

# BMJ Open Protocol for scoping review on well-being among theatre nurses in large public hospitals in low-income and middle-income countries

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## ABSTRACT

**Introduction** Theatre nurses report higher levels of stress and burn-out due to the nature of their work environment. Workplace stress among nurses is associated with decreased well-being resulting in poor health outcomes for patients. However, evidence on well-being among nurses varies considerably, due to the multiple perspectives, definitions and focus on different aspects of well-being. Existing literature has not been consolidated to map out well-being concepts and instruments. In addition, due to limited research in low-income and middle-income countries, the most contextually relevant instruments for this context has not been identified. The aim of this scoping review is to map out existing literature on well-being, key concepts and instruments used to measure well-being among theatre nurses working in public hospitals in low-income and middle-income countries.

**Methods and analysis** A scoping review guided by the Joanna Briggs Institute's methodological approach will be used. PubMed, Scopus, Ebscohost, Web of Science, Emerald Insight, Informa World, Oxford Journals, ScienceDirect and Google scholar will be searched for literature published from 2000 to date. Reference lists of selected articles will also be reviewed. Two reviewers will conduct the screening of articles and data extraction independently and differences will be resolved through a discussion. Data analysis will be guided by both qualitative and quantitative methods.

The scoping review will take place from 1 May 2022 to 1 November 2022, completing the screening, data extraction and analysis phases.

**Ethics and dissemination** The study does not require ethical approval. Findings will be published and shared at events to raise awareness on the importance of monitoring well-being among theatre nurses as a strategy to improve surgical outcomes. The review could shed light on an instrument most suitable for low-income and middle-income contexts.

## INTRODUCTION

The interdependent relationship between well-being and quality of care among health professionals is widely acknowledged. Burn-out, a characteristic of poor well-being has been extensively reported among health professionals. A systematic review on

## Strengths and limitations of this study

- The identified databases host peer-reviewed articles, therefore, an extensive search will enable identification of the most relevant scientific evidence.
- A strategy to synthesise existing knowledge on well-being among theatre nurses in low-income and middle-income countries.
- A recognised strategy for mapping out research and knowledge gaps on well-being in the last two decades.
- The review will only include literature published since 2000 due to resource limitations.
- Only including texts in English language is a limitation of this scoping review.

burn-out among front-line primary health workers in low-income and middle-income countries reported high levels of burn-out among these workers<sup>1</sup> and similar findings were documented for a systematic review and meta analyses on burn-out among inpatient and outpatient healthcare providers in high-income countries.<sup>2</sup> Burn-out among health professionals negatively impacts patient care<sup>1</sup> and has been associated with medical errors.<sup>3</sup>

Work place stress has been singled out as a major cause of poor well-being among health professionals. Specific to nurses, decreased psychological well-being is associated with work place stress<sup>4 5</sup> and this is correlated with poor caring behaviours<sup>4</sup> that lead to unsatisfactory patient care and poor health outcomes.<sup>6</sup> There are variations in levels of stress experienced by nurses in different areas of care. In comparison to other departments, nurses in surgical wards report higher levels of stress and burn-out<sup>7</sup> due to the nature of their work environment. Working in the operating room requires high levels of overall cognitive functioning, physical endurance, emotional control and ability to handle exposure to other occupational risks.<sup>8 9</sup> This

pressure could have a significant impact on the well-being and quality of care among this category of personnel. For this review, theatre nurses are all qualified nurses registered with their professional body in the respective country, therefore, accountable for their practice while patients are in theatre. This includes scrub nurses, anaesthetic nurses, recovery nurses, operating room nurses and surgical nurses.

There is increasing attention to well-being among health professionals<sup>10</sup> due to impact on the level of care. Studies that explore well-being among nurses and impact on patient outcomes have predominantly been conducted in high-income countries with limited research in low-income and middle-income countries.<sup>11</sup> For instance, the first large scale study exploring the work environment, quality of care and aspects of well-being among nurses in South Africa was conducted in 2013.<sup>12</sup> Assessing and monitoring the health and well-being of health personnel is important<sup>13</sup> to ensure improved patient outcomes.<sup>14</sup> The importance and urgency of this exercise has increased with the current COVID-19 pandemic and the impact on nurses in low-income and middle-income countries.

