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ORIGINAL ARTICLES

Attitudes of Zimbabwean Medical Students to future practice

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Objective: To describe the attitudes and factors that influence the choice of future practice preference settings, (rural or urban), of Zimbabwean medical students.

Design: A cross sectional study using a questionnaire containing closed and open ended questions and attitudinal rating scales. The questionnaire was administered to students in their classes, for them to complete and return immediately.

Setting: The University of Zimbabwe Medical School, Harare, Zimbabwe.

Subjects: Medical students in their second, third and fourth years of training.

Main Outcome Measures: Factors associated with attitudes to future practice preference, urban or rural.

Results: A total of 145 students completed the questionnaire, a response rate of 66.5%. There was no difference between rural and urban born students in their willingness to work in the rural areas for at least three years. Female students, however, were unwilling to work in the rural areas for three years or more. The following factors significantly influenced positively the decision to work in a rural setting: job challenge, housing expenses/availability, general living expenses, prestige in the community, and a chance to be of service. Continuing education, schools for children, private practice, standard of living, prestige among colleagues, transport, opportunities for career development and "other" (social) factors, significantly influenced positively the decision to work in an urban setting.

Conclusion: The rural urban maldistribution of doctors will not be effectively addressed without rapid and far reaching improvements in the conditions of service and the situation in the rural areas. As these changes require a level of resources which is beyond the capacity of the country to provide, a more viable short to medium policy option is to increase the numbers of non-physicians such as clinical officers and to develop cadres such a the proposed public health trained officers.

Introduction

Zimbabwe, like many other developing and developed countries, experiences a significant maldistribution of doctors in favour of urban areas. Out of a total of 1 295 registered medical practitioners in 1989, only 570 were in public service.[1] A number of strategies in various countries have been attempted to address this problem, including preferential admission policies to medical schools and financial incentives to encourage location to under served areas.

In Zimbabwe, a bonding system has been introduced for new medical graduates to redress this imbalance. Additionally, students are trained on a new curriculum. This curriculum, introduced in 1987, aims to equip graduates with the knowledge and skills for them to be able to practise better in rural settings (University of Zimbabwe New Medical Undergraduate, unpublished). With this aim, it was also hoped that graduates' attitudes towards rural deployment would be positive.

The bonding scheme has met with mixed results. It has generated resentment, and precipitated a number of strikes and protests. The implementation of the new curriculum has been uneven, and it is unclear whether doctors trained on this curriculum have a more favourable attitude to rural service. Attitudes and the factors that influence attitude formation are important aspects in understanding reasons for practice preferences.

In an attempt to assess these factors, a survey of medical students and housemen was undertaken. The study sought to

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assess the attitudes of medical students and housemen to future practice preferences, to identify factors which are important in the choice of practice setting, and to compare attitudes to future practice preference of students being trained on the old, with those on the new curriculums.

Materials and Methods

A 66 item questionnaire, with 65 closed-ended questions, originally developed by Goldhagen,[2] and modified for use in Zimbabwe, was used to capture this information. The original questionnaire had been tested and used in an Ethiopian study, and was pretested in Zimbabwe. The first 19 questions sought information on the background of the students, including the occupation and education of their parents. Five questions measured attitudes to rural practice, and responses were measured on a five point scale, strongly agree to strongly disagree. Information was also sought on the reasons for studying medicine; initial interest in medicine; career goals; influence of faculty member on these goals.

The remainder of the questions were on assessing the factors influencing the choice of practice and included: salary, job availability, job challenge, patient contact, housing expenses/availability, general living expenses, continuing education, schools for children, private practice, standard of living, prestige among colleagues and the community, environmental surroundings, chance to be of service, transport, and opportunities for career development. A five point rating scale was also used to assess the importance of these factors in both urban and rural areas.

Students in the second, third and fourth years of their training, as well as housemen, were asked to complete the questionnaire. Where possible, students were given the questionnaire in their groups and asked to return it immediately on completion. The completed questionnaires were checked, collated, coded, and analysed on Epi Info computer software.

