More doctors and dentists are needed in South Africa

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Background. An aim of the Colleges of Medicine of South Africa (CMSA) project 'Strengthening Academic Medicine and Specialist Training' was to research the number and needs of specialists and subspecialists within South Africa.

Methods. Data were collected from several sources: Deans of the 8 Faculties of Health Sciences and the Presidents of the 27 constituent Colleges of the CMSA completed a survey; and the HPCSA's Register of Approved Registrar Posts for Faculties of Health Sciences was examined and the results tabulated.

Results. South Africa compares unfavourably with middle-income countries on the ratios of medical and dental professionals; many districts have limited access to specialists and subspecialists. The unacceptable ratio of doctors, dentists and other health professionals per capita needs to be remedied, given South Africa's impressive reputation for its output of health professionals, including the areas of medical training, clinical practice and clinical research. The existing output from South Africa's 8 medical schools of MB ChB and specialist graduates is not being absorbed into the public health system, and neither are other health professionals.

Conclusion. Dynamic leadership and policy interventions are required to advocate and finance the planned increase of medical, dental and other health professionals in South Africa.

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In 2008, the Colleges of Medicine of South Africa (CMSA) initiated a project entitled 'Strengthening Academic Medicine and Specialist Training' as a response to the concern among medical and dental professionals about increasing challenges in the academic training environment and issues relating to the output and retention of specialists and sub-specialists in the public health services. These challenges significantly affect the capacity of the public and private health sectors to provide South Africa's required quality of health care and to ensure the output of sufficient health professionals to meet its needs.

A prime aim of the CMSA project was to research the need for, and numbers of, specialists and subspecialists within South Africa; this is ongoing, and the initial results are presented herein.

Objectives

The objectives of the CMSA project were to:

- compare South Africa internationally regarding the number of doctors and dentists per 1 000 population
- establish the number of specialists and subspecialists in South Africa
- establish whether these numbers meet South Africa's healthcare requirements
- identify the cost of registrar training should finances be needed to increase the output
- develop an Excel model and database to capture and monitor data on specialists and subspecialists by discipline and Faculty.

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Methods

Data were collected from the following sources:

- World Health Organization (WHO) country data on medical doctors and dental personnel.
- Public and private sources of data in South Africa on health professionals included the National Department of Health (DOH), CMSA, National Treasury, Health Professions Council of South Africa (HPCSA), a large private funder, Board of Healthcare Funders (BHF), South African Medical Association (SAMA) and Medpages.
- The deans of the eight faculties of health sciences were asked to complete a survey in 2009. The objectives were to determine:
  - existing figures for filled HPCSA specialist and subspecialist training posts
  - why HPCSA training numbers have not been translated into filled posts e.g. because of unfunded or inadequate recruitment
  - what additional specialist registrar training numbers are needed, and what increase is recommended for specialists, sub-specialists and dental specialists
  - capacity and staffing requirements to train specialists, sub-specialists and dental specialists, and how to meet future staffing needs.
- The Presidents of the then 27 constituent colleges of the CMSA in 2009 were sent the available data and asked to complete a survey. They were informed that the outcome of the exercise was a practicable and pragmatic plan to increase the output of specialists and sub-specialists and that the survey was the first step. They were asked to:
  - agree or disagree with the figures provided (and make adjustments)
  - suggest an ideal staffing situation, and a pragmatic increase which would address, in part, health care needs
  - motivate the reasons for the increase
  - make any other suggestions about staffing requirements.
- The HPCSA's Register of Approved Registrar Posts for health sciences faculties was examined and results tabulated. This register is based on HPCSA accreditation site visits and includes approved training numbers for specialists and sub-specialists.

Results

WHO data

South Africa compares unfavourably with other middle-income countries in terms of medical and dental professionals per 1 000 population. In 2008,[1] South Africa had 0.77 physicians (medical professionals) per 1 000 population, compared with Brazil (1.85), Mexico (1.8), the UK (2.47) and Australia (2.3) (Table I). The UK has 120 000 doctors for a population of 60 million; South Africa, with a population of 48 million, has 27 000 doctors. South Africa compares very unfavourably with other countries in terms of dentistry personnel (only 0.13 per 1 000 population) (Table I), compared with Brazil (1.16) and Mexico (1.42).

