

# Curriculum challenges faced by rural-origin health science students at South African medical schools

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**Background.** The current shortage of healthcare workers in rural communities demands attention. The sourcing of rural-origin students (ROs) has been suggested, but retention of these students in their chosen degrees is crucial. Addressing the tertiary education challenges that ROs face is critical to ensuring their success.

**Objective.** To focus on the various challenges influencing throughput of ROs.

**Method.** This article is one of a series of investigations into various aspects of university life and career choices of health science students. Data were collected at three South African universities by the Collaboration for Health Equity through Education and Research (CHEER) collaborators. Ethical permission was sought from each institution. Health science students at the relevant institutions consented to completing a self-administered questionnaire. The data were analysed on SPSS and  $\chi^2$  tests were used to describe the statistical significance of the results.

**Results.** Academic course content was the greatest challenge as perceived by students. Differences between rural and urban students were significant in all aspects of university life studied. Technological challenges were five times more common for ROs. Differences between first- and final-year students were not as marked, although the personal challenges and academic course content became easier as students progressed through their degree.

**Conclusion.** Although ROs face similar challenges as students of urban origin, in some instances these are enhanced and magnified. These students are more likely to find various aspects of university life challenging. To improve the success and retention of ROs, adequate support structures are essential.

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There is a critical shortage of healthcare professionals in rural communities in South Africa (SA).<sup>[1]</sup> The South African National Department of Health (nDOH) is currently considering increasing the intake of medical and health science students in line with national need. There is evidence in both the international and SA literature, to suggest that students from rural origin are more likely to return to rural practice.<sup>[2,3]</sup> The definition of a rural-origin student (ROS) has come under some debate, but for the purpose of this study it refers to a student who lived in a rural home and attended a rural high school.

If we are to encourage ROSs to pursue careers in rural practice, it follows that we need to recruit such students to study the health sciences. This has been a major focus for many SA universities in response to nDOH directives and is not covered in this article. We aim to address the necessity to retain these students once recruited into their chosen health degrees, and ensure their success in obtaining their degrees. To alleviate the stresses associated with health science degrees, we need to identify the challenges that students face and whether ROSs experience these challenges differently from urban-origin students. We also need to identify such trends throughout the course of study and monitor whether these are mitigated or enhanced.

The literature reports a number of difficulties experienced by students as they move from secondary to tertiary education.<sup>[4,5]</sup> One of the main

difficulties in this transition is the academic content of their chosen field and, for health science students in particular, the added challenge of studying for a professional degree.

The language of teaching and learning for students not studying in their mother tongue has been seen to pose problems universally.<sup>[6]</sup> In SA, secondary schooling is often in the vernacular, but tertiary education is limited to English and Afrikaans. Tertiary study also relies heavily on the use of technology as a vital component to studying. Students are expected to be fully computer literate to fulfil course requirements, especially with the trend towards e-learning. Students not previously exposed to this level of technology have the additional burden of familiarising themselves with the technology, as well as dealing with other challenges of university life.

These issues are further confounded by environmental and personal challenges, such as adapting to university life, changing living environments and leaving home.<sup>[7,8]</sup> Financial concerns also have an overriding impact on student life,<sup>[9]</sup> even when students receive bursaries and scholarships, as the administration of these monies can be time consuming. The transition to adulthood and financial independence is typically fraught with high levels of anxiety.

This article highlights the institutional challenges faced by ROSs, informed by the qualitative phase of this study,<sup>[10]</sup> which found that

they face a common set of challenges regardless of their institution and/or field of study. These are academic course content, personal (e.g. home background), environmental (e.g. acclimatising to university life) and financial challenges, language of teaching and learning, and technology. The purpose is not to compare universities or even disciplines, but to highlight the broader, common challenges ROSs grapple with. We focus on challenges that do not seem to dissipate as students settle into university life – issues that remain challenging across their entire study period.

## Methods

This article reports on phase two of a study conducted between August and October 2011, which aimed at gaining information on various aspects of university life and future career aspirations of health science students (defined as those registered as student health science professionals) at three South African universities, i.e. University X, University Y and University Z. Although these universities selected themselves to take part in the study, they represent a diversity in terms of universities who traditionally select urban and rural students.

Ethical approval for the study was granted by the ethical committees of all three participating universities (X-HSS/0966/09, Z-MREC/M/63/2010:IR, and Y-HREC 353/2011).

