

Career and practice intentions of health science students at three South African health science faculties

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Background. The distribution and accessibility of healthcare professionals as well as the quality of healthcare services are significantly affected by the career choices of medical and other health science graduates.

Objective. While much has been reported on the career intentions of medical students, little is known about those of their counterparts in the health sciences. This study describes the career plans of non-medical health science students at three South African health science faculties, and identifies some key motivating factors.

Methods. A self-administered survey of first- and final-year health science students was conducted at the health science faculties of the universities of Cape Town, KwaZulu-Natal and Limpopo. All data were entered into EpiData software and exported for analysis using IBM SPSS Statistics 19.0.

Results and discussion. The overall response rate was 47% ($N=816$). Over half of all respondents (57%, $n=467$) intended to work after completing their undergraduate studies, 38% ($n=177$) of these in a rural area. The most popular choices were private hospitals (58%, $n=273$), tertiary hospitals (53%, $n=249$) and private practices (51%, $n=249$). Thirty-two per cent ($n=258$) of respondents intended to further their studies. Just over half of all respondents intended to work in another country (51%, $n=418$), primarily motivated by career development, financial reasons and job opportunities.

Conclusion. The findings demonstrate that health science students, similar to medical students, are influenced by a multitude of factors in making career choices. This emphasises the relevance to all health science disciplines of national strategies to address the maldistribution of healthcare professionals.

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The challenges facing the South African health system have been well documented, and the supply and distribution of healthcare professionals is recognised as a strategic priority in developing the health system to ensure equity and improvement of health outcomes.^[1-3] Rural communities are the worst off, with some areas having 14 times fewer doctors per 100 000 people than the national average.^[4] Many urban communities are also significantly underserved, as only 30% of doctors work in the public sector to serve 85% of the population.^[5]

Health has been defined by the World Health Organization (WHO) as 'a state of physical, mental and social wellbeing and not merely the absence of disease',^[6] which emphasises that a health system following a total healthcare approach is holistic and multi-disciplinary. Access to a range of healthcare professionals is therefore a key component of the healthcare delivery system, and these professionals play a particularly significant role in rural and underserved areas. Healthcare workforce programmes therefore need to address the broader spectrum of healthcare professionals, as occupational therapists, physiotherapists, speech-language pathologists, dieticians and radiographers have been recognised as scarce-skills professions alongside medical doctors, dentists and pharmacists.

The career choices of all health science students affect the future availability and distribution of healthcare professionals, as well as the quality of service that the healthcare system is able to deliver.^[7] Various factors have been identified that influence postgraduate primary care specialties and the recruitment and retention of healthcare professionals in rural and underserved communities.^[8,9] These factors include place of origin,

exposure to rural and underserved communities, curriculum and training programmes and a multitude of financial, professional and lifestyle issues.^[10] Information about the career choices and practice plans of young health science graduates is therefore necessary to identify and plan strategies to increase the quantity and quality of human resources and to adequately meet the needs of the most vulnerable communities.

Objectives

While many studies have investigated the future aspirations and career intentions of medical students, similar research on students in the other healthcare disciplines remains scarce. This paper reports on a particular aspect of a larger study undertaken as a collaboration between three South African medical schools to investigate the career aspirations of first- and final-year health science students. It was informed by a qualitative phase that explored the career aspirations of rural health science students.^[11] Other papers resulting from this study are pending or have been accepted for publication. This paper provides insight into the career choices and future practice plans of health science students at three health science faculties, and identifies some key motivating factors.

Methods

During August - October 2011, a cross-sectional, anonymous, self-administered survey was conducted among first- and final-year health science students at three South African health science faculties – the University of Cape Town (UCT), the University of KwaZulu-Natal (UKZN) and the University of Limpopo (UL). The questionnaire was mostly close-

ended, with some open-ended questions for clarification and explanation. It was distributed to students at times appropriate to their schedule, either to the entire class at one time or to groups of the class when they were on campus. Participation in the study was voluntary, and the anonymity and confidentiality of respondents were assured.

Data were collected on demographic characteristics, educational backgrounds, career intentions and practice decisions of respondents. They were asked to identify particular factors which influence their career and practice choices. All data were entered into EpiData software and exported for analysis using IBM SPSS Statistics 19.0. Significance testing was performed by means of chi-square tests of association. Open-ended responses were collated and coded into broad categories.

