

To assess the effect of streamlined educational pathways, or ladder programmes, for the advancement of practicing health professionals, in both undergraduate and postgraduate programmes, on the improvement of the quantity, quality, and relevance of health professionals.

### 3.0 Review Question

For the purposes of this literature review, the population, intervention, comparators and outcomes (PICO) framework to inform the review objectives are presented below:

POPULATION	INTERVENTION	COMPARISON	OUTCOME
<ul style="list-style-type: none"> <li>• <b>Health Science Educational Programs for:</b> <ul style="list-style-type: none"> <li>• Medical Doctors including PH doctors</li> <li>• Nursing Professionals including PH nurses</li> <li>• Midwifery Professionals including PH midwives</li> <li>• Dentists</li> <li>• Pharmacists</li> </ul> </li> <li>• <b>Health Science Students including:</b> <ul style="list-style-type: none"> <li>• Medical students</li> <li>• Nursing students</li> <li>• Premedical students</li> <li>• Midwifery students</li> <li>• Residents</li> </ul> </li> <li>• <b>Health Professionals</b> <ul style="list-style-type: none"> <li>• Doctors/physicians</li> <li>• Nurses/nursing staff</li> <li>• Midwives</li> <li>• Dentists/dental staff</li> <li>• Pharmacists</li> </ul> </li> <li>• <b>Paramedical practitioners</b></li> </ul>	Streamlined educational pathways and/or ladder programmes and /or ladder curriculum and /or ladder education and/or ladder systems and/or clinical ladders and/or career advancement programs and/or career development programs	No streamlined educational pathways and/or ladder programmes and /or ladder curriculum and /or ladder education and/or ladder systems and/or clinical ladders and/or career advancement programs and/or career development programs	Quantity, quality and relevance of health professionals

## 4.0 Evidence gathering and study selection

### 4.1 Evidence gathering

The evidence gathering approach has four components:

#### 4.1.1 Searching databases

The databases in the table below have been searched with a pre-determined strategy.

TOPIC/FIELD	DATABASE
<b>Medicine and Health Sciences</b>	PubMed, Campbell Library, Cochrane Library, Health Systems Evidence, Global Index Medicus
<b>Education</b>	ERIC
<b>Social Sciences</b>	Social Science databases SSRN
<b>Regional databases</b>	African Index Medicus, Australasian Medical Index, Index Medicus for Eastern Mediterranean Region, IndMED, KoreaMed, LILACS, IMSEAR, Panteleimon, WPRIM, British Education Index, Research and Development Resource Base (RDRB)
<b>Grey Literature databases</b>	IGLE, New York Academy of Medicine Grey Lit site, FADE Library, HMIC, INTUTE, Medical Teacher database, DATAD, International Journal of Pharmacy Education, Biomed Central
<b>Local databases</b>	HERDIN, UP Manila Integrated Library System and Research Database, UST Miguel de Bienvenides Library, De La Salle University Library, Ateneo de Manila Library, Siliman University Library, Ateneo de Zamboanga Library, Xavier University Library, San Carlos University Library

#### 4.1.2 Hand searching

The following journals, websites and resources have been hand-searched for relevant articles:

RESOURCES THAT WILL BE SEARCHED BY HAND
<b>Journal of Nursing Administration</b>
<b>Journal of Continuing Education in Nursing</b>
<b>Journal for Nurses in Staff Development</b>
<b>Nursing Management</b>
<b>WHO's Library Database (WHOLIS)</b>
<b>Id Bank</b>
<b>Tayag JG, Clavel L, editors. Bringing Health to Rural Communities, Innovations of the U.P. Manila School of Health Sciences. Manila: University of the Philippines Manila; 2011.</b>

#### 4.1.3 Expert network consultations

A network of health professionals' education experts will be consulted by email to identify additional grey literature or research that has not been found through the above processes. The following experts and networks will be contacted.

EXPERTS AND NETWORKS WILL BE CONTACTED REGARDING ADDITIONAL ARTICLES

#### 4.1.4 Reference searches

Bibliographies of those papers that match the eligibility criteria below were searched by hand to identify any further, relevant references, which were subjected to the same screening and selection process.

