



## **The new rural health curriculum at Dunedin School of Medicine: how has it influenced the attitudes of medical students to a career in rural general practice?**

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### **Abstract**

**Aim** To evaluate the effect of the new fifth-year rural health curriculum developed at Dunedin School of Medicine on the attitudes of students to a career in rural general practice.

**Methods** A structured questionnaire was administered to all fifth-year medical students immediately before and after participation in the rural health curriculum at DSM during 2000 and 2001.

**Results** There were statistically significant positive changes in the students' responses to each question regarding their attitudes towards rural general practice. Students identifying as being of rural origin were more likely to give positive answers both before and after the course. The numbers indicating that they will or probably will enter rural general practice increased from 1.1% (0% (n = 0) of urban and 6% (n = 1) of rural students) to 13% (10% (n = 6) of urban and 22% (n = 4) of rural), pre- to post-course.

**Conclusions** Students who identify their origins as rural are more likely to have a positive attitude towards rural general practice as a career choice. However, a rural curriculum can produce attitude changes in students, irrespective of origin. If medical schools wish to assist in addressing the needs of their rural communities they should consider selection of students from rural origin and ensure that rural health plays a significant part in the school curriculum.

The challenge of attracting and retaining general practitioners (GPs) in rural areas is a problem that is shared by many countries, such as New Zealand, Australia, Canada and the USA.<sup>1,2</sup> A report by the World Organisation of Family Doctors (WONCA) recognised the importance of the role of rural GPs in the provision of healthcare to rural communities and the role medical schools should play in supporting rural healthcare.<sup>3</sup> The development of effective methods of increasing the numbers of students adopting rural general practice as their career choice has received considerable attention, with many studies suggesting either one or other of two strategies.

The first strategy is related to admission policy. Students from a rural background are more likely to enter a career in rural health than their urban-based counterparts,<sup>4-6</sup> but it is widely believed that many current medical-school admission policies unwittingly bias selection towards students from urban backgrounds.<sup>7</sup> A change of admission policy in order to recruit more rural students could lead to more graduates interested in a career in rural health.<sup>5</sup> Similarly, it is believed that admitting more 'general interest' students will lead to more GPs and therefore more rural GPs.<sup>8,9</sup> A criticism of

this approach is that the proportion of rural students would still be small and so the shortage of rural GPs may not be significantly affected.

The second strategy is to place students into rural areas for a period of their study.<sup>10,11</sup> It is believed that many students, especially those from urban backgrounds, are not interested in living and working in a rural area. One purpose of a rural attachment, therefore, is to expose students to general practice in a rural community, letting them experience aspects of rural life and work, and hopefully dispelling any misconceptions they might have. Studies have shown students to regard rural placements more highly than urban placements in terms of educational benefit, due to the number of patients they see and the wider range of experiences gained.<sup>12,13</sup> A number of schools have recently set up rural attachment programmes to provide this exposure for students.<sup>14-16</sup>

The most effective means of increasing the likelihood of students entering rural general practice may be a combination of both of these strategies.<sup>7,17</sup> Other factors have also been identified as possibly important, such as the composition of the teaching faculty.<sup>7,17,18</sup> Rural GP faculty members who are good role models are likely to have a positive influence on students' career choices.

The Department of General Practice at Dunedin School of Medicine (DSM) established a rural attachment in 2000 through Te Waipounamu Rural Health Unit as part of its undergraduate programme. Students are placed in rural centres during their fifth year for a period of seven weeks as part of their training. During this time they are exposed to patient care in a variety of settings, including rural general practice and rural hospital work.

This paper presents the results of a questionnaire-based survey of fifth-year DSM medical students in 2000 and 2001. This study was undertaken to see whether the fifth-year rural attachment had an effect on students' attitudes towards a career in rural general practice.

## Methods

Two cohorts of students from DSM were surveyed both before and after their rural general practice attachment during their fifth year of study. The first cohort was surveyed during 2000 and the second during 2001. Participation in the study was voluntary and participants were permitted to complete the questionnaire anonymously. The first questionnaire was administered before the students embarked on their rural attachment and contained questions pertaining to students' views on rural health. The students completed the second questionnaire at the finish of the rural attachment. This contained the same questions as the first, as well as asking respondents to provide demographic information such as sex, age, and ethnicity, and to identify whether they considered themselves to be from an urban or a rural background.

A preliminary analysis could not find any difference between the 2000 and 2001 cohorts in any of the factors of interest and, as a result, it was decided to pool the cohorts as one group.

