

Will graduating medical students prefer to practise in rural communities?

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Abstract

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Background: The shortage of doctors and their maldistribution between urban and rural areas contribute to inequitable health care delivery. Strategies are being sought by the government and universities to address these challenges. At the Nelson R Mandela School of Medicine of the University of KwaZulu-Natal the admissions policy ensures greater access to rural students and curricular interventions have been introduced to increase an awareness of the plight of vulnerable communities. This study attempted to ascertain the career intentions of final-year medical students and the influence of area of origin and gender on the location of their proposed future practice.

Methods: The 2005 final-year cohort was surveyed by means of an anonymous questionnaire. Demographic information, area of origin and career intentions were canvassed. Students of rural origin were identified as those who matriculated from rural schools and lived more than 200 km from the nearest city. The data were analysed descriptively.

Results: Female and rural students accounted for 63% and 11% of the sample respectively. Women were less likely than men to practise in rural areas. Thirty-five per cent indicated a preference for a public government service career as opposed to a private medical (26%) career. Slightly more than 13.7% ($n = 26$) of the cohort wished to pursue practice or postgraduate careers overseas. Nearly 62% ($n = 90$) of the students in the current cohort received government subsidies for their studies.

Conclusions: The increased intake of students from rural origin and curricular attempts to increase social awareness of vulnerable rural communities are inadequate to alter the perceptions of medical graduates towards rural practice. While government initiatives and medical schools are starting to work together to service rural communities, alternative strategies need to be explored to entice physicians to rural practice.

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Background

There is a major shortage of medical doctors in South Africa, which is particularly evident in the rural areas.¹ Rural doctors generally fulfil a wider range of functions, and loss of rural physicians has a widespread effect on the delivery and organisation of rural health care.² The inequitable distribution of physicians is a global phenomenon that has not improved locally, despite initiatives by the South African government such as the Community Service Programme; scarce skills and rural allowances; and the recruitment of foreign-qualified doctors.³ Studies, both local and abroad, have contributed insightful information to the ongoing debate involving policy makers and educationists.⁴⁻⁶

There is evidence to suggest that the long-term solution may rest with the recruitment, training and sensitisation of students by the various medical schools in the country. Prior rural residence and extended rural exposure are strong predictors of the students' choice of a rural career.⁷ A South African study conducted on the 1991 and 1992

graduating cohorts at five medical schools, for instance, demonstrated that students of rural origin showed a greater tendency to return to rural practice.¹ More recently, Couper and colleagues (2007) have also suggested that the exposure of students to rural health care settings and an emphasis on rural health issues during medical training positively influence students' future choices regarding rural practice.⁸ These findings reflect the South African context, but also mirror the findings of studies conducted outside of the Republic of South Africa, which show that exposure to conditions may increase students' interest in practising in rural settings.^{6,9}

KwaZulu-Natal (KZN) is one of the poorest and most densely populated (9.3 million) provinces in South Africa.⁵ A glance at the recruitment strategies of South African medical schools has shown that the rural population in this province has been identified as the most vulnerable in terms of accessing quality health care.¹⁰ Considering these conditions, the World Federation for Medical Education's

mission of achieving *health for all* proves to be challenging.¹¹ Ethical debates are raging both nationally and internationally regarding the damaging impact to developing countries of increased medical migration to developed and more affluent areas,¹² which has led some countries, such as the United Kingdom, to introduce legislation to manage the situation more efficiently.¹³

South African medical schools have aligned themselves with the government's policies to improve equity and to address social transformation in the country, especially in terms of meeting the varying health care needs and challenges of South Africa's different communities. Female medical students now outnumber male students at seven of the eight national medical schools.¹⁴ Strategies to facilitate redress and equity have also been implemented at the Nelson R Mandela School of Medicine (NRMSM). These include the increased intake of female students to represent approximately 60% of the total student intake. The School has also embarked on innovative ways such as the adoption of rural secondary schools to attract a greater number of students of rural origin to a medical career.¹⁵ Through this initiative, rural secondary schools in various parts of KZN have been adopted; students are supported financially and sensitised to a career in the health sciences. Despite the uncertainty of the impact of this programme, it is nevertheless hoped that the collaboration with rural communities will ultimately result in more students of rural origin entering the medical training programme at the University of KwaZulu-Natal (UKZN).

