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# BMJ Open

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

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## Abstract

**Introduction:** Theatre nurses report higher levels of stress and burnout 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-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-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 and Google scholar will be searched for literature published from 2000 to date. Reference lists of selected studies 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.

**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-middle income contexts.

**Keywords:** well-being; theatre nurses; instruments; scoping review

### 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 review of this nature has not been conducted, despite its importance
- The review will map out concepts used to refer to well-being which could permit comparison of findings from various studies across contexts
- The review will only include literature published since 2000 due to resource limitations

## Introduction

The interdependent relationship between well-being and quality of care among health professionals is widely acknowledged. Burnout, a characteristic of poor well-being has been extensively reported among health professionals. A systematic review on burnout among frontline primary health workers in low-middle-income countries reported high levels of burnout among these workers<sup>1</sup> and similar findings were documented for a systematic review and meta analyses on burnout among inpatient and outpatient health care providers in high income countries.<sup>2</sup> Burnout 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 burnout<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.

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-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-middle income countries.

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5 There are various definitions of the concept of well-being due to multiple perspectives  
6 and philosophical frameworks that inform the perspectives.<sup>15</sup> As a result, it is  
7 acknowledged that well-being is a complex construct.<sup>16</sup> For instance, well-being is  
8 defined as “the pursuit of personal aspirations and the development and exercise of  
9 human capabilities, within a context of mutual recognition, equality, and  
10 interdependence.”<sup>17:5</sup> This definition foregrounds the role of context in attaining well-  
11 being. Another view of well-being is that it is a state of overall contentment with one's  
12 physical and mental health, self-esteem, sense of belonging, personal and economic  
13 security, and opportunities for self- determination and meaningful occupation.<sup>17 18</sup> The  
14 relationship between what people do and their experience of well-being is evident in  
15 this definition.  
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26 Existing evidence on well-being varies considerably, due to the various perspectives  
27 and focus on different aspects of well-being. In turn, there is a variety of instruments  
28 used for measuring well-being. However, a review of literature or meta- analysis on  
29 well-being and various tools used to assess well-being has not been reported in the  
30 last decade. This limits comparison of findings across studies and growth in  
31 scholarship in the area. In addition, education on well-being and development of  
32 strategies to improve well-being among theatre nurses could be lagging behind or  
33 focused on one aspect while neglecting others. The aim of this review is therefore to  
34 map out existing literature on well-being, key concepts and instruments used to  
35 measure well-being among theatre nurses working in public hospitals in low-middle  
36 income countries.  
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### 45 **Objectives**

- 46 1. To identify and compare concepts used to refer to well-being in literature
- 47 2. To establish how well-being among theatre nurses in large public hospitals in  
48 low-middle income countries is measured  
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### 51 **Methods**

52 A scoping review methodology will be used. This method is suitable as it is a type of  
53 review method that is used to map existing evidence, map and clarify key concepts  
54 within an area of research.<sup>19-21</sup> This review will be guided by the Joanna Briggs  
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Institute's methodological approach to conducting scoping reviews and two reviewers will conduct the review.<sup>19</sup>

### 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 Joanna Briggs Institute's methodological approach to conducting scoping reviews,<sup>19</sup> as depicted in Table 1 below:

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

Table 1: PCC Elements

The elements outlined above enabled the researcher 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-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, as well as grey literature, such as theses and dissertations.
- Language: Only studies published in English will be included as the reviewers only have access to full-text articles published in English and they 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 three-step search strategy as recommended by the JBI.<sup>19</sup> The assistance of a librarian was sought to refine the search strategy and a complete initial search strategy for Pubmed is attached (Appendix 1). The librarian also provided guidance on databases that were most likely to index articles relevant to the topic and the search technique.

### *Sources of evidence*

Databases that will be searched are Pubmed/Medline, Scopus, Ebscohost, Web of Science and Google scholar. In addition, reference lists of selected studies will also be reviewed to identify studies that are relevant to answering the research question as recommended by Peters and colleagues.<sup>19</sup>

The following search strategy will be used:

*((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- and middle-income countries keyword (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 researcher. Endnote will be used as the reference manager.

