

SUPPLEMENT 1. Ovid Medline search strategy for simulation-based education in low- and middle-income countries

#	Search string	# of results
1	exp Simulation Training/ or exp Educational Technology/ or Role Playing/	124710
2	((Simulat* or scenario*) adj5 (educat* or learn* or teach* or train* or practice or practise or instruct* or course or workshop)) or (SBE or SBME or simulation based)).mp.	27027
3	(roleplay or role play or manikin or mannikin or mannequin or part task trainer or partial task trainer or bench trainer or laparoscop* trainer or bench model or laparoscop* model).mp.	5828
4	Virtual reality/ or Augmented reality/ or Computer simulation/ or User computer interface/ or Clinical competence/ or Laparoscopy/ or Education, Distance/	436177
5	(virtual reality or augment* reality or interactive learning or learning interactive or acting or distance education or virtual education or remote education).mp.	190461
6	exp Simulation Training/ or (educat* or learn* or teach* or train* or practice or practise or instruct* or course or workshop or simulat*).mp.	3570147
7	(4 or 5) and 6	334290
8	Exp Emergency Treatment/ or exp Emergencies/	168376
9	6 and 8	33709
10	((resuscit* or emergency or trauma* or CPR or ALS or APLS or life support) adj5 (educat* or learn* or teach* or train* or practice or practise or instruct* or course or workshop or simulat*)).mp.	23958
11	1 or 2 or 3 or 7 or 9 or 10	497291
12	Developing Countries/ or Global Health/ or Health Equity/	128863
13	(Deprived Countries or Deprived Population or Deprived Populations or Developing Countries or Developing Country or Developing Economies or Developing Economy or Developing Nation or Developing Nations or Developing Population or Developing Populations or Developing World or LAMI Countries or LAMI Country or Less Developed Countries or Less Developed Country or Less Developed Economies or Less Developed Nation or Less Developed Nations or Less Developed World or Lesser Developed Countries or Lesser Developed Nations or LMIC or LMICS or Low GDP or Low GNP or Low Gross Domestic or Low Gross National or Low Income Countries or Low Income Country or Low Income Economies or Low Income Economy or Low Income Nations or Low Income Population or Low Income Populations or Lower GDP or lower gross domestic or Lower Income Countries or Lower Income Country or Lower Income Nations or Lower Income Population or Lower Income Populations or Middle Income Countries or Middle Income Country or Middle Income Economies or Middle Income Nation or Middle Income Nations or Middle Income Population or Middle Income Populations or Poor Countries or Poor Country or Poor Economies or Poor Economy or Poor Nation or Poor Nations or Poor Population or Poor Populations or poor world or Poorer Countries or Poorer Economies or Poorer Economy or Poorer Nations or Poorer Population or Poorer Populations or Third World or Transitional Countries or Transitional Country or Transitional Economies or Transitional Economy or Under Developed Countries or Under Developed Country or under developed nations or Under Developed World or Under Served Population or Under Served	129359

Supplement to: Robinson SJA, Ritchie AMA, Pacilli M, Nestel D, McLeod E, Nataraja RM. Simulation-based education of health workers in low- and middle-income countries: a systematic review. *Glob Health Sci Pract.* 2024;12(6):e2400187. <https://doi.org/10.9745/GHSP-D-24-000187>