Table I. Comparison of practising physicians and dental personnel, GNP per capita and health expenditure (WHO 2008)

Country	Physicians per 1 000	Dental personnel per 1 000	GNP per capita in $	Health exp as % total exp
Lesotho	0.05	0.01	1 810	6.7
South Africa	0.77	0.13	8 900	8.6
Brazil	1.85	1.16	8 700	7.5
Mexico	1.98	1.42	11 990	6.2
USA	2.56	1.63	44 070	15.3
Greece	5	1.32	30 870	9.9
UK	2.3	0.52	33 650	8.4
Australia	2.47	0.69	33 940	8.7

Exp=expenditure.
Dentistry personnel includes dentists, dental assistants, dental technicians and related occupations.

South African figures for doctors and dentists per 1 000 population

Several data sources were studied to establish the number of doctors and dentists in South Africa (Tables II - V). A 'best guess' estimate involved reviewing and collating data from various sources. This once-off effort is a useful exercise, but is limited as data quickly become outdated.

In 2009 there were about 9 765 medical specialists in the South African health sector – 5 532 in the private and 4 233 in the public sector. There are an estimated 14 814 medical professionals in the public sector (0.36 per 1 000 population) and 12 827 in the private sector (1.70 per 1 000 population), giving a total of 27 641 (0.57 per 1 000 population). This is a lower ratio than the WHO data in Table I (0.77 per 1 000).

Table III. Total general practitioners and medical specialists in the public and private sectors, South Africa 2009

	Public sector	Private sector	Total
Medpages	3 568	12 775	16 756
Large private sector funder	0	12 827	12 827
BHF	0	4 178	Not complete
HPCSA and CMSA	0	0	31 308
SAMA	0	0	24 503
Persal public sector	14 814		14 814
Best guess	14 814	12 827	27 641
Population	41 127 928	7 552 820	48 680 749
Per 10 000 population	3.6	17	5.7
Per 1 000 population	0.36	1.70	0.57

Tables II and III show the results of data searching on numbers of doctors in South Africa in 2009.

A 'best guess' of dentists in South Africa revealed extremely low numbers of dentists and a low ratio per 1 000 population. There were 4 153 dentists (0.085 per 1 000 population) and few or no posts available to them in the public sector. The Community Dentistry speciality is a particular concern, with only 8 posts identified in South Africa (personal communication: Medpages 2011; Dr Barrie, UWC School of Dentistry, January 2011).

Survey of Deans of Faculties of Health Sciences 2009

The 2009 CMSA survey results of Deans of Faculties of Health Sciences are reported in Tables V - VII; 72.43% of HPCSA-approved registrar posts were filled, and only 53% of sub-specialist training posts were filled. Deans prioritised the funding and filling of existing posts before considering plans for expansion, but nevertheless proposed an increase of 8% for specialist trainees and 22% for subspecialist trainees. Deans provided motivation by speciality and sub-specialty for the proposed increases, and identified matters for consideration that affect expansion of specialist and sub-specialist output (Table V).

Table II. Medical specialists and general practitioners, South Africa 2009

	General practitioners			Medical specialists		
Data source	Public sector	Private sector	Total	Public sector	Private sector	Total
Medpages	1 780	8 461	10 568	1 788	4 314	6 188
Large private sector funder		7 295	7 295		5 532	5 532
BHF					4 178	4 178
HPCSA and CMSA			21 079			10 229
SAMA members			18 165			6 338
Persal public sector	10 581			4 233		
Best guess	10 581	7 295	17 876	4 233	5 532	9 765

Table IV. General practitioner dentists and specialists in the public and private sectors, South Africa 2009

	Public sector	Private sector	Total
GP dentists			
Medpages		2 881	
NDoH unpublished Persal payroll	1 086		
Best guess	1 086	2 881	3 767
Per 1 000 population	0.026	0.381	0.077
Specialist dentists			
Medpages	28	240	
CMSA survey 2009	146	240	386
Best guess	146	240	386
Per 1 000 population	0.004	0.032	0.008
Total best guess	1 032	3 121	4 153
Total per 1 000 population	0.025	0.413	0.085

Table V. CMSA 2009 survey of Deans of Faculties of Health Sciences: Issues that affect growth in specialist and sub-specialist training