Some questions required respondents to indicate their preference on a five-point Likert scale. Two questions asked respondents to indicate their likelihood of entering general practice and rural general practice respectively, on a scale ranging from 'definitely will not' to 'definitely will'. Due to the small number of responses in either extreme, the five-point scale was converted to a three-point Likert scale. On the new scale, the category 'will not' consisted of the responses 'definitely will not' and 'probably not', and the category 'will' consisted of the responses 'definitely will' and 'probably will'.<sup>20</sup>

Data were analysed using SPSS 11.0 for Windows. Analysis of cross-tabulation tables is based on modifications of the chi-square coefficient statistic. For nominal data (ie, where respondents answered Yes/No or Rural/Urban etc), Cramer's V measure was used.<sup>19</sup> For ordinal data (where answers are given on a scale), Kendall's Tau-c measure was used.<sup>20</sup> A non-parametric sign test was used in one

case where the significance was borderline and the sample size was small. This test confirms whether the direction of any overall change is significant. For both Tau-c and Cramer's V, the absolute coefficient is between 0 and 1, where 0 indicates no relationship between the variables and 1 indicates a perfect relationship. Actual values of Tau-c can be either positive or negative, with negative values indicating a negative relationship.

## Results

There were a total of 167 returned questionnaires, comprising 87 pre-course and 80 post-course questionnaires. One of the post-course questionnaires was discarded due to most of the responses being invalid. This equates to a response rate of 88% (n = 87) for the pre-course questionnaire and 81% (n = 79) for the post-course questionnaire.

Respondents were asked to supply demographic information, including identifying whether they considered themselves to be of rural or urban origin, in the post-course questionnaire only. Determination of origin was prevented in 15 pre-course questionnaires due to respondents choosing to remain anonymous or completing the pre-course questionnaire only. The proportion of urban and rural students in the pre-course questionnaire (73.6% and 23.6%, n = 53 and 17) was similar to those in the post-course questionnaire (74.7% and 22.8%, n = 58 and 18).

Respondents were asked whether they had ever *considered* entering both general practice and rural general practice. In addition, they were asked to indicate the likelihood of actually entering into these professions.

Figure 1 shows the increase from 81.6% (n = 71) to 88.6% (n = 77) of respondents having *considered* general practice pre-course to post-course, although this increase is not statistically significant (Cramer's V = 0.098, p = 0.208). There was, however, a significant increase in respondents having *considered* rural general practice (Figure 1), rising from 43.9% (n = 38) to 70.9% (n = 56) (Cramer's V = 0.274, p < 0.0005). These questions were kept independent of one another to avoid the assumption that all students would consider rural general practice as a subset of general practice. This allows for students who might be attracted only to rural general practice and not general practice as a whole. The number of these was small, with approximately 4% (n = 3) of students falling into this category.

**Figure 1. Percentage of respondents indicating that they have *considered* general practice (GP) and rural general practice both pre-course and post-course**

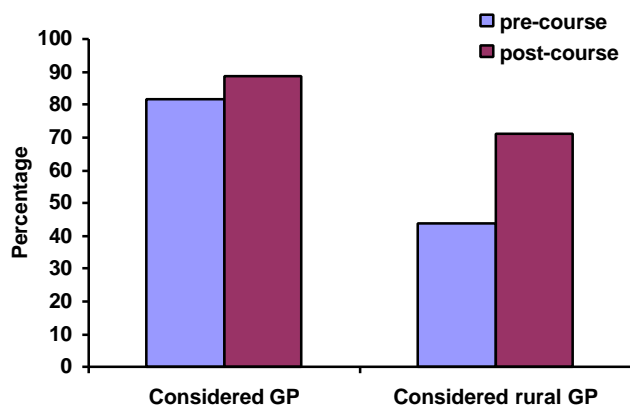


Table 1 shows that there was a significant increase in the indicated *likelihood* of entering rural general practice after the rural attachment (Tau-c = 0.164, p = 0.038) with 12.7% (n = 10) of respondents indicating that they ‘will’ enter rural general practice.

**Table 1. Indicated *likelihood* of entering rural general practice before and after the rural attachment**

Response	Pre-course % (n)	Post-course % (n)
Will	1.1 (1)	12.7 (10)
Maybe	46.0 (40)	45.6 (36)
Will not	52.9 (46)	41.8 (33)

Table 2 shows the respondents separated by origin and compares pre-course to post-course responses. When comparing post-course responses it is apparent that rural respondents have a much greater indicated likelihood of entering rural general practice (Cramer’s V = 0.233, p = 0.043) with only 22.2% (n = 4) of rural students responding that they ‘will not’ enter (‘definitely will not’ or ‘probably will not’ on the original scale) compared with approximately 48% (n = 28) of urban students.