	Populations or Underdeveloped Countries or Underdeveloped Country or underdeveloped economies or underdeveloped nations or underdeveloped population or Underdeveloped World or Underserved Countries or Underserved Nations or Underserved Population or Underserved Populations).ti,ab,kw.	
14	((Resource limited or Low resource) and (Countr* or Nation* or Setting* or Context* or Population* or Econom*)).ti,ab,kw.	13018
15	(Afghanistan or Albania or Algeria or American Samoa or Angola or Argentina or Armenia or Azerbaijan or Bangladesh or Belarus or Belize or Benin or Bhutan or Bolivia or (Bosnia and Herzegovina) or Botswana or Brazil or Bulgaria or Burkina Faso or Burundi or Cabo Verde or Cambodia or Cameroon or Central African Republic or Chad or China or Colombia or Comoros or Congo Dem Rep or Congo Rep or Costa Rica or C*te d*Ivoire or Cuba or Djibouti or Dominica or Dominican Republic or Ecuador or Egypt or Arab Republic of Egypt or Egypt Arab Rep or El Salvador or Equatorial Guinea or Eritrea or Eswatini or Ethiopia or Fiji or Gabon or Gambia or The Gambia or Republic of The Gambia or Georgia or Ghana or Grenada or Guatemala or Guinea or Guinea-Bissau or Guyana or Haiti or Honduras or India or Indonesia or Iran or Islamic Republic of Iran or Iraq or Jamaica or Jamaica or Jordan or Kazakhstan or Kenya or Kiribati or North Korea or Korea Dem People*s Rep or Kosovo or Kyrgyzstan or Kyrgyz Republic or Laos or Lao PDR or Lao People*s Democratic Republic Lebanon or Lesotho or Liberia or Libya or Madagascar or Malawi or Malaysia or Maldives or Mali or Marshall Islands or Mauritania or Mauritius or Mexico or Micronesia Fed Sts or Moldova or Mongolia or Montenegro or Morocco or Mozambique or Myanmar or Namibia or Nepal or Nicaragua or Niger or Nigeria or North Macedonia or Pakistan or Panama or Papua New Guinea or Paraguay or Peru or Philippines or Romania or Russia or Russian Federation or Rwanda or Samoa or (S*o Tom* and Principe) or Senegal or Serbia or Sierra Leone or Solomon Islands or Somalia or South Africa or South Sudan or Sri Lanka or St Lucia or (St Vincent and the Grenadines) or Sudan or Suriname or Syria or Syrian Arab Republic or Tajikistan or Tanzania or Thailand or Timor Leste or Togo or Tonga or Tunisia or Turkey or Turkmenistan or Tuvalu or Uganda or Ukraine or Uzbekistan or Vanuatu or Venezuela or Venezuela RB or Vietnam or (West Bank and Gaza) or Yemen or Republic of Yemen or Zambia or Zimbabwe).ti,ab,kw.	1008512
16	12 or 13 or 14 or 15	1143003
17	(health* or medical or surg*).mp. or exp Health Personnel/ or exp Health occupations/ or exp Students, Health occupations/ or exp Education, Professional/ or exp Health Care Sector/	8547884
18	11 and 16 and 17	11308
19	limit 18 to (english language and yr="2002 -Current")	9559

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SUPPLEMENT 2. List of included studies in a systematic review of simulation-based education programs in low- and middle-income countries evaluating at Level 4 of the Kirkpatrick model

Note: References are displayed in the alphabetical order of author names. The numbering of references matches that of the main text.

