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Health personnel needs and attitudes to rural service in KwaZulu-Natal

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Objectives. To ascertain the urban/rural distribution of health personnel and the opinions of the medical fraternity in KwaZulu-Natal on compulsory rural service for medical practitioners.

Design. Cross-sectional analysis of geographical distribution of health personnel in KwaZulu-Natal based on 1991/92 South African Medical and Dental Council, South African Nursing Council and Pharmacy Council registration data. Opinion survey by administration of a structured questionnaire to a simple, random sample of private practitioners, academic consultants, postgraduate and undergraduate medical students and key informants in senior health service management in KwaZulu-Natal.

Results. Peripheral rural areas had health personnel/population ratios higher than or equivalent to those of urban areas, whereas the ratios were 15 - 40 times lower in deep rural areas. The key finding of the opinion survey was that the majority of all sectors except fifth-year medical students felt that rural service should be compulsory, either post-internship, prior to specialisation or prior to entry into private practice. However, respondents were significantly more likely to agree to rural service that would not affect them personally. The majority (54 - 87%) of all sectors felt that an option of 'buying out' of rural service should not be permitted. Respondents identified a range of financial, health service, academic, infrastructural and social incentives for rural practice. It is recommended that post-internship rural service be compulsory for a period of 6 months to 1 year provided that academic, health service and infrastructural deficiencies are ameliorated and appropriate financial incentives are provided.

S Afr Med J 1997; **87:** 293-298.

The effective planning, production and management of human resources for health care is a critical factor in the successful implementation of the National Health Plan.[1] Human resources are the most important of all the inputs into the provision of health care, constituting 60 - 75% of expenditure.[2]

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The option of compulsory rural service for doctors has been identified as one element of a strategy to rectify the urban/rural maldistribution of health professionals.[3,4] However, health personnel, unlike other inputs, are not passive role-players in the planning process. Their attitudes and aspirations may either promote or conflict with the objectives, goals and needs of the health service. It is therefore crucial to identify areas of support and resistance in the human resources planning process. The views of the medical fraternity in KwaZulu-Natal on the issue of compulsory rural service for doctors were analysed within the framework of the geographical distribution of health personnel in this region.

Methods

The geographical distribution of health personnel by magisterial districts was established by identifying all the magisterial districts in KwaZulu-Natal and calculating the health personnel/population ratios using the 1991/92 South African Medical and Dental Council (SAMDC), South African Nursing Council (SANC) and Pharmacy Council (PC) registration data and the Development Bank of South Africa population statistics (1991 census).[5] Magisterial districts were chosen, because health personnel and population data for this unit of measurement were readily available for comparison.

To demonstrate the extent of the imbalances between urban and rural and within rural areas, these data were then aggregated into urban, peripheral rural and deep rural categories on the basis of the functional geographical classification defined below.[6]

'Urban'[6] was defined as the metropolitan core and metropolitan periphery of Durban and Pietermaritzburg, and large towns with an industrial base and peri-urban areas adjacent to large towns. 'Peripheral rural'[6] was defined as magisterial districts with small or major service centres that serve a commercial agricultural hinterland. 'Deep rural'[6] was defined as those magisterial districts that do not fall into the previous two categories. These are areas without a collective service centre.

A descriptive, cross-sectional study to establish attitudes to rural service was conducted among senior medical health service managers, private medical practitioners and academic consultants, and undergraduate and postgraduate medical students of the Faculty of Medicine in KwaZulu-Natal.

Sample sizes for each category were calculated for a 95% confidence interval. A standardised self-administered questionnaire was used for all sectors except private practitioners — for the latter the questionnaires were administered telephonically by three research assistants. Bias was reduced by training interviewers and continual supervision by the researcher.

1. Senior health service managers. A key informant survey of the following sectors was conducted: (*i*) all 15 medical directors and chief directors of the KwaZulu-Natal Provincial Health Administration in April 1995; (*ii*) the medical and deputy medical officers of health of the three major local authority health departments in KwaZulu-Natal, viz. Durban, Pinetown and Pietermaritzburg, and the superintendents of the Prince Mshiyeni and Edendale health wards as proxies for urban district level managers. The study population was 11; (*iii*) all superintendents of the rural

KwaZulu health wards in April 1995 as proxies for rural district level managers. The sample size was 15.

The results represent the views of those sampled and are only generalisable to public health managers in KwaZulu-Natal.

2. Private medical practitioners. A 10% (239) simple random sample of all medical practitioners (including specialists) in full-time private practice in KwaZulu-Natal was drawn. The 1995 Representative Association of Medical Schemes (RAMS) register of all medical practitioners with a practice number was used as the sampling frame. At interview those practitioners who worked full time in the public sector with limited private practice privileges were excluded from the study.

