Academic performance and career choices of older medical students at the University of Otago

William Shelker, Alison Belton, Paul Glue

Abstract

Aims To compare the academic performance and postgraduate career choices of a cohort of medical students who are older and more life experienced at time of medical school entry (“Other Category” students) with students admitted through standard entry admission pathways.

Methods Examination performance, graduation rates, postgraduate specialisation and geographical location were compared between Other Category students and students entering via Standard Entry admission (including competitive first year entry and competitive graduate entry immediately after completing a Bachelor’s degree).

Results Compared with Standard Entry students, Other Category students had equivalent examination pass rates, significantly higher rates of distinction passes in examinations in Year 2 (OR 1.86; 95% CI 1.05, 3.29; p=0.03) and Year 5 (OR 2.36; 95% CI 1.27, 4.37; p=0.005), and equivalent graduation rates. Retention of Other Category graduates in New Zealand was 14% higher than Standard Entry students over 10 years post-graduation (p<0.0001), and a higher proportion had specialised in General Practice (p=0.04).

Conclusions Compared with Standard Entry students, Other Category medical students had higher rates of distinction grades in examination results, higher rates of retention in NZ post-graduation, and a higher proportion taking up general practice as a specialty. These findings may be relevant in planning for recruitment and training of the future medical workforce in New Zealand.

There are three categories of student admission to medical school at the University of Otago. Approximately 70% of students gain entry via a competitive first year examination. Another 25% gain entry immediately after completion of a bachelor’s degree (competitive graduate entry). For the purposes of this paper, students who enter via these pathways will be collectively termed as Standard Entry. The remaining 5% of students, termed “Other Category”, comprise older applicants with a diverse range of backgrounds. These may include individuals who have completed a second or higher degree, or have completed a degree at an overseas university, in both cases at least three years prior to their application. Also included are graduates from any health-related profession (e.g. nursing, physiotherapy or pharmacy backgrounds), and who have at least five years of work experience.

Selection of Other Category students is by interview, and academic ability, interview performance and life experience are all considered in candidate selection. Successful candidates who have not completed courses equivalent to the first year medical school entrance examination may have their entry deferred until the first year medical school course is passed. Other Category entry has been in place for at least 24 years at Otago
Medical School and over 300 medical students admitted under this category have graduated.

Current research on the academic success of older medical students, or those with tertiary degrees, is rather limited. Older medical students have been shown to be academically more successful\(^1\) or as successful\(^2-5\) as younger entrants. However this research has generally reported on students who, at the Otago Medical School, would be classified as entering under the competitive graduate entry category. Therefore the purpose of this research was to evaluate the academic performance and postgraduate career choices of this older, more life-experienced group of medical students relative to their younger peers.

**Methods**

The objectives of this research were to compare the academic performance and postgraduate career choices of Other Category medical students relative to students admitted through Standard Entry pathways. Approval for this project was given by the Otago University Ethics Committee. The names of students admitted to Otago Medical School under the Other Entry category were identified through the Health Sciences Administration group and the Admissions Committee. Year of acceptance was recorded, along with any entry requirements (such as completion of a prescribed course of study, which was usually the first year medical course).

Anonymised academic data (examination performance in the two key examination years, Years 2 and 5 for 1996-2005, and year of graduation from 1992-2010) were obtained from the Otago University database under the supervision of an authorised staff member. Comparative data for all other medical students (“Standard Entry”) over the same period were provided by the Faculty of Medicine Administration group.

Postgraduate information, including medical specialisation, geographical location (country, and for those in New Zealand, major city versus non-major city location), were gathered from medical registers in New Zealand, Australia, England, Ireland, USA and Canada. Comparative data for all New Zealand medical school graduates were obtained from the 2009 annual workforce report produced by the New Zealand Medical Council\(^6\). Summary statistical methods were used. Comparisons between groups used Chi-squared statistics, and Odds Ratios and Risk Differences were calculated using random effects Mantel-Haenszel methods (Review Manager 5.0).

**Results**

Between 1987 and 2010, a total of 347 students were offered a place at the University of Otago Medical School under the Other Entry category (approximately 5% of the total medical school enrolment over this time). Of these 347 students, 102 were required to complete a prescribed course of study (the first year medical course) before entry, compared with 245 students who were offered direct entry in Year 2 (Table 1). A greater proportion of students who had to complete a prescribed course of study did not enter Year 2 ((32/102) compared with students offered direct entry into Year 2 (46/245; OR=2.00; 95%CI 1.17–3.35; p=0.01).

Other Category students who completed Year 2 had an examination pass rate of 99% (237/239; 30 students still to sit exam), and a pass rate of 98% (193/196) in Year 5 exams. These rates are identical to those of Standard Entry students.

Examination distinction rates were significantly greater in Years 2 and 5 for Other Category students compared with Standard Entry students (Year 2: 16% vs 9%; OR=1.86, 95%CI 1.05–3.29; p=0.03; Year 5: 10% vs 6.8%; OR=2.36, 95%CI 1.27–4.37; p=0.005).
Table 1. Year 2 entry rates of Other Category students required to complete a prescribed study course or offered direct entry

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<thead>
<tr>
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<th>Did not enter Year 2</th>
<th>Entered Year 2</th>
<th>Total students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prescribed course</td>
<td>32</td>
<td>70</td>
<td>102</td>
</tr>
<tr>
<td>Direct Entry into Y2</td>
<td>46</td>
<td>199</td>
<td>245</td>
</tr>
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Graduation rates for Other Category students who entered Year 2 prior to 2005 (and were capable of graduating at the time of data collection) was 96% (187/194), identical to the graduation rate of 96% for Standard Entry students (2265/2363, Chi-squared=0.13, p=0.7).