Author	Year	Country/Setting	Use of simulation-based education	Program Type	Learning Population/s	Simulation Modalities	Educational Focus	Statistically Significant Improvement in Results	Kirkpatrick Levels Evaluated (in Addition to Level 4)	Risk of bias / Quality Assessment Outcome
Afulani ⁵¹	2019	Ghana	Educational program	Standardized	Midwives, Doctors, Nurses	Role-play, Scenario-based, Mannequin, Synthetic PTT, Hybrid simulation	Neonatology; Obstetrics; Communication/ leadership/ team training	Yes	None	Good
Arabi ⁷⁶	2018	Sudan	Educational program	Standardized	Midwives	Scenario-based, Mannequin	Neonatology; Obstetrics	Yes	Level 3	Good
Arreola-Risa ⁷⁷	2004	Mexico	Educational program	Standardized	Unspecified health workers	Mannequin, Animal PTT	Acute/critical care	Partially	Level 3	Fair
Aziz ⁷⁸	2020	China	Educational program	Standardized	Doctors, Nurses	Scenario-based	Neonatology	No	Level 3	Fair
Baumgartner ⁷⁹	2021	Uganda	Educational program	Independent	Unspecified health workers	Mannequin	Neonatology; Obstetrics	NA	Level 3	Fair
Bellad ⁴⁸	2016	1. India 2. Kenya	Educational program	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology	Partially	None	Good
Bender ⁸⁰	2016	Kosovo	Educational program	Standardized	Doctors, Nurses	Scenario-based	Neonatology	Partially	None	Fair
Brathwaite ⁸¹	2020	Ghana	Educational program	Standardized	Doctors, Nurses, Midwives	Role-play, Scenario-based, Mannequin	Neonatology	Partially	Level 2; Level 3	Fair
Carlo ⁸²	2010	1. Argentina 2. Democratic Republic of Congo 3. Guatemala 4. India 5. Pakistan 6. Zambia	Educational program	Standardized	Traditional Birth Attendants, Nurses, Midwives, Doctors	Role-play, Scenario-based	Neonatology	Partially	Level 2; Level 3	Poor
Carvalho ⁸³	2019	Brazil	Educational program	Independent	Doctors, Nurses	Scenario-based, Mannequin	Other: Neurology	No	Level 3	Good
Chan ⁶³	2020	Kazakhstan	Broader intervention/initiative	Independent	Unspecified health workers	Role-play	Other: Cardiology	Partially	Level 3	Good

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Chang ⁸⁴	2019	Malawi	Broader intervention/initiative	Standardized	Doctors, Nurses, Midwives	Scenario-based	Neonatology; Obstetrics; Communication/ leadership/ team training	Partially	Level 3	Good
Charafeddine ⁸⁵	2016	Lebanon	Educational program	Standardized	Doctors, Nurses, Midwives, Allied health	Scenario-based, Mannequin	Neonatology	Partially	Level 1; Level 2	Fair
Charyeva ⁸⁶	2015	Nigeria	Educational program	Independent	Other	Synthetic PTT	Family planning	Partially	Level 3	Fair
Cioe-Pena ⁸⁷	2017	El Salvador	Broader intervention/initiative	Standardized	Doctors, Nurses	Unspecified simulation modality	Acute/critical care	No	Level 2; Level 3	Fair
Clark ⁸⁸	2012	Sierra Leone	Broader intervention/initiative	Standardized	Nurses	Role-play, Scenario-based	Acute/critical care	Yes	None	Fair
Crofts ⁵⁷	2015	Zimbabwe	Educational program	Standardized	Doctors, Nurses, Midwives, Allied health	Scenario-based, Mannequin, Synthetic PTT	Obstetrics	NA	Level 3	Good
Cummings ⁸⁹	2017	Uganda	Broader intervention/initiative	Independent	Unspecified health workers	Unspecified simulation modality	Other: Diagnosis of severe illness	No	Level 3	Fair
Das ⁹⁰	2022	Bangladesh	Educational program	Standardized	Nurses, Midwives, Allied health	Scenario-based, Mannequin, In-situ simulation	Neonatology; Communication/ leadership/ team training	NA	None	Poor
Das ⁹¹	2019	India	Broader intervention/initiative	Standardized	Doctors, Nurses, Nurse/midwives	Mannequin	Neonatology; Obstetrics	Partially	Level 1; Level 2; Level 3	Good
Dean ⁶¹	2021	1. Kenya 2. Tanzania 3. Uganda 4. Zimbabwe 3. Uganda 4. Zimbabwe	Educational program	Independent	Doctors	Synthetic PTT	Surgery (Ophthalmology)	Yes	Level 2; Level 3	Low

