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Concern with the costs of medical school education and further vocational training in Māori, Pasifika and New Zealand European medical graduates

David Lu¹, Antonia Verstappen¹, Phillippa Poole² & Craig S. Webster^{1,3}

¹Centre for Medical and Health Sciences Education, School of Medicine, University of Auckland, Auckland, New Zealand;
²School of Medicine, University of Auckland, Auckland, New Zealand; ³Department of Anaesthesiology, Faculty of Medical and Health Sciences, University of Auckland, Auckland, New Zealand

Abstract

Introduction: The burden of the costs of medical training remains unclear for strategically important cohorts of students. We therefore explored concern with educational costs in Māori, Pasifika and New Zealand European medical school graduates.

Methods: Using data from the Medical Schools Outcomes Database (MSOD) in the years 2011 to 2023, we followed a national combined cohort of 2621 graduates at three time points until postgraduate year 3 (PGY3). We compared the proportions of graduates indicating concern with the costs of medical school education and vocational training (4 or 5 on Likert scale) with those indicating little or no concern (1-3 on Likert scale).

Results: At exit from medical school, the cohort of Pasifika graduates showed a significantly higher proportion of concerned individuals regarding vocational training costs (16 (8.9%) of 179 vs 17 (3.9%) of 434 for Māori and 65 (3.2%) of 2008 for New Zealand European, $\chi^2=14.9$, $p=0.0006$). In addition, Māori medical school graduates were significantly more concerned with the cost of medical school education at PGY1 (24 (10.9%) of 220 vs 2 (3.1%) of 64 for Pasifika and 74 (6.2%) of 1188 for New Zealand European, $\chi^2=7.8$, $p=0.019$). No significant effects were seen at the PGY3 time point suggesting that concerns may reduce over time.

Conclusions: With increasing numbers of Māori and Pasifika medical graduates, concern with educational costs may increase in future. However, our results are reassuring in that concern with educational costs in New Zealand remains low overall, even in strategically important cohorts of medical graduates.

Keywords: Medical Education, Career Choice, Career Influences, Medical Graduates, National Longitudinal Study, Costs

I. INTRODUCTION

Around the world, the financial burden of completing medical school and further vocational or postgraduate training has been one of the most widely studied influencing factors underlying career choice in medical graduates (Asch et al., 2020; Ling et al., 2018). In New Zealand, debt levels of medical graduates are most commonly \$90,000 or more and are substantially higher than graduates in other healthcare disciplines such as nursing and pharmacy (Webster et al., 2017). However,

despite this, national longitudinal studies have demonstrated that concern with the costs of medical school and vocational training are two of the least influential factors determining career decisions in New Zealand medical graduates (Webster et al., 2024). While the overall level of concern with educational costs appears to be low in New Zealand, it is possible that this concern remains disproportionately burdensome for strategically important cohorts of medical graduates. Māori are the indigenous peoples of Aotearoa/New

Zealand, and priority equity pathways for Māori and Pasifika students in New Zealand aim to allow equity of access to medical schools and to supply the diverse range of graduates needed to best serve the healthcare needs of New Zealand communities (Ling et al., 2018). However, such equity aims may be hampered by excessive concern with educational costs in these student cohorts.

Our aim in the present study was therefore to explore the relative levels of concern with the costs of medical school education and further vocational training in Māori, Pasifika and New Zealand European medical graduates.

II. METHODS

We analysed quantitative data drawn from the Medical Schools Outcomes Database (MSOD) Longitudinal Tracking Project. The MSOD Project is a questionnaire-based longitudinal multiple-cohort study that aims to improve medical workforce development in Australia and New Zealand (Poole et al., 2019). As part of the MSOD project, at graduation from medical school (Exit) and in postgraduate years (PGY), graduates are asked to specify their preferred area(s) of medical practice and to complete a schedule of 26 influencing items, indicating the degree to which each was important in their choice, using a 5-point Likert scale with anchors of 1 (not at all) to 5 (a great deal).