The initial, qualitative phase of the study, reported on in *Rural and Remote Health*,<sup>[10]</sup> informed the structure of the questionnaire developed for the latter phase of the study. Data collection at each site was led by the Collaboration for Health Equity through Education and Research (CHEER)<sup>[11]</sup> collaborators at individual universities. An anonymous, self-administered questionnaire was distributed to all first- and final-year students across all disciplines offered at each participating health science faculty or medical school. The questionnaire included various aspects of students' intentions to study for a health science degree, the support they required and their future career intentions. With regard to the challenges they faced at university, students were asked to rate each factor as 'challenging', 'highly challenging' or 'not challenging'. Participation was voluntary and consent was obtained from each participant individually.

Data from the second phase of the study were entered into Epidata at each site, respectively, collated, verified by X, and exported for analysis to SPSS (version 21). Chi-square tests

for independence were performed to test for significance according to origin (urban, rural) and year of study (first, final).

This article represents one of various aspects of the data collected and focuses on the challenges in the curriculum faced by students of rural origin. In other articles students' motivation to study for a health science degree, support mechanisms in place (pending) and final career choices are discussed.<sup>[11]</sup> The aim of this study was to determine general trends in challenges faced by students throughout their degree, with a particular focus on ROSs.

## Results

A total of 1 676 questionnaires were returned. Of these, 126 were excluded owing to the students not studying for a health science degree. A total of 1 550 questionnaires were included in the final analysis. The response rate was 52%, spread across all three universities, where 42% were from Z, 33% from X and 25% from Y.

First- and final-year students were asked to rate the extent to which various aspects of university studies were 'challenging', 'highly challenging' or 'not challenging'. Students allocated themselves to 'rural' or 'urban' categories. This was done because of the broad range of definitions of rural and the lack of consensus in these definitions, which then enabled students to identify with their own understanding of the context. Students were then streamed into groups according to the location of their home and high school (Table 1).

Students from a rural home and school are considered rural, while those from an urban school and home are considered urban. For the purpose of this article, only these two categories of students are compared and contrasted, i.e. 464 students who were identified as rural-rural (RR) and 862 identified as urban-urban (UU). It was felt that students who lived in a rural area and attended school in an urban area or vice versa could not be considered as rural or urban,

**Table 1. Rural-urban classification of participants**

	Rural school, n (%)	Urban school, n (%)	Total, N (%)
Rural home, n (%)	464 (30.63)	125 (8.25)	589 (38.88)
Urban home, n (%)	64 (4.22)	862 (56.90)	926 (61.12)
Total, N (%)	528 (34.85)	987 (65.15)	1 515