3. Medical students: (*i*) undergraduates — in order to assess the effect of the current undergraduate medical training process on the views of students, the entire first-year class (121 students) and fifth-year class (102 students) constituted the study population. These students represented the preclinical and clinical years respectively; (*ii*) postgraduates — a 25% simple random sample (83) of all registrars at the Faculty of Medicine, University of Natal, was drawn.

4. Academic consultants. A 50% simple random sample (105) of all medical consultant staff at the Faculty of Medicine, University of Natal, was drawn. The questionnaire was distributed via the university postal system with a letter of motivation explaining the purpose of the study. A pilot study was conducted and the questionnaire was modified accordingly. The closed questions were analysed on the Epi-Info version 5 statistical package. The open-ended questions were analysed manually.

Results

Geographical distribution of health personnel

The high concentration of health personnel in urban areas underscores the need to attract them to rural areas (Fig. 1).

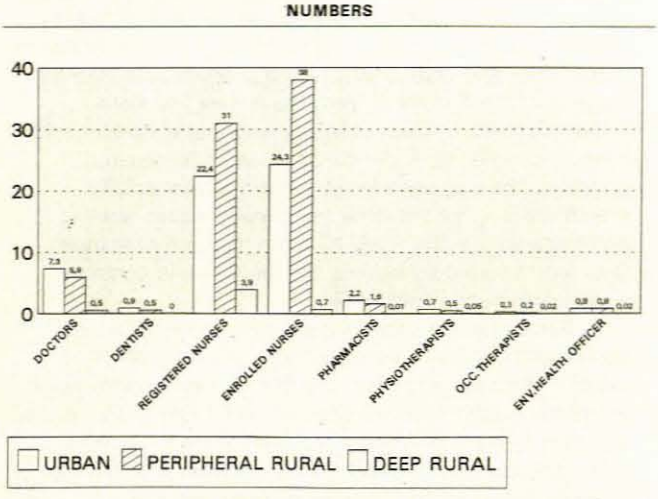

Fig. 1. Registered health personnel per 10 000 population in KwaZulu-Natal.

For doctors, dentists, pharmacists, physiotherapists, occupational therapists and environmental health officers the number of health workers per 10 000 population in peripheral rural areas was similar to or only slightly lower than those in urban areas.

There was a higher number of nurses per 10 000 population in peripheral rural than in urban areas, the increase being greater for enrolled nurses than registered nurses.

The number of personnel (all categories) per 10 000 population in deep rural areas was 15 to 40 times lower than in urban areas.

Attitudes to compulsory rural service

Demographic profile. The proportions of men and women were approximately equal in the first- and fifth-year student respondents. The female/male ratio was approximately 1:3 for consultants, registrars and health managers and 1:7.5 for private practitioners.

The majority of private practitioners, academic consultants and registrars were Indian (56%, 53% and 65% respectively) and white (37%, 37% and 23% respectively). The majority of health service managers were white (71%).

The majority of first-year respondents were black students (50%) and 41% were Indian students. The fifth-year respondents were 70% Indian and 28% black.

Response rates. The response rates were 83%, 85%, 72% and 96% respectively for the health managers, private practitioners, registrars and first-year students. The response rates for fifth-year students and academic consultants were 56% and 36% respectively.

Discussions with fifth-year students suggested that the non-respondents felt that rural service was not an issue that had any relevance to their work and plans after graduation. The probable direction of the bias is therefore likely to be an overestimation of the proportion of fifth-year students who feel that rural service should be compulsory.

The final response rate for the academic consultant sample was 36% despite appeals through the Dean's office, the Medical Faculty Board and heads of departments. Respondents are most likely to be those with strong views on the subject of rural service, whether for or against.

It is therefore not possible to predict the direction of the bias but the results are included for completeness, bearing in mind the above limitations.

Attitudes towards compulsory rural service (Table I). Significance testing within and between the various categories did not include the senior health service managers because of the non-probability sampling technique.

The majority of private practitioners (80%), academic consultants (62%), registrars (53%) and first-year students (52%) felt that rural service should be compulsory *post-internship*. Health service managers were equally divided and the majority of fifth-year students (78%) felt that it should not be compulsory.

