Where have all the doctors gone? Career choices of Wits medical graduates

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Objectives. To assess the distribution of University of the Witwatersrand (Wits) medical graduates from 1960 to 1994 with regard to private or public sector work, chosen specialist or generalist careers, and work in urban or rural areas, looking for secular trends and gender differences.

Design. A cross-sectional analysis of the register of what was then the South African Medical and Dental Council (SAMDC) and a telephone interview survey of a sample of medical graduates, collecting retrospective career histories.

Results. Thirty-six per cent of the sample was working predominantly in the public sector, while 47% of all years worked by graduates were in the public sector. Women graduates spent 68% of their years working in the public sector, compared with 36% for men. The majority (55%) of graduates in the sample who were working in the public sector cited academic and training aspects as the main reason for this choice. Conversely, nearly half (47%) gave income as the main reason for moving to the private sector. Forty per cent of graduates had specialised (46% of men, 22% of women), while 76% were working in the large urban areas.

Conclusions. The findings highlight methodological problems with standard cross-sectional analysis of distribution of personnel. They also challenge several assumptions about the likelihood of Wits graduates working as generalists (60%), the voluntary contribution of graduates to the public sector, and in particular the value of women doctors to public service and primary care.

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There is much public debate and justified concern that the State and taxpayers' investment in tertiary education is not benefiting the majority of people in South Africa, particularly the poorest. This debate has been most strident in the health sector in the last few years as a result of the Department of Health's plans for compulsory community service and extended internship training. (While supported by the Department of Health (DOH), the 2-year internship is driven by the Health Professions Council of South Africa (HPCSA) which is responsible for ensuring standards of training and competence of doctors.) These policies have several objectives. First, extended internship training is intended to be orientated away from specialisation, thus increasing the proportion of doctors who are competent to practise primary and secondary care and who choose to make their careers in primary care or district hospitals. Second, both vocational training and community service are designed to increase the amount of time that doctors spend in the public sector after graduation. Third, community service in particular is intended to distribute doctors within the public sector to poorer areas where doctors do not generally choose to work.

The DOH has been looking at the curricula and educational processes in medical schools. There is concern that medical schools may be providing students with inappropriate role models since most teaching staff are specialists. The course content and clinical environment do not encourage careers in primary care (most training occurs in tertiary hospitals). There is also a concern that the selection methods and the values transmitted through the educational process may favour work in the private sector rather than the public sector. Most of the debates, and the policy options being considered, take place in the absence of any data on the actual choices by graduates from different university environments and the reasons for these choices.

This study was conducted on University of the Witwatersrand (Wits) medical graduates to examine what proportion had specialised, what proportion were currently working in the public or private sectors, the amount of time spent in each sector during their careers, and where they were working in terms of urban/rural distribution. The study focused only on those who had graduated after 1960, i.e. who were likely still to be working, and who had remained in South Africa.

In a previous related study[1] we examined emigration rates among Wits medical graduates since 1960 and showed that approximately 46% were currently working outside South Africa.[1] That paper also discussed the policy implications and proposed solutions to the problem of emigration.

Methods

Two data sources were used. The first was the register of what was then the South African Medical and Dental Council (SAMDC). Since doctors are required to register annually in order to practise, it is likely that all doctors currently practising

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in South Africa are registered and have reasonably accurate addresses.[2] In order to practise as a specialist in South Africa one's specialty must be registered with the Health Professions Council of South Africa (the SAMDC has been restructured and is now the HPCSA). Thus the Council register is a reliable source of such information. It also provides information on year of graduation and gender.

On the other hand, the register does not record information on graduates who are no longer registered because of emigration, and therefore it cannot be used to evaluate rates of emigration. It also does not record information on whether an individual works in the public or private sectors and whether he or she works full-time, part-time not at all. Hence this information had to be obtained through a special sample survey, which was also used to obtain reasons for working in the public or private sectors, and for specialising or not.

A stratified random sample was taken from all graduates listed on the University of the Witwatersrand Alumni register from 1960 to 1994. A sample of 200 graduates was selected. The detailed explanation of the sampling strategy and stratification is given in a previous work.[1] The register contained telephone numbers or addresses for approximately 60% of the sample although many of these were found to be invalid.