- Lack of funds for registrar, sub-specialist and consultant posts
- Staffing issues: Need for better staff remuneration and career planning; slow staff appointments must be facilitated; posts and filling of posts are the problem, not staff availability; various strategies must be used for staff recruitment; staff shortages owing to the shrinkage of academic clinical staff and job opportunities; improve faculty staffing partly with more private sessions
- Provincial departments of health have too much control over the appointment of academic staff
- Health service providers and provincial departments of health could be more accommodating of the needs for clinical specialist training
- Lack of retention of young doctors
- Trainees must be allowed to rotate through the private sector, honorary consultant posts be established for private sector specialists, and 'academic chairs' should be sponsored by the private sector
- The public and private sectors should work together as a partnership with training in both sectors
- Training is threatened in the public sector owing to infrastructure, staff issues and reduced theatre time
- Faculties of health sciences should collaborate and circulate professors who head centres of excellence, or rotate registrars through centres of excellence across the country
- There is a need for a national forum and transparent national process which allows discussion and decision making, and that has access to ring-fenced funding and information

The numerical results of the deans' survey are summarised in Tables VI and VII. Table VII presents the results of the survey of dental deans. Despite the significant shortage of dental specialists, only 62% of dental specialist registrar training posts are filled.

Survey of Presidents of Constituent Colleges of the CMSA 2009

Table VIII summarises the responses to the survey of the Presidents of the constituent colleges of the CMSA. They recommended that a pragmatic increase would be from 8 743 to 13 614 specialists (56% increase). The Presidents suggested that the total number of specialists in the public and private sectors was 8 743, which differs from the figures in Table III that show a 'best guess' of 9 765 – or 10 229 according to HPCSA data. The difference is possibly due to double counting of specialists working in the public and private sectors, non-practising/retired specialists, and emigrants.

Review of the HPCSA 'Register of Approved Registrar Posts'

The HPCSA 'Register of Approved Registrar Posts' was analysed in 2010. Tables IX and X show data from HPCSA reports of site visits that recorded the total number of accredited registrar and sub-specialist training posts, and unfilled training posts; 38% of specialist and 75% sub-specialist training posts were unfilled. The HPCSA register numbers differ from the Deans' survey in Tables VI and VII, which could be due to the year in which the Faculty was visited by the HPCSA, and other factors. To implement a plan for the filling of training posts, Faculty and HPCSA data must be reconciled.

Costs of filling unfilled HPCSA training posts

The costs of filling unfilled HPCSA training posts were calculated (personal communication: Dr Mark Blecher, Social Sector National Treasury). Table XI shows the total cost of filling unfilled specialist and sub-specialist training posts over 5 years. Costs were calculated using only the costs of the registrar salary for a training period of 4 years for registrars and 2 years for sub-specialists (with a 6% cumulative annual increase for inflation). The costs of the service sites where they are trained are not included as they are assumed to be academic site health-service costs and not part of the dedicated financing required for specialist and sub-specialist trainee salaries.

These costs must be taken into account but through a different funding stream. Academic clinician costs were also calculated for each speciality and sub-specialty. Not all newly filled registrar and sub-specialist training posts will require academic clinician appointments. The academic supervision cost per trainee based on 2009 salaries, and over 4 years, is R1 million to R1.5 million, depending on the speciality. Funds for registrar training posts should be ring-fenced to protect their training in line with national needs for medical and dental practitioners.

Discussion

Our study demonstrates that South Africa has a poor ratio of doctors and dentists per 1 000 population, and many districts have limited or no access to specialist medical and dental services. The situation should never have developed. South Africa employs relatively few of its doctors and dentists in the public sector, and loses many to emigration.

From 1997 to 2006, there was a significant decline of 854 (25%) specialists and sub-specialists in the public sector (from 3 782 to 2 928). The number of medical practitioners (non-specialist) on the public sector payroll increased in the same period from 9 184 to 9 958, an increase of only 774 in 10 years (personal communication: Dr Nicholas Crisp, Benguela Health, 2010). The decline in specialists and sub-specialists, and limited increase in medical professionals in the public sector over 10 years, must be seen against the output of MB ChB and specialist graduates in South Africa. Table XII shows the

Table VI. CMSA deans' survey: Filled and vacant HPCSA medical training post figures, and proposed increase, by faculty, 2009

	UCT	US	Wits	UP	UKZN	FS	UL	WSU	Total
Vacant	116	80	173	97	293	63	126	89	1 037
Filled	368	308	673	309	611	226	167	63	2 725
Total	484	388	846	406	904	289	293	152	3 762
% filled	76%	79.4%	79.6%	76.1%	67.6%	78.2%	57%	41.5%	72.4%
Increase	100	30	161	22	4	39	0	0	356
% increase	20.7%	7.7%	19%	5.4%	0.4%	13.5%	0%	0%	9.5%