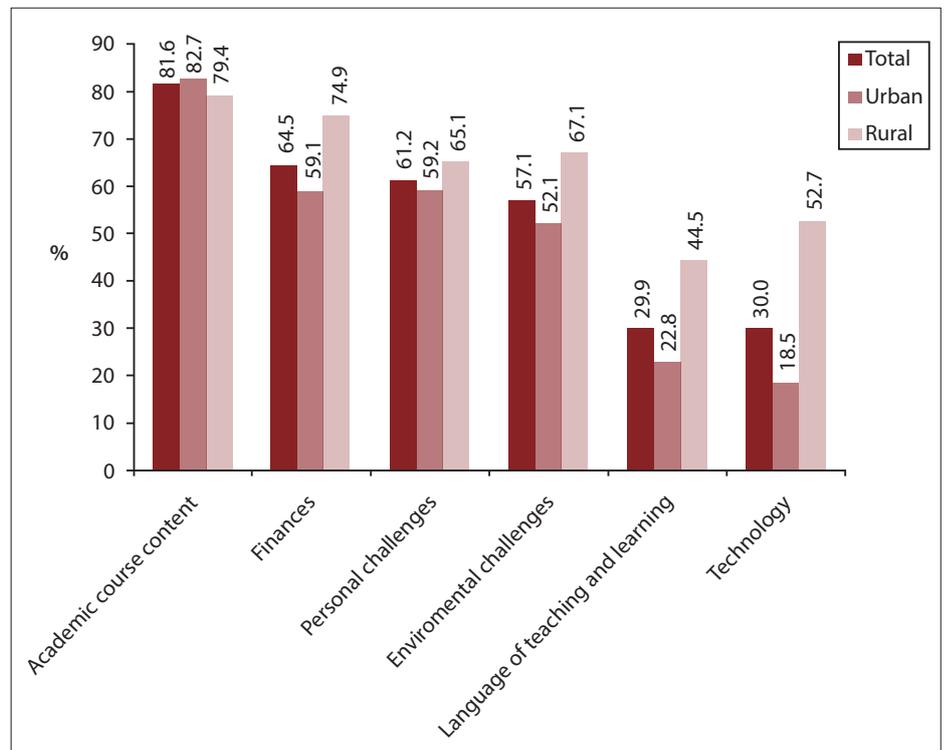


Fig. 1. Graph showing percentages of students who identified various curriculum issues as 'challenging' or 'highly challenging'.

based on their exposure to or immersion in both contexts. They were therefore excluded for the analysis.

The chart in Fig. 1 indicates that academic course content was reported to be the most challenging and technology the least challenging. Although the chart includes both urban and rural students, the majority of students who found these aspects challenging or highly challenging were ROSs.

The purpose of the analysis was to investigate differences between students according to base (rural/urban) and year (first/final). The tests discussed were based on the Pearson  $\chi^2$  test. These tests were used to compare challenges between rural and urban students, depending on their year of study. A small  $\chi^2$  value indicates that the challenge and factor of interest are not related. A sufficiently large  $\chi^2$  value indicates that the challenge and factor of interest are significantly related. The smaller the  $p$ -value, the more significantly the challenge is related to the factor of interest. As can be seen from Table 2, all results are statistically significant, other than the difference found in the challenge posed by the academic course content for final-

year students. The level to which the results are statistically significant is indicated in the key below the table. In addition, ROSs were almost five times more likely than their urban counterparts to find technology a challenge (5.38:1 odds ratio).

When comparing the differences between first- and final- year students, depending on their origin, both the academic course content and personal challenges were less challenging for both rural and urban students by the time they reached their final year, as can be seen in Table 3. There is no statistically significant difference in the challenges posed by the language of teaching and learning, technology and finances from first to final year. However, for rural students, technology is a challenge throughout their studies, as indicated by the  $\chi^2$   $p$ -value of 0.114. While urban students in their final year found the environment less challenging, rural students did not.

Although this is a cross-sectional study and not a longitudinal cohort from first to final year, first- and final-year students found the aspects of university life under discussion to be challenging.

## Discussion

The importance of improving retention of health science and medical students of rural origin is well documented.<sup>[2]</sup> The literature suggests that students most at risk of drop-out, or non-persistence, are from disadvantaged backgrounds.<sup>[11]</sup> Globally, ROSs are often from disadvantaged backgrounds. This is also true in SA, where 'rurality' typically implies disadvantaged, both socioeconomically and educationally. The results of this study confirm that it is indeed the ROS who finds the environment, language of teaching and learning, technology, finances, academic course content and personal challenges more challenging than urban-origin students.

ROSs continue to find most of these aspects challenging throughout their studies. Primary and secondary schooling in rural areas does not adequately prepare them for tertiary education, resulting in these students being at high risk of academic failure.<sup>[12,13]</sup> The abovementioned results show that urban and rural students found the academic course content most challenging. There was no significant difference between how rural and urban students perceived the challenge. However, final-year rural and urban students reported that they found academic course content less challenging than in the first year. This may be indicative of the adjustment of both groups to academic discourse and university life in general, development of professional identity over the course of their studies or even success of the various academic development and student support initiatives.<sup>[14]</sup> Traditionally, such initiatives focus on the academic needs of students, without consideration of the link between poor academic performance and other institutional challenges. It would be imprudent to ignore the impact of these challenges on academic performance.<sup>[15]</sup>

Personal challenges were seen to pose more of a problem for rural than urban students, regardless of the year of study. However, for both groups the challenge of personal life was greater in the first year of study. In the case of final-year students, there was no significant difference between rural- and urban-origin students. This could imply that by their final year all students had found ways of dealing with various personal challenges. Nevertheless, personal challenges were ranked as one of the top three challenges in general while studying for a tertiary degree, with 61% of all students perceiving these to be challenging or highly challenging. The impact on other issues, such as academic studies and