Doctors were traced using other databases including the SAMDC register, the Representative Association of Medical Schemes register, and telephone directories. Where no telephone number could be obtained, postcards were sent requesting the respondent to contact the authors. All interviews were conducted by telephone using a structured questionnaire.

Results

Ninety-two graduates from the sample were identified as living in South Africa. Of these, 5 refused to be interviewed and 6 could not be contacted. Three were not currently working (including homemaking) and a further 9 were working in fields not related to medicine.

Distribution between public and private sectors

Table I shows the distribution of the sample by gender and decade. Since the sample was stratified by decade of graduation, the aggregate percentages are weighted. The sample highlights the increase in the proportion of female graduates, from 10% in the 1960s to 45% in the 1990s.

At the time of the survey 36% of respondents (weighted average) were working predominantly in the public sector, 60% predominantly in the private sector and 4% were not working as doctors. Many respondents indicated that they also worked part-time in the other sector — for example public-sector employees doing limited private practice and private-sector doctors doing sessions in public hospitals. The analysis by decade of graduation indicates that 63% of recent graduates from the 1990s were working predominantly in the public sector. Since doctors who wish to specialise have to spend at least 4 years in the public sector after internship, and will then often spend a further year or two to gain experience, a high proportion of most graduates from the 1990s were still in the public sector at the time of the survey. In contrast, 44% of graduates from the 1980s, 18% of those from the 1970s and 22% of those from the 1960s were working in the public sector at the time of the survey.

Given this tendency to start off one's career in the public sector, a more meaningful analysis should calculate the life-time distribution of time worked in each sector. Respondents were asked to identify all the jobs they had held since completing their internships and to indicate the number of months or years spent in each job. These were then classified as 'private sector', 'public sector' and 'other' if not in the health sector. National military service as a doctor was classified as public service. Maternity leave and homemaking were classified as work outside of medicine. Since most respondents had spent some time in both the public and private sectors, each of these contributed some years to both categories. In addition, part-time work was also included, and was allocated as a proportion of a year to the relevant category (e.g. 'public sector part-time'). For example, if someone worked part-time (50%) in the public sector for 10 years, this contributed 5 years to the 'public sector part-time' category and 5 years in total. Fig. 1 shows the percentage of all years worked by each cohort of graduates in the private and public sectors, or outside of medicine.

This analysis confirms that it is not just that more graduates from the 1990s are still in the public sector, but that more recent

Table I. Distribution of sample by decade of graduation and gender

	1960s		1970s		1980s		1990s		Total (% weighted)	
	N	%	*N*	%	*N*	%	*N*	%	*N*	%
Female	3	10.3	3	16.7	5	21.7	10	45.5	21	25
Male	26	89.7	15	83.3	18	78.3	12	54.5	71	75
Total	29	100	18	100	23	100	22	100	92	100

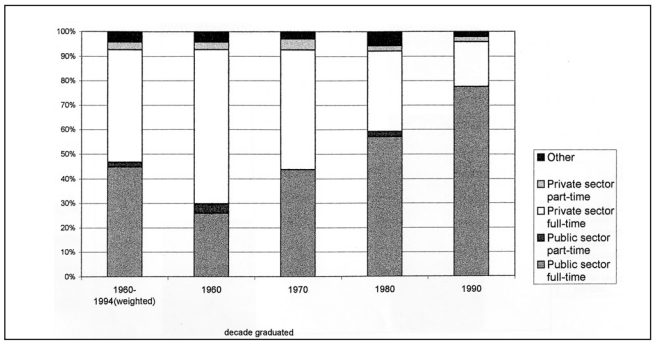

Fig. 1. Proportion of time spent in the public and private sectors: 1960 - 1994.