There are various definitions of the concept of well-being due to multiple perspectives and philosophical frameworks that inform the perspectives.<sup>15</sup> As a result, it is acknowledged that well-being is a complex construct.<sup>16</sup> For instance, well-being is defined as ‘the pursuit of personal aspirations and the development and exercise of human capabilities, within a context of mutual recognition, equality and interdependence’.<sup>5 17</sup> This definition foregrounds the role of context in attaining well-being. Another view of well-being is that it is a state of overall contentment with one’s physical and mental health, self-esteem, sense of belonging, personal and economic security, and opportunities for self-determination and meaningful occupation.<sup>17 18</sup> The relationship between what people do and their experience of well-being is evident in this definition. In this review, the authors note that well-being, wellness and health, could be considered synonymous but, although the terms are related, they are distinct. Well-being and wellness are components of health,<sup>19</sup> as the WHO<sup>20</sup> definition of health states that health is a state of well-being in different aspects of the person. Wellness is considered freedom from illness and encompasses prevention of ill health<sup>19 21</sup> (for a more robust unpacking of the term wellness, see Kirkland, 2014).

Existing evidence on well-being varies considerably, due to the various perspectives and focus on different aspects of well-being. In turn, there is a variety of instruments used for measuring well-being. However, a review of literature or meta-analysis on well-being and various tools used to assess well-being has not been reported in the last decade. This limits comparison of findings across studies and growth in scholarship in the area. In addition, education on well-being and development of strategies to improve well-being among theatre nurses could be lagging behind or focused on one aspect while neglecting

others. The aim of this review is therefore to map out existing literature on well-being, key concepts and instruments used to measure well-being among theatre nurses working in public hospitals in low-income and middle-income countries.

## Objectives

1. To identify and compare concepts used to refer to well-being in literature on low-income and middle-income countries.
2. To establish how well-being among theatre nurses in large public hospitals in low-income and middle-income countries is measured.

## METHODS

A scoping review methodology will be used. This method is suitable as it is a type of review method that is used to map existing evidence, and to map and clarify key concepts within an area of research.<sup>22–24</sup> This review will be guided by the Joanna Briggs Institute’s (JBI) methodological approach to conducting scoping reviews and two reviewers will conduct the review.<sup>22</sup> This approach has been refined from the original work by Arksey and O’Malley,<sup>24</sup> providing a guide that is systematic, rigorous and transparent, as well as tools for use, such as the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow chart for scoping reviews.<sup>22</sup> As a result, the JBI approach has become the most widely recognised approach for this type of knowledge synthesis. The scoping review will take place from 1 May 2022 to 1 November 2022, completing the screening, data extraction and analysis phases.

## Refining the research question

The research question for this scoping review was developed using the PCC elements with ‘P’ denoting population, ‘C’, the concept and ‘C’, the context according to the JBI’s methodological approach to conducting scoping reviews,<sup>19</sup> as depicted in table 1.

The elements outlined above enabled the authors to define the scope and focus of this proposed scoping review and the following research question was developed.

How is well-being described and measured for theatre nurses in large public hospitals in low-income and middle-income countries?

**Table 1** PCC elements

PCC elements		
P	Population	Theatre nurses
C	Concept	Well-being and measuring tools/instruments used
C	Context	Large public hospitals in low-income and middle-income countries

## Inclusion criteria

The PCC elements mentioned above were used to design the selection criteria and frame the search for relevant evidence. In addition, the following parameters were also applied:

- ▶ Types of evidence: primary research studies that adopted qualitative, quantitative or mixed methodologies. Reviews of all types with or without meta-analysis will be included.
- ▶ Language: Only studies published in English will be included as the reviewers only have access to full-text articles published in English and are proficient in English.
- ▶ Publication date: Studies published in the period of January 2000 to date.

## Search strategy

The search strategy in this review will follow a three-step search strategy as recommended by the JBI.<sup>22</sup> The assistance of a librarian was sought to refine the search strategy and a complete initial search strategy for PubMed is attached (online supplemental appendix 1). The librarian also provided guidance on databases that were most likely to index articles relevant to the topic and the search technique. The Cochrane Database and the JBI Evidence Synthesis were searched to establish whether a review had been conducted or was currently underway on this topic and no evidence was found.