#### 4.2 Eligibility criteria

After gathering the evidence, the following eligibility criteria was applied to the results and all identified references screened independently by two reviewers (ML,VC) using a three-stage approach to reviewing the title, abstract and full text.

##### 4.2.1 Types of studies:

All types of evaluative study designs are eligible for inclusion, including grey literature. Studies were not selected on methodological quality.

##### 4.2.2 Types of participants:

Participants in this study are:

- **Health Science Educational Programs for:**
  - Medical Doctors including Public Health doctors
  - Nursing Professionals including Public Health nurses
  - Midwifery Professionals including Public Health midwives
  - Dentists
  - Pharmacists
- **Health Science Students including:**
  - Medical students
  - Nursing students
  - Premedical students
  - Midwifery students
  - Residents
- **Health Professionals**
  - Medical Doctors - both Generalist and Specialist Practitioners, and Public Health Doctors
  - Nursing Professionals- both Generalist and specialist practitioners, including nurse practitioners and Public Health Nurses
  - Midwifery Professionals, including Public Health Midwives
  - Dentists
  - Pharmacists
- **Paramedical practitioners as defined in the ISCO-08 minor group 224 and Mullan and Frehywot, 2007; WHO, 2010. Will also include The Mid-level Cadres like Assistant medical officers, Clinical officers, Health Assistants, Health Officers, Medical Assistants, Nurse Clinicians, Physician Assistants.**

##### 4.2.3 Types of intervention:

Streamlined educational pathways and/or ladder programmes and /or ladder curriculum and /or ladder education and/or ladder systems and/or clinical ladders and/or career advancement programs and/or career development programs

##### 4.2.4 Types of outcome measures:

The primary outcomes of interest are the quantity, quality and relevance of practicing health professionals. These are defined by a number of measurable outcomes found in the Outcomes Framework document (See Appendix D). Secondary outcomes include values and preferences, costs and benefits, harms and all unintended effects of the intervention are also of critical importance and will be eligible. Studies that include other outcomes should not be excluded at this stage in the evidence retrieval.

#### 4.3 Exclusion criteria

Editorials, newspaper articles and other forms of popular media were excluded. Failure to meet any one of the above inclusion criteria resulted in exclusion from the review and any apparent discrepancies during the selection process were resolved by a third, independent reviewer. The number of excluded studies was recorded at each stage.

## 5.0 Assessment of risk of bias and data extraction

Following final selection, reviewers extracted required data from each paper, using the predefined evidence summary templates. The Descriptive Evidence Table is attached in Appendix B. Data were collected regarding the reasons for exclusion, characteristics of included studies, participants, interventions (including comparators) and outcomes. The final decision for inclusion or exclusion will be made by a team consisting of the WHO Secretariat, methodologist and researchers conducting the review. Any potential disagreement will be recorded and resolved by further discussion.

Risk of bias across studies will be assessed using the approach outlined by the Grading of Recommendations Assessment Development and Evaluation (GRADE) working group. Any disagreements will be recorded and resolved by involvement of an additional reviewer.

## 6.0 Data synthesis

The availability of appropriate data and resources to conduct a meta-analysis was considered, where feasible.

## 7.0 Dissemination

A final set of tables including a GRADE Evidence Table and Descriptive Evidence Table was produced and submitted to the WHO Secretariat as stipulated in the Procedures for the Retrieval of Evidence and Summary of Evidence. In addition, a manuscript will be submitted to peer-reviewed journals for publication (a more specific dissemination proposal can go here as well).

