Do changes in the pre-licensure education of health workers impact on the supply of health workers?

In many countries there is a shortage of health workers. The high financial and resource investments needed to train health workers make it important to find ways to increase the number of students entering health professional training and reduce the number of pre-graduation drop-outs. Minority academic advisory programmes that include academic, personal, financial and vocational advising, skills building, mentorships, supplementary training, and annual evaluations are some of the ways to achieve this amongst minority students.

**Key messages**

- There is little evidence of the effects of interventions to increase the capacity of health professional training institutions, reduce student drop out rates or increase the number of students recruited from other countries.

- Two studies conducted in the United States of America (USA) provide low-quality evidence that Minority Academic Advising Programs (MAAP) may increase the number of minority students enrolled in health sciences; may slightly increase retention through to graduation; and may decrease differences in retention levels through to graduation between minority and non-minority students in the health sciences.

- There is a lack of evidence of the effects of other types of changes in the pre-licensure education of health workers on health worker supply.

Who is this summary for?

People making decisions concerning changes in the pre-licensure education of health workers.

This summary includes:

- Key findings from research based on a systematic review
- Considerations about the relevance of this research for low- and middle-income countries

Not included:

- Recommendations
- Additional evidence not included in the systematic review
- Detailed descriptions of interventions or their implementation

This summary is based on the following systematic review:


What is a systematic review?

A summary of studies addressing a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise the relevant research, and to collect and analyse data from the included studies.

SUPPORT – an international collaboration funded by the EU 6th Framework Programme to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries.

Glossary of terms used in this report:

- SUPPORT – an international collaboration funded by the EU 6th Framework Programme to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries.

Background references on this topic:

See back page.
Background

There is a considerable shortage of health workers globally and this shortfall is greatest in sub-Saharan Africa. Health worker education is costly in terms of the financial, temporal and other resources required, but vital in terms of providing universal good-quality health care services and attaining health-related objectives such as the millennium development goals. Strategies to increase the number of students in relevant courses and promote their retention to graduation are therefore essential.

How this summary was prepared

After searching widely for systematic reviews that can help inform decisions about health systems, we have selected ones that provide information that is relevant to low- and middle-income countries. The methods used to assess the quality of the review and to make judgements about its relevance are described here: www.support-collaboration.org/summaries/methods.htm

Knowing what’s not known is important

A good quality review might not find any studies from low- and middle-income countries or might not find any well-designed studies. Although that is disappointing, it is important to know what is not known as well as what is known.

About the systematic review underlying this summary

**Review objective:** To assess the effect of changes in the pre-licensure education of health professionals on health-worker supply.

<table>
<thead>
<tr>
<th>What the review authors searched for</th>
<th>What the review authors found</th>
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<tbody>
<tr>
<td><strong>Interventions</strong></td>
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<tr>
<td>Interventions that could:</td>
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<tr>
<td>- Increase the capacity of schools</td>
<td>2 controlled before-and-after</td>
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<td>- Reduce the loss of students (and</td>
<td>studies of minority academic</td>
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<td>increase the likelihood that</td>
<td>advising [advisory?] programmes. These programmes consisted of academic, personal, financial and vocational advice, skills building, mentorships, supplementary training and annual evaluations.</td>
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<td>students will graduate)</td>
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<td>- Increase school recruitment of</td>
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<tr>
<td>students from other countries</td>
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<tr>
<td><strong>Participants</strong></td>
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<tr>
<td>Health professional students prior</td>
<td>2 studies among black and</td>
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<tr>
<td>to licensure</td>
<td>general health professional</td>
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<tr>
<td><strong>Settings</strong></td>
<td>2 studies from the USA</td>
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<td>No restrictions</td>
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<tr>
<td><strong>Outcomes</strong></td>
<td>2 studies of the numbers of</td>
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<td>Increased numbers of health</td>
<td>health workers ultimately</td>
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<td>workers ultimately available for</td>
<td>available for recruitment into</td>
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<td>recruitment into the health</td>
<td>the health workforce</td>
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<td>workforce</td>
<td>Improved population-to-health</td>
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<td>professional ratios</td>
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**Date of most recent search:** October 2007/February 2008

**Limitations:** This is a good quality systematic review with only minor limitations

Summary of findings

Two controlled before-and-after studies conducted among students at health professional training institutions in the USA were identified. A Minority Academic Advising Program (MAAP) was implemented in two institutions, and changes in the levels of of black student enrolment and retention to graduation rates were measured.