Each reviewer will independently search for evidence on specific databases; Reviewer 1 will search Ebscohost, Scopus and Web of Science and Reviewer 2 will search PubMed, Google Scholar and grey literature. The identified articles will be imported to Endnote. The reviewers will document their detailed search strategy and results for each database using an Excel spreadsheet that will be designed by the reviewers to



1  
2  
3 ensure uniformity of recording searches. This spreadsheet will capture the search  
4 terms used, the date the search was conducted and the results retrieved.  
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## 8 Study Selection

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10 The initial screening of all articles retrieved will be done by each reviewer  
11 independently and any discrepancies will be resolved through a discussion. The title  
12 and abstract will be screened using the inclusion criteria above to determine eligibility  
13 of articles and reasons for excluding articles at this stage, will be documented.  
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18 The reviewers will then independently source full-text articles and those without full-  
19 text access will be excluded. The full-text articles will be read by each reviewer  
20 independently and decisions on their inclusion or exclusion documented. Excluded  
21 articles will be re-read by both reviewers to ensure agreement on their exclusion. The  
22 Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow  
23 diagram (Appendix 3)<sup>22</sup> will be used to succinctly present the search and screening  
24 process.  
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## 32 Data extraction

33 A data extraction tool based on the JBI<sup>19</sup> data extraction template (Appendix 4) will be  
34 developed. The fields for this instrument will include the aspect of the inclusion criteria  
35 and the following information:  
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- 39 • Author(s)
- 40 • Title
- 41 • Year of publication
- 42 • Language of publication
- 43 • Concept
- 44 • Study design
- 45 • Context of study
- 46 • Sample
- 47 • Data collection instrument/tool
- 48 • Key findings that relate to the scoping review question
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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 re-reading 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/critical appraisal of evidence is not required for a scoping review<sup>19</sup> therefore will not be conducted for this study.

### Data analysis

The extracted data will be collated and described in a narrative summary in preparation for reporting the findings. 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-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>19,21</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 below will be used to capture information on the instruments:

Name	Format	Number of Items	Domains/Aspects assessed	Where it was used

Table 2: Presentation of Instruments

## 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-middle income countries. The discussion could explore the appropriateness of such instruments for contexts such as South Africa where there is diversity.

## Conclusion

The proposed scoping review is important as nurses' well-being has been found to have an impact on patient outcomes, therefore monitoring their well-being is crucial for improving outcomes. To improve scholarship in this area, there is a need to map out existing evidence on the concept of well-being. In order to ensure that instruments

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3 used are contextually relevant, there is a need to firstly establish what instruments are  
4 used. This review will enable identification of gaps in this area and therefore the need  
5 for further research.  
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### 25 Competing interests

26 None  
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### 30 Contributorship statement

31 The author conceptualised, planned and wrote the article alone.  
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## 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 Tadzkhikistan OR Tajikistan OR Tadzhhik 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



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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 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)) 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



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4 Economy OR Under Developed Countries OR Under Developed Country OR under developed nations  
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6 Underdeveloped Countries OR Underdeveloped Country OR underdeveloped economies OR  
7 underdeveloped nations OR underdeveloped population OR Underdeveloped World OR  
8 Underserved Countries OR Underserved Nations OR Underserved Population OR Underserved  
9 Populations))  
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12 388 05:46:22

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14 #31

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16 Search: (((((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse  
17 OR surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR  
18 operating room nurses))) AND (((well-being OR "well being" OR wellbeing OR quality-of-life OR  
19 "quality of life")) OR ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement  
20 OR measurements OR instrument OR instruments)))) AND (((state hospital OR state hospitals OR  
21 government hospital OR government hospitals OR public hospital OR public hospitals OR national  
22 hospital OR national hospitals)) OR ("Hospitals, State"[Mesh]))  
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25 1,116 05:45:12

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27 #30

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29 Search: ((state hospital OR state hospitals OR government hospital OR government hospitals OR  
30 public hospital OR public hospitals OR national hospital OR national hospitals)) OR ("Hospitals,  
31 State"[Mesh])  
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33 1,134,909 05:44:33

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35 #29

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37 Search: "Hospitals, State"[Mesh] Sort by: Most Recent  
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39 2,194 05:44:19

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41 #28

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43 Search: (state hospital OR state hospitals OR government hospital OR government hospitals OR  
44 public hospital OR public hospitals OR national hospital OR national hospitals)  
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48 #27

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50 Search: (((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR  
51 ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement OR measurements OR  
52 instrument OR instruments))  
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54 1,809,423 05:41:53