## Sources of evidence

Databases that will be searched are PubMed/Medline, Scopus, Ebscohost, Web of Science, Emerald Insight, InformaWorld, Oxford Journals, ScienceDirect and Google scholar. In addition, reference lists of selected articles will also be reviewed to identify studies that are relevant to answering the research question as recommended by Peters and colleagues.<sup>22</sup>

The following search strategy will be used and Boolean operators modified accordingly for each database:

((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR surgical nurses)) OR ("Operating Room Nursing"[Mesh]) OR ((operating room nurse OR operating room nurses))) AND (((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life") OR ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement OR measurements OR instrument OR instruments))) AND (((state hospital OR state hospitals OR government hospital OR government hospitals OR public hospital OR public hospitals OR national hospital OR national hospitals)) OR ("Hospitals, State"[Mesh])) AND (((("Developing Countries"[Mesh])

An extensive MeSH terms list for low-income and middle-income countries keyword (online supplemental appendix 2) was provided by the librarian, and this was copied and pasted into searches without altering terms.

Search results were saved on respective databases and emailed to the first author. Endnote will be used as the reference manager.

The reviewers have access to full-text articles through their affiliation with the University and the second author is a member of the Royal Council of Nursing, which offers support to members on literature searches. Each reviewer will independently search for evidence on specific databases; Reviewer 1 will search Ebscohost, Scopus, Web of Science and Google scholar. Reviewer 2 will search PubMed, Emerald Insight, InformaWorld, Oxford Journals and ScienceDirect. The identified articles will be imported to Endnote for archiving and to enable deletion of duplicates. The reviewers will also document their detailed search strategy and results for each database using an Excel spreadsheet that will be designed by the reviewers to ensure uniformity of recording searches. This spreadsheet will capture the search terms used, the date the search was conducted and the results retrieved.

## Study selection

The initial screening of all articles retrieved will be done by each reviewer independently and any discrepancies will be resolved through a discussion. The title and abstract will be screened using the inclusion criteria above to determine eligibility of articles and reasons for excluding articles at this stage, will be documented.

The reviewers will then independently source full-text articles and those without full-text access will be excluded. The full-text articles will be read by each reviewer independently and decisions on their inclusion or exclusion documented. Excluded articles will be reread by both reviewers to ensure agreement on their exclusion. The PRISMA flow diagram (online supplemental appendix 3)<sup>25</sup> will be used to succinctly present the search and screening process.

## Data extraction

A data extraction tool based on the JBI<sup>22</sup> data extraction template (online supplemental appendix 4) will be developed. The fields for this instrument will include aspects of the inclusion criteria and the following information:

- ▶ Author(s).
- ▶ Title.
- ▶ Year of publication.
- ▶ Language of publication.
- ▶ Concept.
- ▶ Study design.
- ▶ Context of study.
- ▶ Sample.
- ▶ Data collection instrument/tool. Studies that report on well-being or an aspect of well-being will be included, but studies that report exclusively on mental health will not be included as their focus will be narrow.
- ▶ Key findings that relate to the scoping review question, including types of evidence retrieved and therefore research gaps that exist.



The reviewers will work together to pilot the tool on a selection of five full-text articles. The next step will be for the reviewers to continue the data extraction process independently. The extracted data from each reviewer will be consolidated into a single summary and disagreements will be resolved by rereading the particular article together and discussing the extraction to reach a consensus. Other information that is deemed relevant for meeting the study objectives and strengthening description of findings will also be included in the results summary.

#### Risk of bias assessment

In alignment with the JBI approach, establishing the risk of bias or critical appraisal of evidence is not required for a scoping review<sup>22</sup> therefore will not be conducted for this study.

#### Risk of searching bias

All studies selected will be those published in English language, therefore introducing a searching bias. The reviewers acknowledge that other studies written in other languages especially those published in low-income countries will not be included, because the reviewers are not competent in these languages.