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De Melo ⁹²	2021	Brazil	Educational program	Independent	Doctors	Simulated/standardized patients/participants, Scenario-based, Synthetic PTT, Hybrid simulation, In-situ simulation	Obstetrics	No	Level 3	Fair
Dresang ⁵⁸	2015	1. Colombia 2. Guatemala 3. Honduras 4. Tanzania	Educational program	Standardized	Doctors, Nurses, Nurse/midwives, Other	Scenario-based, Mannequin	Obstetrics	Partially	Level 2; Level 3	Fair
Dumont ⁹³	2013	1. Senegal 2. Mali	Broader intervention/initiative	Standardized	Doctors, Midwives	Scenario-based	Obstetrics	Partially	Level 3	Some concerns
Egenberg ⁵⁶	2017	Tanzania	Educational program	Standardized	Nurses, Midwives, Doctors, Other	Role-play, Scenario-based, Mannequin, Synthetic PTT, Hybrid simulation	Neonatology; Obstetrics	Partially	Level 3	Good
Ellard ⁹⁴	2016	Tanzania	Educational program	Independent	Clinical Officers, Nurse/midwives	Unspecified simulation modality	Neonatology; Obstetrics; Communication/ leadership/ team training	No	Level 1; Level 2; Level 3	Fair
Evans ⁹⁵	2018	Uganda	Educational program	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology; Obstetrics; Communication/ leadership/ team training	Partially	Level 2; Level 3	Some concerns
Fikree ⁹⁶	2020	Ethiopia	Broader intervention/initiative	Independent	Unspecified health workers	Synthetic PTT	Family planning	Partially	Level 3	Poor

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Gandhi Bhatt ⁹⁷	2021	India	Educational program	Independent	Doctors	Unspecified simulation modality	Surgery (Ophthalmology)	Yes	Level 3	Good
Geldenhuys ⁹⁸	2020	South Africa	Broader intervention/initiative	Independent	Doctors	Unspecified simulation modality	Acute/critical care	Partially	Level 3	Poor
Gill ⁶⁷	2011	Zambia	Broader intervention/initiative	Independent	Traditional Birth Attendants	Mannequin	Neonatology	Partially	Level 3	Some concerns
Goudar ⁴⁰	2013	India	Broader intervention/initiative	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology	Partially	Level 3	Good
Goudar ⁹⁹	2012	India	Broader intervention/initiative	Standardized	Other, Nurse/midwives, Doctors	Scenario-based, Mannequin	Neonatology	Partially	Level 2; Level 3	Some concerns
Gueye ¹⁰⁰	2016	Senegal	Broader intervention/initiative	Independent	Nurses, Midwives, Unspecified health workers	Synthetic PTT	Family planning	NA	Level 3	Good
Hands ⁶⁴	2020	Sierra Leone	Broader intervention/initiative	Standardized	Doctors, Nurses	Role-play	Acute/critical care	NA	Level 3	Fair
Hashmi ¹⁰¹	2013	Pakistan	Broader intervention/initiative	Independent	Doctors	Unspecified simulation modality	Acute/critical care	Partially	None	Fair
Hawkins ¹⁰²	2021	Botswana	Broader intervention/initiative	Independent	Doctors, Nurses	Role-play	Family planning	NA	Level 1; Level 3	Poor
Houy ¹⁰³	2017	Cambodia	Educational program	Independent	Traditional Birth Attendants, Other, Midwives, Other	Mannequin	Neonatology; Obstetrics	Partially	None	Fair
Hu ¹⁰⁴	2016	China	Broader intervention/initiative	Independent	Unspecified health workers	In-situ simulation, Unspecified simulation modality	Obstetrics	Yes	Level 3	Fair
Innerdal ¹⁰⁵	2020	Mali	Educational program	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology	Partially	Level 3	Good
Irimu ⁶⁶	2012	Kenya	Broader intervention/initiative	Standardized	Unspecified health workers, Clinical Officers, Nurses, Doctors	Role-play, Scenario-based, Mannequin	Acute/critical care	NA	Level 3	Fair

