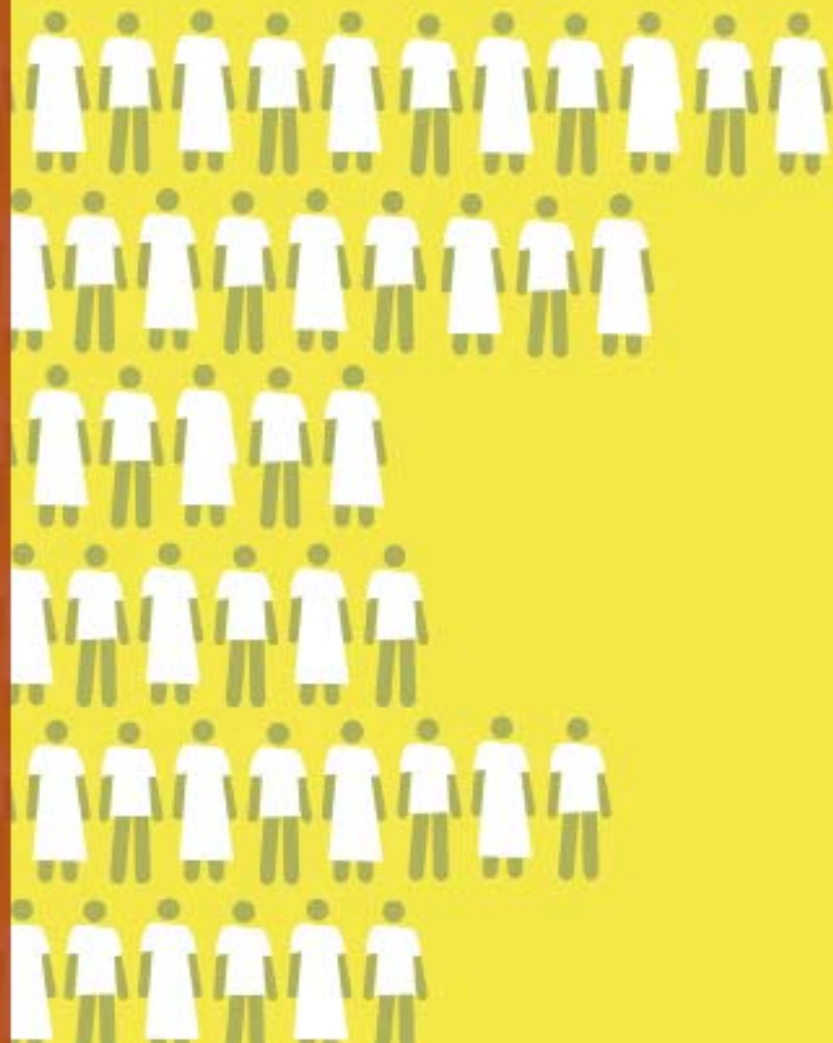


**Increasing
access to
health workers
in rural and
remote areas**

Technical Report N°1



**REALIST REVIEW AND SYNTHESIS
OF RETENTION STUDIES FOR
HEALTH WORKERS IN RURAL
AND REMOTE AREAS**



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REALIST REVIEW AND SYNTHESIS OF RETENTION STUDIES FOR HEALTH WORKERS IN RURAL AND REMOTE AREAS

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PREFACE

Policy-makers in every country are faced with the significant challenge of meeting the health needs of their populations, including the especially vulnerable communities in remote and rural areas. In order to ensure the equitable delivery of health services in these areas, skilled and motivated health workers need to be in the right place at the right time.

Following various international calls for action from global leaders, civil society and Member States of the World Health Organization (WHO), in February 2009 WHO launched a programme to increase access to health workers in remote and rural areas through improved retention. This programme was developed in order to support countries to address the critical issues of retention and equitable distribution of health workers.

The programme consists of three strategic pillars:

- building and sharing the evidence base;
- supporting countries in the analysis, evaluation and implementation of effective strategies;
- producing and disseminating policy recommendations and guidelines.

Substantial work has gone into expanding the evidence base on retention strategies and developing the global recommendations. At the launch of the programme, the expert group convened by WHO to develop evidence-based recommendations identified the key evidence gaps in this field. Subsequently, additional systematic reviews have been commissioned by WHO to fill these gaps. In addition, a series of country case-studies has also been commissioned, following a common template developed by the expert group, to better understand the importance of context and the ways in which different countries have approached the issue of rural retention of health workers.

This report uses a realist review, which is a theory-based method, to address the questions of “why” and “how” certain rural retention interventions work better in some contexts and fail in others. The authors applied this method to the papers included in the first literature review prepared by the WHO Secretariat as a background paper for the launching of the programme. Through applying a realist perspective to the review of these retention studies, a greater understanding is gained of the contextual factors and the main mechanisms that triggered the effects of retention strategies.

The report provides strong support for the assertion that a bundle of retention strategies should be used in order to successfully attract and retain health workers in remote and rural areas. It also provides valuable recommendations for future studies and gives a better insight into why interventions that were effective in one setting may or may not produce similar results in another.



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INTRODUCTION

Limited availability of qualified health workers in remote and rural areas is an important obstacle to accessing care in many countries. The Health Workforce Migration and Retention (HMR) unit of the Department of Human Resources for Health (HRH) of the World Health Organization (WHO) is implementing a programme of work to support Member States in addressing this issue. Developing evidence-based WHO global recommendations on “Increasing access to health workers in remote and rural areas through improved retention” is one strategic pillar of this programme. The WHO background paper, which reported on a global review of the evidence to date on this topic, showed the scarcity of evidence as well as the limitation of currently available evidence (1). The quality of the 40 documents retained for the global review was analysed using the GRADE system. However, experts were of the opinion that this approach did not provide sufficient details to assess whether or not interventions that had been effective would produce similar results elsewhere. It was therefore proposed that another method be used in order to identify the key elements that might explain why interventions were effective in one setting or failing in another: the “realist review”, which has already been applied in other domains and settings (health, law and education in high-income countries). The aim was to explore whether using a realist approach would allow a better insight into the working of these interventions, and would reveal the underlying mechanisms and contexts of influence on successful (and unsuccessful) outcomes of retention policies and interventions (see Annex 1 for the terms of reference for this assignment).

This report gives an account of the application of the realist approach to the available evidence on retention studies for health workers in rural and remote areas, so as to identify factors that explain which intervention strategies work, for whom and in which circumstances.

The report is structured as follows: the first section provides background and gives an overview of WHO’s programme “Increasing access to health workers in remote and rural areas through improved retention”, of the current evidence on this issue and of the main reasons to review the evidence using a realist perspective; it also outlines the objectives of the report. Section 2 presents in detail the methodology used to re-analyse the studies used for the WHO background paper. The findings are described and interpreted in Section 3, looking at the type of intervention, describing how the interventions worked and identifying commonalities and contrasting information. In Section 4 these findings are discussed by looking at the working of the interventions and the intervention logic and critically reviewing the application of realist review on the 30 studies. Conclusions and recommendations are given in Section 5.

1. BACKGROUND

Human resources are an important component of health systems, as without health workers, access to and provision of quality health care is severely compromised (2). Moreover, the limited number of competent health workers puts at risk the achievement of the Millennium Development Goals (MDGs). Shortage of staff is particularly problematic in underserved areas, and attention to attraction and retention of health workers is high on the agenda. As there are fewer health workers in rural areas, loss of health workers in these areas will significantly contribute to accessibility problems (3). Studies have shown that at hospital level, lower nurse-to-patient ratios lead to more complications and poorer patient outcomes (4, 5). In addition, staff shortages negatively impact on the motivation of the remaining staff as they create increased workload, causing extra stress and the risk of more staff leaving or being absent from work.

In low-, middle- and high-income countries, there is a need to identify how best to ensure access to health workers in underserved areas, and there have been various calls for action (6). For this reason, WHO has formulated a two-year programme of work that aims to:

- build the evidence base on effective retention strategies, through:
 - literature reviews, expert consultations and synthesis of the evidence;
 - identification of knowledge gaps and commissioning research;
- support countries to evaluate and adapt retention strategies by working with interested countries to evaluate past and on-going strategies and to develop and implement country-specific plans;
- develop and disseminate global recommendations on increasing access to health workers in remote and rural areas through improved retention.

