

## Convincing health workers to work in rural areas



This brief is based on data collected in 2007 in all nine rural districts in Dodoma and Morogoro regions, Tanzania.

126 randomly selected health facilities were enrolled, including 11 hospitals, 25 health centers and 90 dispensaries. 80 of the facilities were owned by the government, 46 by voluntary agencies. 159 health workers were randomly selected for inclusion.

More than 3500 outpatient consultations were directly observed. Interviews were conducted with all health workers, all patients/caretakers, and with the in-charge of all facilities.

The research team is grateful to district officials and health workers in all the nine study districts, who participated in the study, discussed the results with the research team, and assisted in the interpretations.

Tanzania has one of the lowest health worker ratios in the world. It is the rural areas that suffer the most. The geographical imbalance represents a serious problem for the delivery of crucial health services to a large share of the population. A new study shows that offering education after a certain period of service may be one of the most powerful instruments the authorities have available in recruiting health workers to the rural areas.

### Job preferences

The focus of this brief is on nurses', clinical officers' (COs) and assistant medical officers' (AMOs) job preferences and their willingness to work in rural and remote areas in Tanzania.

Nurses (i.e., nursing officers and nurse/midwives) constitute 27.8% of the health workforce (Munga and Mæstad, 2009) and nurses have been found to perform substantial amounts of clinical work in many remote areas of Tanzania. COs and AMOs represent a large and important share of the health workforce in Tanzania (9.5%, compared with 1.1% for medical doctors), and COs do in practice form the backbone of the clinical workforce, in rural areas especially. For COs wanting to upgrade their qualifications, the AMO grade is the natural way to go. For AMOs however, the upgrading path is more unclear. The university qualifications of these health workers are often not recognised in high-

income countries. As a result, COs are more likely to stay in their home country than for example medical doctors and nurses.

The distribution of nurses and AMOs across districts follows a similar pattern to that presented above; there are on average twice as many AMOs in urban districts compared to rural districts. The COs, however, are more equally distributed between districts, but even in this group, most work in urban areas. Salaries for all three health workers are uniform throughout the country. In spite of severe shortages of health personnel in rural areas, there are currently no special allowances or top ups related to location.

### Methods used

This brief is based on two different studies applying two different methods. The results

for COs and AMOs are based on results from a discrete choice experiment, while the results for nurses are based on a slightly different contingent valuation method. Both methods mimic choices that respondents are likely to make or could make in real life. Such methods, often referred to as stated preference methods, are frequently applied when we lack data on real choices or when real choices cannot give us

### Box 1: Facts about the studies

#### Nurses

- An extensive survey capturing attitudes and motivational issues as well as a contingent valuation exercise was conducted between April and June 2009.
- 362 third and fourth year nursing students from 9 randomly selected schools (out of 29) in Tanzania mainland participated in the study.

#### COs and AMOs

- A series of in-depth interviews were conducted with CO final-year students in Kibaha and Sengerema in March 2007.
- An extensive survey capturing attitudes and motivational issues as well as a discrete choice experiment conducted during the autumn of 2007.
- 320 CO final-year students from 10 randomly selected schools and 120 AMO final-year students from three schools participated in the study (around 60% of all CO finalists and 80% of all AMO finalists in Tanzania in 2007).

All schools involved in the study enrol students from all over the country. Thus the surveyed students are representative of the prospective health workers in Tanzania.

information about how people would react to attributes that are rarely found, like for instance rural jobs with sufficient equipment and good infrastructure. However, the two methods differ when it comes to the way the choices are constructed as well as the analysis applied after the data has been collected; the results presented here are therefore not directly comparable even though they deal with the same issues. A short description of the two methods is presented below.

#### The Discrete Choice Experiment

In the discrete choice experiment respondents were asked to make choices between two carefully constructed job alternatives. These jobs were constructed as bundles of seven different attributes with different levels.

The following seven attributes were included in the job descriptions:

1. Working location
2. Salary and allowances
3. Possibilities of further education
4. Workload
5. Housing offer
6. Availability of equipment and drugs at the institution
7. Infrastructure in the area

The discrete choice experiment method has become an increasingly popular tool for

collection of information about job preferences in low-income settings, but it is conceptually and technically quite demanding and several types of skills are needed in order to conduct a decent discrete choice experiment – as a consequence, the World Health Organisation and the World Bank in cooperation with Capacity Plus and USAid are developing a user's guide for DCE for Health Workforce Recruitment and Retention in Remote and Rural Areas.