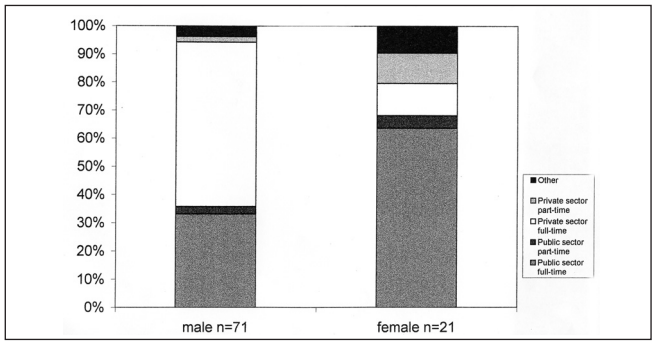

Fig. 2. Proportion of time spent in private and public sectors by gender.

graduates have spent a greater proportion of their time in the public sector than earlier graduates. It also shows that while only 18% of the 1970s cohort are currently in the public sector, that cohort had contributed 44% of its total working years to the public sector.

Fig. 2 shows the percentage of time spent in the public and private sectors according to gender. Overall, women spent 10% of their years since internship outside of medicine, compared with 4% for men. Women spent about 15% of their years since internship in part-time work, compared with 5% for men. Women appear likely to spend twice as many years working in the public sector as men (68% v 36% of years since internship). However, the analysis of public/private-sector time distribution may be confounded by a cohort effect in that recent cohorts (men and women) spent a greater proportion of their time in the public sector, and women form a greater proportion of recent cohorts (Table I). Therefore the analysis must be done by cohort. This confirms that within each decade cohort the percentage of time that women spent in the public sector was higher than for men. However, the numbers in each group are too small to be statistically significant.

Tables II and III show the reasons given for choosing to work in the public and private sectors respectively. It is striking that the academic and training aspects of some public- sector work were the main reasons offered by 55% of people working in the public sector. Sixty-four per cent gave income as a reason for going into the private sector, and 47% gave this as the main reason.

Rates of specialisation

Based on the SAMDC register, we identified Wits graduates from 1960 to 1994 with South African addresses. Of these, 46% of men and 22% of women graduates are specialists (40% overall). However, the rate of specialisation among doctors who emigrate may possibly be higher than among those who have remained in South Africa. The distribution of specialities is given in Table IV.

Fifty per cent of specialists were in four categories, viz. internal medicine, anaesthesiology, surgical specialties and radiology. However, the gender preferences were very different, with most women choosing anaesthesiology, paediatrics, pathology, radiology and psychiatry.

Table II. Reasons given by doctors for working in the public sector

	Main reason		Any reason	
	N	%	*N*	%
Training	12	41	12	43
Academic aspect, i.e. teaching and research	4	14	5	18
Want to provide services to public sector/consistent with personal ethics	3	10	6	21
Requires more experience before working in the private sector	3	10	4	14
Better hours of work compared with private sector	3	10	3	11
Forced to work in the public sector in view of medical aid payment delays	1	3	1	4
Disease spectrum/profile	1	3	1	4
Ill-health	1	3	1	4
Fixed salary			1	4
Total	28	100		

Table III. Reasons given by doctors for working in the private sector

	Main reason		Any reason	
	N	%	*N*	%
Income-generating potential	22	47	30	64
Independence/autonomy/own boss	6	13	10	21
Wanted to be a GP/did not want to work in a hospital	6	13	9	19
Better conditions of service compared with the public sector	3	6	13	28
Attitudes of racism in the public sector	3	6	3	6
Need to pay back a loan	2	4	5	11
Dislike for public-sector environment/culture	2	4	3	6
Poor management in public sector	1	2	3	6
Lack of opportunity for advancement in the public sector	1	2	2	4
Lack of suitable full-time appointment in public sector	1	2	1	2
Too much administration as consultant specialist in public sector	-	-	1	2
Opportunity in a specialist practice	-	-	1	2
Lack of direction in academic medicine	-	-	1	2
Poor quality of care in the public sector	-	-	1	2
Total	47	100		

Respondents in the sample survey were asked for their reasons for choosing to specialise or remain generalists. Seventy-nine per cent of specialists gave an answer indicating that their specialty reflected an area of personal interest. Only 9% mentioned financial benefits and 15% mentioned less after-hours work. Eighteen per cent had been dissatisfied with general practice work. Among respondents in general practice, positive factors that attracted them were personal interest (31%), the disease spectrum (17%) and the possibilities of flexi-time work or less call-work (14%). However, many were in general practice because of obstacles preventing them from specialisation, such as the need to pay back loans or earn a higher income immediately after qualifying (21%), and domestic responsibilities and personal reasons (17%). Either by choice or requirement, 19% were working as generalists before specialising.