A starting point to achieving the first objective, building the evidence base, was a stocktaking of the current evidence reported in the background paper (1). About 40 documents on retention were reviewed, and retention interventions were categorized according to the type of intervention: educational, regulatory, financial, and personal and professional support.

The background paper reported that there is very limited evidence and that the available evidence is weak. Despite this, some messages on “what works” could be formulated (see Box 1).

BOX 1. “What works” to attract and retain health workers

Educational and regulatory interventions

- Health professionals from a rural background are more likely to practise in rural areas (consistent findings from observational studies).
- Clinical rotations in a rural setting may influence medical students’ subsequent decision to work in an underserved area (quasi-randomized trials).
- Adapting curricula to include rural health issues improves competencies to work in rural areas and creates more interest to work in these areas.
- The effectiveness of compulsory placement has been assessed by descriptive surveys with inconclusive results (compulsory placement solves short-term maldistribution, but is criticized for alienating people from the profession and for difficulties in administration and enforcement).
- Loan repayment schemes, direct incentives and medical residency programmes to encourage rural placement have the highest service completion rates and physician retention rates.

Type and level of remuneration

- Direct financial incentives to practise in rural areas may encourage rural practice, in particular in developed countries, but reports from developing countries are not positive, with the possible exception of a few such as Mali, South Africa and Zambia.

Personal and professional support

- Professional and community support to rural workers encourages rural practice (but there are no quantitative results from an actual intervention); it can be achieved by supportive supervision, Internet access and community involvement projects, as well as by professional networks).
- Very few countries have implemented large-scale interventions to improve the infrastructure and living conditions, and evaluations of these interventions have been published (Mali, Thailand and Zambia are examples). This is despite the fact that factors ranking highest in workers’ preferences and choices of location are precisely those related to the local infrastructure, isolation and working conditions.

Source: (1).

At the same time, the background review served as a basis to formulate research questions to collect additional evidence, and it provided recommendations with respect to the type of evidence and its quality (1). It was discussed during the first expert meeting in February 2009 and an action plan was developed to start expanding the evidence base (6).

One of the action points contributing to building the evidence base is the re-analysis of the documents reviewed in the background paper, exploring whether the use of an alternative analytical approach would provide additional insights. The realist review takes the context

into consideration and tries to assess what made certain programmes work or why they failed in a specific setting. Most of the current evaluation and research methods in HRH often do not take the context and complexity into account: they tend to look only at outputs or outcomes to assess whether interventions work and often try to establish linear causality. Given that HRH interventions are located within certain contexts and interact with this context, they need to be explained in the context within which they are implemented, and not in isolation (7).

Not taking sufficient account of either the context in which the interventions occurred, or the mechanisms according to which they worked, leads to inconclusive results of reviews and evaluation studies. These results are therefore not conducive to assisting policy-makers and planners in choosing appropriate interventions (8, 9). In addition, if the intervention logic is not made explicit, understanding how interventions worked is compromised, i.e. limiting our comprehension of “programme theories” and “theory-building” for HRH interventions (10). An increasing number of public health practitioners and researchers realize the importance of developing additional types of evaluation and research methods to expand the evidence base and to look beyond output or outcome-focused evaluations (11–13). This is not yet the case for HRH practice.

In the health-care setting, only a limited number of realist evaluation studies have yet been published (among others: 14–17).

1.1 REPORT OBJECTIVES

This report presents the findings and interprets the results of a realist review of 30 documents reporting on retention interventions, which were used to develop the WHO background paper on retention of health workers in rural and remote areas. It aims to identify the key elements of retention interventions that might explain why interventions were effective in one setting or failing in another.

The report has the following specific objectives:

- to provide an overview of the range of retention interventions that were described in the 30 documents, their characteristics and results;
- to identify contextual factors and the main mechanisms triggered by the interventions that were of influence on positive or negative results of the published retention interventions;
- to discuss the strength of the evidence;
- to discuss the usefulness of applying a realist perspective to the review of retention studies or the evaluation of retention interventions;
- to provide recommendations for future retention interventions that feed into the global recommendation;
- to provide recommendations for future studies on retention interventions.

2. METHODOLOGY

2.1 SEARCH STRATEGY

From the 40 studies identified by WHO with the search strategy specified in its background paper (1), the research team and WHO collaborators selected 30 published interventions. As only a limited number of articles had been identified for the background paper, the selection of studies for this review was based on exclusion criteria, instead of inclusion.

The main exclusion criteria were:

- power point presentations (three “articles”);
- articles that did not describe a retention intervention or retention strategies that were implemented, or described a baseline prior to an intervention that was not included in the database (four articles);
- interventions from high-income countries that were over 15 years old (one article);
- articles that described only to a very limited extent the interventions that took place, and did not allow a description or analysis (two articles).

This selection yielded 30 documents, which were re-analysed.

2.2 DATA ANALYSIS

2.2.1 Analytical framework

The review used a realist perspective for data analysis. Realist enquiry intends to answer the question: “What is it about this programme that works, for whom and in what circumstances?” (18); in other words: which mechanisms cause which outcome under which circumstances. Realist enquiry has an explanatory focus and aims to unravel mechanisms of change. The interaction of an intervention with a specific context triggers reactions (mechanisms) which cause certain outcomes to occur. These interactions are called “context-mechanism-outcome” (CMO configurations) (19). Contexts are the circumstances within which – in this case – retention interventions are implemented and include the organizational, socioeconomic, cultural and political conditions, but also the stakeholders involved, their interests and convictions regarding change and the process of implementation. Mechanisms are reactions, triggered intentionally or unintentionally by the intervention within a certain context, which lead to change occurring (or not occurring).

Evidence building using a realist perspective implies researching CMO configurations by:

- making the “programme theory” that underlies the choice of a certain intervention explicit, i.e. the assumptions regarding expected outcome of an intervention and how this will be achieved;
- conducting research on implemented interventions to collect evidence about this assumption or to (further) develop it.

Research based on a realist perspective can use both qualitative and quantitative data-collection techniques. Realist synthesis systematically reviews results of previous studies so as to identify, articulate, test and refine programme theories. It focuses on the identification of mechanisms that were triggered as a result of the interaction between the intervention and context. It has a so-called generative approach to causality. This approach provides insight into possible transferability of interventions for HRH policy-makers and planners in different settings (20).

2.2.2 Analysis

In order to identify key elements of importance to the success or failure of an intervention in a certain context using a realist perspective, information was gathered on the intervention, the context and the actual “working of the intervention” or the mechanisms. As we intended to discuss the strength of the evidence and the usefulness of the application of realist principles to already published studies, we developed a process of data analysis that was comprehensive and as objective and transparent as possible. Therefore, a data analysis matrix was developed by the team of authors (see Annex 2). During the development of this matrix, the team extensively discussed and defined terms (such as context, mechanisms and outcome) and evaluation levels (such as process, output and outcome).

Data were extracted from the articles as follows: articles were read as transcripts and, apart from a description of the aim, the intervention characteristics and the outcome, the researchers looked for information regarding contextual factors, mechanisms (or reactions) triggered by the intervention and underlying assumptions (expected intervention logic or “how the intervention was supposed to work”). The researchers included only reported findings in the data analysis matrix. This means that information included in the matrix consisted of reported study results or interpretation of study results by the authors in the discussion section of the report or the article; the researchers refrained from adding their own interpretations.

In addition, we assessed the type of evidence. The team collected information about when and how the intervention was evaluated: the time of evaluation (e.g. directly upon completion of the intervention, during the intervention or after a certain period of time), the evaluation level (input, process, output or outcome level)¹ and the evaluation method (how it was done: through interviews, self-administered questionnaires, records, etc.). Lastly, information was collected regarding

¹ Input was defined as the resources used for the intervention. Process was defined as the way the intervention was implemented: number of training courses, number of activities, etc. Output was defined at HRH level: number of retained or number of motivated health workers, etc. Outcome was defined at service delivery level: utilization, coverage, etc.

the study type, use of baseline and control groups and possible alternative explanations for the outcome of the interventions.