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Jones-Konneh ¹⁰⁶	2017	Sierra Leone	Educational program	Independent	Unspecified health workers	Simulated/standardized patients/participants, Scenario-based	Infectious diseases	NA	None	Poor
Jorro-Baron ¹⁰⁷	2021	Argentina	Broader intervention/initiative	Independent	Unspecified health workers	Role-play	Communication/ leadership/ team training	No	Level 2; Level 3	Low
Joudeh ⁵⁵	2021	India	Educational program	Standardized	Nurse/midwives	Scenario-based, Mannequin, Synthetic PTT, Hybrid simulation, Unspecified simulation modality	Neonatology; Obstetrics; Communication/ leadership/ team training	Partially	Level 3	Fair
Kamath-Rayne ⁴⁴	2017	Honduras	Educational program	Standardized	Doctors, Nurses	Scenario-based, Mannequin	Neonatology	No	Level 3	Good
Kestler ¹⁰⁸	2020	Guatemala	Broader intervention/initiative	Standardized	Unspecified health workers	Scenario-based, Mannequin, Synthetic PTT, Hybrid simulation, Unspecified simulation modality	Neonatology; Obstetrics; Communication/ leadership/ team training	No	Level 3	Low
Matendo ¹⁰⁹	2011	Democratic Republic of Congo	Broader intervention/initiative	Standardized	Traditional Birth Attendants, Nurses, Midwives	Mannequin	Neonatology	Yes	None	Low
Michelangelo ¹¹⁰	2020	Argentina	Educational program	Independent	Nurse/midwives, Allied health	Role-play, Scenario-based, Unspecified simulation modality	Infectious diseases	Yes	Level 3	Good
Miller ¹¹¹	2012	Pakistan	Educational program	Independent	Traditional Birth Attendants	Role-play, Mannequin	Neonatology; Obstetrics	Yes	Level 2; Level 3	Good

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Mogilevkina ¹¹²	2022	Ukraine	Educational program	Standardized	Doctors, Midwives	Mannequin	Obstetrics	Partially	Level 3	Moderate
Molyneux ⁶⁵	2006	Malawi	Broader intervention/initiative	Standardized	Unspecified health workers	Role-play	Acute/critical care	NA	Level 3	Fair
Mould-Millman ¹¹³	2019	South Africa	Educational program	Independent	Other	In-situ simulation, Unspecified simulation modality	Acute/critical care	NA	Level 1; Level 2; Level 3	Fair
Mubeen ¹¹⁴	2021	Pakistan	Educational program	Standardized	Midwives	Scenario-based, Mannequin	Neonatology	No	Level 3	Good
Mugore ¹¹⁵	2016	Togo	Broader intervention/initiative	Independent	Nurses, Midwives	Synthetic PTT	Family planning	NA	Level 3	Poor
Mukhtar-Yola ¹¹⁶	2018	Nigeria	Broader intervention/initiative	Standardized	Doctors, Midwives	Scenario-based, Mannequin	Neonatology	NA	Level 3	Fair
Muthamia ¹¹⁷	2016	Kenya	Broader intervention/initiative	Independent	Unspecified health workers	Role-play, Synthetic PTT	Family planning	Partially	Level 3	Fair
Nataraja ¹¹⁸	2022	Myanmar	Educational program	Independent	Doctors	Scenario-based, Mannequin	Surgery	Yes	Level 1; Level 2; Level 3	Good
Nelissen ¹¹⁹	2017	Tanzania	Educational program	Standardized	Unspecified health workers, Nurse/midwives, Other	Scenario-based, Synthetic PTT	Obstetrics	Partially	Level 1; Level 2; Level 3	Good
Nevrekar ¹²⁰	2017	India	Educational program	Independent	Doctors	Unspecified simulation modality	Acute/critical care	No	Level 3	Fair
Nia ¹²¹	2008	Iran	Broader intervention/initiative	Independent	Unspecified health workers, Other	Mannequin, Animal PTT	Acute/critical care	Yes	Level 3	Low
O'Hare ¹²²	2006	Uganda	Broader intervention/initiative	Independent	Nurses	Mannequin	Neonatology	Partially	None	Fair
Olson ¹²³	2012	Indonesia	Educational program	Standardized	Doctors, Nurses, Midwives	Mannequin, Synthetic PTT	Neonatology	No	Level 2; Level 3	Moderate
Opiyo ¹²⁴	2008	Kenya	Educational program	Standardized	Nurses, Midwives	Mannequin	Neonatology	NA	Level 3	Some concerns
Paludo ⁶⁰	2021	Brazil	Educational program	Independent	Doctors	Laparoscopic bench trainer, Extended reality	Surgery (Urology)	Partially	Level 3	Fair