Table IV. Field of practice of Wits medical graduates living in South Africa

	Male		Female		Total	
Non-specialists versus specialists	*N*	%	*N*	%	*N*	%
Non-specialists	1 798	54.2	835	77.7	2 633	60.0
Specialists						
Internal medicine	241	7.3	25	2.3	266	6.1
Surgical specialties*	219	6.6	7	0.7	226	5.1
Anaesthetics	171	5.2	35	3.3	206	4.7
Diagnostic radiology	148	4.5	28	2.6	176	4.0
Obstetrics and gynaecology	133	4.0	14	0.2	147	3.3
Paediatrics	94	2.8	35	3.3	129	2.9
Pathology	83	2.5	31	2.9	114	2.6
Surgery	111	3.3	2	0.2	113	2.6
Psychiatry	73	2.2	26	2.4	99	2.3
Family medicine	76	2.3	14	1.3	90	2.1
Orthopaedics	81	2.4	0	0.0	81	1.8
Medical specialties†	53	1.6	11	1.0	64	1.5
Community health	17	0.5	6	0.6	23	0.5
Therapeutic radiology	13	0.4	3	0.3	16	0.4
Other	4	0.1	3	0.3	7	0.2
Total	3 315	100.0	1 075	100.0	4 390	100

* Ophthalmology, ear, nose and throat surgery, urology, cardiothoracic surgery, neurosurgery, maxillofacial surgery, paediatric surgery, plastic surgery
† Dermatology, neurology.

Geographical distribution

The addresses from the SAMDC register were used to classify Wits graduates between 1960 and 1994 by city, small town and rural areas. Postal codes were used to allocate individuals to census enumeration districts or magisterial districts which where then classified into predominantly small town or rural. Seventy-six per cent of respondents lived and worked in the largest metropolitan areas, 10% in cities and medium-sized towns, and about 14% in rural areas and small towns.

Discussion

Methodological issues

This survey highlights a number of methodological pitfalls that complicate analyses of the distribution of doctors, which typically take only a cross-sectional 'snapshot'. Firstly, it is apparent that men and women have different rates of specialisation, different specialist preferences, and spend different periods of time in the public and private sectors. Since the proportion of women graduates has been increasing over the last 4 decades, any analysis of trends regarding specialisation or public/private distribution of doctors will be confounded by the changing proportion of women over the period and therefore the analysis needs to be done while controlling for gender in each period.

Secondly, a typical analysis of distribution of personnel between private and public sectors will miss the fact that there is a natural history or career path, with many doctors spending a considerable portion of their early careers in the public sector but less time there later on. Thus this cohort effect means that the analysis will be incorrect if the sample misrepresents recent graduates or earlier graduates or if the total number of graduates has changed over time.

Thirdly, analogous to the life-cycle pattern of public/private-sector movement, most doctors who work in rural areas do so at an early stage in their careers, and usually for only a few years (often until their children reach school age). Therefore to assess the contribution to rural health, one should again not rely on a cross-sectional snapshot, but on a detailed longitudinal work history with an analysis of person-years in rural versus urban areas. Unfortunately, the need to elicit this information was not appreciated when the survey was designed.

Findings

The reliability of those results of this study that depend on the sample survey undoubtedly suffers from the relatively small sample size once the analysis is broken down into decade and gender sub-groups. Nevertheless, the consistency with the national register data, and with other surveys nationally and internationally, lends support to the findings. It also suggests that even though this is a study of Wits graduates, certain findings would be generalisable to doctors nationally. We must also highlight, again, that the results relate only to the graduates remaining in South Africa.