Data analysis was an iterative and joint process, and it was performed manually. To ensure objectivity as far as possible, the articles were read independently by two researchers; moreover, the content of each article in the data analysis matrix was extensively discussed, until consensus was reached among all research team members. This means that, at times, articles or sections of articles had to be re-read and discussed among the researchers to ensure that there was a common understanding. The preliminary data analysis was discussed among the research team and with a member of the WHO programme. These preliminary findings were also presented and discussed with the expert group at a meeting in Geneva (29 June–1 July 2009) so as to explore other perspectives on the usefulness of realist review and the results of the data analysis. This allowed for the completion of the data analysis and the commencement of the report writing process.

The report was written by the principal researcher, with extensive feedback, discussions and input from the other research team members and with feedback from four members of the expert group.

2.3 RESEARCH TEAM AND TIME FRAME

The research team consisted of four members, all staff of the KIT Department for Policy and Practice of the Royal Tropical Institute. Three of the members had prior experience with the application of realist review and realist synthesis, and the fourth was introduced to this method through background papers and a joint analysis of one article using realist principles: the article was first individually analysed by all research team members and the analysis and conclusions were then extensively discussed. Full text of the articles was provided by WHO. Data analysis took place in May and June 2009, and report writing was done in August and September 2009.

2.4 STUDY LIMITATIONS

The review had a number of limitations.

- Firstly, prior to the start of WHO's retention programme² only a limited number of studies on retention interventions for health workers in rural and remote areas had been published or were accessible, which limited the extent of the review.
- Often, the published articles described the study methodology or the intervention itself only to a limited extent, hampering data analysis and interpretation.
- As contextual factors are often not taken into consideration in human resources studies, these were often not described, which again limited data analysis.

² Since the start of the programme, a number of studies have been retraced or were commissioned and this has given a considerable boost to the existing evidence base.

- Time limitations restricted the research team from contacting the authors of the published studies for additional information.

3. FINDINGS

3.1 DESCRIPTION OF STUDIES

Table 1 provides an overview of the different types of interventions that were part of the review, the country of intervention and the target group. We have used the categories proposed by the WHO retention working group and categorized an intervention as “bundled” when it includes activities in two or more different categories, such as education (curriculum, selective recruitment for courses), regulation (e.g. compulsory service upon graduation), financial incentives or management and social support (support from professional associations, advice during work, etc.).

Table 1 demonstrates that most reviewed studies on retention interventions targeted physicians and that educational interventions were only studied in Canada and the USA. Low-income countries that studied retention mainly intervened using a combined approach or bundled strategy, such as providing training for rural practice together with support from professional associations and a kit when starting up a private practice in rural areas (Madagascar and Mali). The next sections provide the data analysis per intervention category, describing first the intervention characteristics and their outcome³ and subsequently addressing context and mechanisms. The detailed data analysis matrix, presented in Annex 2, shows what data were extracted from each article.

3.2 DESCRIPTION OF FINDINGS BY TYPE OF INTERVENTION

3.2.1 Education

Intervention characteristics and outcome

In total there were four educational interventions, all of which were in high-income countries. One intervention focused on rural training in Canada (21). Three interventions addressed selective recruitment for rural training among rural students, all in the USA (3, 22, 23). The interventions consisted of offering rural practice during training (internships), an adviser or mentor, and financial support, either a scholarship or a contribution to the student's educational expenses. None of the programmes had a compulsory service element and students were free to choose their location of practice. Cosgrove et al. described the enrolment of students (23). It was designed on evidence of the Jefferson programme, among others (22, 23), but did not give results related to rural practice.

³ The outcome data (i.e. percentage of change) are presented in the matrix.

TABLE 1. Overview of reviewed interventions

Intervention	Country	Components	Professional cadres
Education	United States of America (USA) (New Mexico)	Rural medical curriculum	Physicians
	USA – 2 papers	Selective recruitment from rural areas; internship during training in rural areas	Physicians
	USA	Rural recruitment	Physicians; later expanded to other cadres
	Canada	Medical school in rural province; residency training	Physicians
Compulsory medical service	Ecuador	1 year in rural areas in order to obtain licence	Nurses, physicians and dentists
	South Africa	1 year in rural areas	Physicians
	Thailand	3 years in rural areas	Physicians
Financial incentives	Niger	Incentives for motivation, placement and task and for risk related to the job, for accommodation telephone, being on call, and transport	Physicians, pharmacists and dentists
	South Africa	Rural allowance	Various health workers (nurses, physicians)
	Uganda	Lunch allowance	All cadres
	Australia	Rural allowance	Physicians
	USA	Bonus payment to work in rural, underserved areas	Physicians
	Indonesia	Incentives according to region	Physicians
Personal and professional support	Australia – 2 papers	Link general practitioners (GPs), visiting health check-ups, crisis plans, pamphlets, emergency support line, rural retreats, development of networks. Baseline and follow up survey	Physicians
Bundled approach	Japan – 4 papers	9 year practice in home prefecture after rural training	Physicians
	Madagascar	Training, support from professional association and installation kits	Physicians
	Mali – 2 papers	Training, support from professional association and installations kits	Physicians
	Kenya	Comparison of different retention strategies; no specific intervention as such	Various health workers
	Zambia	Financial incentive (hardship allowance), school fees, loans facility for cars or a house and assistance with postgraduate training at the end of the 3-year contract. Funds for renovation of Government housing are included	Physicians
	United Republic of Tanzania	Assess availability and effectiveness of non-financial incentives: training, leave, participatory appraisal system, worker participation in discussion job requirements and welfare, promotion, supervision, recognition and respect, housing, safe and supportive environment, no specific intervention as such	Various health workers
	Ghana	5 different types of retention strategies	Various health workers
	Australia	1. Raise the profile and credibility of the service through: presentations at conferences, advertising, prompt response to enquiries on recruitment and recruitment managed by Latrobe Regional Hospital mental health services 2. Assistance for housing, schooling and establishment in a new environment 3. Induction and orientation of new psychiatrists	Psychiatrists
	Canada	Identifying intervention strategies, no specific intervention	Physicians
	Thailand	1. Establishment of systems and forums for public recognition of rural doctors 2. Systems for peer recognition of rural doctors 3. Award of honorary degrees 4. Creation of professional progress tracks 5. Improved logistic and personnel support	Physicians

Graduates from the rural medical school in Canada were likely to work in rural areas and the study indicates that having graduated from rural training improves the likelihood of having a rural practice (21). Rabinowitz et al. (22) and Salafsky et al. (3) demonstrated that actively selecting students with a rural background and with an interest in rural practice for medical training with rural internships or rural practice during training increases the likelihood of starting a rural practice upon graduation.

Contextual factors and mechanisms

Context and mechanisms were not systematically discussed; when they were, more attention was paid to contextual factors contributing to success than to mechanisms triggered by the intervention.

Regarding the context: all interventions took place in areas where the state acknowledged the shortage of physicians, had rural practice as a priority area and was committed to contributing to an increase in rural practitioners. In one study, the authors stated that integration of the new (rural) curriculum into the established medical curriculum was crucial for success, as well as the involvement of rural people, such as rural practitioners, nurses, school officials and farmers, in the recruitment committee (3). Originating from a rural area had a positive influence on the outcome: the Physician Shortage Area Program (PSAP) of Jefferson Medical College (22, 24) demonstrated a positive association between students hailing from a rural background and their establishing a rural practice after graduation. A constraining contextual factor identified in one study only was weakness in mathematics and science, which was more prevalent in high-school students from rural areas, requiring specific pre-medical education (23).

Mechanisms, in terms of reactions triggered by the intervention, were only haphazardly described in one study. A report on a rural recruitment programme in the USA stated that “Commitment, dedication to [these] ideals, a willingness to undertake unique approaches, and adaptation to specific societal and cultural needs may be the overriding indicators for a positive impact” (3).

Interpretation

The studies are very limited in number and therefore do not allow definite conclusions but give some input for discussion. For instance, although the studies on rural training have positive results, having a rural curriculum might not be sufficient. One study had as an assumption that rural training leads to rural practice (21), but there might have been a confounding factor: already having the intention to start a rural practice, perhaps, as this might be a reason to enrol in these rural training courses in the first place.

