



August 2016 – SUPPORT Summary of a systematic review

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 initial health professional training (sometimes referred to as pre-licensure training) and reduce the number of pre-graduation drop-outs. Ways to achieve this include interventions to increase the capacity of health professional training institutions; reduce the loss of students (and increase the likelihood that students will graduate); or increase the recruitment of students from other countries into health professional training institutions. Minority academic advisory programmes that include academic, personal, financial and vocational advising, skills building, mentorships, supplementary training, and annual evaluations are an approach to achieving this amongst students from minority groups.

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 into health professional training institutions.**
- **Academic advising programs for minority groups may**
 - Increase the number of minority students enrolled in health sciences
 - Slightly increase retention through to graduation
 - Decrease differences in retention levels through to graduation between minority and non-minority students in the health sciences
- **No studies were found of the effects of other pre-licensure measures to increase 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-income countries

X 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:

Pariyo GW, Kiwanuka SN, Rutebemberwa E, et al. Effects of changes in the pre-licensure education of health workers on health-worker supply. Cochrane Database of Systematic Reviews 2009, Issue 2. Art. No.: CD007018.

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 was an international project to support the use of policy relevant reviews and trials to inform decisions about maternal and child health in low- and middle-income countries, funded by the European Commission (FP6) and the Canadian Institutes of Health Research.

Glossary of terms used in this report:
www.supportsummaries.org/glossary-of-terms

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 healthcare services and attaining health-related objectives. Strategies to increase the number of health professional students and to 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-income countries. The methods used to assess the reliability of the review and to make judgements about its relevance are described here: www.supportsummaries.org/how-support-summaries-are-prepared/

Knowing what's not known is important

A reliable review might not find any studies from low-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.

A lack of evidence does not mean a lack of effects. It means the effects are uncertain. When there is a lack of evidence, consideration should be given to monitoring and evaluating the effects of the intervention, if it is used.

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

Types of	What the review authors searched for	What the review authors found
Study designs & Interventions	Randomised trials, controlled before-after studies and interrupted time series studies of interventions that could increase the capacity of health professional training institutions; reduce the loss of students (and increase the likelihood that students will graduate); or increase the recruitment of students from other countries into health professional training institutions	2 controlled before-after studies of minority academic advising programmes consisting of academic, personal, financial and vocational advice, skills building, mentorships, supplementary training and annual evaluations
Participants	Health professional students prior to licensure	2 studies among minority groups and general health professional students
Settings	No restrictions	2 studies from the USA
Outcomes	Increased numbers of health workers ultimately available for recruitment into the health workforce, improved population-to-health professional ratios	2 studies of the numbers of health workers ultimately available for recruitment into the health workforce

Date of most recent search: February 2008

Limitations: This is a well-conducted systematic review with only minor limitations.

Summary of findings

Two studies conducted among students at health professional training institutions in the USA were identified. An academic advising program for minority groups was implemented in two institutions, and changes in the levels of enrolment for the minority group and retention to graduation rates were measured.

Academic advising programmes for minority groups may:

- Increase the number of health sciences students enrolled from the minority group. The certainty of this evidence is low.
- Slightly increase retention to graduation. The certainty of this evidence is low.
- Decrease the difference in retention levels to graduation between the minority group and those in other population groups in the USA. The certainty of this evidence is low.

The effects of other pre-licensure measures to increase health worker supply in low-income countries are uncertain. No studies were found that evaluated pre-licensure measures in low-income countries.

About the certainty of the evidence (GRADE) *



High: This research provides a very good indication of the likely effect. The likelihood that the effect will be substantially different† is low.



Moderate: This research provides a good indication of the likely effect. The likelihood that the effect will be substantially different† is moderate.



Low: This research provides some indication of the likely effect. However, the likelihood that it will be substantially different† is high.



Very low: This research does not provide a reliable indication of the likely effect. The likelihood that the effect will be substantially different† is very high.

* This is sometimes referred to as 'quality of evidence' or 'confidence in the estimate'.

† Substantially different = a large enough difference that it might affect a decision

See last page for more information.

Minority academic advising programs		
People	Students (minority groups and general) in health professional training institutions	
Settings	Health professional training institutions, USA	
Intervention	Minority academic advising programs (personal, financial and vocational advice; skills building; mentorships; supplementary training; and annual evaluations)	
Comparison	Pre-intervention minority students and non-minority students	
Outcomes	Impact	Certainty of the evidence (GRADE)
Increased numbers of health workers ultimately available for recruitment into the health workforce	<p>One study found a 45% (Male: 48%, Female: 43%) relative increase in the total number of minority group allied health sciences students enrolled. Retention to graduation of minority group students increased from 72% to 83% (p=0.051)</p> <p>The relative difference in retention to graduation between minority and non-minority groups was reduced from 14% to 2.5% (p<0.0002). Another study found that the percentage of minority students retained to graduation increased by 5.2% (p>0.05), and the fraction of minority group students increased by 11%.</p>	 Low
p: p-value; GRADE: GRADE Working Group grades of evidence (see above and last page)		