Contribution to public-sector health services. There is no evidence of recent graduates abandoning the public sector. Over 63% of graduates from the 1990s were in the public sector at the time of the survey. There is a clear trend indicating that doctors spend the early part of their careers in the public sector and then move to the private sector. Wits graduates spent on average 47% per cent of their working years (excluding internship) in the public sector.

'Value for money' – men and women. Many studies have raised questions regarding the relative service given by male and female doctors.[3-6] Most show that women provide less service, mainly because of the amount of part-time work they do rather than the total number of years worked. Our study confirms this pattern. Women doctors spent 75% of their working years in full-time practice compared with 91% for men. However, women appear to spend more full-time equivalent years working in the public sector than men – possibly up to twice as many years. Thus concerns that the increasing participation of women in medicine (now two-thirds of students in most medical schools) will aggravate the national doctor shortage because of the time they take off to raise families should be balanced against the likelihood that the public sector benefits more (in terms of years of service) from women doctors than from men. On the other hand, one must recognise that the reasons for this pattern are probably related to the particular structure of private practice in South Africa at present, viz. largely solo practices with very high expectations from patients regarding continuity of their relationship with a particular doctor. This makes part-time and interrupted work very difficult in the private sector. However, as the organisation of private practice changes in South Africa – more group practice, less doctor choice under managed care, less fee for service – the opportunities and attractiveness of private practice for women doctors will increase.

Gender and specialisation. Studies in several countries[7-10] have found that women choose general practice more frequently than men. Of the Wits graduates, 45% of men had specialised compared with 22% percent of women.

We cannot tell whether this is because women have a greater preference for general practice,[7,11] or because there were biases against women in the process of selecting registrars, inflexible registrar programmes and/or an alienating institutional culture. However, the most important factors may be family commitment and intentions.[9,10]

The same questions are raised by the very different specialty profiles of men and women doctors. The pattern of specialisation among women doctors found in this survey is consistent with that found by Brink and Bradshaw[3] in South Africa, and others elsewhere.[4,7,9] The near absence of women in

surgery and the surgical specialties is a particular cause for future concern which postgraduate training programmes must address.[4,10] This also requires changing the culture in surgical departments. Students are exposed to this culture as undergraduates, and it is often perceived as being hostile to women.

Geographical distribution. Fourteen per cent of Wits graduates currently work in rural areas and small towns. There have been many policy proposals on how to incentivise doctors to move to or stay in remote areas.[12,13] Community service, which is one strategy, was implemented after this survey. Rural allowances and other benefits, including sabbaticals, are probably the most important instruments. Ensuring that doctors are competent and confident about working without supervision is also critical, and will be substantially addressed through the 2-year internship.

There are two key questions. Firstly, what difference does the selection process (at entry to medical school) play, i.e. can one select students who will be more likely to work in rural areas? A recent South African study[14] found that students of rural origin are more likely to work in a rural area than students from urban areas. Methodological weaknesses may have biased these results, although the findings are consistent with international data.[15] Secondly, do the training and exposure received during the basic medical degree affect graduates' decisions? A research project suggested by this study would be a comparison of the work location of graduates of different medical schools, and an analysis of the medical school-related factors that have influenced those doctors who have chosen to work in rural areas.

Conclusion

The longitudinal analysis of work history demonstrates a level of contribution to public-sector care, past and current, which is higher than that estimated by a cross-sectional analysis, and may be higher than conventional wisdom suggests — nearly half of all years worked. Furthermore, 60% of graduates who have remained in South Africa are in primary care and general medical officer service. This must challenge the often- raised criticism that Wits, and similar institutions, have failed to promote post-qualification careers in general practice through their specialist-orientated, tertiary-level, hospital-based undergraduate training. Clearly the determinants are far more complex, as highlighted by the reasons given by respondents for specialisation. It is striking that a minority of these reasons relate to factors under the Faculty's control at undergraduate level.

However, we have reserved judgement regarding whether the rates of specialisation, of rural practice, and of public-sector participation by Wits graduates are too low, just right or too high. For even if there were agreement on the national targets for the above, we do not believe that all medical schools should be producing the same mix of graduates with the same interests, strengths and career path aspirations. Certainly the government's current higher education policy is promoting a more differentiated higher education landscape.[16]

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