In the present study we analysed New Zealand graduates' concerns related to the costs of medical training, namely, the influencing items of the "Financial costs of medical school education", and the "Financial costs of vocational training" (see (Webster et al., 2024) for the complete schedule of influences items). These data were collected at three time points, namely at Exit from medical school, and at PGY 1 and 3. We tabulated the number of students at each time point who reported a 4 or 5 on the Likert scale, indicating concern, or a great deal of concern about costs, in Māori, Pasifika, and New Zealand European graduate cohorts. We then conducted Chi-square comparisons at each time point of the proportion of these

numbers in comparison to graduates reporting no concern, or little concern (Likert responses 1 through 3), while designating an alpha of 0.05.

III. RESULTS

We included all available MSOD data in the years 2011 to 2023 of New Zealand medical school graduates whose primary self-identified ethnicity was Māori, Pasifika or New Zealand European, representing a national combined cohort of 2621 questionnaire respondents at the Exit time point, 1555 at PGY1 and 1238 at PGY3 (Table 1). The total response rates for the MSOD questionnaire at Exit are in the 80% range each year – representing a sampling margin of error of 1% at the 95% level of confidence. Response rates fall to the 50% range at PGY 1 and 3, maintaining a margin of error of 3% at the 95% level of confidence (Webster et al., 2024). The mean age of MSOD questionnaire respondents at Exit from medical school is 25 years, with female graduates outnumbering male graduates by 7%.

Table 1 shows the total number of graduate questionnaire respondents, and the numbers (%) of those identifying concern, or a great deal of concern (Likert scores of 4 or 5) for each ethnicity and over time points. Two significant effects were determined. First, Pasifika medical school graduates were significantly more concerned with vocational training costs at Exit from medical school (8.9% vs 3.9% for Māori and 3.2% for New Zealand European, $\chi^2(2)=14.9$, $p=0.0006$, Table 1). Secondly, Māori medical school graduates were significantly more concerned with the cost of medical school education at PGY1 (10.9% vs 3.1% for Pasifika and 6.2% for New Zealand European, $\chi^2(2)=7.8$, $p=0.019$). At each time point for all groups 70-75% of Likert responses were a 4 with the minority indicating 5, demonstrating that those reporting a great deal of concern in the above significant effects numbered between only 5 and 7 individuals over our 12-year study timeframe. No significant effects were seen at the PGY3 time point for concern with educational costs.

Ethnic group	Medical school costs		Vocational training costs	
	Those indicating concern (4 or 5) (n, %)	Total respondents (n)	Those indicating concern (4 or 5) (n, %)	Total respondents (n)
Exit (years 2011 to 2023)				
Māori	33 (7.6%)	432	17 (3.9%)	434
Pasifika	17 (9.5%)	179	16 (8.9%)*	179
New Zealand European	114 (5.7%)	2010	65 (3.2%)*	2008
Total	164 (6.3%)	2621	98 (3.7%)	2621
PGY1 (years 2011 to 2022)				
Māori	24 (10.9%)**	220	8 (3.5%)	229
Pasifika	2 (3.1%)	64	4 (6.0%)	67
New Zealand European	74 (6.2%)	1188	39 (3.1%)	1259
Total	100 (6.8%)	1472	51 (3.3%)	1555
PGY3 (years 2011 to 2020)				
Māori	12 (7.0%)	171	10 (5.9%)	169
Pasifika	2 (4.4%)	45	1 (2.2%)	45
New Zealand European	50 (4.9%)	1022	28 (2.7%)	1022
Total	64 (5.2%)	1238	39 (3.2%)	1236

Note: missing values indicate instances where a question response was not recorded. *p<0.0006, **p<0.019

Table 1. Medical school graduates indicating concern with educational costs at three time points

IV. DISCUSSION

Overall, our results are reassuring in that even in strategically important cohorts of medical graduates, concern with the costs of medical school education and further vocational training remain relatively low in New Zealand. These results are largely consistent with previous longitudinal analyses of the overall medical school graduate population (Webster et al., 2024). While our results did identify two instances where the concern with educational costs were significantly raised for Māori and Pasifika graduates, these effects appeared only at one time point each, and were not present at the later PGY3 time point, suggesting that such concerns may be temporary or reduce over time. It is also reassuring that at all time points 70-75% of responses were in fact 4's rather than 5's – suggesting that only a very few medical graduates overall have a great deal of concern about educational costs in New Zealand.