A total of 7 Other Category graduates (4% of those who graduated) could not be located on any medical register, and in the following analyses were considered to be non-resident in New Zealand. The retention rate of Other Category graduates remaining in New Zealand over the 12 years post-graduation is shown in Figure 1.

Figure 1. Retention rates over 12 years post-graduation for Standard Entry and Other Category medical graduates. Other Category data are a 3 year rolling average; Standard Entry data are from reference (6)

When compared with Standard Entry graduates, the decline in retention rates was less steep. Analysis of data from 1999–2010 showed a risk difference (RD) of 0.14 (95% CI 0.07, 0.21, p<0.0001) between the two populations (Figure 2). This corresponds to
a 14% increase in postgraduate retention in New Zealand of Other Category graduates compared with Standard Entry graduates.

Figure 2. Forest plot comparing retention of Other Category vs Standard Entry medical students in NZ from 1999–2010

The geographical location of Other Category graduates who remained in New Zealand was not significantly different from Standard Entry graduates in distribution between major urban centres and non-major centres (Other: 116:26; Standard: 8880:2284; Chi-squared=0.4, p=0.5). For graduates remaining in New Zealand and who had vocational (specialist) registration, a significantly larger number of Other Category graduates were General Practitioners (28/55 vs. 2573/6905; Chi-squared=4.34, p=0.04). The relative proportions of Other Category Graduates entering other specialties compared with Standard Entry graduates were too small to demonstrate meaningful differences.

Discussion

This study has identified a number of interesting findings. Academically, Other Category students who enter Year 2 of medical school perform as well or better than medical students entering via Standard Entry routes. This is demonstrated by equivalent examination pass rates, higher rates of distinction passes in examinations, and equivalent graduation rates. The retention rate of postgraduate Other Category students in New Zealand is significantly higher than Standard Entry students, and a higher proportion specialise in General Practice. This study also identifies a possible risk factor for Other Category students failing to enter Year 2.

These results agree with an earlier report that older medical students achieve a higher percentage of honours degrees (equivalent to achieving distinction at the University of Otago). This study identified higher rates of distinctions in Year 2 and Year 5 for Other Category entrants compared with Standard Entry students. The overall pass rate...
in Year 2 and Year 5, along with the graduation rate of Other Category students agrees with a body of literature\cite{2-5} that older (or tertiary educated) medical students are as successful as younger medical students, who may be entering direct from high school or with one year of tertiary education.

Another important observation in this research is the higher retention rate of Other Category students in New Zealand post-graduation. Data from the New Zealand Medical Council\cite{6} show a rapid decline in retention of doctors over the first three years after graduation, which continues to decrease steadily over the next six years, to stabilize at approximately 65% at nine years post-graduation (Figure 1).

In contrast, Other Category graduates show a much more gradual decline in retention, with a drop to 89% retention at three years post-graduation and 83% at nine years post-graduation. The overall difference represents a 14% increase in retention for Other Category Entrants, and may be an important consideration when addressing difficulties in retaining medical workforce in New Zealand\cite{7}.

The reasons behind why Other Category graduates have a higher retention rate were not investigated in this research. Possible reasons might be that as older students, they have spent time overseas, are more settled in their lives, or have families, and thus the incentives to travel outside of New Zealand are diminished.

Other Category students also have a higher percentage of graduates specialising in General Practice (51%) compared to the overall General Practice rates (37%). The reason behind this preference for General Practice was also not investigated in this study, however may be relevant to consider when strategies are developed to increase GP numbers in the New Zealand Medical workforce\cite{8}.

Another finding was a possible risk factor for students who were selected not entering Year 2 of medical school. Students who were required to take a prescribed course (first year medical classes) were twice as likely not to enter Year 2. This may indicate a need for additional academic support for students required to take prescribed courses prior to medical school entry, to reduce the risk of non-entry.

There are a number of possible shortcomings related to the findings of this study. The Other Category student population was relatively small (~5%) and highly selected compared with total medical student enrolment, and these factors may reduce the ability to generalise these findings. As there are no directly comparable publications or reports on a similarly selected medical student cohort, it would be important to independently confirm these findings.

This research cannot address whether the academic and retention advantages noted for Other Category students would also be seen in graduate entry students at Otago Medical School (i.e. those who enter medical school after completion of a Bachelors degree, but who are younger than, and lack the life experience of Other Category students).

This research draws attention to possible advantages for medical school enrolment of older students, graduates or health professionals with considerable life experience. These students demonstrate high levels of academic performance, and after graduation, are more likely to remain in New Zealand and to be working in General Practice when compared with colleagues who entered medical school via Standard
Entry pathways. These findings may be relevant in planning for recruitment and training of the New Zealand medical workforce in the future.

**Competing interests:** None.

**Author information:** William Shelker, Student, University of Otago, Dunedin; Alison Belton, Associate Dean-Admissions, Faculty of Medicine, University of Otago, Dunedin; Paul Glue, Professor and Hazel Buckland Chair in Psychological Medicine, University of Otago, Dunedin

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**Correspondence:** Professor Paul Glue, Department of Psychological Medicine, Dunedin School of Medicine, PO Box 913, Dunedin, New Zealand. Fax: +64 (0)3 4747934; email: paul.glue@otago.ac.nz

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