In addition, all students at the NRMSM rotate through a clinical attachment in a rural setting during their years of study. Curricular interventions such as the selective programme (during the second and third years of the programme) and the rural hospital clinical attachment programme (in the final year of study) have been in place for more than five years. Such innovations have been reported as being of significant value in medical curricula for sensitising students to the needs of the rural communities.¹⁶ During the month-long rural-based clinical rotation, students are trained in the rural community setting and become sensitised to the health care challenges and needs of such communities. As shown by De Vries and Reid, there is an encouraging trend among doctors who trained in rural settings to prefer to stay in such settings, mainly because of the sensitisation and training programmes to which they had been exposed.¹ It is also hoped that more students of the NRMSM will return to practise as medical doctors in rural communities after having served their internship.

This study was undertaken to compare the findings of other national and international studies, and also to explore the perceptions of final-year medical students at UKZN and their attitudes towards career and placement choices after graduation and internship. In addition, the influence of area of origin and gender on future choice of location for practice was also investigated.

Study design and methodology

This cross-sectional study was conducted in 2005. All the students in the final-year MBChB programme at the NRMSM (n = 194) were invited to participate. An anonymous self-administered questionnaire was completed by 75% (n = 146) of the students. In addition to collecting demographic information, the questionnaire also gathered information on the participants' place of origin and preferred location for practice; how their studies were funded; and career and postgraduate academic intentions. The various factors influencing their career and practice intentions were also explored. A four-point Likert scale was used in the questionnaire to allow students to rate the importance of factors that influenced their practice preference. A value of 1 on the scale indicated a grading of lesser importance than a value of 4.

Recognising the difficulty in defining "rurality", both in South Africa and internationally,¹⁷ the questionnaire identified an urban area as a centre with a population greater than 250 000. Semi-urban was defined as a centre within two hours of travelling from an urban area and rural was taken to mean an area more than two hours' travelling from an urban centre.^{18, 19} Participants were classified as being of rural origin if they completed their whole school career (including matric/Grade 12) in a secondary school in a rural area. This definition was justified by the belief that students may start their schooling in rural areas, but do not become truly acculturated into the community if they do not complete their secondary schooling experience in the area. This definition of rural origin is contrary to De Vries and Reid's definition by which students are classified as of rural origin after having completed only their primary schooling in a rural area.¹

The data were entered into an Excel spreadsheet and analysed in SPSS version 11.0 (Statistical Package for the Social Sciences, SPSS Inc, Chicago, Illinois, USA). The descriptive analysis entailed frequency tabulations of categorical variables and stratified chi-square analysis was undertaken to assess the association between area of origin and choice of location of future practice, by gender. Ethics approval was obtained from the UKZN's Ethics Committee.

Results

All the students (n = 194) in the final-year MBChB class at the NRMSM were invited to participate. Seventy-five per cent of the students (n = 146) completed the anonymous questionnaire. The demographic profile of the respondents (Table I) indicates that 11% of the students in the sample were of rural origin. The definition of "rurality" has always been a contentious issue; in the current study, the researchers used the location of the secondary, rather than the primary, school and a distance of approximately 200 km from the nearest city as indicators of rurality. The authors believe that this may have been an under-representation

of the rural cohort since the KZN Department of Health provides “rural allowances” to doctors in areas only 50 km from the city of Durban.

Table I: Demographic profile of the 2005 cohort at the NRMSM (n = 146)

Demographic indicator		n	Percentage
Age group	20–30	137	93.8
	> 30	9	6.2
Gender	Male	54	37.0
	Female	92	63.0
Country of birth	South Africa	133	91.1
	Botswana	7	4.8
	Nigeria	1	0.7
	Democratic Republic of Congo	1	0.7
	Swaziland	4	2.7
Language	English	63	43.4
	Other official South African languages	80	55.2
	Non-South African languages	3	1.4
Location of high school	Rural	16	11.0
	Semi-urban	33	22.6
	Urban	97	66.4

The KZN Provincial Department of Health sponsored 50% of the students (n = 90). These students represented 87.5% (n = 14) of the students of rural origin, 75.8% (n = 25) of the students of semi-urban origin and 52.6% (n = 51) of the students of urban origin. Other sponsors included various other provincial departments of health in South Africa, non-governmental organisations, private institutions and private individuals. Students who did not have sponsorship represented 38.4% (n = 56) of the cohort. Students of semi-urban origin (n = 7) on average had the longest period to repay their sponsors, having committed to periods of four years or more for repayment.