Results

A total of 145 students and five housemen completed and returned the questionnaires; a response rate of 66.5%, excluding the housemen. The housemen have been excluded from further analysis. Table I presents background characteristics of the study population. Males were 125 (86%) of the study population. The mean age of the respondents was 22.2, with a standard deviation of 1.8 years. A total of 139 (96%) of the students were single; eight had children. Over half 75 (52,4%) were urban born, and 13 (9%), were foreign born. Seventy five (54%) of the respondents attended urban primary schools, and 90 (66%) went to urban secondary schools.

A total of 115 (67%) of the fathers and 82 (60%) of the mothers of the respondents had had secondary schooling. Twenty three (16%) of the fathers had a university education. Thirty three percent (23%) out of a total of 141 responses to the question on father's occupation, were teachers and headmasters. Another 32 (23%) were in business and finance, 46 were in 10 different occupations. Eight did not state their father's occupation, four were retired, two were unemployed. The remainder had single individuals in a range of various occupations.

Table I: Selected characteristics of the study population.

	n	%
Year of student training:		
2nd	56	38.6
3rd	38	26.2
4th	51	35.2
Sex of the respondents:		
male	125	86.2
female	20	13.8
Place of birth:		
rural	68	47.6
urban	75	52.4
Place of primary school:		
rural	63	45.7
urban	75	54.3
Place of secondary school:		
rural	46	33.8
urban	90	66.2
Father's education:		
no school	3	2.1
primary	20	14.2
form 1-3	30	21.3
form 4	12	8.5
"O"level	49	34.8
"A"level	4	2.8
university	23	16.3
Mother's education:		
no school	6	4.4
primary	42	30.5
form 1-3	40	29.2
form 4	13	9.5
"O"level	27	19.7
"A"level	2	1.5
university	7	5.1
Preferred type of doctor:		
scientist/researcher	19	13.9
primarily clinician	96	67.2
public health practitioner	26	19.0

Sixty three (45%) of the mothers were housewives, (21%) were teachers, 11 were nurses and two others w health workers. Nine mothers were in business and finan four each in services, agriculture and social science. T occupations of six were not stated, and two were unemploy The remaining six were single individuals in various oc occupations.

Forty two respondents (30%) did not have any medi school debt, and 95 (69%) of the respondents wanted to primarily clinicians.

Ninety four (65%) respondents strongly agreed/agre with the statement "doctors should work wherever there need", 31 (21%), disagreed/strongly disagreed, and 20 (14 were uncertain. A total of 95 (66%) strongly agreed/agr that "doctors should not abandon rural areas to other he workers", 31 (22%) disagreed/strongly disagreed and (12%) were uncertain. Of the 145 respondents, 111 (7 strongly agreed/agreed that there was a greater need doctors in the rural areas than in the urban areas; 21(15 disagreed/strongly disagreed, and 13 (9%) were uncerta

Concerning the length of time respondents said that were interested in working in the rural areas, 24 (17%) w not interested, 53 (37%) were willing to work for up to years, 49 (34%), for at least three years. Seventeen (12

Table II: Goals, interests in medicine and preferred places for post graduate work.

	n	%
Career goals:		
general practice/private	20	14.7
general practice/public	13	9.6
paediatrics	9	6.6
obstetrics & gynaecology	13	9.6
surgery	34	25.0
medicine	25	18.4
psychiatry	2	1.5
public health	3	2.2
administration	5	3.7
other	12	8.8
Influential faculty member:		
pre-clinical	14	10.9
paediatric	4	3.1
surgery	27	21.1
medicine	26	20.3
obstetrics and gynaecology	6	4.7
community medicine	9	7.0
other	42	32.8
Year of exposure to faculty member:		
first	35	27.8
second	32	25.4
third	40	31.7
fourth	—	—
houseman	19	15.1
Initial interest in medicine due to:		
interest in basic science	41	29.5
financial and social security	24	17.3
service to patients	47	33.8
family pressure	6	4.3
friends	5	3.6
other	16	11.5
Career goal in choosing medicine based on:		
scientific interest	18	12.8
clinical interest	64	45.4
relevance to health problems	32	22.7
life style	20	14.2
other	7	4.9
Region/country of preferred post graduate work:		
Zimbabwe	33	23.9
South Africa	26	18.8
USA	30	21.7
Europe	45	32.6
Other developing countries	4	2.9

were uncertain. A total of 101 (68%) strongly agreed/agreed that a well trained doctor can function well in a rural setting; 27 (18%) disagreed/strongly disagreed, and 21 (14%) were uncertain.