Ethical approval for the study was granted by the ethics committees of all three participating faculties (HREC 353/2011; HSS/0966/09; and MREC/M/63/2010:IR).

Results

This manuscript primarily reports on the survey results of the non-medical health science students, hereafter referred to as health science students, although comparisons are made with their medical counterparts, where relevant. The overall response rate for health science students was 47% ($n=816$), with minimal variation by institution; 163 of UCT respondents (49%), 277 of UKZN respondents (42%) and 376 of UL respondents (50%) completed the questionnaire.

Demographic data

Of all 816 health science respondents, over 97% ($n=789$) were South African citizens, the mean age for first- and final-year students was 19 and 22 years,

respectively, and over two-thirds were female (70%, $n=574$). Fifty-eight per cent ($n=472$) were black, 19% ($n=153$) Indian, 16% ($n=129$) white and 6% ($n=49$) coloured. These racial proportions varied across institutions, with UL having a significantly higher proportion of black respondents (96%, $n=359$), UKZN a significantly higher proportion of Indian respondents (49%, $n=135$) and UCT a significantly higher proportion of white respondents (48%, $n=78$). English was the predominant language for respondents at UCT (72%, $n=117$) and UKZN (68%, $n=188$), while Sepedi (30%, $n=112$), Xitsonga (14%, $n=42$), and Tshivenda (12%, $n=44$) were the most common first languages for respondents at UL.

Sixty-one per cent ($n=496$) of respondents classified their homes as being situated in an urban area, and 38% ($n=311$) in a rural area. Across institutions, these results varied significantly as 63% ($n=237$) of respondents from UL self-reported to be of rural origin, compared with 19% ($n=59$) of UKZN, and only 13% ($n=21$) of UCT (Table 1). This was expected as Limpopo Province has the highest rural profile of all provinces in South Africa. Thirty-five per cent ($n=180$) of first-year students and 45% ($n=126$) of final-year respondents were of rural origin. Both UCT and UKZN had higher proportions of students of rural origin in their first year (17% and 21%, respectively) compared with those in their final year (9% and 7%, respectively).

Thirty-one per cent ($n=252$) specified their homes as being in a city, 26% ($n=213$) in a village, 19% ($n=158$) in a township and 15% ($n=123$) in smaller towns. This differed greatly between institutions; for example only 4% ($n=7$) of UCT respondents' homes were in a village compared with 48% ($n=180$) of UL respondents. A total of 66% ($n=537$) of respondents had attended high school in an urban area, and the remaining 33% ($n=267$) in a rural area (1% of respondents did not answer this question, $n=12$).

Table 1. Origin, home and school setting of respondents at three South African health science faculties (N=816)

| University | Students surveyed (<i>n</i>) | Rural-origin students (%) | Rural-based school (%) | Home setting (%) | | | | |
|------------------------------|--------------------------------|---------------------------|------------------------|------------------|----------|---------|------------|------|
| | | | | City | Township | Village | Small town | Farm |
| University of KwaZulu- Natal | 277 | 19 | 14 | 44 | 11 | 9 | 25 | 10 |
| University of Limpopo | 376 | 63 | 56 | 5 | 31 | 48 | 9 | 2 |
| University of Cape Town | 163 | 13 | 12 | 67 | 9 | 4 | 14 | 6 |
| Total | 816 | 38 | 33 | 31 | 19 | 26 | 15 | 9 |

Table 2. Motivations which most influenced students' choice of institution in which to work, by medical school (%) (N=467)

| Motivation | University of Limpopo | University of KwaZulu- Natal | University of Cape Town | Total |
|-------------------------------------|-----------------------|------------------------------|-------------------------|-------|
| Want to serve community | 51 | 49 | 50 | 50 |
| Financial reasons | 64 | 61 | 46 | 59 |
| Learning opportunities | 50 | 54 | 59 | 53 |
| Career development | 55 | 57 | 58 | 56 |
| Opportunities to work independently | 37 | 34 | 50 | 39 |
| Exposure to modern technology | 28 | 23 | 18 | 24 |
| Supervision | 17 | 15 | 10 | 14 |