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56 #26

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58 Search: (tool OR tools OR measuring OR measurement OR measurements OR instrument OR  
59 instruments)  
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3 5,202,607 05:38:32  
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5 #25

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7 Search: ((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR  
8 ("Quality of Life"[Mesh])  
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10 7,959,606 05:37:27  
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12 #24

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

15 209,127 05:37:15  
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19 Search: (well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")  
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21 7,959,606 05:36:41  
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25 Search: (((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR  
26 surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR operating  
27 room nurses))  
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29 38,682 05:34:39  
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31 #21

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33 Search: (operating room nurse OR operating room nurses)  
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35 5,112 05:34:29  
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37 #20

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

40 6,069 05:34:01  
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44 Search: (theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR  
45 surgical nurses)  
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## 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 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

## 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

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5 Senegal OR Serbia OR “Sierra Leone” OR “Solomon Islands” OR Somalia OR “South Africa” OR “South  
6 Sudan” OR “Sri Lanka” OR “St Lucia” OR “St Vincent” OR Sudan OR Surinam OR Suriname OR  
7 Swaziland OR Syria OR “Syrian Arab Republic” OR Tajikistan OR Tadjhikistan OR Tajikistan OR Tadjhik  
8 OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR  
9 Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR Uzbekistan OR Vanuatu OR Venezuela  
10 OR Vietnam OR “West Bank” OR Yemen OR Zambia OR Zimbabwe  
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### 19 **Web of Science, Ebsco databases**

21 Deprived Countries OR Deprived Population OR Deprived Populations OR Developing Countries OR  
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27 OR Low GNP OR Low Gross Domestic OR Low Gross National OR Low Income OR Lower GDP OR  
28 lower gross domestic OR Lower Income OR Middle Income OR Poor Countries OR Poor Country OR  
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30 Populations OR poor world OR Poorer Countries OR Poorer Economies OR Poorer Economy OR  
31 Poorer Nations OR Poorer Population OR Poorer Populations OR Third World OR Transitional  
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45 OR Cape Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR China OR  
46 Colombia OR Comoros OR Comores OR Comoro OR Congo OR Costa Rica OR Côte d'Ivoire OR Cuba  
47 OR Democratic People’s Republic of Korea OR Djibouti OR Dominica OR Dominican Republic OR  
48 Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR  
49 Gambia OR Gaza OR Georgia OR Georgia Republic OR Ghana OR Grenada OR Grenadines OR  
50 Guatemala OR Guinea OR Guinea Bissau OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR  
51 Honduras OR India OR Indonesia OR Iran OR Iraq OR Ivory Coast OR Jamaica OR Jordan OR  
52 Kazakhstan OR Kenya OR Kiribati OR Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR  
53 Kyrgyzstan OR Lao PDR OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR  
54 Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR Marshall Islands  
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8 Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR  
9 Zimbabwe  
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16 Web of Science: default to 'all databases' before starting search, filter date

17  
18 Search results: exclude Medline  
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21 Mary Shelton  
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23 June 2019  
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25 Search filters adapted from: Developing Country / Low-Middle Income Searches, Public Health  
26 LibGuide, University of North Carolina, Chapel Hill