## 8.0 Resource implications

The project lead worked closely with the WHO Secretariat to define the scope and methods of the review and facilitate access to unpublished literature, supporting translation of foreign language literature where necessary. Milestones and timescales are outlined below:

<b>MILESTONES</b>	<b>TIMESCALE</b>
<b>Evidence retrieval protocol developed</b>	4th week of September
<b>Identifying and retrieving the evidence and conduct of literature review</b>	4th week of September – 3rd week of November
<b>Conduct of hand searching</b>	4th week of November
<b>Summarize the evidence Develop Descriptive Evidence Table</b>	2nd week of October – 4th week of November
<b>Develop GRADE Evidence Table</b>	
<b>Submit Descriptive Evidence Table</b>	November 30, 2011
<b>Submit GRADE Evidence Table to the WHO Secretariat</b>	
<b>Upload PDFs of articles to FTP site</b>	1 <sup>st</sup> week of December

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## SUMMARY OF DATABASES AND RESOURCES SEARCHED AND CITATIONS YIELDED

DATABASE	CITATIONS	TITLE SEARCH	ABSTRACT SEARCH	FULL TEXT SEARCH
<b>Health</b>				
PubMed	3,386	97	19	15 (retrieved) 13 (relevant)
Campbell Library	0	0	0	0
Cochrane Library	17	1	0	0
Health Systems Evidence	1,798 *only 50 articles were displayed	0	0	0
Global Index Medicus	0	0	0	0
<b>Education</b>				
ERIC	4,801	17	4	4 (retrieved) 1 (relevant)
<b>Social Sciences</b>				
Social Science databases SSRN	0	0	0	0

DATABASE	CITATIONS	TITLE SEARCH	ABSTRACT SEARCH	FULL TEXT SEARCH
<b>Regional Databases</b>				
African Index Medicus	0	0	0	0
Australasian Medical Index	0	0	0	0
Index Medicus for Eastern Mediterranean Region	0	0	0	0
IndMED	702 *only 500 articles were displayed	1	0	0
KoreaMed	0	0	0	0
LILACS	10	1	0	0
IMSEAR	876	2	0	0
Panteleimon	0	0	0	0
WPRIM	0	0	0	0
British Education Index	0	0	0	0
Research and Development Resource Base (RDRB)	0	0	0	0
<b>Grey Literature databases</b>				
OPENSIGLE	2	1	1	1 (relevant)
New York Academy of Medicine Grey Lit site	0	0	0	0
FADE Library	1	0	0	0
HMIC	3	1	1	1 (retrieved) 0 (relevant)
INTUTE	64	0	0	0
Medical Teacher database	37	0	0	0
DATAD	0	0	0	0
International Journal of Pharmacy Education	0	0	0	0
Biomed Central	3,967	1	0	0
<b>Local databases</b>				
HERDIN	0	0	0	0
UP Manila Integrated Library System and Research Database	0	0	0	0
UST Miguel de Bienvenides Library	29	0	0	0

## ANNEX 8

DATABASE	CITATIONS	TITLE SEARCH	ABSTRACT SEARCH	FULL TEXT SEARCH
De La Salle University Library	27	0	0	0
Ateneo de Manila Library	0	0	0	0
Silliman University Library	0	0	0	0
Ateneo de Zamboanga Library	0	0	0	0
Xavier University Library	0	0	0	0
San Carlos University Library	0	0	0	0
<b>Handsearch</b>				
Journal of Nursing Administration	43	10	9	6 (retrieved) 6 (relevant) 4 (same as PubMed articles) 2 (added to descriptive evidence table)
Journal of Continuing Education in Nursing	0	0	0	0
Journal for Nurses in Staff Development	33	6	4	1 (retrieved) 1 (relevant and same as PubMed article) 0 (added to descriptive evidence table)
Nursing Management	27	1	0	0
WHO's Library Database (WHOLIS)	0	0	0	0
World Bank	0	0	0	0
Book: Bringing Health to Rural Communities, Innovations of the U.P. Manila School of Health Sciences Tayag JG, Clavel L, editors.				8 (relevant)
PubMed Author Search *Search for authors of studies included in the Descriptive Evidence Table which appeared in the references of other studies more than once	276	6	2	2 (retrieved) 2 (relevant and same as PubMed articles) 0 (added to descriptive evidence table)
Handsearching bibliographies of relevant articles retrieved from the databases searched	32	7	7	7 (retrieved) 7 (relevant)