Some cell n's in our study were small, and we did not correct for multiple statistical comparisons as we took an exploratory approach to analysis emphasising the detection of effects (hence we were more concerned with avoiding a type-II error than a type-I error). This may suggest some caution should be employed in interpreting our statistical comparisons. In order to address the small-n problem we combined cohorts of data spanning 12 years and the Likert response categories of 4 and 5. In addition, combining data in this way and describing only the response rates and demographics of the total MSOD database, reduced the risk of identifiability of individual participants in our study. Ethnicity in our study is self-reported, which is a strength, but also means that some

respondents may elect not to complete this question, and hence some missing values are apparent. However, substantial strengths of the MSOD Project data are the high questionnaire response rates and the small margins of error ($\leq 3\%$), which compare very favourably with other longitudinal studies of medical career choice, and suggest that our results are generalisable to the national population of New Zealand medical graduates (Guru et al., 2025; Webster et al., 2024). It should be noted that ethnicities beyond the three categories included in our study are designated only as “other” in the MSOD database. Included in the “other” ethnicity category in our study timeframe were 1379, 617 and 478 respondents at the Exit, PGY 1 and 3 timepoints respectively. These respondents were excluded from the present analysis as we felt that this was a catch-all category that would lead to less reliable interpretation.

The cost of medical school education and vocational training is commonly perceived by the public and media as one of the most important barriers to the production of qualified doctors and may impact medical specialty choice. Our results suggest that this is largely not the case in New Zealand, and this appears to include graduate cohorts considered strategically important for medical schools in meeting their equity and diversity aims. However, our results do suggest that with increasing numbers of Māori and Pasifika medical graduates concern with educational costs may increase, and so additional support services at the undergraduate and postgraduate levels may become more important in the future. In addition, better understanding the influences underlying career choice in medical graduates remains

an important and practical concern for medical schools in New Zealand and elsewhere, particularly when attempting to increase the number of doctors in underserved areas of practice.

V. CONCLUSION

We believe our study is the first to consider the relative levels of concern with educational costs in Māori, Pasifika and New Zealand European medical school graduates based on a large national dataset at three timepoints. Pasifika graduates were significantly more concerned with vocational training costs at Exit from medical school compared with Māori and New Zealand European graduates. Māori medical school graduates were significantly more concerned with the cost of medical school education at PGY1 compared with Pasifika and New Zealand European graduates. However, these effects involved only a small number of individuals over our 12-year study period, and no significant effects were seen by PGY3, suggesting that these concerns may diminish over time.

Notes on Contributors

David Lu was involved in the conceptualisation of this study, data analysis, writing and revision.

Antonia Verstappen was involved in data collection, writing and revision.

Phillippa Poole was involved in data collection, writing and revision.

Craig S. Webster was involved in the conceptualisation of this study, data analysis, writing and revision.

Ethical Approval

This study was carried out in accordance with all regulations of the host organisation and with the approvals of the Human Participants Ethics Committees of the University of Auckland (reference number 022388) and the University of Otago (reference number 07-155). All participants gave written informed consent to participate, including for anonymised aggregated data to be published.

Data Availability

The ethics approval for the Medical Schools Outcomes Database Longitudinal Tracking Project does not permit the public sharing of non-aggregated data. All aggregated data are available in our paper.

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Declaration of Interest

All authors have no potential conflicts of interest.

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*Craig S. Webster
Centre for Medical and Health Sciences Education,
School of Medicine, University of Auckland
Private Bag 92-019
Auckland 1142, New Zealand
Email: c.webster@auckland.ac.nz