A clear pattern can be identified in these studies: these interventions showed that having a rural background and/or intending to work in rural areas combined with an adapted rural curriculum can be successful in terms of numbers of health workers settling and practising in

rural areas – at least in the USA and Canada. This means that in addition to adapting curricula, attention to active recruitment of promising rural students would need to be taken into consideration when developing rural training programmes. At the same time, one study suggested that attention would need to be paid to the difference in educational qualifications between rural and urban secondary-school graduates. The authors suggested investing in the preparation of promising rural students for their medical education by providing support in mathematics and science or by promoting stronger mathematics and science education in high schools.

3.2.2 Regulatory interventions

Intervention characteristics and outcome

In the review, three interventions introduced regulatory measures, all in terms of compulsory rural service and all in middle-income countries (Ecuador, South Africa and Thailand). Two interventions consisted of rural practice for one year upon graduation for nurses, physicians and dentists in Ecuador (25) and for physicians in South Africa (26). The third intervention consisted of a three-year compulsory service for physicians in rural Thailand (27). Two interventions included a fine in case of a breach of contract (25, 27) and only in Ecuador did participants take part in a three to five-day orientation programme prior to placement.

The studies showed mixed results. In Thailand the programme was initially successful, but this was reversed after 1990 because of contextual changes. For example, in 1997, a large proportion (22%) of newly contracted physicians resigned from the public sector to join the private sector. In South Africa, the authors wrote that the initiative positively contributed to the number of doctors required in rural areas and to an increase in service utilization. However, data on retention, the reduction in the gap between the number of doctors needed and the number of doctors present and the proportion of students completing their compulsory service were not provided (26). None of the studies provided data on the outcome, in terms of service utilization, coverage or patient satisfaction. Cavendar et al. (25) stated that the impact of compulsory service on rural health in Ecuador could not be shown. Omole et al. (26) described the point of view of hospital and health centre directors who believed that because of the availability of doctors, more people visited the centres and fewer referrals occurred. Negative results were reported as well, such as over-prescription of tests and drugs attributable to a lack of experience.

Context and mechanisms

Contextual factors were influential in success and failure rates. This is particularly clear in Thailand: the programme was successful up to 1990, but the situation changed because of the expansion of the private sector, made possible through rapid economic growth, as well as the ease of payment of the fine for breach of contract, which amounted to six months' wages in a private clinic. The study showed that the highest resignation rate occurred among

graduates from families who resided in and around the capital and among students who graduated from central medical schools. In Ecuador, compulsory service was widely accepted, as there was a countrywide belief that health professionals who benefited from financial support from the government to complete their studies should do something in return, e.g. serve in rural areas. All three interventions seemed centrally developed and in none were students trained in rural medicine prior to compulsory service. The studies in South Africa and Ecuador specifically mention the problems that graduates faced due to their lack of training to practise rural medicine in resource-constrained settings. The difficulties encountered when working and living in rural areas were researched among physicians in Ecuador. The main problems mentioned were difficulties in housing, transport, electricity and a lack of equipment in the health centres. Interestingly, when community leaders were involved in the initiative, fewer problems (e.g. housing) were reported. This was the case when leaders felt the need for a physician, and offered assistance (in housing and food, for instance).

Mechanisms were only explicitly researched in Ecuador, where compulsory service triggered mainly negative mechanisms. Respondents admitted to feeling abandoned by the government and had doubts about the government's commitment to the programme and understanding of rural medicine. According to the respondents, these reactions were caused because most of them did not undertake a pre-rural programme, there was a lack of adequate preparation for rural service experience in medical schools and a lack of attention to rural medicine in the orientation programme. Respondents also reported feelings of isolation due to problems with access to telephone services. Moreover, this lack of access also prevented inexperienced and unconfident rural practitioners from consulting with more experienced physicians about problems of diagnosis and treatment. Frustration (according to authors and not measured) could result in feelings of apathy and resentment because of problems with transport, communication, housing, living adjustments and limited equipment, infrastructure, consumables and poor electricity. On the other hand, the programme triggered positive mechanisms among some physicians, as some said it led to gaining confidence, maturity and a greater sense of responsibility. In Thailand, the obligation to pay a fine when in breach of contract stopped triggering fears of changing location as soon as the context of economic growth made it much easier to pay this penalty (27).

Interpretation

Although the three outlined interventions do not allow for generalization, and data are lacking, a pattern emerges: the studies show that compulsory service in rural areas without preparation to provide health services in resource-constrained settings (and without training in rural health) is not likely to be successful in terms of improving service quality and health worker motivation. It may be that because of the relatively short duration of compulsory service in both Ecuador and South Africa, drop-out was not

mentioned as a major problem. The Ecuador study showed that involving local communities in the initiative and having community leaders who feel the need for a physician might lead to fewer problems in living and working conditions, and therefore are likely to contribute to increased health worker motivation. The Thailand study showed that fines do not lead to improved retention, particularly when they are easily afforded by the majority.

3.2.3 Financial incentives

Intervention characteristics and outcome

Six studies reported on the provision of financial incentives in a mix of low-, middle- and high-income countries (Australia, Indonesia, the Niger, South Africa, Uganda and the USA), addressing either only physicians (Australia, Indonesia and the USA), physicians, dentists and pharmacists (the Niger) or different health cadres, such as physicians and nurses (South Africa and Uganda). In three countries – Australia, South Africa and Uganda – only financial incentives for rural placement were used: in the Niger and South Africa a flat rate was allocated for any area in the country that was designated as a rural area; in Uganda it took the form of a lunch allowance. In Indonesia, financial incentives varied according to remoteness and were complemented by the possibility of obtaining a civil service appointment. The number of physicians receiving a civil service appointment differed according to the remoteness of the area. In the Niger, incentives for retention (called “motivation incentives”) were complemented by grants for telephone services, being on-call, transport and accommodation, although these were not intended by the government to specifically enhance retention. One study in the USA (28) focused on spending patterns towards bonus payments to physicians for working in rural, underserved areas, but did not look at the effects of bonus payments on retention.

Evaluation of results took place at different levels (see below) and the study results varied. None of the studies measured changes in the number of health workers being retained for a certain period of time. The study in South Africa showed that the retention of one third of the health workers was positively influenced by the rural allowance. Young nurses in particular responded to proposed changes in short-term career plans when annual incentives of ZAR 50 000 would be introduced (29). The Indonesia study demonstrated that incentives did influence location choice, although no information was collected regarding finalization of contract and stay beyond contract term. Before the introduction of incentives among students graduating from medical faculties in Bali and Java, only 5.6% of males and 1.7% of females volunteered to go to very remote areas. Those proportions increased to 20.7% and 6.7%, respectively, after the incentive was introduced. It also showed that the incentives had a large impact on the willingness of Bali and Java graduates to volunteer for remote and very remote posts: for remote areas, willingness to go surged from 17% before the introduction of incentives to about 50% afterwards. For very remote areas, this changed from 3.1% to 17.8%, respectively. Incentives

had a strong impact on females: the proportion willing to go to outer island non-remote posts increased from 5.8% to 28.1% and from 3.5% to 9.5% for very remote posts. Moreover, regardless of the incentive regime, students from the outer island faculties were far more likely to volunteer for remote and very remote outer island assignments than students from Bali and Java faculties (30). In both Australia and the Niger, despite environmental differences, the financial incentives were only partially successful. In Australia, the amount of money offered was too limited to make a difference (31); in the Niger, the number of doctors in rural areas increased, but the distribution of doctors between rural and urban areas did not alter, as the total number of doctors increased as well. The incentives were only successful for pharmacists (32). In Uganda, the lunch allowance was only described, with no link to health worker retention (33).