**Table 2. Indicated *likelihood* of entering rural general practice for urban and rural respondents**

Response	Urban		Rural	
	Pre-course % (n)	Post-course % (n)	Pre-course % (n)	Post-course % (n)
Will	0 (0)	10.3 (6)	5.9 (1)	22.2 (4)
Maybe	41.5 (22)	41.4 (24)	58.8 (10)	55.6 (10)
Will not	58.5 (31)	48.3 (28)	35.3 (6)	22.2 (4)

From Table 2 it is apparent that the percentage shift for each origin is similar to the overall shift shown in Table 1. However, this shift was not statistically significant, which may be due to the small sample size. A non-parametric sign test confirmed that the direction of the shift was significant. There were 50 urban and 16 rural respondents matched across pre-course and post-course questionnaires. A significant positive shift was found in both the urban (p = 0.009, 22 positive, 7 negative, and 21 ties), and the rural respondents (p = 0.031, 6 positive, 0 negative and 10 ties).

A similar overall analysis was performed on the indicated likelihood of entering general practice. Table 3 shows a slight increase from pre-course to post-course, although this was not statistically significant (Tau-c = 0.069, p = 0.403).

**Table 3. Indicated likelihood of entering general practice before and after the rural attachment**

Response	Pre-course % (n)	Post-course % (n)
Will	29.9 (26)	35.4 (28)
Maybe	46.0 (40)	44.3 (35)
Will not	24.1 (21)	20.3 (16)

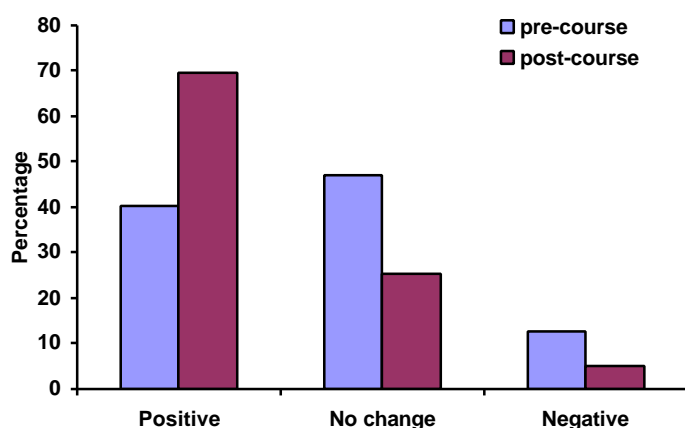
Table 4 compares the indicated likelihood of entering general practice for rural and urban students. Rural respondents have significantly greater indicated likelihood of entering general practice (Cramer's  $V = 0.213$ ,  $p = 0.036$ ). Analysis showed no change in indicated likelihood of entering general practice in either rural or urban students from pre-course to post-course (urban  $p = 0.730$ , rural  $p = 0.664$ ).

**Table 4. Indicated likelihood of entering general practice for urban and rural respondents**

Response	Urban % (n)	Rural % (n)
Will	32.4 (36)	42.9 (15)
Maybe	41.4 (46)	54.1 (18)
Will not	26.1 (29)	5.7 (2)

Respondents were asked whether their undergraduate programme had had any influence on their attitude toward a career in rural general practice, and, if the answer was yes, whether that influence was positive or negative. There was a significant positive shift in attitude as influenced by the undergraduate programme (Tau-c = 0.301,  $p < 0.0005$ ), with only 40% ( $n = 35$ ) of the pre-course respondents indicating that the undergraduate programme had a positive influence compared with 69% ( $n = 55$ ) post-course (Figure 2). The proportion of respondents who indicated the undergraduate programme had a negative influence dropped from approximately 13% ( $n = 11$ ) to 4% ( $n = 3$ ). The remaining respondents indicated that their attitude was not influenced by the undergraduate programme.

**Figure 2. Influence of the undergraduate programme pre-course and post-course**



When asked whether they recognised rural general practice as a specific discipline of medicine, a higher proportion of respondents classified rural general practice as a specific discipline of medicine after the rural attachment. This change was significant with 70.1% (n = 61) pre-course increasing to 85.9% (n = 68) post-course (Cramer's V = 0.189, p = 0.015). The proportion amongst urban students increased from 66% (n = 35) to 81.4% (n = 47) and rural students from 88.2% (n = 15) to 100% (n = 18).

There was an increase in the proportion of respondents who had discussed rural general practice as a career among their peers. The overall increase was a highly significant rise, from 52.9% (n = 46) to 73.4% (n = 58) (Cramer's V = 0.215, p = 0.022). The number of respondents of urban origin in this category increased from 47.2% (n = 25) to 69.5% (n = 40), with that of rural respondents increasing from 64.7% (n = 11) to 83.3% (n = 15).

Asked whether the rural GP they had met was a good role model, 92% (n = 80) answered 'yes' after the attachment compared with 72% (n = 57) before.