Minority academic advising programmes may:

- Increase the number of black health sciences students enrolled
- Slightly increase retention to graduation
- Decrease the difference in retention levels to graduation between blacks and those in other population groups in the USA
- There is a lack of evidence of the effects of other pre-licensure measures to increase health worker supply in low- and middle-income countries

### About the quality of evidence (GRADE)

- **High**: Further research is very unlikely to change our confidence in the estimate of effect.
- **Moderate**: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
- **Low**: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
- **Very low**: We are very uncertain about the estimate.

For more information, see last page

### Patients or population

- **Patients or population**: Students (black, general) in health professional training institutions
- **Settings**: Health professional training institutions, USA
- **Intervention**: Minority Academic Advising Program (MAAP) academic, personal, financial and vocational advice; skills building; mentorships; supplementary training; and annual evaluations
- **Comparison**: Pre-MAAP (non-MAAP, non-black to account for secular changes)

### Outcomes

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Impact</th>
<th>Number of participants (studies)</th>
<th>Quality of the evidence (GRADE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased numbers of health workers ultimately available for recruitment into the health workforce</td>
<td>Hesser 1993: 45% (Male: 48%, Female: 43%) relative increase in the total number of black allied health sciences students enrolled. Retention to graduation of black students increased from 72% to 83% (p=0.051) Relative difference in retention to graduation between blacks and non-blacks reduced from 14% to 2.5% (p&lt;0.0002) Hesser 1996: Percentage of minority students retained to graduation increased by 5.2% (p&lt;0.05). Fraction of black students increased by 11%.</td>
<td>MAAP: 129 Pre-MAAP: 89 Non-black comparison group: 1884</td>
<td>Low</td>
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</tbody>
</table>

**p**: p-value  
GRADE: GRADE Working Group grades of evidence (see above and last page)
### Relevance of the review for low- and middle-income countries

<table>
<thead>
<tr>
<th>Findings</th>
<th>Interpretation*</th>
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<tbody>
<tr>
<td><strong>APPLICABILITY</strong></td>
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</table>
| ➤ All included studies were conducted in high-income countries. No relevant evidence from low- or middle-income countries was identified | ➤ The challenges faced in health care worker education in high- and low-income countries are qualitatively and quantitatively different (e.g. the availability of funds, laws regarding equity and awareness of these, job prospects including remuneration, and curricula)  
➤ Appropriate interventions could be expected to have a comparatively higher impact in low-income countries where alternatives and opportunities are generally more limited than in high-income countries. However, there is no evidence regarding the effects of such interventions. |
| **EQUITY** | |
| ➤ The included studies focus on equity between racial groups in a high-income country | ➤ Similar interventions (such as the promotion of minorities, marginalised populations or other sub-groups within the society) are likely to have positive effects on equity, irrespective of the context  
➤ Interventions focusing solely on increasing absolute numbers of health workers will probably not have a notable effect on equity irrespective of the context |
| **ECONOMIC CONSIDERATIONS** | |
| ➤ The review did not provide information on absolute costs and cost-effectiveness | ➤ Direct costs of interventions, however small, will be difficult to meet or justify in low-income countries where education in general, and the health sector in particular, are cash-strapped  
➤ Increasing the overall quantity and quality of health workers incurs substantial costs (such as investments in facilities, teaching staff, and materials. Low-income countries may not be able to afford the burden of additional education and training expenses.  
➤ Health worker education could be conducted as a business if high numbers of health workers are trained to a standard that enables them to work abroad and their home countries are able to rely on remittances (for example, the Philippines) |
| **MONITORING & EVALUATION** | |
| ➤ The currently available evidence is very limited and restricted to one high-income country | ➤ All changes in the pre-licensure education of health workers that are intended to improve the supply of health workers in low- and middle-income countries should be rigorously monitored and evaluated since evidence of their effects is lacking |

*Judgements made by the authors of this summary, not necessarily those of the review authors, based on the findings of the review and consultation with researchers and policymakers in low- and middle-income countries. For additional details about how these judgements were made see: [http://www.support-collaboration.org/summaries/methods.htm](http://www.support-collaboration.org/summaries/methods.htm)*
Additional information

Related literature


Wilson NW, Couper I, de Vries E, Reid S, Fish T, Marais BJ. A critical review of interventions to redress the inequitable distribution of medical professionals to rural and remote areas. Rural Remote Health 2009;9:1060.


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Peter Steinmann, Swiss Tropical and Public Health Institute, Switzerland

Conflict of interest
None declared. For details, see: www.support-collaboration.org/summaries/coi.htm

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All Summaries: evidence-informed health policy, evidence-based, systematic review, health systems research, health care, low- and middle-income countries, developing countries, primary health care, education, retention, enrolment, health worker, minority, mentoring.