#### Data analysis

The extracted data will be collated and described in a narrative summary in preparation for reporting the findings. Quantitative data extracted will be analysed using descriptive statistics namely arithmetic averages and possibly cross-tabulation if comparisons are needed. The summary will outline concepts used to refer to well-being, highlighting differences and similarities between them. In alignment with the objectives, a description of instruments used to measure well-being will be provided and their suitability for use in low-income and middle-income contexts discussed. The analysis will be a summary as the aim of a scoping review is to map out existing evidence, and not to necessarily assess the quality of the evidence or to synthesise findings.<sup>22 24</sup>

#### Presentation of findings

A table will be used to present the findings as capturing data in the table will enable comparison of concepts and instruments. A table, such as [table 2](#), will be used to capture information on the instruments.

In addition, information on the design of the instruments and the psychometric validation of the tool will be reported on.

**Table 2** Presentation of instruments

Name	Format	No of items	Domains/ aspects assessed	Where it was used

#### Ethics and dissemination

The study does not require ethical approval. The findings of this review will be published in peer-reviewed journals and presented at academic activities targeted at nurses to raise awareness on the importance of well-being among theatre nurses and impact on outcomes. The review could shed light on instruments that are most suitable for low-middle income contexts.

#### Patient and public involvement

No patient involved.

The public will not be involved in the planning, conducting or dissemination of the findings of the proposed review as the review maps out evidence intended for nursing personnel.

## DISCUSSION

### Implications

The findings of this scoping review will inform researchers and other decision makers on the concept of well-being among theatre nurses and aspects of well-being that are of concern could be identified. This information could be used by decision-makers to develop proactive plans to support theatre nurses' well-being. The findings could also be drawn on when planning curriculum and continued professional development activities for theatre nursing staff and students.

The findings on the instruments used to measure well-being could shed light on the range of available instruments, therefore, enabling researchers to identify instruments that are most suitable for low-income and middle-income countries. The discussion could explore the appropriateness of such instruments for contexts where there is great diversity in the population, therefore the nursing personnel.

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**Patient consent for publication** Not applicable.

