

The role of socially accountable universities in improving the selection of medical students from rural and underserved areas

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As rural areas in South Africa have a lack of human resources for health, selecting rural-origin learners for health sciences education can serve to improve the number of health sciences graduates choosing to work in these areas. Schools within rural areas are however characterised by poor infrastructure, limited access to water and electricity and fewer skilled teachers, resulting in poor performance of learners. The poor performance in mathematics and science is a concern as these serve as gateway subjects to the health sciences. The Stellenbosch University Area Health Education Centres (SU-AHEC) focus on interventions in rural and underserved schools with the aim of enhancing learner performance in mathematics and science to improve access to tertiary health professions education. This project is funded by the US President's Emergency Fund for AIDS Relief in South Africa.

Afr J Health Professions Educ 2015;7(1 Suppl 1):76-78. DOI:10.7196/AJHPE.504



The discourse surrounding the social accountability of medical schools has gained momentum over the past 20 years. This has been driven by various global initiatives including the World Health Organization (WHO)'s early recommendation that medical schools should direct their research, activities and education towards the priority health needs of the population.^[1] Medical schools therefore have an imperative to produce appropriately trained graduates that are not only academically skilled but socially responsive to the communities they serve.^[2]

Rourke^[3] outlines that successful socially accountable medical schools include a selection of medical students who are representative of the nation's demographic and geographic diversity. Such medical schools ensure that the country is served with the most competent doctors that can meet the health needs of the population.^[3] However, in South Africa (SA), the poorest representation of medical students are from rural and low-economic backgrounds.^[4] This is problematic as rural-origin medical graduates are more likely to return and work in rural areas than urban-origin medical graduates.^[4] This has negative implications for healthcare in rural and low-economic areas as most medical graduates are concentrated in urban areas.^[4]

This is evident by the dearth of human resources for health in rural areas and resultant poor health outcomes in these areas.^[5] The WHO outlines that one of the building blocks for effective health systems is an effective health workforce.^[6] The recommended physician to population ratio is 100 per 100 000 population.^[6] However, in SA the physician to population ratio varies from 11.5 to 39 per 100 000 population in rural and urban areas respectively.^[4] The selection of rural-origin students therefore becomes a critical strategy for socially responsive universities, given the evidence that rural-origin students are more likely to return to their area of origin.^[4]

International strategies and evidence to improve the retention of health workforce in rural areas includes the selection of students from such areas, as they are likely to return there for employment.^[4,7] Medical graduates selected from rural areas are found to be more socially responsive and are more likely to function as generalists providing essential primary care

services to communities.^[8] However, as alluded to above, selection of rural-origin medical students across South African universities is low (27%) when compared with the average rural population of 46%.^[4]

This is due in part to insufficient rural learners meeting the selection criteria for health sciences tertiary education.^[9] Generally there is a fair degree of 'underpreparedness' among Grade 12 learners in SA, and even more so in rural areas.^[10] Performance in mathematics and science, which serve as gateway subjects for the study of various health sciences disciplines, is much lower in rural than in urban areas.^[11] The poor performance is as a result of several factors. Schools in rural communities are generally more difficult to reach, lack basic infrastructure for sanitation, water, transport and electricity and have fewer skilled teachers.^[12] Socioeconomic background is also a strong predictor of performance.^[13] Poor teaching standards in mathematics and science are also associated with poor learner performance, and are further aggravated by the large number of underqualified teachers who teach in overcrowded and under-resourced classrooms.^[14,15]

The inefficiencies in educating learners combined with the socioeconomic challenges that exist within rural and underserved areas serve as key barriers to accessing tertiary health sciences education and therefore may influence the output of rural-origin graduates in required fields such as healthcare.^[16]

Stellenbosch University, in response to the inadequate preparation of rural students for university, implemented school interventions to improve learners' grades in mathematics and science in preparation for tertiary education. In 2012 the Faculty of Medicine and Health Sciences acquired a linked award through the US President's Emergency Fund for AIDS Relief (PEPFAR) for school interventions to commence the pipeline of the Stellenbosch University Rural Medical Education Partnership Initiative (SURMEPI) project and increase the pool of rural-origin medical graduates.^[17] PEPFAR recognises the constraints in learner education and the negative impact these have on human resources for health in South Africa. This model of school interventions linked to medical faculties was derived from the USA, called the Area Health Education Centres (AHEC) project. AHEC function as a 'pipeline' through the recruitment of youth from underserved communities into the health professions. This article describes the intervention of



Fig. 1. Contextualising and implementing Area Health Education Centres in the Western Cape, South Africa.

