were compared with a single factor ANOVA test and categorical variables by Chi Square.

**Results**

**Response rate**

The average response rate for surveys conducted between 2006 and 2015 was 83.8% (n=1,353). Of these, international students (10.8%, or 146) were excluded, as they are not eligible to apply for a New Zealand GSL. Another 19 students did not provide details of their residency status and were excluded from the analysis. This study is based on the responses of 1,188 New Zealand domestic medical students who answered at least some of the debt question.

**Size of Government Student Loan**

Overall, 1,169 students reported their level of GSL debt at graduation. Of these, 1,088 had any GSL debt (93%), with a further 81 students indicating they had no debt (7%). Over 27% of students had a GSL of $90,000 or more, with over 80% having a loan of $30,000 or more. The number of students in each GSL debt category, by years, is shown in Table 1.

The proportion of students reporting no GSL debt showed a downwards trend from 2006–2007 (13%) to 2014–2015 (5%), while the percentage of students reporting a balance of more than $90,000 increased over this time period from 12.5% to 46% (P<0.0001).

Using the centre amount of each loan category as an estimate, and assigning $100,000 for the top category, the mean GSL loan size over the decade was $64,677 (all students). For those reporting any loan, it was $69,492. The mean GSL debt for all students (including those with no debt) increased from $57,359 in 2006–7 to $76,198.
in 2014–15. The mean loan size for those with a GSL increased from $66,025 (139 students) to $80,063 (276 students) over the same time period.

Sources of income

Students indicated whether or not they had used income from any of the following eight sources during their study: GSL; paid employment; personal loan; savings/trust fund; scholarship; family support; partner support or other. There was no increase in the number of sources used over time; however, there was a positive relationship between the number of financial sources and GSL debt (P<0.0001 sf ANOVA). The group with the highest debt level accessed an average of 3.5 sources, which was higher than for those with no or low GSL debt (2.4).

Table 2 demonstrates the number of students accessing each income source during their programme, by category of GSL debt at graduation, along with the proportion of students within each GSL category who accessed each income source.

Table 1: Number of students in GSL categories, by years.

<table>
<thead>
<tr>
<th>Years</th>
<th>Total</th>
<th>$0</th>
<th>$1–$14,999</th>
<th>$15,000–$29,999</th>
<th>$30,000–$44,999</th>
<th>$45,000–$59,999</th>
<th>$60,000–$74,999</th>
<th>$75,000–$89,999</th>
<th>$90,000 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006–2007</td>
<td>160</td>
<td>21</td>
<td>3</td>
<td>8</td>
<td>9</td>
<td>33</td>
<td>36</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>2008–2009</td>
<td>221</td>
<td>16</td>
<td>16</td>
<td>13</td>
<td>17</td>
<td>27</td>
<td>48</td>
<td>46</td>
<td>38</td>
</tr>
<tr>
<td>2010–2011</td>
<td>236</td>
<td>14</td>
<td>27</td>
<td>18</td>
<td>25</td>
<td>29</td>
<td>49</td>
<td>33</td>
<td>41</td>
</tr>
<tr>
<td>2012–2013</td>
<td>262</td>
<td>16</td>
<td>16</td>
<td>14</td>
<td>14</td>
<td>27</td>
<td>36</td>
<td>50</td>
<td>89</td>
</tr>
<tr>
<td>2014–2015</td>
<td>290</td>
<td>14</td>
<td>6</td>
<td>14</td>
<td>11</td>
<td>25</td>
<td>31</td>
<td>56</td>
<td>133</td>
</tr>
<tr>
<td>Total (%)</td>
<td>1,169</td>
<td>81</td>
<td>68</td>
<td>67</td>
<td>76</td>
<td>141</td>
<td>200</td>
<td>215</td>
<td>321</td>
</tr>
</tbody>
</table>

Over 40% of students in each category reported paid employment, with a non-significant trend upwards at higher debt levels. Over 60% of students in each category had parents/family support (P=0.446). On the other hand, there was significant positive relationship of debt level with having a personal loan (P=0.018) and inverse relationship with savings/trust fund (P=0.007).

Gender

Overall, 1,165 students provided information on their gender as well as their GSL debt, of whom 56% were female and 44% male. There was no difference in pattern of GSL debt by gender (P=0.17) (see Table 3).

Age

Overall, 1,162 students provided information on their age and their GSL debt. Figure 1 shows the proportion of students in each age bracket at each level of loan. Older students are more likely to have a larger GSL debt than younger students (P<0.0001).