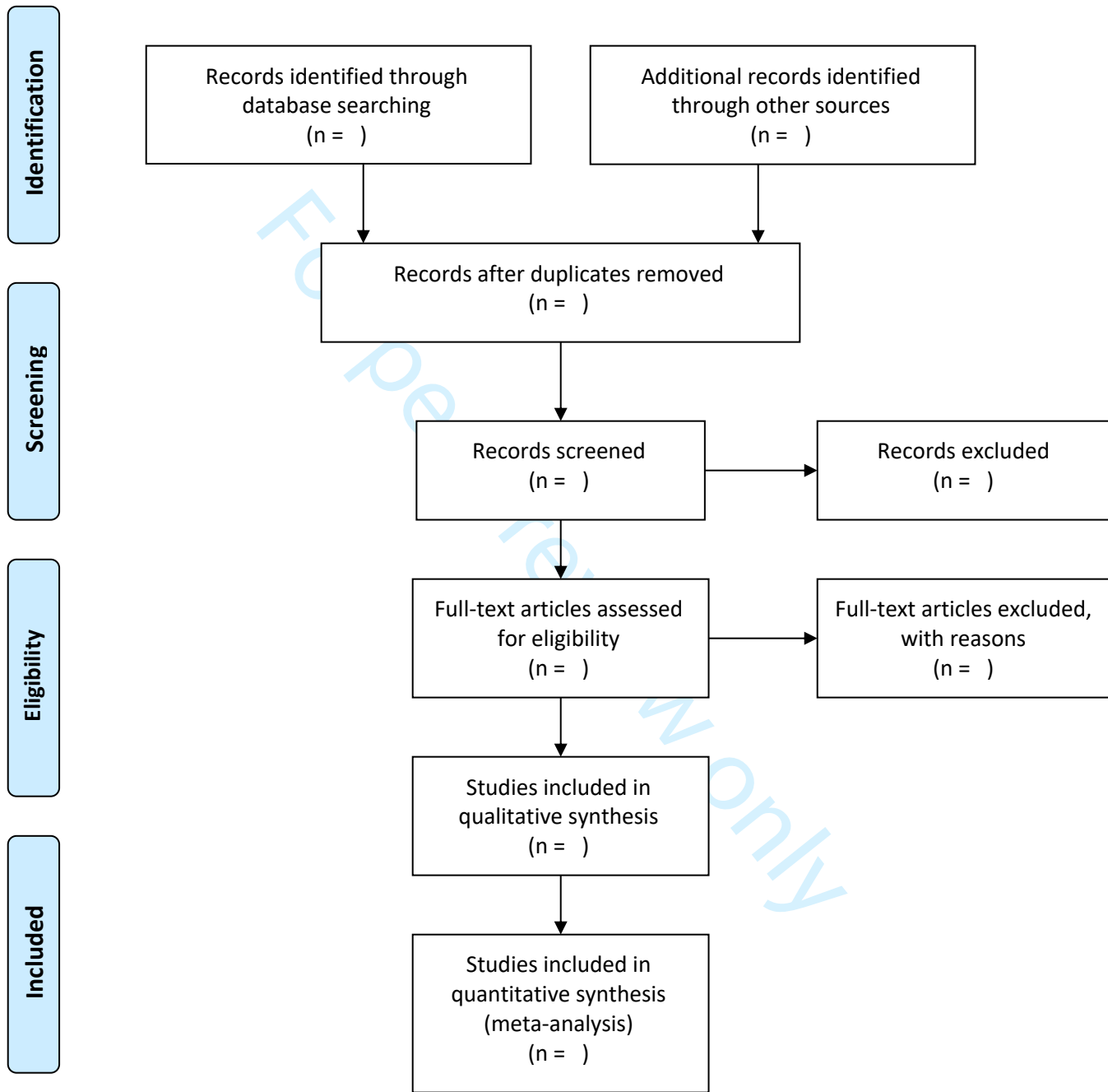
27 <https://guides.lib.unc.edu/c.php?g=8369&p=784120#s-lg-box-9898133>  
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30 Countries based on World Bank Country and Lending Groups

31 [https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)  
32 [lending-groups](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)  
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# 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).

For peer review only - <http://bmjopen.bmj.com/site/about/guidelines.xhtml>

# BMJ Open

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

Journal:	<i>BMJ Open</i>
Manuscript ID	bmjopen-2021-057600.R1
Article Type:	Protocol
Date Submitted by the Author:	17-Feb-2022
Complete List of Authors:	Ramafikeng, Matumo; University of Essex Faculty of Science and Health, School of Health and Social Care Eboh, Winifred; University of Essex Faculty of Science and Health, School of Health and Social Care
<b>Primary Subject Heading</b>:	Nursing
Secondary Subject Heading:	Occupational and environmental medicine
Keywords:	Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, PREVENTIVE MEDICINE, MENTAL HEALTH

SCHOLARONE™  
Manuscripts



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2  
3 **Title:** Protocol for scoping review on well-being among theatre nurses in large public  
4 hospitals in low-middle income countries  
5  
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## Abstract

**Introduction:** Theatre nurses report higher levels of stress and burnout 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-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-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 studies 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-middle income contexts.