Table VII. CMSA deans' survey: Filled and vacant HPCSA dental training post numbers and proposed increase by faculty, 2009

	Registrar posts					
Totals	Vacant	Filled	Total	% filled	Increase	% increase
Community dentistry	10	7	17	41.2%	0	0%
Maxillo-facial and oral surgery	4	23	27	85.2%	1	3.7%
Oral medicine and periodontics	8	8	16	50%	2	12.5%
Oral pathology	5	6	11	55%	0	0%
Orthodontics	12	16	28	57.1%	0	0%
Prosthodontics	6	16	22	72.7%	2	9.1%
Totals	45	76	121	62.8%	5	4.1%

Table VIII. CMSA survey 2009: Total number of specialists in the public and private sectors and a recommended pragmatic increase to meet healthcare requirements

	EC	FS	GA	KZ	LI	MP	NC	NW	WC	Totals
Public and private	533	494	3 560	1 312	149	202	72	218	2 203	8 743
Public	249	262	1 289	604	85	60	27	46	1 015	3 637
Private	284	232	2 271	708	64	142	45	172	1 188	5 106
Ratio/10 000 population 2008	0.81	1.72	3.41	1.30	0.28	0.56	0.64	0.64	4.19	1.50
Ratio/population pragmatic	2.00	2.41	4.46	2.47	1.35	1.41	1.54	1.58	4.79	2.44
Actual numbers pragmatic	1 317	694	4 657	2 498	713	506	173	540	2 518	13 614

EC = Eastern Cape; FS = Free State; GA = Gauteng; KZ = KwaZulu-Natal; LI = Limpopo; MP = Mpumalanga; NC = Northern Cape; NW = North West; WC = Western Cape.

Table IX. Number of HPCSA-approved registrar training posts

Faculty	UCT	US	Wits	UP	UKZN	FS	UL	WSU	Total
Vacant	148	63	210	126	433	56	148	169	1 353
Filled	299	287	568	260	436	214	159	6	2 229
Total	447	350	778	386	872	270	307	175	3 582
% filled	67%	82%	73%	67%	50%	79%	52%	3%	62%

Note: HPCSA sites visits were undertaken between 2008 and 2010.

graduates produced during the period 1998 - 2006, when specialist and generalist numbers on the public sector payroll were declining and stagnating. Over 9 years, 14 145 MB ChB and specialist graduates were produced.

These graduates are not being recruited into the public sector system; the reasons include: lack of policy to expand the number of medical professionals in the public sector; lack of planning; lack of finance and posts; poor working environment and working

Table X. Number of HPCSA-approved sub-specialist training posts

	UCT	US	Wits	UP	UKZN	FS	UL	WSU	Total
Vacant	49	62	59	69	42	29	43	27	380
Filled	29	24	53	0	8	2	0	0	116
Total	78	86	112	69	50	31	43	27	496
% filled	37%	28%	53%	0%	16%	6%	0%	0%	25%

HPCSA sites visits were undertaken between 2008 and 2010.

conditions; and very limited – to non-existent – career prospects in the public health services.[2]

A significant contributor to low retention has been lack of positive reinforcement for 15 years from DoH authorities to doctors. Doctors often feel undervalued, and some policy and financing incentives support this perception. The South African health and education system has, by omission and commission, implemented 'push factors' which send doctors away (Table XIII).[3]

The first step to improve management of staff needs for the South African health sector is to have a reliable database that supplies the numbers of health professionals, and trends in output and retention. The present study showed that there is no accurate and reliable database of health professionals, with information on location and type of employment, active or inactive, emigrated, etc. Therefore, trends are not monitored. Key trends are that the number of public sector specialists is declining despite an annual output of about 500, and only a tenth of medical graduates are absorbed into the public sector.

A central data source on medical, dental and other health professionals, which is monitored and updated annually, is urgently needed. It should be used to ensure planning and development of specialists, monitor placement and emigration, plan recruitment, and review specialist service activity. Such a database should be developed by collaboration between the parties who provided data for this research, and be publicly available. Examples of international electronic databases include the UK's www.specialistinfo.com and the Australian www.healthdirectory.com.au/medicalspecialists.

Table XIV details the data sources reviewed and their strengths and weaknesses. No single source is adequate for providing comprehensive data on health professionals.