Table 2: Number (proportion) of students using each income source, by student loan debt.

<table>
<thead>
<tr>
<th>Income source</th>
<th>$0</th>
<th>$1–14,999</th>
<th>$15,000–$29,999</th>
<th>$30,000–$44,999</th>
<th>$45,000–$59,999</th>
<th>$60,000–$74,999</th>
<th>$75,000–$89,999</th>
<th>$90,000 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents/family support</td>
<td>70 (86.4%)</td>
<td>42 (61.8%)</td>
<td>41 (61.2%)</td>
<td>62 (81.6%)</td>
<td>99 (70.2%)</td>
<td>133 (66.5%)</td>
<td>154 (71.6%)</td>
<td>215 (67%)</td>
</tr>
<tr>
<td>Student allowance/ government assistance</td>
<td>17 (21.0%)</td>
<td>51 (75%)</td>
<td>37 (55.2%)</td>
<td>42 (55.3%)</td>
<td>84 (59.6%)</td>
<td>100 (50%)</td>
<td>101 (47%)</td>
<td>160 (49.8%)</td>
</tr>
<tr>
<td>Paid employment</td>
<td>35 (43.2%)</td>
<td>32 (47.1%)</td>
<td>40 (59.7%)</td>
<td>47 (61.8%)</td>
<td>81 (57.4%)</td>
<td>129 (64.5%)</td>
<td>139 (64.6%)</td>
<td>221 (68.8%)</td>
</tr>
<tr>
<td>Partner</td>
<td>5 (6.2%)</td>
<td>2 (2.9%)</td>
<td>3 (4.5%)</td>
<td>7 (9.2%)</td>
<td>16 (11.3%)</td>
<td>16 (8%)</td>
<td>21 (9.8%)</td>
<td>24 (7.5%)</td>
</tr>
<tr>
<td>Savings/trust fund</td>
<td>28 (34.6%)</td>
<td>8 (11.8%)</td>
<td>18 (26.9%)</td>
<td>19 (25%)</td>
<td>45 (31.9%)</td>
<td>62 (31%)</td>
<td>51 (23.7%)</td>
<td>59 (18.4%)</td>
</tr>
<tr>
<td>Scholarship</td>
<td>36 (44.4%)</td>
<td>52 (76.5%)</td>
<td>47 (70.1%)</td>
<td>42 (55.3%)</td>
<td>73 (51.8%)</td>
<td>91 (45.5%)</td>
<td>73 (34%)</td>
<td>120 (37.4%)</td>
</tr>
<tr>
<td>Personal loan*</td>
<td>1 (3.3%)</td>
<td>0</td>
<td>5 (17.9%)</td>
<td>2 (8%)</td>
<td>5 (19.6%)</td>
<td>7 (16.4%)</td>
<td>5 (4.7%)</td>
<td>39 (17.6%)</td>
</tr>
<tr>
<td>Other</td>
<td>2 (2.5%)</td>
<td>2 (2.9%)</td>
<td>0</td>
<td>3 (3.9%)</td>
<td>6 (4.3%)</td>
<td>6 (3%)</td>
<td>12 (5.6%)</td>
<td>10 (3.1%)</td>
</tr>
</tbody>
</table>

*This was only asked for years 2012 onwards.
Discussion

Medical training is expensive, both to taxpayers and to students. The longitudinal career intentions project at the University of Auckland has enabled real-time tracking of self-reported medical student debt at graduation since 2006. Trends since this time show mean GSL debt increasing by nearly $20,000 over the decade; fewer students with no GSL debt; and over four times the proportion of recent graduating cohorts owing more than $90,000 at graduation than in 2006–2007. Nearly half of the most recent domestic graduates have accrued a debt from their GSL alone of over $90,000.

Further, we confirmed an association between the number of sources of financial support accessed by medical students and their debt levels. On average, the group with the highest debt obtained financial support from 3.5 other sources, including employment. We also found an association between the types of income sources accessed by students during their course of study, and their GSL debt. Students with no GSL debt were more likely to have access to savings or a trust fund to fund their studies than students with high GSL debt, and students with high GSL debt were more likely to take out personal loans or tended to be in paid employment. This suggests that the reality for the majority of current medical students is managing a range of debts and employment, in addition to their study.

While it is not possible to determine the reasons, increasing student debt levels will be partially due to yearly increases in student fees at the maximum allowable 4% per annum. Other factors might be increased living costs in Auckland, reduced opportunities for part-time employment, erosion of buying power of other income sources, increased course costs, such as having to travel further for clinical placements, or changes in borrowing behaviour by students.