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# REFERENCES

- 1 Dugani S, Afari H, Hirschhorn LR, *et al*. Prevalence and factors associated with burnout among frontline primary health care providers in low- and middle-income countries: a systematic review. *Gates Open Res* 2018;2:4.
- 2 Roberts DL, Cannon KJ, Wellik KE, *et al*. Burnout in inpatient-based versus outpatient-based physicians: a systematic review and meta-analysis. *J Hosp Med* 2013;8:653–64.
- 3 Shanafelt TD, Balch CM, Bechamps G, *et al*. Burnout and medical errors among American surgeons. *Ann Surg* 2010;251:995–1000.
- 4 Foster K, Roche M, Giandinoto J-A, *et al*. Workplace stressors, psychological well-being, resilience, and caring behaviours of mental health nurses: a descriptive correlational study. *Int J Ment Health Nurs* 2020;29:56–68.
- 5 Roche M, Duffield C, White E. Factors in the practice environment of nurses working in inpatient mental health: a partial least squares path modeling approach. *Int J Nurs Stud* 2011;48:1475–86.
- 6 Sarafis P, Rousaki E, Tsounis A, *et al*. The impact of occupational stress on nurses' caring behaviors and their health related quality of life. *BMC Nurs* 2016;15:56.
- 7 Zahiri M, Mahboubi M, Mohammadi M, *et al*. Burnout among nurses working in surgery and internal wards at selected hospitals of Ahvaz. *Tech J Engin App Sci* 2014;4:79–84.
- 8 Akansel N, Akansel M, Yanik H. Association of organisational stress with fatigue in operating room nurses. *Int J Caring Sci* 2019;12:627.
- 9 Soltanmoradi Y, Ansari A, Heidari S, *et al*. Occupational stress among operating room nurses of hospitals affiliated to Kerman universities of medical sciences, Iran (2016): a cross-sectional study. *JOHE* 2017;6:225–33.
- 10 Pawar BS. Workplace spirituality and employee well-being: an empirical examination. In: *Employee relations*. , 2016: 38, 975–94.
- 11 Nantsupawat A, Srisuphan W, Kunaviktikul W, *et al*. Impact of nurse work environment and staffing on hospital nurse and quality of care in Thailand. *J Nurs Scholarsh* 2011;43:426–32.
- 12 Coetzee SK, Kloppe HC, Ellis SM, *et al*. A tale of two systems--nurses practice environment, well being, perceived quality of care and patient safety in private and public hospitals in South Africa: a questionnaire survey. *Int J Nurs Stud* 2013;50:162–73.
- 13 Johari FS, Omar R. Exploring factors impacting on psychological well-being of health care workers. In: *International Journal of academic research in business and social sciences*. , 2019: 9, 10–6007.
- 14 Maben J, Peccei R, Adams M. *Exploring the relationship between patients' experiences of care and the influence of staff motivation, affect and well-being*. NIHR Service Delivery and Organisation Programme: Southampton, 2012.
- 15 Lambert L, Passmore H-A, Holder MD. Foundational frameworks of positive psychology: mapping well-being orientations. *Can Psychol* 2015;56:311–21.
- 16 Ryan RM, Deci EL. On happiness and human potentials: a review of research on hedonic and eudaimonic well-being. *Annu Rev Psychol* 2001;52:141–66.
- 17 Hay D, Clague M, Goldberg M. *Well-Being: a conceptual framework and three literature reviews*. Vancouver, BC: Social Planning and Research Council of BC, 1993.
- 18 Wilcock AA, van der Arend H, Darling K, *et al*. An exploratory study of people's perceptions and experiences of well being. *Br J Occup Ther* 1998;61:75–82.
- 19 Holds worth MA. Health, wellness and well being. In: *Revue interventions economiques*. 28, 2019.
- 20 World Health Organization. Constitution of who: principles, 2018. Available: [http://www.who.int/udel.idm.oclc.org/governance/eb/who\\_constitution\\_en.pdf](http://www.who.int/udel.idm.oclc.org/governance/eb/who_constitution_en.pdf)
- 21 Kirkland A. What is wellness now? *J Health Polit Policy Law* 2014;39:957–70.
- 22 Peters MDJ, Godfrey C, McInerney P. Chapter 11: Scoping Reviews (2020 version). In: Aromataris E, Munn Z, eds. *Joanna Briggs Institute Reviewer's Manual*. JBI, 2020. <https://reviewersmanual.joannabriggs.org/>
- 23 Munn Z, Peters MD, Stern C. Systematic review or scoping review? guidance for authors when choosing between a systematic or scoping review approach. *BMC Med Res Methodol* 2018;8:143.
- 24 Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol* 2005;8:19–32.
- 25 Moher D, Liberati A, Tetzlaff J, *et al*. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med* 2009;6:e1000097.

## Appendix 1

### PubMed – Initial Search

#33

Search: (((((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR ("Quality of Life"[Mesh])) AND (((state hospital OR state hospitals OR government hospital OR government hospitals OR public hospital OR public hospitals OR national hospital OR national hospitals)) OR ("Hospitals, State"[Mesh])) AND (((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR operating room nurses)))) AND (((("Developing Countries"[Mesh]) OR (Afghanistan OR Albania OR Algeria OR American Samoa OR Angola OR Armenia OR Azerbaijan OR Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR Burkina Faso OR Burundi OR Cabo Verde OR Cape Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR Costa Rica OR Côte d'Ivoire OR Cuba OR Djibouti OR Dominica OR Dominican Republic OR Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR Gambia OR Gaza OR Georgia OR Georgia Republic OR Ghana OR Grenada OR Grenadines OR Guatemala OR Guinea OR Guinea- Bissau OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR Honduras OR India OR Indonesia OR Iran OR Iraq OR Ivory Coast OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Democratic People's Republic of Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR Kyrgyzstan OR Lao PDR OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR Marshall Islands OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR Nicaragua OR Niger OR Nigeria OR Pakistan OR Palau OR Papua New Guinea OR Paraguay OR Peru OR Philippines OR Principe OR Romania OR Ruanda OR Rwanda OR Samoa OR Sao Tome 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 OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR Syrian Arab Republic OR Tajikistan OR Tadzhikistan OR Tajikistan OR Tadjhik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR Zimbabwe)) OR (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 OR Lower GDP OR lower gross domestic OR Lower Income OR Middle Income 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 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))