**Table 2. Results of  $\chi^2$  tests comparing rural and urban students, depending on their year of study**

Challenge	First year		Final year	
	$\chi^2$	$p$ -value	$\chi^2$	$p$ -value
Environmental changes	30.685	0.000 <sup>†</sup>	20.039	0.000 <sup>†</sup>
Language of teaching and learning	33.652	0.000 <sup>†</sup>	24.808	0.000 <sup>†</sup>
Technology	104.553	0.000 <sup>†</sup>	54.965	0.000 <sup>†</sup>
Finances	36.038	0.000 <sup>†</sup>	19.024	0.000 <sup>†</sup>
Academic course content	5.574	0.062 <sup>*</sup>	2.992	0.224
Personal changes	13.269	0.001 <sup>†</sup>	5.086	0.079 <sup>*</sup>

<sup>\*</sup>Significant at the 10% level of significance.  
<sup>†</sup>Significant at the 0.1% level of significance.

**Table 3. Results of  $\chi^2$  tests comparing first- and final-year students, depending on their origin**

Challenge	Rural		Urban	
	$\chi^2$	$p$ -value	$\chi^2$	$p$ -value
Environmental changes	4.261	0.119	6.218	0.045 <sup>†</sup>
Language of teaching and learning	0.817	0.665	2.504	0.286
Technology	4.337	0.114	3.233	0.199
Finances	0.610	0.737	0.153	0.926
Academic course content	5.888	0.053 <sup>*</sup>	8.204	0.017 <sup>†</sup>
Personal changes	6.492	0.039 <sup>†</sup>	7.064	0.029 <sup>†</sup>

<sup>\*</sup>Significant at the 10% level of significance.  
<sup>†</sup>Significant at the 5% level of significance.

financial concerns, should not be overlooked. The impact of personal challenges should be borne in mind when addressing student support initiatives. However, there was no difference in the way first- and final-year ROSs perceived environmental, financial, language of teaching and learning and technology challenges.

The most used technology for student teaching and learning is information communication technology, which is a challenge in most developing countries.<sup>[16,17]</sup> A study among undergraduate medical students in Sri Lanka (a developing country) found that their overall computer literacy was <50%.<sup>[18]</sup> The study recommended the introduction of computer training in the initial stages of the undergraduate programme. In SA, ROSs have limited exposure to information technology in their schools, which has a negative effect on their preparedness for tertiary education.<sup>[19]</sup> This is reflected in our study, where rural students were five times more likely to perceive technology as a challenge in their teaching and learning than their urban counterparts.

African languages – not English – are mostly spoken in the majority of rural areas in SA. These languages are used at home and for teaching and learning in primary school, and in some cases secondary school. Currently, none of the medical schools or health science faculties in SA offers the core curriculum in an African language. The language for teaching and learning in these institutions is either English or Afrikaans.<sup>[19]</sup> In the three participating universities, the language of teaching and learning is English. Studies have shown that there is a direct relationship between students' academic performance and their proficiency in the medium of instruction.<sup>[20-22]</sup> In our study, rural students found the language of teaching and learning – English – more challenging than the urban students.

For health science students, all these challenges may impact on their progress and throughput and may even result in drop-out. It is therefore crucial to address these issues if we are to ensure success for ROSs in health sciences. Therefore, universities should consider specific support tailored to the needs of ROSs in conjunction with regular support offered to all students in terms of the institutional challenges.<sup>[15]</sup>

## Limitations

Universities selected themselves to participate in this study. Although the results give an indication of how ROSs perceive challenges, the findings cannot be generalised from this exploratory study. Furthermore, owing to the cross-sectional nature of the study, we cannot accurately determine trends but only highlight areas that warrant further study. Also, students who dropped out of their studies between the first and final years were not accounted for and can lead to bias when comparing these groups of students.

## Recommendations

It is recommended that each university assesses how ROSs perceive the challenges. Addressing these issues, may enable student support structures

to meet specific needs of ROSs, thus facilitating their overall university experience and success in their course.

## Conclusion

The study suggests that the aspects of university life most challenging to first-year health science students are academic and personal challenges. Overall, the ROS found environment, language of teaching and learning, technology, finances and personal difficulties more challenging than their urban counterparts, regardless of whether they were in their first or final year. The only aspect which both urban and rural students found equally challenging was the academic content. A student who feels alienated, alone and unsupported is at high risk for non-persistence or drop-out.<sup>[9]</sup> Therefore, to improve retention, it is essential to ensure that students feel supported, included and socially integrated at university.

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