Relevance of the review for low-income countries

→ Findings	▷ Interpretation*
APPLICABILITY	
→ All included studies were conducted in high-income countries. No relevant evidence from low-income countries was identified.	<p>▷ <i>The challenges faced in healthcare 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).</i></p> <p>▷ <i>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.</i></p>
EQUITY	
→ The included studies focused on equity between racial groups in a high-income country.	<p>▷ <i>Similar interventions (such as the promotion of minorities, marginalised populations or other subgroups within the society) are likely to have positive effects on equity, irrespective of the context.</i></p> <p>▷ <i>Interventions focusing solely on increasing absolute numbers of health workers will probably not have a notable effect on equity irrespective of the context.</i></p>
ECONOMIC CONSIDERATIONS	
→ The review did not provide information on costs or cost-effectiveness.	<p>▷ <i>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.</i></p> <p>▷ <i>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.</i></p> <p>▷ <i>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).</i></p>
MONITORING & EVALUATION	
→ The currently available evidence is very limited and restricted to one high-income country.	<p>▷ <i>All changes in the pre-licensure education of health workers that are intended to improve the supply of health workers in low-income countries should be rigorously monitored and evaluated since evidence of their effects is lacking.</i></p>

*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-income countries. For additional details about how these judgements were made see: www.supportsummaries.org/methods

Additional information

Related literature

Grobler L, Marais BJ, Mabunda S. Interventions for increasing the proportion of health professionals practising in rural and other underserved areas. *Cochrane Database of Systematic Reviews* 2015, Issue 6. Art. No.: CD005314.

Kessel RA. The A.M.A and the supply of physicians. *Law and Contemporary Problems* 1970; 35:267–83.

World Health Organization. *World Health Report*. World Health Organization 2006.

Wilson NW, Couper I, de Vries E, et al. A critical review of interventions to redress the inequitable distribution of medical professionals to rural and remote areas. *Rural Remote Health* 2009 ;9:1060.

Wyss K. An approach to classifying human resources constraints to attaining health-related Millennium Development Goals. *Human Resources for Health* 2004; 2:1–11.

This summary was prepared by

Peter Steinmann, Swiss Tropical and Public Health Institute, Switzerland.

Conflict of interest

None declared. For details, see: www.supportsummaries.org/coi

Acknowledgements

This summary has been peer reviewed by: Ben Marais, George Pariyo, Simon Goudie, and Hanna Bergman.

This review should be cited as

Pariyo GW, Kiwanuka SN, Rutebemberwa E, et al. Effects of changes in the pre-licensure education of health workers on health-worker supply. *Cochrane Database of Systematic Reviews* 2009, Issue 2. Art. No.: CD007018.

The summary should be cited as

Steinmann P. Do changes in the pre-licensure education of health workers impact on the supply of health workers? A SUPPORT Summary of a systematic review. August 2016. www.supportsummaries.org

About certainty of the evidence (GRADE)

The “certainty of the evidence” is an assessment of how good an indication the research provides of the likely effect; i.e. the likelihood that the effect will be substantially different from what the research found. By “substantially different” we mean a large enough difference that it might affect a decision. These judgements are made using the GRADE system, and are provided for each outcome. The judgements are based on the study design (randomised trials versus observational studies), factors that reduce the certainty (risk of bias, inconsistency, indirectness, imprecision, and publication bias) and factors that increase the certainty (a large effect, a dose response relationship, and plausible confounding). For each outcome, the certainty of the evidence is rated as high, moderate, low or very low using the definitions on page 3.

For more information about GRADE: www.supportsummaries.org/grade

SUPPORT collaborators:

The Cochrane Effective Practice and Organisation of Care Group (EPOC) is part of the [Cochrane Collaboration](http://www.cochrane.org). The Norwegian EPOC satellite supports the production of Cochrane reviews relevant to health systems in low- and middle-income countries. www.epocoslo.cochrane.org

The Evidence-Informed Policy Network (EVIPONet) is an initiative to promote the use of health research in policymaking in low- and middle-income countries. www.evipnet.org

The Alliance for Health Policy and Systems Research (HPSR) is an international collaboration that promotes the generation and use of health policy and systems research in low- and middle-income countries. www.who.int/alliance-hpsr

Norad, the Norwegian Agency for Development Cooperation, supports the Norwegian EPOC satellite and the production of SUPPORT Summaries. www.norad.no

The Effective Health Care Research Consortium is an international partnership that prepares Cochrane reviews relevant to low-income countries. www.evidence4health.org

To receive e-mail notices of new SUPPORT summaries or provide feedback on this summary, go to: www.supportsummaries.org/contact