Respondents were asked to rank in order of importance, the primary function of a doctor; offering curative service, offering preventive service, and performing relevant research. Offering curative and preventive services were considered to be almost of equal importance; 64 (49%) felt the curative function to be the most important, 59 (45%), the preventive function to be the most important. Only six (5%), said that performing relevant research was the most important function.

A quarter of the respondents (34) indicated that it was their career goal to specialize in surgery, 25 (18%) in medicine, (Table II). Twenty (15%), wanted to become private general practitioners. Faculty members in the departments of surgery and medicine had the most influence on career goals; 27 (21%) and 26 (20%), respectively. Respondents were exposed to this influential faculty member almost equally in their first three years of training.

Initial interest in medicine was based on service to patients for 47 (34%) of the respondents, 41 (30%), cited their interest

Table III: Factors considered to be better urban/rural areas.

	n	%
Salary:		
rural	47	36.4
urban	69	53.5
don't know	13	10.1
Job availability:		
rural	74	54.4
urban	58	42.6
don't know	4	2.9
Job challenge:		
rural	96	68.6
urban	44	31.4
Patient contact:		
rural	88	65.2
urban	45	33.3
don't know	2	1.5
Housing expenses/availability:		
rural	99	71.2
urban	40	28.8
General living expenses:		
rural	121	84.6
urban	22	15.4
Continuing education:		
rural	3	2.1
urban	141	97.9
Schools for children:		
rural	6	4.1
urban	139	95.9
Private practice:		
rural	2	1.4
urban	143	98.6
Standard of living:		
rural	10	7.1
urban	131	92.9
Prestige among colleagues:		
rural	46	33.6
urban	88	64.2
don't know	3	2.2
Prestige in community:		
rural	111	78.2
urban	28	19.7
don't know	3	2.1
Environmental surroundings:		
rural	50	35.7
urban	90	64.3
Chance to be of service:		
rural	111	82.8
urban	23	17.2
Transport:		
rural	13	9.2
urban	129	90.8
Opportunities for career development:		
rural	6	4.2
urban	138	95.8
Other:		
rural	77	79.4
urban	20	20.6

in basic science. The career goal in choosing medicine for 64 (45%) of the respondents was based on clinical interest. More than half of the respondents 75 (54%) would prefer to pursue post graduate work in the United States of America or Europe and only 33 (24%) in Zimbabwe.

Respondents were asked to indicate which of a number of factors was better, in a rural or an urban setting. Table II presents these findings. Sixty nine (54%) of the respondents felt salary to be better in urban areas, and 74 (54%)felt there was greater job availability in the rural setting. Job challenge (69%) and patient contact (65%) were also felt to better in rural areas, as were lower housing costs/greater availability (71%), lower general living expenses (85%), prestige in the community (78%), the chance to be of service (83%) and "other" factors (79%).

Opportunities for continuing education (98%), schools for children (96%), private practice (99%), standard of living (93%) and prestige among colleagues (64%), were all felt to be better in urban areas. Similarly, the environmental surroundings (64%), transport (91%) and opportunities for career development (96%), were all felt to be better in urban areas.

Table IV: Rating of influential factors on the decision to work in rural or urban settings.

		Rural		Urban	
		n	%	n	%
Salary:	<5	72	60.5	66	58.9
	5	47	39.5	46	41.1
Job availability:	<5	82	70.7	71	61.7
	5	34	29.3	44	38.3
Job challenge^{+}:	<5	67	54.9	83	73.5
	5	55	45.1	30	26.5
Patient contact:	<5	82	65.6	85	76.6
	5	43	34.4	26	23.4
Housing expenses/availability^{+}:	<5	67	54.9	83	72.8
	5	55	45.1	31	27.2
General living expenses$^{@}$:	<5	68	54.8	77	68.1
	5	56	45.2	36	31.8
Continuing education$^{\&}$:	<5	90	82.6	43	33.1
	5	19	17.4	87	66.9
Schools for children$^{\&}$:	<5	91	82.0	44	34.6
	5	20	18.0	83	65.4
Private practice$^{\&}$:	<5	91	83.5	54	41.5
	5	18	16.5	76	58.5
Standard of living$^{\&}$:	<5	86	80.4	66	50.4
	5	21	19.6	65	49.6
Prestige among colleagues$^{@}$:	<5	89	80.2	82	67.8
	5	22	19.8	39	32.2
Prestige in community$^{\&}$:	<5	66	55.5	89	78.8
	5	53	44.5	24	21.2
Environmental surroundings:	<5	82	71.3	71	58.2
	5	33	28.7	51	41.8
Chance to be of service$^{\&}$:	<5	72	57.1	89	76.7
	5	54	42.9	27	23.3
Transport$^{\&}$:	<5	84	75.7	72	55.4
	5	27	24.3	58	44.6
Opportunities for career development$^{\&}$:					
	<5	94	86.2	44	33.8
	5	15	13.8	86	66.2
Other$^{\&}$:	<5	53	84.1	38	51.4
	5	10	15.9	36	48.6