#### Contingent valuation

In the nurse study, a contingent valuation (CV) methodology was applied in order to find the reservation wage at which nurses would be willing to work in remote health facilities. In this study, the choice was between a rural and an urban job. Differentiation of the hypothetical choice scenarios was done at two levels. Firstly, the urban and the rural jobs were described along the following dimensions:

1. Location
2. Availability of schools
3. Transport and communication facilities
4. Utilities (e.g. clean tap water, electricity)
5. Recreational facilities
6. Duration of posting (3 years)

These descriptions were held constant in the three different choice situations the respondents were presented. Then, salary levels, offering of housing and opportunities for further education were varied in each choice situation.

#### Results

Based on the choices the respondents make in the two studies, we are able to predict the probabilities with which health workers will take a rural and remote job given different incentives provided. Although in particular the studies of COs and AMOs provide information about several incentive strategies, we concentrate on three commonly proposed strategies in this brief; increasing salaries in rural and remote areas, providing houses in rural and remote areas and finally, providing education opportunities to health workers that choose to serve in rural and remote areas. But first, let's take a look at the situation when no incentive is provided. Figures 1, 2 and 3 show how the probability of taking the rural remote job is affected by salary increases and other interventions for nurses, COs, and AMOs respectively.

Without any intervention (baseline), 19% of nurses would be willing to work in remote health facilities (Fig.1). Clinical officers were initially more willing to work in remote areas; without any intervention, 44% were predicted to take rural or remote jobs (Fig. 2). It is likely that the willingness of CO to work in rural areas is higher than for the other two given the more equal geographical distribution, however, part of the difference between nurses and COs is

likely due to differences in methods. For the AMOs, the initial willingness to take a remote job was around 38% (Fig. 3).

**Money makes a difference**

When the salary is increased by 100%, the share of nurses willing to work in remote areas (Fig.1), increased more than for COs (Fig. 2). The willingness of AMOs to work in rural and remote areas, however, increased by as much as 25 percentage point when salaries were doubled (Fig. 3), indicating that AMOs may be more responsive to salary increases.

**Provision of housing is an alternative**

With provision of free housing, the share of both nurses and AMOs willing to choose a remote job increased with around 15 percentage points (Fig. 1 and Fig. 3) while the share of COs willing to choose a remote job increased with only the half of that (Fig. 2). Thus, compared to both nurses and AMOs, COs do not seem to be particularly responsive to provision of free housing.

**Career development is a powerful incentive**

From other low-income countries, we know that opportunities for educational upgrade and career development are motivating factors that have been found important when health workers decide where to work. Better access to education may provide positive effects also for the surroundings of the health workers, unless the health workers then become increasingly attractive also to urban areas and foreign countries.

The COs and the AMOs in our studies seem to be very concerned with educational opportunities. With better education opportunities (after 2 years of services instead of after 6 years of service), the share of nurses willing to work in a rural and remote area increased by as much as 28 percentage points. The COs willingness to take the rural remote job increased slightly less than for the nurses. AMOs, however, have less clear alternatives when it comes to upgrading, and seem not as interested in additional education; their predicted probability of taking the rural remote job increases less than if housing were offered.

Offering education after a certain period of service may thus be one of the most powerful recruitment instruments the authorities have available – but for COs and AMOs only.

**Which is the best intervention?**

It is impossible to give a clear answer to this question as long as we do not have proper cost estimates of the different alternatives. However, we can say something about how much the salary would have to increase in order for this intervention to have the same impact as provision of houses or better education opportunities.

A substantial top-up must be added to the baseline salary in order to match these interventions: For nurses the salary must be

doubled to have the same effect as provision of free housing, and more than doubled to have the same effect as provision of education opportunities. For COs salary increases must be of around 30% in order to match the effect of provision of free housing, while the increase has to be a little more than doubled in order to match the effect of better education opportunities. For AMOs, the salary increase has to be a little above 50% in order to match the effect of both provision of houses and of better educational opportunities. Thus, if we assume that it is more expensive to provide education opportunities than to provide a house, providing free houses will be preferable to providing education for AMOs. Whether or