There was a statistically significant difference between respondents who are post-internship (registrars, consultants and private practitioners) and those who are pre-internship (first- and fifth-year medical students) (*P*-value = 0.000001; chi-square test). The majority of respondents (76 - 91%) in all categories who felt that rural service should be

Table I. Opinions on compulsory rural service for medical practitioners

		Private sector		Academic consultant		Registrars		Fifth-year students		First-year students		Health managers	
		Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Post-internship	No.	161	41	23	14	32	28	13	45	59	54	17	17
	(%)	(80)	(20)	(62)	(38)	(53)	(47)	(22)	(78)	(52)	(48)	(50)	(50)
Pre-specialisation	No.	157	43	20	15	17	42	13	42	47	67	25	9
	(%)	(78)	(22)	(59)	(41)	(29)	(71)	(24)	(76)	(41)	(59)	(74)	(26)
Pre-private practice	No.	112	89	21	15	30	29	16	37	58	54	17	17
	(%)	(56)	(44)	(58)	(42)	(51)	(49)	(30)	(70)	(52)	(48)	(50)	(50)
Buying out option	No.	25	166	16	19	12	44	10	43	26	86	11	20
	(%)	(13)	(87)	(46)	(54)	(21)	(79)	(19)	(81)	(23)	(77)	(35)	(65)
Respondents	No.	202		38		57		57		116		34	

NB. Totals for each pair of cells may not correspond to number of respondents because of unanswered questions.
Post-internship = rural service done by all medical practitioners immediately after the current statutory 1-year period of internship; pre-specialisation = rural service done only by those practitioners wishing to specialise prior to admission to a training post; pre-private practice = rural service done only by medical practitioners wishing to enter the private sector prior to entering private practice; buying out option = a proposed alternative to compulsory rural service by paying back to the State an amount of approximately R400 000.

compulsory post-internship selected a period of service of 6 months to 1 year.

The majority of private practitioners (78%), academic consultants (59%) and health service managers (74%) felt that rural service should be compulsory *prior to entering training for a specialist degree* while the majority of registrars (71%), fifth-year students (76%) and first-year students (59%) felt that it should not be a compulsory requirement.

There was a statistically significant difference between respondents who are post-specialisation (consultants) or in private practice and respondents who are specialising/may still specialise (registrars, first- and fifth-year medical students) (*P*-value = 0.0000 to infinity; chi-square test). The majority of respondents (72 - 100%) in all categories who felt that rural service should be compulsory prior to specialisation selected a period of service of 6 months to 1 year.

The majority of private practitioners (56%), academic consultants (58%), registrars (51%) and first-year medical students (52%) felt that rural service should be a compulsory requirement *prior to entering private practice.* Health service managers were equally divided and the majority of fifth-year students (70%) felt that it should not be compulsory.

There was no significant difference between private practitioners and respondents who were not in private practice. The majority of respondents (76 - 92%) in all categories who felt that rural service should be compulsory prior to entering private practice selected a period of service of 6 months to 1 year.

The majority of respondents in all categories (54 - 87%) felt that the *option of 'buying out'* of service should not be allowed.

Incentives and disincentives for rural practice. The main problems identified by all six categories of respondents were the lack of utilities (37%), poor housing (36%), poor clinical facilities (32%), violence (31%), lack of recreational facilities (23%) and inadequate pay (20%) (Table II). Interference with freedom of choice was the lowest-ranked problem (5%). A small proportion of respondents (2%) felt that no problems militated against rural practice.

In contrast the majority of respondents in all categories identified higher salaries as the main incentive that would make a period of rural service a more attractive option (56 - 81%) (Table III). Suggestions in respect of the size of salary increase ranged from a 10% increase to five times current salary, and from abolition of taxation to an amount equivalent to the income the medical practitioner could earn in private practice.

Improvement in housing (24%), utilities (23%) and clinical facilities (23%) were ranked the second most important incentives for rural practice. Doing rural service as a matter of conscience/fulfilment was ranked lowest (2%).

Discussion

Strategies to rectify the urban/rural maldistribution of all categories of health personnel are an urgent priority for South Africa. Although the precise classification of areas within the continuum of urban to rural is difficult, the functional geographical categorisation of all magisterial districts in KwaZulu-Natal[6] demonstrates a clear differential in health personnel per population numbers between peripheral rural and deep rural areas. This has important implications for human resource policy, planning and resource allocation to the areas of greatest need. It must be stated, however, that this analysis is subject to the limitations of aggregate data. Supply and demand should ideally be determined for each individual district.

Multiple strategies are required to tackle the urban/rural imbalance. These include the extension of the role of nurses, the creation of new categories of health worker, the creation of rural health career pathways and prioritisation of rural areas in academic institutions' selection criteria, curricula and training environments.[7-13] The opinion survey focused on one aspect only, viz. the role of a compulsory period of rural service for medical practitioners, but this must be located within an overall human resource strategy for health personnel.