Context and mechanisms

Three studies reported on contextual factors influencing the outcome. In the Niger, the level of incentives led to an income that was still far below that of a private practice in the capital, and there was still sufficient space in urban areas for new private clinics. In addition, implementation created problems and often incentives were paid irregularly, only partially or not at all. This reduced the credibility of the programme (32). In Australia, the incentives were small in relation to the salaries and not cost-indexed, and therefore considered insignificant. Moreover, participation was hampered by the set of incentives being rather confusing for physicians and the bureaucracy and paperwork being cumbersome (31). In Indonesia, serving for the Government was a prerequisite to obtaining a licence to practise, thus ensuring that graduates had to work in a public facility. The civil service hiring freeze created concerns for the unemployment of young physicians, and obtaining a civil service appointment upon completion of the contract was attractive. At the same time, there was an expansion of health insurance schemes, which, combined with economic growth, enabled the private sector to grow fast, offering graduates an alternative to the public sector and likely diminishing their interest in working in rural areas.

Mechanisms triggered by the intervention were only reported on in Australia and the Niger. In Australia, the intervention led to a general feeling among doctors of being appreciated and valued by the government, despite the small amount that was paid. By working in rural areas, physicians were able to practise and apply a broad range of professional skills, which gave them a sense of fulfilling ideological and philosophical commitments. In the Niger, the evaluators concluded that the non-financial incentives offered in urban areas, such as better technical support (equipment, etc.), opportunities to participate in the development of guidelines, obtaining medical expertise, private practice opportunities, opportunities to obtain bursaries and internships, and participation in international meetings, were more important motivators than the financial incentives.

Interpretation

The published studies varied widely in the type of incentive scheme and place of implementation, making patterns difficult to identify. However, the importance of the context is clearly shown in two studies: in the Niger, the health labour market and the stark shortage of physicians made it nearly impossible to use financial incentives as a trigger for physicians to relocate to rural areas. In Australia, the incentive scheme did not trigger motivation to relocate either, as it was not related to salaries and costs. Both studies also indicated that non-financial incentives are important to trigger motivation. In addition, implementation problems hampered the programme, as both studies suffered from extensive bureaucratic procedures.

3.2.4 Personal and professional support

Intervention characteristics and outcome

In this area only one intervention was reported: for physicians in Australia (34, 35). The intervention aimed to improve physicians' health and well-being by offering social and emotional support. Key components of social and emotional support were linking physicians in a peer-support network, provision of health check-ups, crisis plans, distributing pamphlets, providing an emergency support line, organizing rural retreats and the development of networks among physicians and other professionals. An evaluation two years after the intervention was implemented showed that there was a reduction of physicians considering leaving their post in the short or medium term (from 52.7% to 46.1%), that fewer rural physicians intended to leave (from 30% to 25%), and that 30% were undecided, compared with 25% before the intervention (34). There was an increase in the use of a number of support activities that were offered: more physicians approached other physicians to discuss personal issues (an increase from 46.2% to 56.4%) and there was an increase in having other people with whom physicians could discuss professional or personal issues (from 56.8% to 66.7%).

Context and mechanisms

Contextual factors of influence on the intervention were hardly reported or discussed, apart from a common belief that medical practice was a stressful occupation, that rural physicians suffered from stress and that psychological ill-health had negative consequences, including difficulties in rural physician retention. As for mechanisms, the authors reported that the intervention led to a decrease in the number of physicians who reported physical problems (40.9% compared with 47.1% before the intervention) and mental health problems (36.9% compared with 43.8% before the intervention) (34).

Interpretation

As there is only one studied intervention, no patterns could be identified. However, it is important to appreciate that offering social and emotional support in rural areas, such as peer networks and health check-ups, can reduce health workers' mental and physical health problems. Therefore,

a baseline study would be required in order to identify the number of health workers in rural areas suffering from physical and emotional problems and whether they would consider leaving rural areas as a consequence.

3.2.5 Bundled approach

Intervention characteristics and outcome

This category contains 10 interventions, covering a wide variety of combinations of intervention categories and taking place in a mix of low-, middle- and high-income countries (see Table 1). Five documents were limited to a description of the current situation on rural physician retention (Canada and Thailand) or health workers in general (Ghana, Kenya and the United Republic of Tanzania). For instance, doctors in Thailand working in rural areas received management support in terms of improved personnel and logistic support, peer recognition and awards and opportunities for career progression, thereby making their compulsory rural work more attractive (36). In Ghana, five different types of retention strategies were in place: additional duty hours allowance, car and housing loans, postgraduate training opportunities, relaxed criteria for promotion and flexible contracts (37).

Two programmes (Madagascar and Mali) provided financial, management and educational support, mainly through a rural professional association, for young medical graduates to settle in private practices in rural areas. One intervention (Japan) combined rural training with compulsory service in rural areas in the medical graduate's home prefecture. In Australia, a rural retention programme for psychiatrists included training, management and social support in terms of raising the profile of rural psychiatry, managers establishing a rapport with applicants for rural posts, and providing support for housing, schooling and getting established in a new environment. In addition, support was provided for the orientation of new psychiatrists through supervision and by establishing a professorial chair of rural psychiatry. A retention scheme in Zambia included financial incentives and management and social support to assist in schooling children, obtaining car or housing loans and postgraduate training.

The intervention of rural training and compulsory services in Japan showed that the location of undergraduate medical schools in Japan influenced practice location after graduation: between 46% and 93% of graduates remained in their home prefecture for at least six years after the contract ended (38). Graduates from the rural training school were 4.2 times more likely to work in rural areas after contractual obligations than non-rural school graduates.

The programmes in Madagascar and Mali, which assisted young doctors in starting a practice in rural areas, have resulted in more than 100 doctors working in rural areas, mainly in community-managed health centres. Doctors placed in rural areas and who were members of the rural professional association were more satisfied and stayed longer or intended to stay longer in rural areas than non-members. Results of the evaluation also indicate

that communities had more trust in the centres with a doctor, that utilization increased, curative services improved, follow-up of chronically ill people improved and referrals decreased (39). In Madagascar, the programme enabled 42 doctors to work as private practitioners in rural areas (40).

The retention intervention in Zambia resulted in 68 Zambian doctors being recruited over a period of 18 months, replacing all the foreign Dutch doctors in two provinces (41). In Australia, the number of rural psychiatrists increased from one to 11, and the retention period increased from an average of 18 months to an average of four years (42).

In Thailand, between 1977 and 2000, the proportion of outpatient department visits made to public rural health centres out of those made to all public health care centres (community, urban and rural) increased from 29.4% (1977) to 46.1% (2000). The proportion of outpatient department visits to urban provincial hospitals decreased from 46.2% (1977) to 18.2% (2000). However, no clear link was made with retention strategies (36).

Context and mechanisms

A number of studies reported or discussed contextual factors that had an influence on the results of the intervention.

In Japan, graduates who settle in rural areas are more likely to be male primary care physicians who graduated from a public school and are of rural origin (38). Prefectures with a relative shortage of health workers had a higher settlement rate; these prefectures were more likely to require graduates to work as generalists and were keen to persuade them to remain after the obligatory period. Some prefectures arranged jobs in public clinics or hospitals.

In Madagascar and Mali, the high unemployment rates among recent graduates attributable to recruitment ceilings made it attractive for young doctors to start a practice in rural areas. In Madagascar, the lack of personal finances to start a practice also contributed to young doctors taking up the offer of private rural practice, as they were supported through the provision of kits and equipment. Communities were said to appreciate these clinics, but private clinics that were not officially presented to the community were not well integrated. For instance, some doctors had difficulties practising in their private clinics, as the population refused to come during the first year. Mayors who were involved from the start appreciated the presence of these private clinics and assisted in their development (40). The importance of local leader involvement is confirmed in Mali, where collaboration with local authorities in prevention campaigns, for example, was easier when there were preliminary visits prior to the installation of the doctor (39). In both countries, most rural practitioners were male. Both programmes received most of their financial support from donors – sustainability was

therefore questionable. Moreover, doctors mentioned low income as a problem: in Mali, salaries paid by community health centres did not match public salary scales; in Madagascar, most respondents were not satisfied with low utilization of their services, which limited their income.