Table 3. Motivations for choice of location for community service (%) (N=771) (missing: n=31)

| Motivations: community service | University of Limpopo | University of KwaZulu- Natal | University of Cape Town | Total |
|--------------------------------------------|-----------------------|------------------------------|-------------------------|-------|
| Closer to home | 39 | 42 | 44 | 41 |
| Good supervision | 14 | 9 | 38 | 17 |
| Adequate patient exposure | 19 | 16 | 33 | 25 |
| To gain good experience | 32 | 33 | 80 | 42 |
| To move to a different province | 6 | 5 | 28 | 10 |
| To stay in same province | 7 | 8 | 18 | 10 |
| Hospital recommended by a friend/colleague | 3 | 3 | 23 | 7 |
| To experience work in a rural area | 16 | 12 | 31 | 17 |
| Opportunity to continue lifestyle pursuits | 10 | 10 | 30 | 14 |

Educational data

Respondents were drawn from a range of disciplines in the health sciences, three-quarters of whom were completing their undergraduate degree in either pharmacy (21%, $n=168$), physiotherapy (19%, $n=155$), occupational therapy (19%, $n=156$), sports sciences (8%, $n=65$) or speech-language pathology (7%, $n=53$). Sixty-four per cent ($n=522$) of respondents were in their first year of study, and the remaining in their final year (34%, $n=281$). These ratios were particularly influenced by the composition of UKZN respondents, where 88% ($n=244$) of respondents were first-year students, compared with approximately half of the respondents at UCT (52%, $n=85$) and UL (52%, $n=193$).

Career plans

Work and study intentions

Over half of all respondents (57%, $n=467$) intended to work after completing their undergraduate studies, while another 32% ($n=258$) intended to further their studies. The remaining students were either uncertain about their future plans (3%, $n=25$) or answered this question incorrectly or not at all (8%, $n=52$). The preference for working over studying was consistent across all institutions.

Of the 258 health science student respondents who wished to further their studies, most chose medicine (50%, $n=134$), physiotherapy (18%, $n=46$), dentistry (17%, $n=45$), pharmacy (16%, $n=42$), and commerce (10%, $n=25$).

Choice of area and institutions in which to work

Thirty-eight per cent ($n=177$) of those intending to work after graduation would like to work in a rural area, while 56% ($n=262$) would prefer working in an urban area. Respondents of rural origin were significantly more likely to prefer working in a rural area than their urban-origin counterparts (66% v. 22%, $p<0.01$). No difference was found between the preferences for rural practice between the first-year respondents and those in their final year (38% v. 39%, $p=0.1$). A substantially greater proportion of health science students from UL (49%, $n=83$) preferred to work in a rural area compared with their counterparts at UKZN (31%, $n=60$) and UCT (33%, $n=33$). Medical students were more likely to prefer working in a rural area than health science students (52% v. 38%, $p<0.05$).

Respondents were also asked to identify which institutions they preferred work in. The most popular choices were private hospitals (58%, $n=273$),

tertiary hospitals (53%, $n=249$), private practice (51%, $n=236$) and district hospitals (51%, $n=236$). This was in contrast to medical students who indicated highest preferences for working in district hospitals (63%, $n=193$) and much less preference for private hospitals and private practice (36% and 32%, respectively).

Respondents' choice of institution (Table 2) was mostly motivated by financial reasons (59%, $n=274$), career development (56%, $n=262$), learning opportunities (53%, $n=248$), and wanting to serve the community (50%, $n=274$). In contrast, medical students were found to be most motivated by wanting to serve their community (65%, $n=197$). Respondents at UKZN and UL were more highly motivated by financial reasons (61% and 64%, respectively) than respondents from UCT (46%).

Intentions to work outside South Africa

Just over half of all respondents intended to work in another country for some time (51%, $n=418$); however, respondents at UKZN (51%, $n=141$) and UL (45%, $n=168$) were less likely to want to go overseas than their counterparts at UCT (66%, $n=108$, $p<0.10$). Just under two-thirds of these respondents intended to work in another country for more than three years (63%, $n=264$), and only 14% ($n=57$) intended to work for a year or less.

Those wanting to work in another country were more likely to be of urban than rural origin (55% v. 45%, $p<0.01$), and medical students were found to be less likely to want to work in another country than their health science counterparts (43% v. 51%, $p<0.01$) – a pattern consistent across all the institutions. Female respondents were less likely than males to want to work in another country, although this difference was significant but not substantial (49% v. 52%, $p=0.05$); and the slight preference which final-year students had for wanting to work overseas over respondents in their first year of study was not found to be statistically significant (49% v. 56%). This was true across all institutions with the exception of UCT, where 74% of final-year students intended to work overseas compared with 59% of first-year students ($p=0.05$).