$^{@}p<=0.05$; $^{\#}p<0.01$; $^{+}p<0.005$; $^{\&}p<0.001$.

Respondents were asked to rate, on a scale from one (not important) to five (most important), how strongly selected factors would influence their decision to work in a rural or an urban setting. These factors were analyzed comparing most important (five) with less important (one to four), (Table IV). The following factors significantly influenced the decision to work in a rural setting: job challenge (x^2=8.73, df=1, p=0.003); housing expenses/availability (x^2=8,14, df=1, p=0.004); general living expenses (x^2=4.14, df=1, p=0.036); prestige in the community (x^2=14.19,df=1, p<0.001) and chance to be of service (x^2=10,40, df=1, p=0.001). Salary was not a significant factor influencing the decision to work in a rural setting.

Factors significantly influencing the decision to work in an urban setting were: continuing education (x^2=58.84, df=1, p<0.001); schools for children (x^2=54.07, df=1, p<0.001); private practice (x^2=43.72, df=1, p<0.001); standard of living (x^2=22.96, df=1, p<0.001); prestige among colleagues (x^2=4.60, df=1, p=0.032); transport (x^2=10.80, df=1, p<0.001); opportunities for career development (x^2=64.05, df=1, p<0.001), and "other" factors (x^2=16.39, df=1, p<0.001).

An analysis was done to assess whether place of birth, urban or rural, influenced attitudes to practice preference differently, (Table V). The female respondents were more likely than the males to have been urban born, (x^2=7.21, df=1 p=0.009). Significantly more urban born respondents agree with the statement that doctors should not abandon rural area to other health workers, (x^2=6.74, df=1, p=0.009). There wa no significant difference between rural born and urban bor students in their likelihood of working for at least three year in the rural areas, (p=0,821). "Other" factors were significantly less important to the rural born respondents in influencing their willingness to practice in a rural setting, (x2=4.03, df=1, p=0.045).

Table V: Place of birth (urban/rural), and attitude to practice preference.

		Place of Birth			
		Rural		Urban	
		n	%	n	%
Sex:					
	male	65	95.6	69	70.1
	female[1]	3	4.4	16	21.1
Doctors should not abandon rural areas to other health workers:					
	agree[2]	38	64.4	55	84.6
	disagree	21	35.6	10	15.4
Number of years interested in working in the rural setting:					
	3 years or more	29	60.4	20	41.7
	1 or less years	19	39.6	28	58.3
Other factors - rural setting:					
	1-2[3]	22	66.7	11	40.7
	3-5	11	33.3	16	59.3

[1] x^2=7.21, p=0.007; [2] x^2=6.74, p=0.009; [3] x^2=4.03, p=0.045.

Sex was also analyzed to assess whether being male female influenced practice preference. The following variabl were analyzed for gender differences: desired type of doct work where needed; rural areas should not be abandoned other health workers; greater need for doctors in rural th urban areas; length of time willing to work in rural areas

primary function of a doctor; a well trained doctor can function well in a rural setting; career goals; faculty who influenced career goals; initial interest in medicine; career goal in medicine; preferred country of post graduate training. The results of this analysis are presented in Table VI. The factors influencing choice of area; rural, urban, such as salary, job availability and challenge, were not analyzed by gender because there were too few women in the survey for meaningful results to be obtained.

Table VI: Sex and attitudes to practice preference.