More than 90% of this cohort wished to proceed to postgraduate medical studies. A total of 132 (90.4%) desired to undertake advanced postgraduate training in the future (Table II). Slightly more than 90% (n = 120) indicated a preference to do these studies in South Africa while 7.7% (n = 10) indicated the intention to study abroad. Ten students wanted to migrate upon completion of their undergraduate studies. Only two indicated an intention to return to South Africa upon completion of a postgraduate qualification. Seven students who intended to return to South Africa were also from a group who indicated a preference to undertake postgraduate studies in South Africa. However, they would pursue these studies abroad if no suitable placements were available. One student did not indicate where he/she wanted to study.

Table II: Postgraduate intentions of the 2005 cohort at the NRMSM (n = 146)

Postgraduate intentions		n	%
Intention to pursue advanced postgraduate medical training	No	6	4.1%
	Yes	132	90.4%
	No response	8	5.5%
Intended location of postgraduate training	South Africa	120	90.4%
	Abroad	10	7.6%
	No response	2	1.5%
Intention to return to South Africa after postgraduate opportunities elsewhere	No	10	7.3%
	Not sure	3	2.2%

Table III shows that 81.5% of respondents intended to practise in South Africa. The intended location of their practice was also shown. The majority chose urban areas (63.7%). In total, 51 (34.9%) chose government medical practice; 38 (26%) private medical practice; 27 (18.5%) were undecided; 26 (17.8%) chose an academic career, and 4 (2.7%) chose a non-medical career.

Table III: Location of intended practice

Intend to leave South Africa to practise	Yes	27	18.5%
	No	119	81.5%
Location of practice	Urban area	72	63.7%
	Semi-urban area	32	28.3%
	Rural area	9	8.0%

Reasons for leaving Africa

Students who indicated a preference to emigrate thought they would benefit from higher salaries and improved career opportunities in overseas practice settings. Some also thought that they would have wider access to training in speciality areas that are not readily available in South Africa. Personal factors such as improved opportunities for spouses and offspring were also cited as reasons for decisions to emigrate. In the current graduating class, the ability to repay the student loan ranked lowest among the factors that influenced participants' decision to emigrate.

The factors influencing the decisions of rural origin students to remain or emigrate were similar but not identically sequenced to those of students of urban origin. For students of rural origin, factors that influenced their decisions related to personal safety; the desire to bring about effective change in the health care system; and the desire to see an improvement in the social conditions in the country. Other factors related to financial rewards; career advancement; and working in a regulated environment.

Table IV shows a significant association within each gender between location of high school and location of future practice ($p = 0.010$ and 0.032 for males and females

Table IV: Origin vs location of practice by gender (n = 146)

Student origin vs practice location				Rural area		Semi-urban area		Urban area	
				n	%	n	%	n	%
Gender	Male*	Location of high school	Rural	2	25	3	38	3	38
			Semi-urban	3	50	2	33	1	17
			Urban	0	0	10	39	16	62
	Female**	Location of high school	Rural	0	0	1	20	4	80
			Semi-urban	3	15	8	40	9	45
			Urban	1	2	8	17	39	81

* Pearson's chi square = 13.310; p = 0.010

** Pearson's chi square = 10.580; p = 0.032

respectively). However, due to small sample sizes in some cells, the results should be treated with caution. The trends showed that, among the males, there was a tendency for respondents of urban origin to choose urban practice; for respondents of rural origin to be equally likely to choose semi-urban or urban practice; while those who were most willing to practise in the rural areas were of semi-urban origin (50%). With females, the trend was similar in terms of those of urban origin, but differed from the males in that the rural females were most likely to want to practise in urban areas (80%) and the semi-urban female students preferred urban or semi-urban practices. Females were less likely than males to indicate a preference for rural practice, although the difference was not statistically significant (5.5% vs 12.5%; p = 0.072 – data not shown).

Discussion

This study has shed some light on the demographic profile of the students admitted to NRMSM and their intentions concerning practice. While efforts are made towards greater female and rural inclusion, the majority of students admitted to the School are of urban origin with females of rural origin constituting the lowest intake and accounting for 4.1% (n = 6) of the current student sample.

