MEDICAL EDUCATION

Twenty years of medical education in rural South Africa – experiences of the University of Transkei Medical School and lessons for the future

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The University of Transkei (Unitra), now Walter Sisulu University, is one of South Africa's 'historically black universities' (HBUs), and one of the three HBUs established in the so-called 'independent homelands' during the twilight years of apartheid. The Transkei region of South Africa stretches from the Umtamvuna River in the north to the Great Kei River in the south, and from the Drakensberg mountains in the west to the Indian Ocean's 'Wild Coast' in the east. Covering an area of about 43 500 km^2 (or approximately 3.6% of South Africa's total surface area), this region is home to more than 4 million people (over 10% of the country's population).[1]

In 1976 the 'Republic of Transkei' was given nominal independence by apartheid South Africa. The following year, a fully fledged Unitra metamorphosed out of what had hitherto been the Umtata branch of the University of Fort Hare, the oldest of the HBUs. At the time, there were seven medical faculties in South Africa, but only one, at the University of Natal, catered for the medical educational needs of non-white South Africans. In 1978, the country's eighth medical faculty, the Medical University of Southern Africa (MEDUNSA), was established for the exclusive training of non-white medical, veterinary and paramedical professionals. However, it soon became clear that two medical faculties could not cater adequately for the needs of 87% of the population, while six medical faculties were serving the small white population (13% of the population). The debate surrounding this imbalance culminated in the De Villiers Commission, which in 1981 recommended that no new medical schools be established for 5 years, and that the existing faculties at historically white universities (HWUs) should increase their intake of black medical undergraduates. Partly because the latter recommendation was, predictably, not likely to be heeded, coupled with the fact that Transkei was an 'independent' country not bound by the formal recommendations of the De Villiers Commission, Unitra pressed ahead with plans to establish a medical faculty. These plans attracted heated debate within the medical and political fraternities in South Africa, debate characterised predominantly by hostility and scepticism.

Arguing for the establishment of a medical faculty at Unitra, Professor Marina Xaba-Mokoena, the founding dean, made two candid observations: existing medical schools in South Africa had simply failed to produce adequate numbers of indigenous doctors to cater for the health care needs of the disadvantaged yet majority population, and the doctors produced by these institutions (both the few indigenous and the majority non-indigenous graduates) were neither appropriately trained nor motivated to serve rural communities (unpublished – Professorial Inaugural Address, Unitra, 1986). The views of the other extreme were probably best articulated by Professor S Saunders, then Vice-Chancellor of the University of Cape Town (UCT), and past dean of the UCT medical faculty. In an address delivered at the University of the Witwatersrand he asked: 'where will the staff of sufficient academic standing be found?', lamented: 'there is a danger of their obtaining fifth-rate, First-World medical education', and rather patronisingly suggested: 'surely a school of public health to educate professionals to work in rural areas constitutes a greater need?'.[2]

Despite the attendant opposition, the Unitra medical faculty was established in 1985.[3] The initial intake of 13 medical students (8 males and 5 females) was into MB ChB II. They had

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obtained their 'pre-medical' credits (or equivalents) from the Unitra Science Faculty, or (as was more likely to be the case) from other universities. Three of these students dropped out at the end of 1985, but the remaining 10 went on to graduate – a remarkable maiden throughput rate of 77% for a faculty that was wished stillborn!

Problem-based learning and community-based education – choice pedagogies of Unitra Medical School

From the outset, the Unitra medical faculty was established to develop according to two fundamental concepts hitherto alien to the South African medical education scene, namely community-based medical education (CBME) and problem-based learning (PBL).[3-6] However, logistical and infrastructure limitations did not permit the immediate implementation of these educational approaches and it was decided initially to follow the 'traditional' medical curriculum while the faculty 'got on its feet'. At the same time, the then Principal and Vice-Chancellor recommended, in 1987, that the Unitra Council formulate guidelines for the medical faculty. These 'Council Guidelines'[7] were published in 1988, and their gist was that the Unitra medical faculty should aspire to train doctors and other health care workers who: (*i*) were equipped with the necessary scientific and professional knowledge, skills and attitudes to deal with the health care problems of urban and rural communities, families and individuals in Transkei; (*ii*) were motivated to work in both rural and urban primary health care settings in Transkei, and could find professional and personal satisfaction in such work; (*iii*) were able and motivated to work in health care teams to the benefit of the people of the country; (*iv*) were able to educate and motivate communities, families and individuals to take personal responsibility for their health and their own health care; (*v*) could think critically and creatively in dealing with the health care problems of communities, families and individuals, and who had the necessary knowledge and skills to do research appropriate to Transkei within the various health care settings in the country; (*vi*) were as committed to the prevention as to the management of illness, and were capable of understanding health care problems in their biological, psychological, and socio-economic contexts; (*vii*) were self-directed and lifelong learners who would be able to adapt to changing circumstances in Transkei, keep up with developments in their profession and have the necessary motivation and background to acquire relevant specialised qualifications to fulfil the needs of the country, and to advance in their own careers; and (*viii*) exhibited high levels of ethical and administrative insight, skills and integrity.