Conclusion

Dynamic leadership and policy interventions are required to advocate and finance the planned growth of medical, dental and other health professionals, including specialists and sub-specialists. This effort must be accompanied by a strategy to retain doctors, careful assessment of working conditions, and active recruitment of doctors who have left the country and of foreign doctors who can contribute to South African health care development.[5,6] The policy priority should be to consolidate training capacity by planning and funding the existing recommended HPCSA training posts within faculties of health sciences, and to send a positive message to South African doctors and dentists that the country values and needs them.

Postscript. As a result of the CMSA's project work in 2010, National Treasury agreed this year to allocate funds for filling unfilled registrar training posts over 5 years, as detailed and costed in this article.

Table XII. Specialist and MB ChB graduates 1998 - 2006

	Graduate specialists	Graduate MB ChBs	Total
1998	263	1 131	1 394
1999	304	1 131	2 829
2000	298	1 131	4 258
2001	285	1 229	5 772
2002	306	1 212	7 290
2003	324	1 296	8 910
2004	335	1 394	10 639
2005	321	1 511	12 471
2006	308	1 366	14 145

Source: Personal communication DHET and CMSA, 2010.

Table XIII. Main push and pull factors in migration and international recruitment of health workers[4]

Push factors	Pull factors
Low pay (absolute and/or relative)	Higher pay and opportunities for remittances
Poor working conditions	Better working conditions
Lack of resources to work effectively	Better-resourced health systems
Limited career opportunities	Career opportunities
Limited educational opportunities	Provision of post-basic education
Impact of HIV and AIDS	Political stability
Unstable/dangerous working environment	Travel opportunities
Economic instability	Aid work

Table XI. Cost of filling unfilled trainee specialist and sub-specialist training posts, 2010

	Year				
	1	2	3	4	5
Trainees	305	645	985	1 330	1 382
Total annual costs	R198 468 623	R462 805 132	R683 058 919	R934 763 254	R1 018 901 474

Sub-specialist trainees are paid at specialist rates, unless sub-specialty is studied in registrar years 3 and 4. Overtime and the 2010/2011 salary increase are included.

Table XIV. Sources of South African data on medical and dental specialists, and medical practitioners (non specialist)

Data source	Quality of data
Persal public sector payroll	Persal system from National Treasury is an accurate source of data on existing medical professionals on the public sector payroll, but only records job category and broad profession. Its lack of recording the type of medical or dental specialist can be corrected by the DoH requesting provincial health departments to use a standard set of job titles in existing job categories. Data are captured inconsistently by existing fields for geographical and workplace location and employer. Provincial departments of health could be required annually to submit this refined data on medical, dental and other health professionals, in a standard format to the DoH or other central source.
HPCSA	The HPCSA records the registration of specialist medical personnel and other health professionals in specific disciplines so that they can practise, but does not monitor numbers of health professionals in the health system. Therefore, its database has limitations as an accurate source of numbers of individual specialists in the health system, and has no available data by practitioner and their work location in the public or private sector. Registrars are registered separately. The data are an overestimate as there is double counting of specialists who are on 2 or more registers. HPCSA data duplicate public and private sector figures, include people who have emigrated and who no longer practise, and does not record individual and practice details. The utility of HPCSA data could be improved by refining the annual registration form and ensuring that the data can be analysed annually in a relevant format. Extending the current HPCSA database capture has resource implications.
CMSA	The CMSA database includes only members of the CMSA and not specialists who are not members. CMSA data do not include details of where specialists work. This research checked CMSA and HPCSA data against each other and used a single figure for the results.
Medpages	Medpages (www.medpages.co.za) is a live database that is regularly updated and maintained by a private service provider. It was developed to service private sector suppliers such as pharmaceutical companies. Medpages data on private sector providers and practitioners are accurate to within 95%. It records speciality and sub-speciality and area/s of interest. Medpages separates non-practising and emigrated practitioners and public, private and limited private practice; and identifies physical location of practices and academics in the public and private sectors. As Medpages had no access to information on medical professionals working in the public sector at the time of the research, their data are less accurate than their data on the private sector.
BHF	BHF data did not have the relevant data required.
SAMA	SAMA data records only medical practitioners who are members, but includes non-practising practitioners.
Large private sector administrator/funder	A large private sector administrator/funder that has an accurate data base of types of specialists and the specialists' practice address was used to establish numbers of private sector specialists. Their data on types of private sector specialists, and specialists in the public sector who do private work, were similar to Medpages'.
DoH	The DoH does not have a live database on practising medical and dental professionals in the public and private sectors, or information on other health professionals. To plan and finance the health workforce, and manage need, demand and supply, the DoH requires an accurate database of health professionals, which it could develop or outsource.

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