A key finding of the survey is that, in general, the majority of senior health service managers, private practitioners, academic consultants, registrars and first-year medical students feel that a once-off period of rural service should be a compulsory requirement.

Table II. Disincentives for rural practice

	Private sector		Academic consultant		Health manager		Registrar		Fifth-year students		First-year students	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%
Health service												
Poor clinical facilities	42	(21)	10	(26)	13	(38)	23	(40)	26	(46)	49	(42
Large workload	15	(7)	3	(8)	11	(32)	7	(12)	13	(23)	8	(7
Inadequate supervision	30	(15)	9	(24)	8	(24)	5	(9)	10	(18)	2	(2
Poor referral/support service	27	(13)	13	(34)	9	(26)	5	(9)	11	(19)	5	(4
Lack of academic support	15	(7)	10	(26)	19	(56)	12	(21)	9	(16)	5	(4
Infrastructure												
Poor housing	68	(34)	10	(26)	14	(41)	16	(28)	20	(35)	51	(44
Lack of utilities	70	(35)	8	(21)	11	(32)	16	(28)	20	(35)	62	(53
Poor roads/transport	28	(14)	7	(18)	9	(26)	5	(9)	13	(23)	25	(22
Social												
Violence	62	(31)	11	(29)	4	(12)	19	(33)	29	(51)	32	(28
Family disruption	18	(9)	8	(21)	7	(21)	11	(19)	15	(26)	23	(20
Lack of recreation	28	(14)	10	(26)	17	(50)	13	(23)	9	(16)	40	(34
Inadequate pay	30	(15)	7	(18)	3	(9)	13	(23)	29	(51)	19	(16
Lack of schools	16	(8)	16	(42)	15	(44)	8	(14)	1	(2)	0	
No freedom of choice	2	(1)	4	(11)	0		7	(12)	8	(14)	6	(5)
None	3	(1)	0		0		4	(7)	0		3	(3)

Table III. Incentives for rural practice

	Private sector		Academic consultant		Health manager		Registrar		Fifth-year students		First-year students	
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
Health service												
Improved clinical facilities	46	(23)	7	(18)	7	(21)	18	(32)	13	(23)	25	(22)
Improved technology	23	(11)	6	(16)	6	(18)	14	(25)	10	(18)	19	(16)
Sufficient trained staff	16	(8)	4	(11)	4	(12)	14	(25)	12	(21)	5	(4)
Good referral systems	13	(6)	7	(18)	6	(18)	15	(26)	8	(14)	4	(3)
Specialist support	18	(9)	7	(18)	8	(24)	14	(25)	8	(14)	0	
Academic												
Academic credits/training opportunities	16	(8)	11	(29)	9	(26)	6	(11)	2	(4)	9	(8)
Academic support	7	(3)	7	(18)	9	(26)	5	(9)	1	(2)	0	
Financial												
Higher salaries/less tax	113	(56)	25	(66)	27	(79)	47	(82)	46	(81)	71	(61)
Fringe benefits	22	(11)	19	(50)	19	(56)	16	(28)	16	(28)	11	(9)
Infrastructure												
Improved housing	34	(17)	12	(32)	11	(32)	12	(21)	21	(37)	32	(28)
Improved utilities	33	(16)	10	(26)	11	(32)	9	(16)	19	(33)	35	(30)
Improved transport/ communication systems	11	(5)	2	(5)	6	(18)	5	(9)	5	(9)	13	(11)
Social												
Extended leave periods	4	(2)	2	(5)	4	(12)	2	(4)	10	(18)	7	(6)
Improved security	22	(11)	2	(5)	2	(6)	4	(7)	10	(18)	13	(11)
Recreation/entertainment	5	(2)	7	(18)	6	(18)	5	(9)	3	(5)	3	(3)
Improved school facilities	9	(4)	6	(16)	2	(6)	4	(7)	2	(4)	0	
Conscience/fulfilment	0		0		0		2	(4)	0		8	(7)
None	1	(0.5)	0		0		0		2	(4)	0	
Respondents	202		38		34		57		57		116	

Fringe benefits include car, housing and school subsidies, assistance with loan and bursary repayments and provision of free accommodation in rural area.

There are two possible explanations for the significant differences in opinion between categories that are pre-internship or pre-specialisation and those that are post-internship or post-specialisation.