Prior to the rural course, 53% (n = 46) of students had already decided on a branch or speciality of medicine as a career choice. This figure changed slightly to 57% (n = 45) after the course.

## Discussion

These results indicate that the fifth-year rural attachment at Dunedin School of Medicine (DSM) has a strongly positive effect on the attitudes of students towards a career in rural general practice. There was a significant increase in both the number of students who considered rural general practice as a career, and their indicated likelihood of actually entering a career as a rural GP. Only 4% of respondents indicated a negative effect of the attachment. It is, however, disconcerting that over 50% of fifth-year medical students at DSM had not ever considered the idea of a career as a rural GP before the rural attachment, and nearly 53% had already made up their minds on career direction.

Our results are in keeping with previous findings that students of rural origin have a higher indicated likelihood of entering rural general practice than their urban

counterparts.<sup>4-6</sup> It is, however, encouraging that the positive shift in the indicated likelihood of entering rural general practice pre-course to post-course is similar for students of rural and urban origin. These results suggest that both student origin and undergraduate experience have positive effects on the likelihood of entering rural general practice. When these two factors are combined, the effect is even larger.

There was also a significant difference when comparing the likelihood of rural and urban students entering into general practice in that rural students are more likely to enter general practice per se.

Respondents in this study were asked whether they considered themselves to come from either a rural or urban background. This approach is different from other studies, where respondents are categorised according to the size of the town where they grew up, usually in conjunction with government census classifications.<sup>21</sup> The advantage of asking the respondents to classify themselves is that there is not the problem of attempting to classify respondents who may have spent some of their formative years in a rural environment and other years in an urban one. For example, a person who attended secondary school in a major city may have grown up in a small centre and may identify as rural. In addition, classification according to population size may be somewhat misleading, as it is possible that a larger town may in fact be 'more rural' than a smaller town that is closer to a major urban area. A disadvantage of our method is that two respondents from the same place may classify themselves differently. In addition, when asked how likely it is that they will become a rural GP, one respondent's idea of what constitutes rural general practice may be quite different from another's.

The difference in classification also leads to differences in comparing the results with other studies. Heath et al found that only 6.9% and 4.5% of Otago Medical School students lived in towns of fewer than 1000 people when they were between the ages of 5 and 12 years, and 13 and 18 years respectively.<sup>21</sup> Even when minor urban areas (population under 10 000) are included, the percentages rise to only 17.2% and 13.6%. By comparison, this study found that approximately 23% of students identified as being of rural origin. The higher percentage in this study is most likely due to the method of classification of rural and urban origin; for example, some students may state that they are of rural origin even though they may have grown up living in towns of over 10 000 people.

There is evidence that rural attachments for medical students provide a good educational experience of a generalist nature offering opportunities not easily obtained in other settings.<sup>10,22</sup> Therefore, the argument for rural placements has both an educational and a workforce value. The current rural course at DSM has received excellent student feedback. It is possible that some of the changes measured may relate to the quality of the learning experience and the immediacy of the course, rather than the nature of the branch of medicine the students studied.<sup>23</sup>

Important findings from this study are that the fifth-year rural health attachment at DSM has:

- resulted in more students considering rural general practice as a career choice;
- increased the number of students stating there is a likelihood they may enter rural general practice;

- increased the number of students viewing rural general practice positively, whether or not they would consider or choose it as a career;
- increased the number of students who regard rural general practice as a unique discipline;
- confirmed the influence of student origin on the stated likelihood of entering rural general practice.<sup>4-6</sup>

Also of significance is the finding that approximately 50% of the students felt that they had already decided on a career choice by their fifth year.

Our results lend weight to the belief that medical school admission and educational policies can influence student attitudes towards entering a career in rural practice. We suggest the following as a long-term strategy for Government and medical schools to address rural medical workforce issues in New Zealand:

- Undergraduate students should be given increased experience of rural medicine.
- This experience should commence earlier in the course and probably needs to be repeated throughout the undergraduate programme.
- Rural medicine should be developed as a specific discipline of medicine in order to make it a more visible career option.
- Rural origin should be a consideration in medical school selection.

It must be remembered that these results relate only to respondents' indicated career intentions. It is possible that students who indicated a high likelihood of entering rural general practice may in fact not, and vice versa. The immediacy of the administration of the questionnaire to the end of the course is a concern, and we would expect a drop off in effect over time.<sup>23</sup> An interim study on the maintenance of the attitudinal changes demonstrated here is currently underway for students in their Trainee Intern year. Our long-term plan is to track the respondents' career choices five years on and compare these with students from other schools who did not have such a high degree of exposure to rural health in their undergraduate course. Such a follow up would be extremely useful as a way of determining whether those who indicated an increased likelihood of entering rural general practice did in fact follow this career path, and whether there is a discernible 'downstream' effect.

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