	Male		Female	
	n	%	n	%
Preferred type of doctor:				
primarily clinician[1]	83	70.3	9	47.4
scientist/researcher/ public health practitioner	35	29.7	10	52.6
Length of time (years) interested in working in a rural setting:				
not interested	23	18.7	1	5.0
1-2 years	39	31.7	14	70.0
3 or more years[2]	46	37.4	3	15.0
uncertain	15	12.2	2	10.0
Career goals[3]:				
medicine	18	15.3	7	36.8
other specialty	100	84.7	12	63.2
Choice of medical career based on[4]:				
relevance to health problems	24	19.7	8	42.1
other reasons	98	80.3	11	57.9
Preferred country/region for post graduate work[5]:				
USA/Europe	59	49.6	16	84.2
other countries	60	50.4	3	15.9

[1]x^2=3.91, p=0.048; [2]Fisher's test, p=0.016 [3]Fisher's test, p=0.048; [4]Fisher's test; p=0.040; [5]x^2=7.92 p=0.005.

Concerning type of doctor, more males compared to females wanted to be primarily clinicians, (x^2=3.91, df=1, p=0.048). More males than females were willing to work longer (more than three years) in the rural areas, (Fisher's test; p=0.016). The career goal of more females than males was medicine (Fisher's test; p=0.048), and the females said that their career goal in choosing to be a doctor was based on the relevance to health problems, (Fisher's test; p=0.040). Finally, more females than males wanted to pursue post graduate studies in the USA/Europe, (x^2=7.92, df=1, p=0.005).

The analysis of whether students in different years of training had different attitudes to practice preference is presented in Table VII. Fourth year students were the least willing to work in the rural areas, (x^2=17.57 df=6, p=0.007). Students in their third year seemed the most willing to work in the rural areas, as 52% said that they would work there for more than three years. Fourth year students also disagreed with the statement that a well trained doctor can function well in a rural setting, (x^2=10.09, df=4, p=0.039). The opportunity for career development was a significant factor influencing the preference for urban practice among the second and fourth year medical students, compared to the third year students, (x^2=9.32, df=2, p=0.010).

Table VII: Year of training and attitudes to practice preference.

	Year of training					
	2nd		3rd		4th	
	n	%	n	%	n	%
Length of time (years) interested in working in rural setting:						
not interested	6	16.0	4	12.9	14	29.81
at least 1 year	42	84.0	27	87.1	33	70.2
up to 2 years	28	63.6	7	25.9	20	60.6
3 years or more	16	36.4	20	74.1	13	39.4
A well trained doctor can function well in a rural setting:						
agree	39	70.9	29	76.3	30	58.8
uncertain	9	16.4	6	15.8	5	9.8
disagree	7	12.7	3	7.9	16	31.4[2]
Opportunities for career development; urban setting:						
<5	12	23.5	19	54.3	13	24.1
5	39	76.5	16	45.7	31	75.9[3]

[1]x^2=17.57, df=6, p=0.007 [2]x^2=10.09, df=4, p=0.039 [3]x^2=9.32, df=2, p= 0.010.

Discussion

A constraint of the study is that the respondents were not randomly selected. It is not possible therefore, to measure the extent to which the responses are representative of the medical student population. Nevertheless, the study provides some insights into the attitudes of medical students to rural/urban practice preference and the background characteristics are very similar to that recorded by the medical school.

The male:female ratio reflects the situation for the medical student population as a whole (University of Zimbabwe Annual Report 1990). The levels of education of the parents of the respondents and their occupational groupings indicate that the students come from backgrounds which are educationally and occupationally above the average for the Zimbabwe population. Similarly, a higher proportion than the Zimbabwean average of 30% were urban born.[3] An Ethiopian study found that only about 15% of medical students at Gonder College were of peasant origin.[2] The authors of this study found this low percentage "disturbing", reflecting a yawning gap in educational opportunities between rural and urban areas.