A demographic analysis of the cohort still indicates the predominance of urban recruits in the cohort, this despite the School's intention to admit more students of rural origin. Only 11% (n = 16) of the present student sample representing the 2005-cohort matriculated from rural schools. The under-representation of rural students at national medical schools is causing concern, especially since the proportion in South Africa was found to be considerably lower than the national rural population ratio.²⁰ At least six of the students in the current sample were citizens of Botswana, which questions the success and impact of the advocated strategies to include more students of rural origin. Also interesting was that more than 56% of the cohort were English second- and third-language users. Further exploration might be needed to understand the impact of language as a barrier or facilitator in students' career choices.

In the light of human resource shortages in the health care of rural and disadvantaged communities, it has long

been believed that rural medical recruitment, selection and increased undergraduate and postgraduate rural training would be the most significant factors to alleviate the shortfall in rural health care.²¹ The perceptions of students from the present cohort, however, suggested that rural students were not as likely as those of semi-urban origin to commit to rural practice.

The majority of the students of urban, semi-urban and rural origin indicated a preference for the public service sector as their preferred career choice upon completion of their studies. Interestingly, a small number of students (n = 4) intended to pursue careers outside the medical field. The second most popular choice for 29% of the students of semi-urban origin and 26% of those of urban origin was for private medical practice. Nearly 19% of those of rural origin indicated a preference for a career in private medical practice. It is also interesting to note that nearly 19% (n = 27) of the students who responded to the survey were still undecided about a definite choice. For some, this related to the availability of speciality positions at local hospitals.

Study debt and obligatory service

This study found a greater tendency to consider rural practice among students of semi-urban origin only, a finding contradicting earlier predictions.¹ This finding is promising, since it had been established that doctors who voluntarily choose rural practice generally are likely to stay for a longer term than those who feel obliged by service commitment contracts such as in response to study loans.²²

It is positive to note that many intended to fulfil their service obligation in the public service sector, even after graduating. While only a minority appeared to be affected by student debt, a considerable percentage of the graduates would be indebted to the various Departments of Health and other financial institutions. Financial opportunities and debt were found to be significant motivating factors to entice graduates into accepting career opportunities overseas.²³ In the current cohort, the student debt of students of rural and semi-urban origin far exceeded that of their urban counterparts and may have accounted for the longer period of commitment (i.e. placement) in rural settings of the semi-urban group.

In the light of the challenges to adequately staff provincial and district health services, it was rewarding to note that very few students (only 10 in this cohort) planned to pursue advanced medical training outside of Africa and this may be an indicator that students view the quality of local studies as rewarding or as of similar quality to what they could hope for elsewhere. The voluntary responses of 27% of the cohort who indicated the intention to practise abroad may not be realistic with regard to the current government-to-government agreements and imposed limitations that have since been forged. Conditions at South African government hospitals having deteriorated considerably since the survey, it may be necessary to repeat the study to investigate how students' perceptions of working conditions would impact on their career choices.

Several limitations are acknowledged. Firstly, the findings of this study cannot be generalised to the rest of South Africa because of the particular recruitment strategy of the NRMSM, which reflects the demographic profile of the province rather than the country. There is also the possibility that the perceptions of the current cohort would differ from other cohorts; to truly establish a trend would certainly require continuous monitoring. In addition, there is the difficulty of defining "rural" in a universal sense, which makes comparisons difficult.

Conclusions

The recruitment and retention of doctors in rural communities have become a priority both internationally and in South Africa. Rural doctors are fewer in number and losses of doctors from rural communities have a widespread influence on the delivery and organisation of rural health care.² The main strategy of the South African government is to increase the intake and throughput of black African students in anticipation of these graduates serving the local and rural communities. It is reassuring that the majority of the students in this cohort indicated a preference to study and practise within South Africa. Those who indicated an intention to practise abroad wished to return to South African practice even after accepting educational opportunities that may arise from overseas programmes.

Contradictory to earlier local studies, we found that students of rural origin are unlikely to return to a rural practice. In fact, this study confirms the finding of another study indicating that students of rural origin do not always wish to work in rural areas.²⁴ It is also difficult to generalise the impact of students of rural origin, since, as shown in the current study and in earlier reports, this group often is the least represented at medical schools.²⁴ Despite the increased representation of females in the current cohort, there is also no evidence that women would prefer to practise in rural communities. In view of the current findings, medical schools therefore are likely to review the preferential intake of female medical students in future.

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