Although the medical curriculum initially followed at Unitra was described as 'traditional', certain aspects were community-based by default, considering the rural location of the university and the relative paucity of health and other social services in the region.[8] The plunge into fully fledged PBL and CBME was taken at the beginning of 1989, but by the end of the first semester it was clear that there were insurmountable implementation obstacles jeopardising the objectives of this innovative medical curriculum.[3-5,9]

The roots of the said problems may be summed up in two words, namely *insufficient preparation* – insufficient preparation (or design) of the envisaged curriculum, insufficient preparation of the academic and support staff, insufficient preparation of the learners (and their older peers hitherto in the 'traditional' curriculum), and insufficient preparation of local opinion and policy makers from both the political and medical fraternities. It was therefore hardly surprising that towards the end of 1989 the MB ChB II class that had pioneered PBL and CBME revolted against the system – not without a lot of urging and support from fellow (older) medical students, and indeed from some senior academic staff members and certain members of the local medical fraternity. For the faculty it was 'back to the drawing board', with explicit and implicit determination to 'get it right' the next time around.

Among the factors deemed crucial to any envisaged success of the innovative medical curriculum at Unitra was the appropriate preparation of learners.[3,4,10] In the past, the medical faculty had relied on the faculty of science to provide the 'pre-medical' courses in botany, zoology, chemistry and physics to bring aspiring medical undergraduates, most of them from very poor, rural educational backgrounds, to acceptable levels of scientific preparedness for medical training. Year after year, however, it became increasingly clear that the science faculty was primarily training students for BSc degrees, majoring in any of the above subjects, and preparing students for medical training was not their major objective. If anything, they felt 'used', having to lose their best BSc I students to MB ChB II!

The medical faculty therefore decided that as from 1991, students would be admitted into MB ChB I for tuition in human behavioural sciences, medical biology, medical physics, and medical chemistry. The syllabi for these courses were tailor-made with the MB ChB I student (with a relatively poor high school science background) in mind. It was also decided that given the educational background of the majority of the prospective learners, the learning *modus* in MB ChB I would be largely didactic in the first semester, and that PBL would be introduced in the second semester. In 1992, a better-planned PBL/CBME curriculum was reintroduced, starting in the MB ChB II class. Since then, the faculty has not looked back.

Unitra medical faculty – facts and figures

Notwithstanding the birth pains that threatened to turn the nascent faculty into a stillbirth, the Unitra health sciences

faculty has against all odds defied the prophets of doom, and has grown from strength to strength. Indeed, within the short space of 15 years from 1985 to 2001, this faculty grew from being the smallest in the University to the largest. Some major milestones relating to this growth are summarised in Table I. The cumulative MB ChB enrolment over the past 20 years (1985 - 2005 inclusive) is over 1 000, and has increased steadily over the years (Fig. 1). By the end of 2004, a total of 505 medical students had graduated from the faculty (Fig. 2). The demographic characteristics of graduates from Unitra Medical School are summarised in Table II.

Unitra medical faculty – achievements and national relevance

There is evidence that a considerable proportion of Unitra medical graduates have chosen to practise in rural settings, including small towns, rather than in big metropolitan areas.[11] This is consistent with their intentions as students and may represent a preference for rural work settings.[12] Given the rural-urban drift of labour that often characterises developing countries, it is important that our pedagogy tends to challenge this oncotic pull of medical professionals in South Africa.[13-16]

There is also growing evidence that the pedagogical approach of PBL and CBME tends to improve academic performance assessed in terms of increasing throughput rates and reduced attrition rates.[8] This is relevant as the institution attracts students from historically disadvantaged backgrounds and often with poor preparation for university education.

In 1996 the South African National Department of Health introduced compulsory community service for all doctors qualifying for full registration after the 1-year internship. The programme was directed particularly at rural and underserved areas. This was also intended to address the endemic South African problem of uneven rural-urban distribution of medical doctors.

As expected, the introduction of community service elicited mixed reactions. Of note, however, is that the medical students at Unitra unanimously supported the introduction of community service. They felt that their training at Unitra had left them comfortable and well suited to serve in rural areas, without fear of inadequacy.

Table I. Unitra faculty of health sciences – milestones

Years	Milestones
1985	Medical Faculty opened with 13 MB ChB II students
1989	First (unsuccessful) attempt at introducing PBL in MB ChB II
1990	First Unitra MB ChB graduates (7 of intake of 13)
1992	PBL successfully implemented in MB ChB II
1990 - 1996	122 'traditional' MB ChB graduates
1997	First PBL MB ChB graduates (15 of original 23)
1997 - 2002	203 PBL MB ChB graduates
1990 - 2004	Total 500 + MB ChB graduates
1985 - 2005	Cumulative enrolment into MB ChB course 1 070

Table II. Demographic characteristics of Unitra medical graduates (1990 - 2004) (*N* = 505)

	Traditional curriculum (*N* = 122, 24.16%)		PBL curriculum (*N* = 383 (75.84%))	
Characteristics	*N*	%	*N*	%
Female	48	39.34	213	55.61
Male	74	60.66	170	44.39
Black	86	70.49	262	68.41
Asian	36	29.51	114	29.76
Coloured	0	0	5	1.30
White	0	0	2	0.52