The finding that two thirds of the respondents agreed with the statement that doctors should work where there is need, and that doctors should not abandon rural areas to other health workers, suggests an awareness of the need in rural areas, and some sense of altruism. This is supported by the fact that nearly 40% of the sample indicated that they would be prepared to work for up to two years in a rural setting, and a third for three years or more. Also that for more than a third of the students initial interest in medicine was due to service to patients. In contrast, the Ethiopian study reported that only 10% of medical students expressed willingness to serve in the rural areas for more than two years after graduation.[2]

However, by the time the students graduate they may have changed their opinion about their choice of practice location. It is certainly likely that a number of those who had originally stated a desire to work in a rural setting for more than two years, will be less willing to do so. A study in the United States

found that as students came towards the end of their medical training, (post clerkship), they were less likely to opt for the primary care specialities than in their pre-clerkship years.[4]

The students were aware of the importance of the balance between preventive and curative services in the present study. The high standings of surgery and medicine were reflected by the largest proportions of the respondents aspiring to these specialities. Ethiopian students chose obstetrics-gynaecology, other specialities such as dermatology, internal medicine and surgery as their preferred career goals.[2] A majority of medical students aspire to work in the USA or Europe. This indicates the Westernization of the students and has implications for the "brain-drain" of medical manpower.

Though eight of the 17 factors discussed were considered to be better in rural areas, these eight factors were felt to be less important than the factors that were better in the urban setting. Using the size of the x^2 values to rank the factors (highest to lowest) reported to be influential in the preference of the practice setting, factors important in the choice to practice in an urban area ranked in the top seven. The most important three factors were opportunities for career development, continuing education and schools for children. The implications of these findings is that for there to be any significant redistribution of medical manpower, the opportunities for career development and for continuing education particularly, would have to be addressed. Salary as an incentive is insufficient on its own, especially as private practice with its significant monetary rewards will always be a stronger factor in the urban setting. A Jamaican study found that the ambition to pursue post graduate study and the desire for upward mobility were some of the strongest factors in the choice of urban practice.[5]

The analysis of whether place of birth influenced the choice of practice site indicated that the urban born respondents were more sympathetic to rural areas not being "abandoned" by doctors to other health workers. An alternative explanation however, is that the urbanites did not appreciate the usefulness and importance of these other health workers, as much as the rural born respondents did. Possibly the rural born respondents had positive first hand experiences of these health workers.

The finding that there was no difference between rural and urban born respondents in the willingness expressed to work for at least three years in the rural areas implies that the suggestion sometimes made to positively discriminate in favour of rural applicants may have little impact, without consideration of other factors. "Other" factors are an important "push" away for the urbanites to work in a rural setting. Whilst information on these other factors was not sought, it is likely that this refers to social factors such as being able to interact with individuals of similar standing and education.

The findings on the differences by sex present a picture of the female respondents as being more urbanized and Western oriented, and possibly of a higher socio-economic background, than the males. This suggests that the women who get into medical school are a highly selected group. Other studies have found that women are much less likely to enter rural practice.[6,7]

Finally, the findings on the difference in attitudes by students in different years of training suggests that the new medical curriculum may be helping to shape more positive attitudes to rural practice. The third year medical students were at the time the first group of students to trained under this curriculum; they had already had three fifths of this new programme. The second year students had only had one year of the curriculum and this may not have been sufficient exposure. There were no differences in place of birth (urban/rural) between the students in the various years of training. A study which evaluated the Zimbabwean first year field attachment programme supports the finding that the new curriculum may have an impact in moulding student attitudes in a positive way.[8] The Jamaican study, however, found that a supportive curriculum had no impact on eventual practice location.[5] In a US study, Brooks found that student responses changed between their pre and post clerkship periods of training.

When exposed extensively to clinical practice, student preferences changed away from the primary care specialities to the surgical specialities, and away from practicing in small towns and communities to larger cities.[6]

In conclusion, medical students probably represent a highly selected group, given the nature of Zimbabwean society. They come from rather more privileged backgrounds perhaps than students in other disciplines. Whilst students appeared to be willing to work in the rural areas for varying periods of time, the factors which are more likely to induce them to work there more willingly are those which would involve major changes to the present situation as well as significant amounts of resources. Even if more financing was made available to doctors in rural practice, this in itself would not be sufficient.

Other incentives such as opportunities for career development, continuing education and schools for children would have to be made available. Even then, social factors which probably equate to "class", (interacting with people of similar background and education), are influential in dissuading rural practice.

A possible way to create career opportunities, continuing education possibilities and to begin to reduce the maldistribution of doctors might be to train specialists in provincial hospitals. This would involve extending the medical school training to these areas. Even then, given the scale of policy change and resources needed, it maybe that for the foreseeable future, a more viable short to medium policy option would be to increase the numbers of paramedical workers for rural areas.

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