In Zambia, contextual factors both supported and hampered the programme. At the time of the intervention there was an estimated vacancy rate of 50% for doctors and a compulsory service period of one year upon graduating. Most doctors who were recruited for the rural areas in the context of the retention programme were recently graduated men embarking on their first posting. The authors wrote that the lack of women working as health professionals in rural areas might be related to the cultural norm of women following the postings of the husband (41). Implementation of the retention intervention occasionally suffered from insufficient management, thereby negatively influencing perceptions of the programme. The Zambian curriculum in medical education was cure-oriented and only included community health to a limited extent, which made it difficult for doctors to perform rural medicine because they lacked the appropriate training.

In Australia, all rural psychiatrists who participated in the intervention were foreign recruits from India. The private sector in Australia offered attractive working conditions, as it provided a perceived increased control over work – working one-to-one rather than within a team – and it offered exposure to a broader range of psychiatric disorders. The attractiveness of the private sector therefore made it more difficult to retain psychiatrists in rural areas.

The studies also discussed potential mechanisms: in Japan, defaulting was not something students saw as an option, as there was a historical and cultural trend towards fulfilling contractual obligations and there were senior role models. Systematic communication between undergraduates and alumni as part of the curriculum offered a favourable environment for finding these role models. This created an institutional climate that allayed career path anxiety and fostered assurance. Continued support from prefectures created a sense of connectedness and belonging among graduates, facilitating retention and contract compliance. In addition, the authors reported that primary care involved greater engagement with community and led to physicians being more rooted in the community than other specialists and therefore more likely to be retained (43).

The evaluation in Mali, described per intervention component (39), revealed the following mechanisms that made the programme work:

- Doctors were said to be better prepared for rural practice after receiving training from the Santé Sud nongovernmental organization.
- Supervision gave doctors the feeling of being less isolated and gave them more legitimacy among the community and recognition by the Government.

- Exchange with French doctors gave rural Malian doctors an opportunity to reflect on their own practice, thus improving their work.
- Participation in research activities on certain diseases brought them recognition in the research community and helped them to feel less isolated.
- Being a member of the rural professional association helped to gain peer recognition, support and a professional identity, which was reinforced by the work in rural areas.
- Mutual support seemed to be a determinant to remaining in a rural post.

In Madagascar, training offered by the nongovernmental organization and the professional association was seen to help doctors to understand rural communities better and to manage centres, and it served as psychological support to remain in rural areas. Supervision helped to improve practice, allowed for the exchange of experience, and helped in finding solutions to problems and to obtaining feedback. Moreover, supervision was felt to be encouraging, as it provided psychological support and gave rural populations the feeling that the doctor had higher-level contacts and increased credibility. Participation in the project made these doctors feel proud and satisfied as they were able to practise medicine “in all its dignity” (40).

In Zambia, some positive and negative mechanisms were identified by the authors (41). Although working in rural areas was seen as a positive experience, most doctors were of the opinion that they could not perform to the required standards. The availability of essential staff, supplies and equipment stood out as an important factor to maintain motivation. Some mentioned the difficulty of working without professional support and that coming to remote places was a culture shock to urban-based doctors.

Mechanisms explicitly discussed by the authors of the Australian study (42) were that the programme established a rapport with applicants, which enhanced recruitment; there was a clear division of responsibilities and shared workloads, which ensured continuity of patient care, and less demanding travel requirements, which proved particularly attractive to psychiatrists. Moreover, work satisfaction was increased thanks to a focus on cultural issues, family support, educational opportunities and additional linkages to urban-based psychiatrists and services. Lastly, the establishment of a professorial chair of rural psychiatry raised the profile of research and academic activities for rural psychiatry.

Documents that were limited to a description of retention strategies and factors in Canada, Ghana, Kenya, Thailand and the United Republic of Tanzania only provided anecdotal information on the context or mechanisms. The salient points that could be extracted from these documents included the following:

- Implementation problems, due to bureaucratic procedures, weak management and non-transparency in the selection process negatively influence perceptions on these strategies (United Republic of Tanzania, 44).

- Rural physicians do not appreciate the long working hours, the unpredictability of services as they are always on call, the lack of professional support, and social isolation (Canada, 45).
- National hospitals and urban facilities have less mobility among personnel and non-financial incentives are highly valued, such as improved working conditions, training and supervision, good living conditions, communications, health care and education opportunities for staff and families (Kenya, 46).

Interpretation

A number of studies (Australia, Japan, Madagascar, Mali, Zambia) that reported specifically on retention data showed that the intervention contributed positively to an increase in the number of health workers and to the number of years served in rural areas.

The interventions cannot be compared with each other, but some common patterns can be found regarding positive and negative contextual factors. Involvement of local leaders and other local stakeholders seems important to ensure a programme's success. Management capacity and procedures to implement schemes are also important for success. The health labour market has influence: if the private sector is more attractive, public sector HRH recruitment or retention for a longer period of time in rural areas is more difficult (see Australia). When there is unemployment and no opportunities to establish an urban private practice, rural areas offer a good alternative if establishment is facilitated (see Madagascar and Mali). Gender and age are neglected aspects: although most studies showed that rural workers are male (Japan, Madagascar, Mali, Zambia) and young, there has been little analysis of why women and mid- or end-career health workers are less present in rural retention programmes. An interesting aspect mentioned in Japan is that the primary health care (PHC) specialty contributed to retention in rural areas. The reason for this was that PHC involved greater engagement with the community and led to physicians being more rooted in the community than other specialists and therefore more likely to be retained. The lack of preparation attributable to limited attention to PHC in medical curricula was mentioned as a negative factor in Zambia.

The mechanisms mentioned most often are social and professional isolation, which hamper rural recruitment and a lengthy stay in rural areas, i.e. beyond the contractual obligation. The documented interventions offered a number of different examples of how professional isolation can be addressed:

- The formation of rural professional associations created a sense of peer support, being part of the health system and having a professional identity.
- Supervision increased legitimacy among the community, recognition by the government and the sense of being part of the whole health system; it decreased the feeling of isolation.

Additionally, rural practice does not seem to have a positive profile. Thailand tried to raise the profile by including rural practice in career ladders and peer and public recognition; Australia established a professorial chair of rural psychiatry; and rural areas in Mali were included in research projects in which rural practitioners participated.

3.3 SUMMARY OF EVIDENCE

This section provides details about the type of study, the level of evaluation of the intervention and the data-collection methods. More information about the evaluation or study for each intervention is presented in the data analysis matrix.

3.3.1 Details of research

Education

Of the four interventions, one was described (23) and three were evaluated. These three were evaluated at output level by looking at the number of rural graduates practising in rural areas after a number of years. Two of the three interventions were still ongoing (3, 21). Evaluation was done through a review of records and using a student cohort questionnaire. Only one study (22) had a control group; none had a baseline. The three interventions that focused on active recruitment had a reported assumption: it was expected that originating from a rural area, as a contextual factor, was of influence on rural practice. This assumption in one study was based on additional studies and evidence (23).

Regulation

The three evaluated interventions all used qualitative methods, complemented in Ecuador with a self-administered questionnaire and in Thailand with the review of records and a self-administered questionnaire. None had a baseline or a comparison group. The Ecuador study focused on the implementation process, the Thailand study on the output (number resigned) and the South Africa study on output and outcome (the number of doctors in rural areas and the way they work as perceived by managers of facilities, as well as the perception of these managers on service utilization and quality of care). Only one study (Ecuador) mentioned that there was an assumption before the start of the intervention: the expectation was that compulsory service would lead to improved presence of physicians in rural areas, which in turn would contribute to the reduction of the comparatively high morbidity and mortality rates in rural areas (25).

Financial incentives

Out of the six studies, one was a descriptive case study (Uganda) limited to describing the type of incentives and the reactions of the health workers; there was no evaluation. Two studies had some sort of baseline (Indonesia and South Africa); none of the studies had a control group. In Australia and South Africa, data were collected through self-administered questionnaires. The study in the Niger used various data-collection methods: self-administered

questionnaires, focus group discussions, interviews and review of reports and policy documents. The data-collection methods used for the case-study in Uganda were not described. The study on bonus payment in the USA and the preference analysis study in Indonesia were done through a review of records.

Evaluation levels in Australia and the USA were limited to process; in Indonesia evaluation was limited for revealed preferences to output level (the number of doctors willing to serve in rural areas); in the Niger and South Africa studies, output (retention levels) and process (the way the intervention was implemented) were evaluated in a number of different ways.