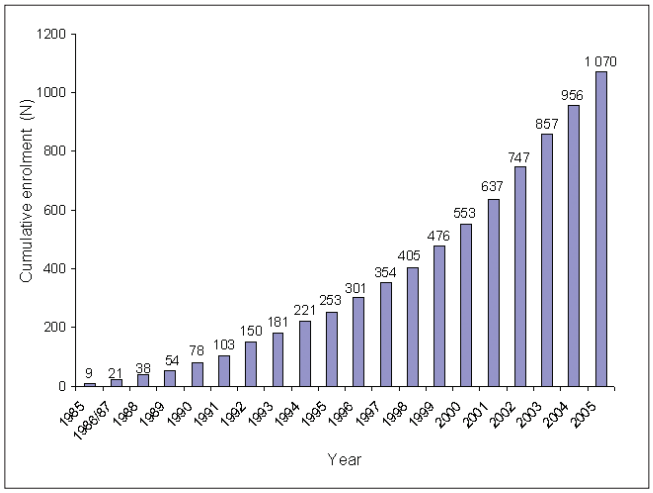

Fig. 1. Cumulative MB ChB enrolment at Unitra, 1985 - 2005.

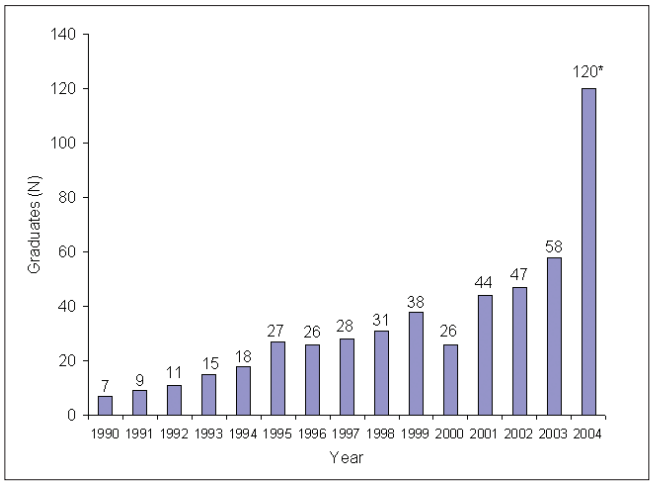

*Fig. 2. Unitra MB ChB graduates by year, 1990 - 2004. (*There was an unusually high number of graduates in 2004 because of change in course duration from 6 to 5 years in 2000. Therefore there were two groups of finalists in 2004 – MB ChB VI admitted in 1999 and MB ChB V admitted in 2000.)*

Nine years after the introduction of community service, reports from both our graduates and colleagues working with them have been positive. This is probably due to certain strengths in the Unitra training, *inter alia* the early introduction of community-based education and service in years 1 - 3, and of community-based clinical clerkships in years 4 - 5.[17-19] It is clear that in the course of their training the students had been sensitised to the health needs and problems of rural and underserved communities. For some students from other centres, such lessons come only after graduation from medical training.[20]

It is also interesting to note that in an exit survey of Unitra MB ChB final-year students in 2002, 57% reported that their community-based clinical training had been better than in other settings, 31% thought it was the same as in other settings, 6% said it was worse, and 6% had no opinion or were indifferent.[19]

In addition to evaluating the response of our graduates to internship, we also intend conducting follow-up surveys to assess their response to community service. Of interest would be the proportion of our graduates who after internship and community service choose to work in the rural hospitals or to engage in private practice in rural areas.[11]

Conclusion – lessons learnt

Over the past 20 years the Unitra medical school has striven to advance models of medical training that produce doctors equipped with not only the requisite knowledge and clinical skills, but also the professional attitudes to offer quality health care to the communities they serve. Experience and time have taught us that deciding on an ideal system of medical education is a dynamic process. It follows a continuous cycle of planning and design, implementation, evaluation and revision.

At the inception of the medical programme at Unitra, there was limited experiential support for the CBME and PBL approaches to medical education. In fact, the relative balance between the merits of PBL pedagogy and the traditional approach at the time made many medical faculties reluctant to change their educational approach. However, the unique mandate of the Unitra medical school meant that developing strength in PBL and CBME was the only tenable way to ensure that it succeeded. Our experience testifies to the strengths of the PBL pedagogy in our setting as we record the significant successes of this approach to medical education.

We have learnt that PBL improves the academic performance of students by both increasing the throughput rates and reducing the rate of attrition. Analysis of the performance of students has further demonstrated that tutors' subject-matter expertise does not influence the performance of learners in content-based examinations in an integrated PBL curriculum. This may be explained by the fact that PBL is, in essence, student-centred so that tutors serve as facilitators rather than as subject experts who impart knowledge didactically. Our current studies include exploration of individual factors that might predict success in a PBL medical curriculum.

The authors thank Professor J E Iputo, Professor G George and Mrs V Mjoli for their comments on this article.

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