1,157 05:49:45

#32

Search: (((((((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR operating room nurses))) AND (((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement OR measurements OR instrument OR instruments)))) AND (((state hospital OR state hospitals OR government hospital OR government hospitals OR public hospital OR public hospitals OR national hospital OR national hospitals)) OR ("Hospitals, State"[Mesh])) AND (((("Developing Countries"[Mesh]) OR (Afghanistan OR Albania OR Algeria OR American Samoa OR Angola OR Armenia OR Azerbaijan OR Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR Burkina Faso OR Burundi OR Cabo Verde OR Cape Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR Costa Rica OR Côte d'Ivoire OR Cuba OR Djibouti OR Dominica OR Dominican Republic OR Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR Gambia OR Gaza OR Georgia OR Georgia Republic OR Ghana OR Grenada OR Grenadines OR Guatemala OR Guinea OR Guinea- Bissau OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR Honduras OR India OR Indonesia OR Iran OR Iraq OR Ivory Coast OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Democratic People's Republic of Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR Kyrgyzstan OR Lao PDR OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR Marshall Islands OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR Nicaragua OR Niger OR Nigeria OR Pakistan OR Palau OR Papua New Guinea OR Paraguay OR Peru OR Philippines OR Principe OR Romania OR Ruanda OR Rwanda OR Samoa OR Sao Tome 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 OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR Syrian Arab Republic OR Tajikistan OR Tadzhikistan OR Tajikistan OR Tadjhik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR Zimbabwe)) OR (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 OR Lower GDP OR lower gross domestic OR Lower Income OR Middle Income 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 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))

388 05:46:22

#31

Search: (((((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR operating room nurses))) AND (((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement OR measurements OR instrument OR instruments)))) AND (((state hospital OR state hospitals OR government hospital OR government hospitals OR public hospital OR public hospitals OR national hospital OR national hospitals)) OR ("Hospitals, State"[Mesh]))

1,116 05:45:12

#30

Search: ((state hospital OR state hospitals OR government hospital OR government hospitals OR public hospital OR public hospitals OR national hospital OR national hospitals)) OR ("Hospitals, State"[Mesh])

1,134,909 05:44:33

#29

Search: "Hospitals, State"[Mesh] Sort by: Most Recent

2,194 05:44:19

#28

Search: (state hospital OR state hospitals OR government hospital OR government hospitals OR public hospital OR public hospitals OR national hospital OR national hospitals)

1,134,909 05:43:57

#27

Search: (((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement OR measurements OR instrument OR instruments))

1,809,423 05:41:53

#26

Search: (tool OR tools OR measuring OR measurement OR measurements OR instrument OR instruments)



5,202,607 05:38:32

#25

Search: ((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR ("Quality of Life"[Mesh])

7,959,606 05:37:27

#24

Search: "Quality of Life"[Mesh] Sort by: Most Recent

209,127 05:37:15

#23

Search: (well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")

7,959,606 05:36:41

#22

Search: (((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR operating room nurses))

38,682 05:34:39

#21

Search: (operating room nurse OR operating room nurses)

5,112 05:34:29

#20

Search: "Operating Room Nursing"[Mesh] Sort by: Most Recent

6,069 05:34:01

#19

Search: (theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR surgical nurses)

32,743

## Appendix 2

### Low and Middle income countries (LMIC) search filters

#### PubMed can search on TW instead of all fields

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 OR Lower GDP OR lower gross domestic OR Lower Income OR Middle Income 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 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

OR

Afghanistan OR Albania OR Algeria OR American Samoa OR Angola OR Armenia OR Azerbaijan OR Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR Burkina Faso OR Burundi OR Cabo Verde OR Cape Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR Costa Rica OR Côte d'Ivoire OR Cuba OR Djibouti OR Dominica OR Dominican Republic OR Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR Gambia OR Gaza OR Georgia OR Georgia Republic OR Ghana OR Grenada OR Grenadines OR Guatemala OR Guinea OR Guinea-Bissau OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR Honduras OR India OR Indonesia OR Iran OR Iraq OR Ivory Coast OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Democratic People's Republic of Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR Kyrgyzstan OR Lao PDR OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR Marshall Islands OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR Nicaragua OR Niger OR Nigeria OR Pakistan OR Palau OR Papua New Guinea OR Paraguay OR Peru OR Philippines OR Principe OR Romania OR Ruanda OR Rwanda OR Samoa OR Sao Tome 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 OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR Syrian Arab Republic OR Tajikistan OR Tadzhikistan OR Tajikistan OR Tadjik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR

Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR Zimbabwe

## Scopus

### **Advanced search, select TITLE-ABS-KEY, and copy terms between the brackets ()**

TITLE-ABS-KEY "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" OR "Lower income" OR "Lower GDP" OR "Lower Gross Domestic" OR "Middle Income" 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" OR "Under Served" 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"

OR

TITLE-ABS-KEY Afghanistan OR Albania OR Algeria OR "American Samoa" OR Angola OR Armenia OR Azerbaijan OR Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR "Burkina Faso" OR Burundi OR "Cabo Verde" OR "Cape Verde" OR Cambodia OR Cameroon OR "Central African Republic" OR Chad OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR "Costa Rica" OR "Côte d'Ivoire" OR Cuba OR "Democratic People's Republic of Korea" OR Djibouti OR Dominica OR "Dominican Republic" OR Ecuador OR Egypt OR "El Salvador" OR Eritrea OR Ethiopia OR "Equatorial Guinea" OR Fiji OR Gabon OR Gambia OR Gaza OR "Georgia Republic" OR Georgia OR Ghana OR Grenada OR Grenadines OR Guatemala OR Guinea OR "Guinea Bissau" OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR Honduras OR India OR Indonesia OR Iran OR Iraq OR "Ivory Coast" OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR Kyrgyzstan OR "Lao PDR" OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR "Marshall Islands" OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR

Nicaragua OR Niger OR Nigeria OR Pakistan OR Palau OR Papua New Guinea OR Paraguay OR Peru OR Philippines OR Principe OR Romania OR Rwanda OR Ruanda OR Samoa OR "Sao Tome" 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" OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR "Syrian Arab Republic" OR Tajikistan OR Tadjikistan OR Tajikistan OR Tadjhik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR "West Bank" OR Yemen OR Zambia OR Zimbabwe

## Web of Science, Ebsco databases

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 OR Lower GDP OR lower gross domestic OR Lower Income OR Middle Income 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 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

Afghanistan OR Albania OR Algeria OR American Samoa OR Angola OR Armenia OR Azerbaijan OR Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR Burkina Faso OR Burundi OR Cabo Verde OR Cape Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR Costa Rica OR Côte d'Ivoire OR Cuba OR Democratic People's Republic of Korea OR Djibouti OR Dominica OR Dominican Republic OR Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR Gambia OR Gaza OR Georgia OR Georgia Republic OR Ghana OR Grenada OR Grenadines OR Guatemala OR Guinea OR Guinea Bissau OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR Honduras OR India OR Indonesia OR Iran OR Iraq OR Ivory Coast OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR Kyrgyzstan OR Lao PDR OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR Marshall Islands OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR Nicaragua OR Niger OR Nigeria OR Pakistan OR Palau OR Papua New Guinea OR Paraguay OR Peru OR Philippines OR Principe OR



Romania OR Rwanda OR Ruanda OR Samoa OR Sao Tome 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 OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR Syrian Arab Republic OR Tajikistan OR Tadjikistan OR Tajikistan OR Tadjik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR Zimbabwe

Web of Science: default to 'all databases' before starting search, filter date

Search results: exclude Medline

Mary Shelton

June 2019

Search filters adapted from: Developing Country / Low-Middle Income Searches, Public Health LibGuide, University of North Carolina, Chapel Hill