Personal and professional support

The Australian intervention for physicians was developed on the results of a baseline study, and an assumption was formulated before implementation that retention of physicians in rural areas could be ensured by providing social and emotional support. Self-administered questionnaires were used as data-collection techniques (both prior to and two years after the intervention). The intervention was evaluated at output level – number of physicians intending to leave and number of physicians suffering from mental and physical problems – and at process level – number of physicians participating in activities.

Bundled approach

In the case of five interventions (Canada, Ghana, Kenya, Thailand and the United Republic of Tanzania) only the current situation was described in the documents, without any evaluation. These did not include (or provided to only a very limited extent) information on retention intervention

outcomes, contexts or mechanisms. Although they were informative as an evidence base, these documents are only useful to a very limited extent.

Out of the remaining five interventions, one (Japan) was evaluated in a number of quantitative cross-sectional studies, using a baseline (4 studies) and a control group (1 study). The retention programme was evaluated at output level, looking at the number of physicians retained upon contract completion. Data collection included review of records over periods of time, telephone interviews and a mail survey. The interventions in Madagascar, Mali and Zambia were extensively evaluated using qualitative methods. Output, i.e. evaluating the number of doctors working in rural areas, and process, i.e. evaluating perceptions on implementation aspects, were assessed; there was no control group. In Mali, data-collection methods consisted of a document review, observation on site, self-administered questionnaires and both individual and group interviews. In Madagascar, data collection included focus group discussions, interviews and a survey. In Zambia, apart from interviews, a document review took place. In Australia, the intervention was evaluated at output level, i.e. assessing the number of psychiatrists working in rural areas and the average period they remained at their post, and the process, i.e. evaluating the perception of the rural psychiatrists on the various aspects of the programme. Data were collected using records, document reviews and interviews.

The assumptions on which the interventions were based were made explicit in three cases. In Japan, it was assumed that trainees would be beholden to their prefectures and would be likely to stay there. Intense and sustained contact with rural services would breed familiarity and

TABLE 2. Evaluation levels of retention studies

Evaluation	Education (3 studies)	Regulation (3 studies)	Financial incentives (5 studies)	Support (1 study)	Bundled (5 studies)
Process	x	Feelings of physicians on implementation of the programme-orientation programme (Ecuador)	Trends in bonus payment (USA) Perceptions on implementation (Australia)	Number of physicians participating in activities (Australia)	Perceptions on implementation (Australia, Madagascar, Mali, Zambia)
Output	Number of rural graduates practising in rural areas after graduation (Canada, USA 2x)	Number of doctors who resigned (Thailand) Perception of managers on number of doctors and the way they work in rural areas (South Africa)	Number of doctors being retained and intention to stay (South Africa) Number of physicians working in remote or very remote areas (Indonesia, the Niger)	Number of physicians intending to leave and number of physicians suffering from mental and physical problems (Australia)	Number of physicians retained (Australia, Japan, Madagascar, Mali, Zambia) Average period psychiatrists remained at their post (Australia)
Outcome	x	Perceptions of managers on utilization of services and quality of care (South Africa)	x	x	x

connectedness, and rural school students would not be influenced by those more likely to work in urban areas (38). The Thailand intervention (36) was based on the assumption that rural careers could be made attractive through public and peer recognition, as well as by career development paths that included rural practice. In Mali, the assumption was made that the medicalization of health centres (i.e. recruiting doctors) would improve community access to health services, quality of care and the functioning of the rural health system (39). The intervention in Madagascar was similar to the intervention in Mali and implemented by the same international nongovernmental organization (Santé Sud). It is therefore likely that the Madagascar intervention was based on the same assumption as Mali (40).

3.3.2 Discussion on the current evidence base

Level of evaluation and type of indicators

Out of the 30 documents that were reviewed, 17 were evaluation studies of which 14 were conducted at output level, looking at either retention of health workers in rural areas or intention to stay or leave; retention was expressed in average number of years retained in only one study. In five studies, additional perceptions on implementation of the interventions were assessed. In three studies, only process aspects were evaluated. One study looked at outcome, in terms of perceived utilization of services and changes in service delivery, in addition to output level. Table 2 presents the details on the level of evaluation and the type of indicators used.

Table 2 shows that only a limited number of indicators were used for the evaluation, which mostly considered output level. The limited number and types of indicators hampered insight into the working of the documented interventions.

There are clear needs to develop a common conceptual framework and to make a larger number of indicators at different evaluation levels available to the research and evaluation community.

Research design

Out of the 17 studies, four looked retrospectively at the output of a programme, following a cohort of health workers, using different points for the assessment, e.g. location of practice and associated characteristics of practitioners. Three were qualitative studies, exploring perceptions (South Africa) or evaluating a programme among a small group of practitioners (Madagascar and the Niger). Evaluation studies often used a mixture of qualitative and quantitative data-collection methods (six evaluations). Studies seldom described how the researchers or evaluators defined expected output, outcome, etc., making it difficult to compare studies. Table 3 shows the different types of research designs that were used. However, the research methodology was often insufficiently described (five evaluations) and did not include an assessment of the appropriateness of the study implementation or the type and level of bias. It is therefore important to stress that the findings presented in this report are indicative.

Assumptions made explicit

Although all interventions will have an intervention logic that was at the basis of the design, the studies only explicitly stated how the intervention was supposed to work in eight cases.

TABLE 3. Research designs

Research design	Education (3 studies)*	Regulation (3 studies)	Financial incentives (4 studies)	Support (1 study)	Bundled (5 studies)*
Cross-sectional, quantitative	Canada (1x)		Australia (1x)		
Retrospective cohort, quantitative	USA (2x)			Australia (1x)	Japan (3x, one intervention)
Before and after study			South Africa (1x) Indonesia (1x)		
With control group	USA (1x)				Japan (1x)
Case-study, qualitative methods		South Africa (1x)	Niger (1x)		Madagascar (1x)
Case-study, quantitative and qualitative methods		Ecuador (1x) Thailand (1x)			Mali (1x) Zambia (1x) Australia (1x)

* Some results were presented in more than one study.

4. DISCUSSION

This review allows the following preliminary conclusions regarding attraction and retention strategies.

- Bundled approaches are more successful than single interventions.
- Rural practice comes with a risk of professional and social isolation. This can successfully be addressed through bundled approaches that trigger a sense of belonging, recognition and professional identity.
- Attractiveness of work in rural areas is influenced by the health labour market.
- Motivation to work in rural areas is influenced by health workers' gender, age and origin; gender and age are neglected aspects in retention and attraction strategies.
- Rural practice is often seen as unappealing; various programmes have successfully tried to raise the profile of rural practice.
- Important contextual factors regarding the implementation of interventions are management capacity and limited bureaucratic procedures; the studies in Australia, the Niger and Zambia demonstrated that a lack of management capacity and red tape reduced motivation to participate.
- The involvement of local stakeholders, such as community leaders and local schools, contributes to triggering motivation and reducing isolation, thus positively influencing retention.

Apart from identifying whether interventions were a success or a failure and the contributing contextual factors, realist synthesis also tries to identify patterns: context–mechanism–outcome (CMO) configurations. The synthesis looks for positive or negative outcomes of interventions due to similar mechanisms that were triggered in similar contexts.

Despite the limited evidence available regarding the intervention studies, this realist synthesis identified three patterns that enabled the formulation of the following preliminary assumptions, which require validating by further testing and should subsequently be refined.

- Attracting and retaining graduates in rural practice occurs when graduates feel able to provide rural services and are willing to select a rural location. This is likely to happen when (i) schools have a rural-focused curriculum; (ii) schools recruit students with a rural background and with an interest in rural practice; and (iii) the government values and gives priority to rural practitioners and is committed to increasing their numbers.
- Professional and social isolation, which hinder the attraction and retention of health workers in rural areas, can be reduced through a bundle of interventions consisting of education, financial incentives and personal and professional support interventions. These can work if they trigger the following mechanisms among health workers: a sense of recognition and

being valued by the government, their peers and communities and a sense of professional identity. These interventions can only be successful if local communities (and leaders) are actively involved, if there is sufficient management capacity among implementing agencies and if bureaucratic procedures to implement interventions are simple.