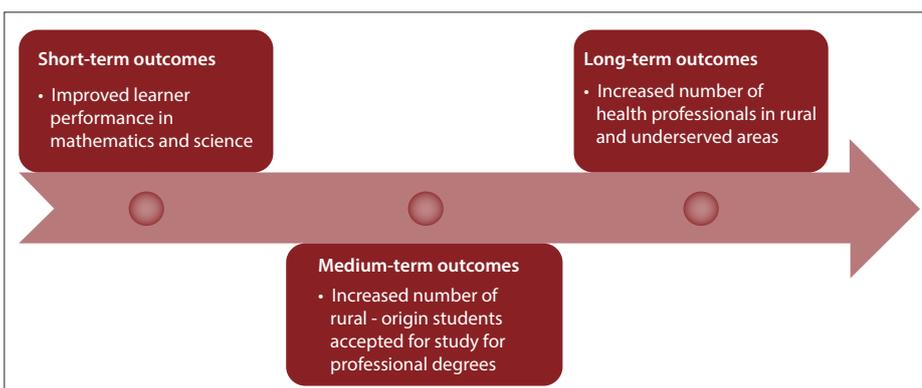


Fig. 2. SU-AHEC project indicators of success.

the SU-AHEC project in the Western Cape (Fig. 1) – a long-term strategy to improve human resources for health in rural and underserved areas.

Stakeholder collaboration

The success and sustainability of such an intervention is dependent on the inclusion of relevant

stakeholders. Morehouse School of Medicine in Atlanta have partnered with Stellenbosch University on this project as they are currently involved in the implementation of a number of AHEC in the USA. The Stellenbosch University Faculty of Medicine and Health Sciences have collaborated with the Faculty of Education's SUNCEP (Stellenbosch

University Centre for Pedagogy) project. SUNCEP is a significant stakeholder and partner, as their goals of strengthening mathematics, science and accounting learning in high schools in preparation for tertiary education were closely aligned with those of SU-AHEC. In addition the Western Cape Department of Education, teachers and parents in these communities have been key stakeholders that embraced the project. They recognise the importance of improving access to tertiary education and especially health sciences training.

Intervention

Currently SUNCEP offers the Hope@Maties programme in the Western Cape, a programme targeted at Grade 12 learners to improve mathematics, science and accounting in preparation for tertiary education. Learners are recruited into the programme only if their grades in both mathematics and science are above 70% at the end of Grade 11. The cohort of selected learners are then encouraged to attend week-long sessions during school holidays. These week-long tuition sessions occur three times during the year and focus on revising the content of mathematics and science according to the set school curriculum. In addition, information is provided on available bursaries and the application processes for university courses. SU-AHEC has expanded the SUNCEP Hope@Maties intervention in three rural districts of the Western Cape, viz. Malmesbury, Caledon and Worcester, in the following five categories:

- Expanding the cohort in the general education and training phase to include Grades 7 - 9 learners from each of the three rural districts with 30 learners per district. Utilise teachers from each of the three rural areas to function as tutors. Conduct bi-weekly sessions after school for 1.5 hours alternating between mathematics and science tuition.
- Expanding the cohort in the further education and training phase to include learners with a 65% average from Grades 10 and 11 with 30 learners per grade from each district. The model of the holiday schools is implemented for this learner group.
- Providing teacher capacity development for mathematics and science teachers to improve the quality of teaching.
- Providing life skills interventions and career counselling for learners. This includes understanding the socioeconomic circumstances of learners in these rural areas and providing relevant interventions and psychosocial counselling and support where necessary.

Implementing a learner tracking system using smartcard identification to monitor and track the performance and outcomes of the project.

The SU-AHEC project now comprises a cohort of 400 learners and 150 teachers responsible for Grades 7 - 12 in three rural districts of the Western Cape.

Outcomes

The short-, medium- and long-term outcomes of this project will be measured using the indicators shown in Fig.2.

Conclusion

The SU-AHEC project aims to improve the performance of secondary school rural learners to increase their eligibility to access tertiary health professions education. It is envisaged that this intervention will contribute to an increased pool of rural-origin students. The response and social responsibility from universities to improve selection from rural and underserved areas is critical to increasing the availability of the health workforce in these areas. The injection of funds by universities or non-governmental organisations into school projects via donor funders such as PEPFAR will be critical for the expansion of such interventions. The AHEC project addresses only one part of the systemic problem that affects the quality of school education in rural areas. The project may represent the start of a harmonising of interventions together with the pooling of resources.

Acknowledgements. We gratefully acknowledge funding from the US President's Emergency Plan for AIDS Relief (PEPFAR) through Health Resources and Services Administration (HRSA) under the terms of

T84HA21652 via the Stellenbosch University Rural Medical Education Partnership Initiative (SURMEPI). We are also very thankful to our partners, Morehouse School of Medicine, Atlanta, USA, SUNCEP and the parents and learners of the communities SU-AHEC works in.

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