The first is that respondents were more likely to agree to compulsory rural service that would not affect them personally. The fact that only 2% of respondents felt that rural service should be undertaken as a matter of conscience or fulfilment raises the question of how extensive the consultation process needs to be to balance the needs of the health service and the attitudes and aspirations of medical personnel. It may also be an argument for an incentive-driven system of voluntary rural service as opposed to a compulsory requirement.

The difference in response is effectively between undergraduate and postgraduate medical students as one category and consultants, managers and private practitioners as the second category. A second explanation, therefore, may be the difference in the nature of the experience between medical students who have largely been exposed to a tertiary teaching hospital situation only and the more extensive community and management experience of the latter three sectors.

The latter possibility coupled with the difference in response between first- and fifth-year students implies that the medical school training process has profound influences on the perceptions and ethos of students in terms of community service.

International experience has demonstrated that selection of students from rural backgrounds and incorporation of adequate exposure to rural settings during training increase the likelihood of students' wishing to practise in a rural area.[8,10-13]

This exposure needs to occur particularly in deep rural areas — exposure to largely peripheral rural areas may not be adequate.

The majority opinion among all sectors that the option of 'buying out' of rural service should not be permitted is probably due to a perception that this option would favour the rich.

The problems and the incentives identified by the various sectors are similar to those documented in previous articles and reports in South Africa.[7,14,15] Of note is the major emphasis on financial incentives, which contradicts the recommendation of other authors that the incentive package be exclusively non-financial.[14,15] The findings of this survey suggest that increased salaries are the main incentive required to attract practitioners to rural areas.

An additional issue to be considered in formulating policy is that of the financial, social and academic option costs of a period of rural service for the individual practitioner. Medical students have a longer period of financial dependence than, for example, someone who enters the workforce after high school or 3 - 4 years of tertiary education. This, together with the need to pay back student loans and bursaries and the expenses of young families, leaves the individual practitioner with a large burden of debt on graduation.

Academic option costs of a period of rural service need to be offset by an extension of the role of academic institutions into rural areas to permit continuation of training during this period. The social costs are not easily addressed. It is an argument for rural service to be a voluntary, incentive-driven option rather than a compulsory requirement.

This issue is particularly relevant because professionals enjoy great personal mobility both into the private and the international medical sectors. Therefore, although the majority of respondents as a group favoured compulsory rural service, individual doctors with family and other constraints could also opt to leave the country. The issue of compulsory versus voluntary incentive-driven rural service must be carefully assessed and negotiated. If compulsory rural service does not enjoy the support of affected doctors, it may exacerbate the rural/urban imbalance.

The critical issue with regard to incentives is one of implementation. The RDP[16] and the National Health Plan[1] make a national policy commitment to rural development. This is, of necessity, a long-term strategy.

In the short term, e.g. over a 5-year period, the health services need to plan and prioritise a programme to correct the infrastructural, health service, academic and social deficiencies that act as disincentives to service in deep rural areas. Planning and implementation of this programme should take place with an intersectoral team, including the health services, academic institutions and other sectors, e.g. water, sanitation and electricity authorities.

The recurring theme in all the results is that effective strategies to solve these problems require the active co-operation of the health personnel, the health services and the academic sector if they are to redress the geographical imbalances and the disincentives inherent in compulsory rural service. We feel that a human resources development unit within the Department of Health at national and provincial level is necessary to develop human resource policy and plans, monitor the utilisation, distribution and functioning of health personnel, adjust the planning and 'production' systems on the basis of these results and address the following specific issues.

The role and contribution of private practitioners in performing some form of rural service and in addressing the imbalance of health personnel should be explored further.

Health science training institutions should establish recruitment procedures, selection criteria and academic support programmes to ensure an adequate intake and graduation of students from rural backgrounds.

Undergraduate and postgraduate training of health personnel should incorporate exposure to primary, secondary and tertiary health services in urban, peripheral rural and deep rural settings.

In conclusion, rural service should be a compulsory requirement for all medical practitioners immediately post-internship with the following provisos: (*i*) undergraduate training and internship must be structured so as to equip practitioners with the skills necessary to function, if required, in a rural setting with limited access to support services; (*ii*) ongoing specialist support, both clinical and academic, from the private sector, and regional, tertiary and academic hospitals is required; (*iii*) financial incentives should be put into place prior to the introduction of compulsory service. A programme to put non-financial incentives into place over a 5-year period is required urgently. The most inhospitable areas should be highest on the priority list.

We gratefully acknowledge the assistance of the HSRC Joint Programme for Health and Social Development, Dr K Naidoo in reviewing the manuscript, Mr P Pillay and Ms E Gouws for statistical support, and Drs P D Ramdas and K N Vallabhjee for moral support.

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Accepted 30 Aug 1996.