## SEARCH STRATEGIES FOR OTHER DATABASES

### HEALTH DATABASES

Campbell Library

<http://www.campbellcollaboration.org/library.php>

SEARCH CONCEPT	THESAURUS KEYWORDS	ALL TEXT WORDS
<b>Population</b>	<ul style="list-style-type: none"> <li>• Doctors</li> <li>• Physicians</li> <li>• Nurses</li> <li>• Nursing education</li> <li>• Midwifery</li> <li>• Dentists</li> <li>• Dentistry</li> <li>• Dental education</li> <li>• Pharmacy</li> <li>• Pharmaceutical education</li> <li>• Pharmacists</li> <li>• Medical education</li> <li>• Medical students</li> </ul>	<ul style="list-style-type: none"> <li>• Doctor</li> <li>• doctors</li> <li>• physician</li> <li>• physicians</li> <li>• nurse</li> <li>• nurses</li> <li>• nursing</li> <li>• Midwife</li> <li>• midwives</li> <li>• midwifery</li> <li>• Dentist</li> <li>• dentists</li> <li>• dental staff</li> <li>• Pharmacist</li> <li>• pharmacists</li> <li>• medical student</li> <li>• medical students</li> <li>• nursing student</li> <li>• nursing students</li> <li>• premedical student</li> <li>• premedical students</li> <li>• midwifery student</li> <li>• midwifery students</li> <li>• resident</li> <li>• residents</li> <li>• midwifery education</li> <li>• dental education</li> <li>• pharmaceutical education</li> <li>• medical education</li> <li>• Nursing education</li> <li>• Midwifery education</li> <li>• Dentistry education</li> <li>• Pharmacy education</li> <li>• Medical internship</li> <li>• Medical residency</li> <li>• medical personnel</li> <li>• medical provider</li> <li>• medical providers</li> <li>• medical professional</li> <li>• medical professionals</li> <li>• nurse professional</li> <li>• nurse professionals</li> <li>• Physician Assistant</li> <li>• Allied health personnel</li> <li>• physician assistants</li> <li>• Physicians' Assistants</li> <li>• Physician's Assistants</li> <li>• Physicians Assistants</li> <li>• Physicians' Assistant</li> <li>• Physicians' Extenders</li> <li>• Physician Extender</li> <li>• Physician Extenders</li> <li>• Physician's Extenders</li> <li>• Physicians' Extender</li> <li>• Doctor's Assistants</li> <li>• Doctor Assistants</li> <li>• Doctor's Assistant</li> <li>• Medex</li> <li>• Feldshers</li> <li>• Feldsher</li> <li>• Assistant Medical Officers</li> <li>• Assistant Medical Officer</li> <li>• Clinical Officers</li> <li>• Clinical Officer</li> <li>• Health Assistants</li> <li>• Health Assistant</li> <li>• Health Officers</li> <li>• Health Officer</li> <li>• Medical Assistants</li> <li>• Medical Assistant</li> <li>• Nurse Clinicians</li> <li>• Nurse Clinician</li> <li>• Nurse Practitioners</li> <li>• Nurse Practitioner</li> <li>• non-physician clinician</li> <li>• non-physician clinicians</li> <li>• non physician clinician</li> <li>• non physician clinicians</li> </ul>
<b>Intervention</b>	<ul style="list-style-type: none"> <li>• Alternative education</li> <li>• Integrated curriculum</li> <li>• University curriculum</li> <li>• Higher education</li> </ul>	<ul style="list-style-type: none"> <li>• streamlined educational pathways</li> <li>• educational pathway</li> <li>• educational pathways</li> <li>• ladder program</li> <li>• ladder programs</li> <li>• ladder programme</li> <li>• ladder programmes</li> <li>• ladderized programs</li> <li>• ladderized programmes</li> <li>• ladder curriculum</li> <li>• ladder education</li> <li>• clinical ladder</li> <li>• clinical ladders</li> <li>• ladder system</li> <li>• ladder systems</li> <li>• career advancement program</li> <li>• career advancement programs</li> <li>• career advancement programme</li> <li>• career advancement programmes</li> <li>• career development program</li> <li>• career development programs</li> <li>• career development programme</li> <li>• career development programmes</li> </ul>

## Annex 9

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