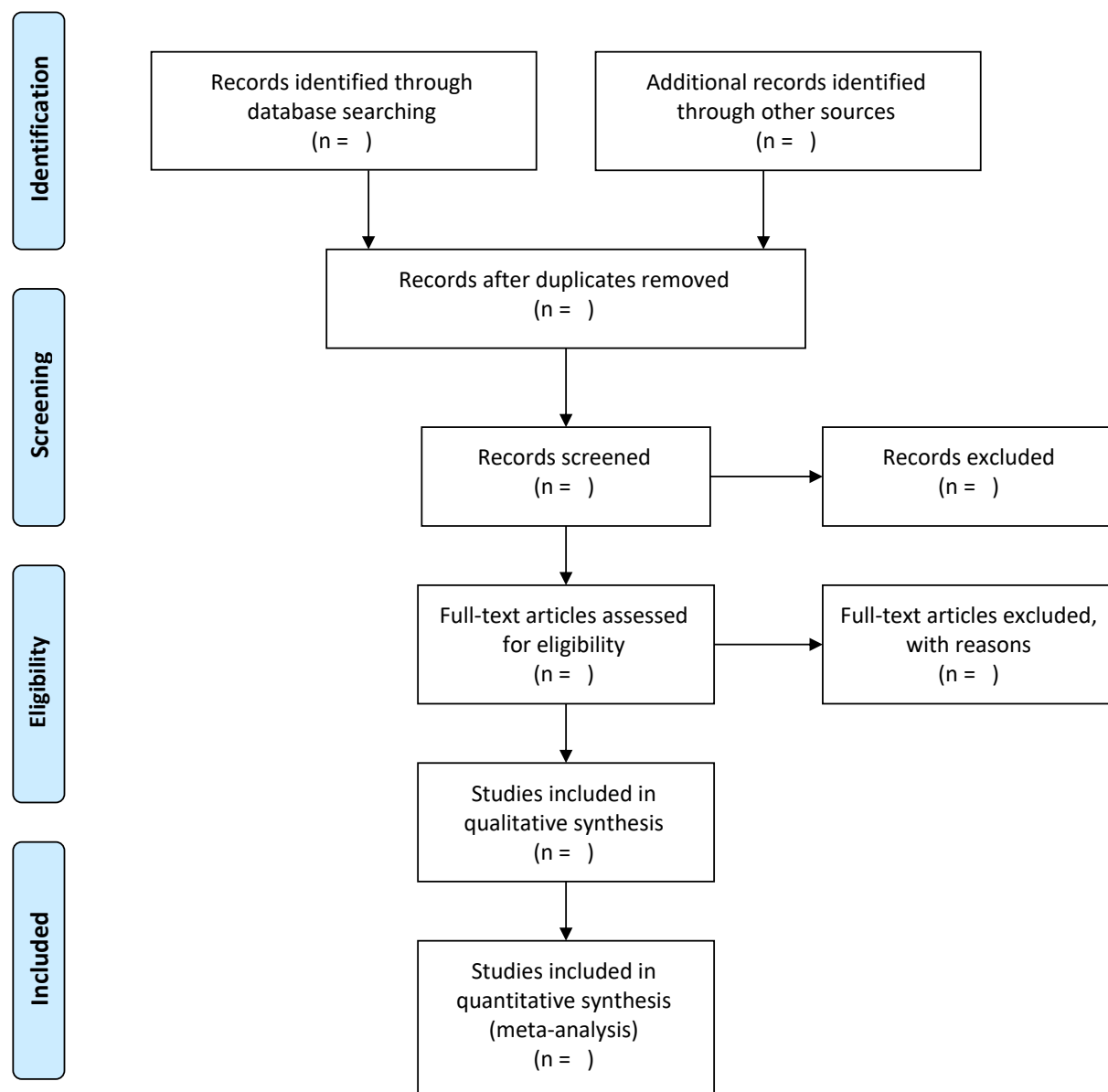
<https://guides.lib.unc.edu/c.php?g=8369&p=784120#s-lg-box-9898133>

Countries based on World Bank Country and Lending Groups

<https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups>



## PRISMA 2009 Flow Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(7): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit [www.prisma-statement.org](http://www.prisma-statement.org).

# JBI template source of evidence details, characteristics and results extraction instrument

Scoping Review Details	
Scoping Review title:	
Review objective/s:	
Review question/s:	
Inclusion/Exclusion Criteria	
Population	
Concept	
Context	
Types of evidence source	
Evidence source Details and Characteristics	
Citation details (e.g. author/s, date, title, journal, volume, issue, pages)	
Country	
Context	
Participants (details e.g. age/sex and number)	
Details/Results extracted from source of evidence (in relation to the concept of the scoping review)	
E.g. Quality of Life Domains assessed	
E.g. Number of items in tool	
E.g. details of psychometric validation of tool	