- Financial incentives can only contribute to improved health worker attraction and retention if they outweigh the opportunities of private practice in urban areas, if there are limited opportunities to work in urban areas and if they are offered in combination with non-financial incentives.

We realize that these preliminary assumptions are based on weak evidence. Reviewing the studies on retention clearly showed that there is a need to improve evaluation and documentation of HRH interventions. Not only are there differences among researchers regarding the definitions of output, outcome and impact, but Tables 1 and 2 also clearly demonstrate that there is a mix of research designs being used and a limited number and type of indicators to assess change. These difficulties make comparison and synthesis very difficult, which are important to be able to draw lessons for transferability. In addition, only eight interventions had a clearly formulated assumption, which is a requirement to test “theories of change” and further develop theories.

The analysis also revealed that, because of the types of research design, the level of evaluation and the indicators that were used, little or no attention was being paid to the context during research, although often authors concluded that the context was influential. The focus on mechanisms, which is promoted in realist enquiry, is not consistently included in intervention evaluation or research. Whereas most evaluations focus on assessing the type of intervention, different types of interventions can trigger similar mechanisms – it is the mechanisms (or reactions of the group of interest to the intervention in a particular context) that will lead to a certain outcome. It is therefore important to assess these mechanisms and build up an evidence base on which types of mechanisms were triggered by similar interventions in different contexts and on different interventions in similar contexts. The identification of such patterns, i.e. the type of reactions triggered by specific interventions in a given context, allows the formulation of assumptions or programme theories, as presented in this section. In order to assess transferability, these assumptions need to be tested in various contexts and, based on the test results, the assumptions can be refined. Such information will improve policy-makers' and planners' understanding of the relevance of retention interventions implemented elsewhere. These assumptions should form the basis on which interventions in similar settings are designed by policy-makers and planners. This testing and refining of assumptions will contribute to theory building on how to increase access to health workers in underserved areas.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

This review showed that attracting and retaining health workers in rural and remote areas requires a bundled approach and a careful situational analysis regarding the health labour market, gender, age and origin of health workers prior to the intervention design. It also showed that professional and social isolation needs to be considered and remedied and that the profile of a rural career could be raised. However, to assess transferability of successful interventions to other settings, more information is needed about the working of programmes and essential contextual factors. Realist evaluation and research methods gain a deeper insight into the working of programmes and enable the formulation and testing of assumptions. The value of a realist perspective is that it contextualizes the existing evidence and focuses on the mechanisms through which programmes work in these contexts. It identifies which mechanisms were triggered in specific contexts and explores the different types of interventions triggering these mechanisms.

However, a realist synthesis is only as good as the primary research it synthesizes; it attempts to get more out of the evidence rather than just the sum of the parts. In order to do this effectively in HRH practice, the evaluation and research approaches would need to be broadened. The evidence base can only be expanded with this information if evaluation and research include questions on mechanisms and contextual factors, if these evaluations and studies are synthesized using a realist perspective and if they are made available to policy-makers and planners.

5.2 RECOMMENDATIONS

The limited types of research designs, the limited number and types of indicators, as well as the limited focus of evaluation and research documented in this synthesis call for broadening evaluation and research methods.

The following would be required:

- 1) There is a need to make explicit assumptions for each intervention and to relate the evaluation of interventions to these assumptions so as to allow for testing and further refinement.
- 2) It is important to evaluate HRH interventions at different levels (output, outcome and impact) and to include qualitative and quantitative indicators.
- 3) It is important to develop a common conceptual framework for researchers and evaluators and to propose a set of common indicators. This will allow for better comparison of results of different human resource management interventions aiming to improve attraction and retention and it will facilitate the synthesis of research and evaluation.
- 4) An evaluation should include an analysis of contextual factors that were of influence.
- 5) Mechanisms could be triggered through different interventions, and policy-makers and planners need to know which interventions have triggered these mechanisms in different settings. The occurrence of these mechanisms and their existence prior to the intervention need to be mapped and evaluated and therefore need to be part and parcel of any evaluation or research.

We refrain from formulating new research questions. Instead, we suggest improving upon planned and ongoing evaluation and research of attraction and retention policies and interventions. Given the increased insight this realist synthesis provided despite the limited primary research, we strongly advise to include a realist perspective in ongoing and future studies.

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ANNEX 1

TERMS OF REFERENCE

Consultancy for a realist review of selected studies on effective rural health worker retention strategies

Background

It is now clear that the Millennium Development Goals will not be met unless health systems are strengthened and the crisis of human resources for health is effectively addressed. Many low- and middle-income countries have a fragile health system, which is further disturbed by the migration of health personnel, either within the country, from rural to urban, or outside the country. Paradoxically, there are also situations in which there are many trained health workers who do not find jobs and are forced to take up other activities to make a living.

The World Health Organization (WHO) Department of Human Resources for Health (HRH) works with Member States to develop recommendations on policies and strategies for effective management of health personnel. It also works to develop appropriate policies related to the issues of health workforce education, distribution, shortages, motivation and migration of health personnel.

In this context, and through its newly established team, Health Workforce Migration and Retention (HRH/HMR), WHO is implementing a programme of work to support Member States to address the issue of inequitable distribution of health workers in remote and rural areas. One of the three strategic pillars of this new programme is the development of evidence-based WHO global recommendations on “Increasing access to health workers in remote and rural areas through improved retention”.

The development of the recommendations follows the protocol outlined by WHO's Guidelines Review Committee, which includes expert consultations in order to analyse and assess the quality of the evidence, based on which recommendations will be formulated. At the first expert consultation, WHO provided a background paper based upon a global review of the current evidence on this topic. The 40 studies retained for the global review have been

analysed using the GRADE system for assessing the quality of the evidence. It was felt that this approach did not provide sufficient details for the expert to allow them to say whether interventions that were effective in one setting would produce similar results in another setting. It was proposed to use another method in order to identify the key elements that might explain why interventions were effective in one setting or failing in another. This method was the “realist review”, which has been already used in other domains (law and education) to come to a better, more in-depth understanding of the underlying mechanisms and contexts behind successful (and unsuccessful) retention policies.

Scope of the assignment and expected outcomes

The consultancy is to undertake the following tasks:

- 1) Perform realist review on 30 of the studies upon which the WHO background paper drew. The studies will be chosen from the original 40 that supported the background paper, in consultation with the HMR team. Regular updates to be given to HRM, who will support this work, and to the supporting members of the Core Expert Group.
- 2) Following realist review of the 30 studies, perform a “realist synthesis” of the 30 realist reviews.
- 3) An interim report on progress in the form of a PowerPoint presentation to be given to the Expert Group at its 29 June–1 July 2009 Expert Group meeting. Draft to be sent to HMR by 23 June 2009.
- 4) An outline of the final report to be submitted to HMR by 15 August 2009.
- 5) Final report on the realist review and synthesis of around 15 000 words (not including graphs and annexes) to be sent to HMR by 15 September 2009.
- 6) A final report to the Core Expert Group in mid-October 2009, in the form of a PowerPoint presentation. Draft to be sent to HMR by 30 September 2009.

Timeline

This contract covers the period of 29 May to 30 October 2009, with interim, outline and final reports due as indicated above.

ANNEX 2 DATA ANALYSIS MATRIX

CMO configurations and assessment methods for interventions to improve rural retention

Authors, Title of study, Location, Year of publication, Year of study	Intervention characteristics and objective	Outcome and study objective	Contextual factors reported to be of influence: socioeconomic, political environment	Mechanism-reported under- lying assumptions (= how was the intervention supposed to work) and description of actual mechanisms researched or mentioned by authors in the discussion	Evaluation: time and level (output-outcome- effect)			Assessment of study				Comments from reviewers	Prior assump- tions	
					Time of evalua- tion upon completion of inter- vention	Level of evaluation	Evaluation methods	Study type	Base- line	Compar- ison	Alter- native explan- ation for results likely			
Education interventions														
Regulatory interventions														
Monetary compensation														
Management, environment and social support interventions														
Bundled interventions														

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