Career development was the most important motivation for respondents wanting to work in another country (51%, $n=212$), followed by financial reasons (48%, $n=201$) and job opportunities (43%, $n=181$).

The most popular destinations included the UK (33%, $n=138$), USA (17%, $n=72$), Australia (12%, $n=49$) and European countries (9%, $n=36$).

Community service preferences

The most significant factors in respondents' choice of location for their community service were: to gain good experience (42%, $n=323$), to be

closer to home (41%, $n=314$), and to obtain adequate patient exposure (25%, $n=192$) (Table 3).

Discussion

This research supports the findings of similar reports on career intentions of South African medical graduates.^[7,9,12]

The demographic analyses across institutions indicate that although there were more rural-origin students in total (38%) than in an earlier study (26%), which included medical, dental, physiotherapy, and occupational therapy students across all nine health science faculties,^[13] the proportion is significantly inflated by the high rural composition (63%) from UL. The general predominance of urban-origin students, particularly in the UKZN and UCT cohorts, is concerning in light of growing international recommendations that students of rural origin should be granted preferential admittance.^[8,14] However, the significantly higher proportion of rural-origin first-year compared with final-year students at UKZN and UCT may be indicative of this increasing trend. On the other hand, it may be indicative of a higher number of rural-origin students who drop out of courses, as it is well acknowledged that students from rural areas face a range of challenges, have special needs, and are at highest risk of academic failure.^[15]

In contrast to studies involving medical students, there was no significant difference between preferences of first- and final-year students for working in rural areas.^[7] As with medical students, however, the results show that rural preference was strongest for respondents of rural origin, which is consistent with evidence that rural background is the single factor most strongly associated with rural practice.^[8,10] The findings indicate that any institutional admission-selection strategy designed to increase the intake of students of rural origin needs to be implemented across all health science disciplines and not be limited to medical students.

The high numbers of respondents who intended to work in another country for a period of three years or longer are consistent with predictions that emigration rates will increase; over half of healthcare professionals have expressed such an intention.^[3] Plans to work in another country appear to be most strongly influenced by geographical origin, an association consistent with findings by de Vries *et al.*^[12] in their study on career plans of final-year medical students across the eight South African medical schools. The factors that mostly motivate health sciences students' intention include career development opportunities, financial interests, and job opportunities, as reported elsewhere.^[3,16]

Health science respondents were generally found to be less likely to work in a rural area, more likely to want to work in another country, and less motivated to serve their communities than their medical counterparts. This finding is significant as much attention is paid to the workforce shortages and migration behaviour of medical graduates, whereas non-medical healthcare professionals are an equally scarce but a much needed resource. Their career choices significantly impact on the delivery of healthcare and the overall health of the nation.

Respondents were motivated by several different factors in their choice of workplace/institution and location for community service. Which factor or combination of factors are the most influential in making these choices is difficult to interpret from this cross-sectional survey of career intentions, which may not be a true reflection of respondents' future choices and behaviour. This highlights the need for longitudinal tracking of medical students and graduates to determine the evolution of students' career decisions. The survey design was relatively easy to administer, and

the use of closed- and open-ended questions provided both quantitative and limited qualitative data. The overall response rate was consistent across the faculties, although a significantly higher response from first-year UKZN students may undermine the findings of the study population of all first-year students.

Conclusion

This study describes the career intentions of health science students of both rural and urban origin in their first and final years of study in three of the nine faculties of health sciences in South Africa. The findings support previous research on career and practice decisions of medical students and graduates and show that, similar to medical students, a multitude of factors influence health science students' career choices. Compared with medical students, health science students appear less interested in serving their own and/or rural communities, and are more interested in working in the private sector and in other countries. More research is needed to understand these preferences and to identify educational interventions that encourage healthcare profession students to enter and remain in general practice and in areas of need.

It is recommended that health science institutions across South Africa implement multi-professional tracking projects to obtain systematic long-term data on their students and graduates, the education and training programme, and the overall outcome of the health professions education programme. Understanding how the educational programmes, training environments and learning experiences impact on students' attitudes, values and practice behaviour is critical to producing healthcare professionals who are committed to serving the needs of our society.

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