Table 3: Student loan balance by gender (% of gender cohort).

<table>
<thead>
<tr>
<th>Gender</th>
<th>$0</th>
<th>$1–$14,999</th>
<th>$15,000–$29,999</th>
<th>$30,000–$44,999</th>
<th>$45,000–$59,999</th>
<th>$60,000–$74,999</th>
<th>$75,000–$89,999</th>
<th>$90,000 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>6.3</td>
<td>6.4</td>
<td>5.7</td>
<td>6.7</td>
<td>14.7</td>
<td>17.1</td>
<td>18.0</td>
<td>25.0</td>
</tr>
<tr>
<td>Male</td>
<td>7.8</td>
<td>5.1</td>
<td>5.9</td>
<td>6.3</td>
<td>8.8</td>
<td>17.2</td>
<td>18.6</td>
<td>30.3</td>
</tr>
</tbody>
</table>

Figure 1: Age distribution at each level of loan.
The burden of GSL debt falls more on older students, which may not be surprising given they are likely to have had more years of tertiary study, during which to accrue a loan. Recently, a cap on years of study during which a student may apply for a GSL was introduced. For those students already with a master's or PhD, a consequence is they will have to access other sources of income, which may come at higher cost than a GSL.

High debt levels may impact upon the future medical workforce. The extent to which the size of loan will affect where a student chooses to work, and their specialty, is not able to be determined from this study, nor is the personal impact of these loans. Yet, medical graduates in the US have a median debt of around $US170,000, with those with higher debts reporting higher levels of stress and delay starting a family. Students with high debt felt more callous to others and less likely to work in underserved locations. It is not unreasonable to believe this may also apply in New Zealand.

Yet past New Zealand medical students reported little influence of debt on future specialty, which may reflect adequacy of salary across all specialties, or that the reality of the impact of a large loan had yet to materialise. Others have indicated debt would drive a decision to head overseas. Since these earlier studies, the rate of New Zealand medical graduates seeking work overseas has plummeted. This is mainly due to more limited work opportunities, but it may reflect loan conditions, which become more stringent if graduates travel offshore. Almost all New Zealand doctors work in the public sector for at least the first two years after graduation, with public system salary commensurate more with work conditions and seniority, not necessarily specialty. Starting salaries range from $70,000 to $116,000, depending on hours worked, with first year jobs largely guaranteed, at least for now. Having a high GSL will inevitably impact on the capacity to buy a house, especially in Auckland where mean prices approach $1 million, and may make practice in smaller centres more desirable.

It is well-established that, on average, men and women doctors have different career trajectories, with women more likely to participate in part-time medical practice, take time out of practice to have a family or work in less procedural areas of medical practice, all of which may impact on earnings and capacity to pay back debts. In contrast to an earlier study which found lower levels of GSL debt in women than in men, the present study found no difference in loan size by gender. At one level this is reassuring; however, when one considers female doctors on average have less earning capacity over a working lifetime, this is potentially inequitable. Priorities for future studies are to look at the influence of debt for those individuals with the highest debt levels, particularly by gender and age, over the longer term.

The high response rates and internal consistency seen both in the relationship of debt with debt sources and in debt patterns over different cohorts of students over time, suggest the findings are robust. In 2000, Auckland medical students anticipated that their total debt from all sources would be between $60,000 and $70,000. This was close to the actual levels of GSL debt alone in the early cohorts in our study, but not the latter ones, which are higher. On balance, we believe our findings and conclusions may be conservative, as only GSL debt was quantified, and because the top category was open-ended at >$90,000. To be absolutely certain of the true GSL debt levels would require information from the New Zealand Inland Revenue Department, but this would not take into account all debt.

As class sizes have nearly doubled in the study period, the study raises concerns that well over a hundred medical graduates each year from this medical programme alone will be a taking forward a six-figure debt into their early post-graduate training and beyond, with this number rising yearly. The effect of this on individual doctors and the New Zealand health system is uncertain, but has the potential to be negative if it forces graduates into higher paid careers away from areas of need, or impacts on the way individuals live or conduct their practice. Many of the medical students in this study will be invited to complete surveys until their eighth post-graduate year, allowing a prospective view of the extent to which student debt impacts on their early careers. Arguably, it will take far longer to be sure about the effect of student debts on New Zealand's future doctors.
Competing interests:
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