Figure 1: Probability of choosing the rural and remote job - Nurses

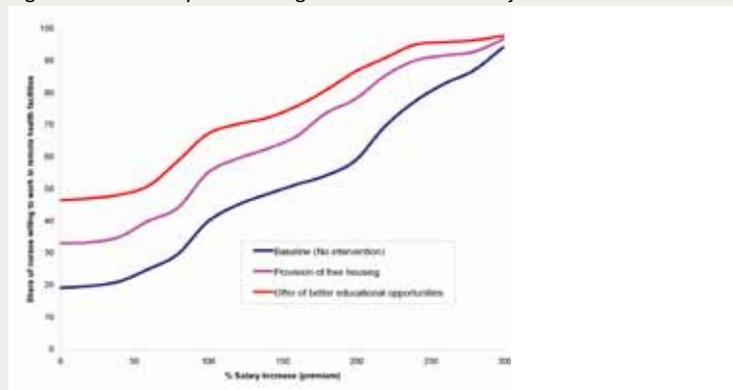


Figure 2: Probability of choosing the rural and remote job - Clinical officers

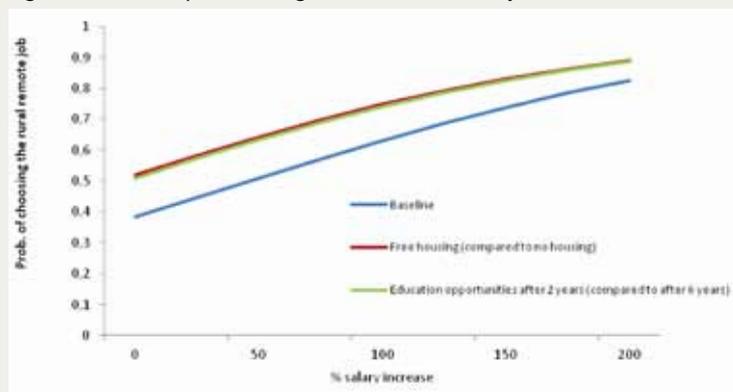
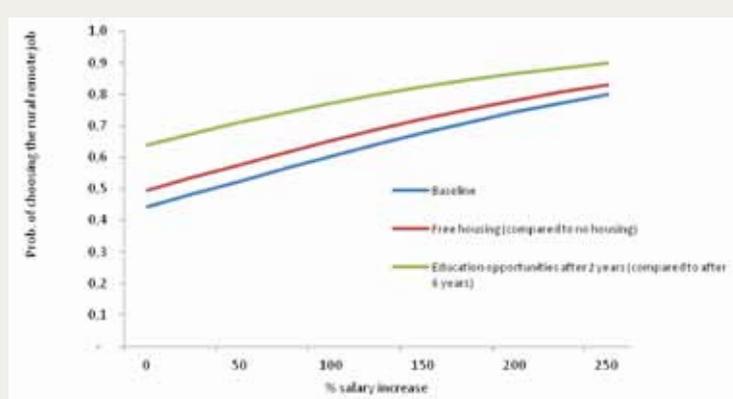


Figure 3: Probability of choosing the rural and remote job - Assistant Medical Officers



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not the best policy is to simply increase the salaries of this group, depends of the cost of providing free houses. If not too expensive compared to increasing salaries, providing houses may be more feasible politically than stimulating national differences in salary levels. COs do not seem very attracted by free houses; they only need a 30% salary increase in order to react the same way as they would had they been offered houses. It is perhaps not very likely that houses will cost less than 60 000 Tsh per month, so for this group the question would be whether better education

opportunities can be provided to a smaller cost than 450 000 Tsh per month. For nurses however, the picture is less clear. Even though the relative salary increases will have to be higher compared to that of AMOs in order to match the effects of provision of housing and education opportunities, the absolute numbers are not necessarily higher (since salaries are lower). Which is the best intervention, will thus depend on the cost of both providing housing and on the cost of providing better education opportunities.

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#### Related publications from the MAP group

Kolstad (2011), "How can rural jobs be made more attractive to Tanzanian health workers? Results from a discrete choice experiment", *Health Economics*, 20(2), p196-211

Kolstad (2010), "What affects the career choices of health workers? Four essays on preferences, incentives and career choices in a low-income context". PhD thesis, University of Bergen.

Munga & Mæstad (2009), "Measuring inequalities in the distribution of health workers: the case of Tanzania", *Human Resources for Health*, 7(1)

Munga (2011), "The unequal distribution of health workers in Tanzania: its magnitude, causes and remedies". PhD thesis, University of Bergen.

#### Forthcoming user's guide to DCEs on human resources for health

How to conduct a Discrete Choice Experiment for Health Workforce Recruitment and Retention in Remote and Rural Areas: A User's Guide

Mandy Ryan, Health Economics Research Unit, University of Aberdeen and Consultant for the World Bank; Julie Riise Kolstad, University of Bergen, Uni Rokkan Centre and Consultant for the World Bank; Peter C Rockers, Harvard University and Consultant for CapacityPlus/ USAID; Carmen Dolea, World Health Organization

The MAP project (Health Worker Motivation, Availability, and Performance) is a collaboration between NIMR (National Institute of Medical Research), CMI (Chr Michelsen Institute), University of Bergen, REPOA (Research on Poverty Alleviation), and Bergen University College.



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