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Petroze ¹²⁵	2015	Rwanda	Educational program	Standardized	Doctors, Nurses	Unspecified simulation modality	Acute/critical care; Communication/ leadership/ team training	Partially	Level 3	Poor
Pleah ¹²⁶	2016	1. Benin 2. Chad 3. Côte d'Ivoire 4. Niger 5. Senegal 6. Togo	Educational program	Independent	Unspecified health workers	Synthetic PTT	Family planning	NA	Level 3	Poor
Puchalski Ritchie ¹²⁷	2015	Malawi	Broader intervention/initiative	Independent	Nurses, Clinical Officers	Role-play	Infectious diseases	No	None	Low
Rule ⁴³	2017	Kenya	Broader intervention/initiative	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology	Partially	None	Good
Schmidt ¹²⁸	2018	Laos	Educational program	Independent	Unspecified health workers	Mannequin	Neonatology	Partially	None	Good
Schnittger ¹²⁹	2011	Malawi	Educational program	Independent	Doctors, Nurses, Midwives, Clinical Officers, Other	Mannequin, Synthetic PTT, Animal PTT	Acute/critical care; Obstetrics	NA	None	Fair
Shahnazi ¹³⁰	2021	Iran	Broader intervention/initiative	Independent	Unspecified health workers	Role-play	Communication/ leadership/ team training	Yes	Level 2; Level 3	Moderate
Shikuku ¹³¹	2019	Kenya	Broader intervention/initiative	Independent	Midwives	Mannequin, Synthetic PTT	Obstetrics	Partially	Level 3	Moderate
Spitzer ¹³²	2014	Kenya	Educational program	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology; Obstetrics	Partially	Level 3	Fair
Størdal ⁴⁷	2020	Tanzania	Educational program	Standardized	Midwives	Scenario-based, Mannequin	Neonatology	Partially	Level 3	Fair
Sunguya ¹³³	2017	Tanzania	Educational program	Independent	Unspecified health workers	Role-play	Other: Nutrition	Yes	Level 2; Level 3	Some concerns
Tadesse ¹³⁴	2021	Ethiopia	Educational program	Standardized	Nurses, Midwives	Scenario-based	Neonatology	Partially	Level 1; Level 2; Level 3	Fair
Tilahun ¹³⁵	2017	Ethiopia	Broader intervention/initiative	Independent	Unspecified health workers	Synthetic PTT	Family planning	NA	Level 3	Fair
Tongprasert ¹³⁶	2010	Thailand	Educational program	Independent	Other	Other: Mixed PTT	Obstetrics	No	Level 3	Good

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Trevisanuto ¹³⁷	2015	Mozambique	Educational program	Standardized	Midwives	Scenario-based, Mannequin	Neonatology	No	Level 3	Good
Ullrich ¹³⁸	2020	Uganda	Educational program	Independent	Doctors	Cadaveric PTT	Surgery	No	Level 1; Level 2; Level 3	Good
Umunyana ⁴²	2020	Rwanda	Broader intervention/initiative	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology	Partially	Level 2; Level 3	Good
Van Den Broek ¹³⁹	2019	South Africa	Educational program	Standardized	Midwives, Unspecified health workers	Unspecified simulation modality	Neonatology; Obstetrics	No	Level 3	Some concerns
Van Heng ¹⁴⁰	2008	Cambodia	Educational program	Independent	Unspecified health workers	Animal PTT	Surgery	Yes	Level 3	Good
Varghese ¹⁴¹	2016	India	Educational program	Independent	Doctors, Nurses	Role-play, Scenario-based, Mannequin	Neonatology; Obstetrics	No	Level 1; Level 2; Level 3	Moderate
Vossius ⁴¹	2014	Tanzania	Educational program	Standardized	Unspecified health workers	Scenario-based, Mannequin	Neonatology	Yes	Level 1; Level 2; Level 3	Fair
Vukoja ⁶²	2021	1. Bosnia and Herzegovina 2. China 3. Dominican Republic 4. India 5. Ireland 6. Lebanon 7. Mexico 8. Pakistan 9. Philippines 10. Poland 11. Saudi Arabia 12. Serbia 13. Tanzania 14. Turkey 15. USA	Broader intervention/initiative	Independent	Doctors, Unspecified health workers	Telesimulation , Unspecified simulation modality	Acute/critical care	Yes	Level 3	Poor

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Walker ⁵²	2016	Mexico	Educational program	Standardized	Unspecified health workers	Scenario-based, Mannequin, Synthetic PTT, Hybrid simulation, In-situ simulation, Unspecified simulation modality	Neonatology; Obstetrics; Communication/ leadership/ team training	Partially	Level 3	Fair
Walker ⁵³	2020	1. Kenya 2. Uganda	Broader intervention/initiative	Standardized	Unspecified health workers	Scenario-based, Mannequin, Synthetic PTT, Hybrid simulation, In-situ simulation, Unspecified simulation modality	Neonatology; Obstetrics; Communication/ leadership/ team training	Yes	Level 3	Low
Walton ⁵⁴	2016	Guatemala	Broader intervention/initiative	Standardized	Unspecified health workers	Scenario-based, Mannequin, Synthetic PTT, Hybrid simulation, In-situ simulation, Unspecified simulation modality	Neonatology; Obstetrics	No	Level 3	Moderate
Wang ⁵⁹	2010	China	Educational program	Standardized	Doctors, Nurses	Scenario-based, Unspecified simulation modality	Acute/critical care	Partially	Level 3	Poor
Wendot ¹⁴²	2018	Kenya	Broader intervention/initiative	Independent	Doctors, Nurses, Clinical Officers	Role-play	Family planning	Partially	Level 3	Good

Supplement to: Robinson SJA, Ritchie AMA, Pacilli M, Nestel D, McLeod E, Nataraja RM. Simulation-based education of health workers in low- and middle-income countries: a systematic review. *Glob Health Sci Pract.* 2024;12(6):e2400187. <https://doi.org/10.9745/GHSP-D-24-000187>

Author	Year	Country/Setting	Use of simulation-based education	Program Type	Learning Population/s	Simulation Modalities	Educational Focus	Statistically Significant Improvement in Results	Kirkpatrick Levels Evaluated (in Addition to Level 4)	Risk of bias / Quality Assessment Outcome
Willcox ¹⁴³	2017	Ghana	Educational program	Independent	Midwives, Doctors, Nurses	Unspecified simulation modality	Neonatology; Obstetrics	Yes	None	Poor
Wrarmert ⁴⁵	2017	Nepal	Educational program	Standardized	Doctors, Midwives	Scenario-based, Mannequin	Neonatology	Partially	Level 3	Good
Xu ¹⁴⁴	2012	China	Educational program	Standardized	Unspecified health workers	Mannequin	Neonatology	Yes	Level 2	Fair
Xu ¹⁴⁵	2014	China	Educational program	Standardized	Midwives, Doctors	Mannequin	Neonatology	Partially	Level 2; Level 3	Good
Yao ¹⁴⁶	2018	China	Educational program	Standardized	Doctors, Nurses	Scenario-based	Acute/critical care	No	Level 2; Level 3	Fair
Zaman ¹⁴⁷	2008	Pakistan	Educational program	Standardized	Other	Role-play, Scenario-based	Communication/ leadership/ team training	Partially	Level 3	Low

^PTT = Part-task trainer

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