**Keywords:** well-being; quality of life; theatre nurses; scrub nurses; anaesthetic nurses; theatre recovery nurses; operating room nurses; surgical nurses; instruments; scoping review

## 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 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

## Introduction

The interdependent relationship between well-being and quality of care among health professionals is widely acknowledged. Burnout, a characteristic of poor well-being has been extensively reported among health professionals. A systematic review on burnout among frontline primary health workers in low-middle-income countries reported high levels of burnout among these workers<sup>1</sup> and similar findings were documented for a systematic review and meta analyses on burnout among inpatient and outpatient health care providers in high income countries.<sup>2</sup> Burnout 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 burnout<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,

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3 accountable for their practice whilst patients are in theatre. This includes scrub nurses,  
4 anaesthetic nurses, recovery nurses, operating room nurses and surgical nurses.  
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8 There is increasing attention to well-being among health professionals<sup>10</sup> due to impact  
9 on the level of care. Studies that explore well-being among nurses and impact on  
10 patient outcomes have predominantly been conducted in high income countries with  
11 limited research in low-and-middle income countries.<sup>11</sup> For instance, the first large  
12 scale study exploring the work environment, quality of care and aspects of well-being  
13 among nurses in South Africa was conducted in 2013.<sup>12</sup> Assessing and monitoring the  
14 health and well-being of health personnel is important<sup>13</sup> to ensure improved patient  
15 outcomes.<sup>14</sup> The importance and urgency of this exercise has increased with the  
16 current COVID 19 pandemic and the impact on nurses in low-middle income countries.  
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25 There are various definitions of the concept of well-being due to multiple perspectives  
26 and philosophical frameworks that inform the perspectives.<sup>15</sup> As a result, it is  
27 acknowledged that well-being is a complex construct.<sup>16</sup> For instance, well-being is  
28 defined as “the pursuit of personal aspirations and the development and exercise of  
29 human capabilities, within a context of mutual recognition, equality, and  
30 interdependence.”<sup>17:5</sup> This definition foregrounds the role of context in attaining well-  
31 being. Another view of well-being is that it is a state of overall contentment with one's  
32 physical and mental health, self-esteem, sense of belonging, personal and economic  
33 security, and opportunities for self- determination and meaningful occupation.<sup>17 18</sup> The  
34 relationship between what people do and their experience of well-being is evident in  
35 this definition. In this review, the authors note that well-being, wellness and health,  
36 could be considered synonymous but, although the terms are related, they are distinct.  
37 Well-being and wellness are components of health,<sup>19</sup> as the World Health  
38 Organization (WHO)<sup>20</sup> definition of health states that health is a state of well-being in  
39 different aspects of the person. Wellness is considered freedom from illness and  
40 encompasses prevention of ill-health<sup>21, 19</sup> (for a more robust unpacking of the term  
41 wellness, see Kirkland, 2014).  
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56 Existing evidence on well-being varies considerably, due to the various perspectives  
57 and focus on different aspects of well-being. In turn, there is a variety of instruments  
58 used for measuring well-being. However, a review of literature or meta- analysis on  
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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-middle income countries.

### Objectives

1. To identify and compare concepts used to refer to well-being in literature on low-middle income countries
2. To establish how well-being among theatre nurses in large public hospitals in low-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, 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 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 providing tools for use, such as the 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.

### 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 Joanna Briggs Institute's methodological approach to conducting scoping reviews,<sup>19</sup> as depicted in Table 1 below:

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#### PCC elements

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<b>P</b>	Population	Theatre Nurses
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<b>C</b>	Concept	Well-being and measuring tools/instruments used
<b>C</b>	Context	Large public hospitals in low-middle income countries

Table 1: PCC Elements

The elements outlined above enabled the researcher 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-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 they 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 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 (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 studies 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:

*((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- and middle-income countries keyword (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 researcher. 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 re-read by both reviewers to ensure agreement on their exclusion. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (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 (Appendix 4) will be developed. The fields for this instrument will include the aspect 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.



1  
2  
3 The reviewers will work together to pilot the tool on a selection of five full-text articles.  
4  
5 The next step will be for the reviewers to continue the data extraction process  
6 independently. The extracted data from each reviewer will be consolidated into a  
7 single summary and disagreements will be resolved by re-reading the particular article  
8 together and discussing the extraction to reach a consensus. Other information that is  
9 deemed relevant for meeting the study objectives and strengthening description of  
10 findings will also be included in the results summary.  
11  
12  
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15

### 16 Risk of bias assessment

17  
18 In alignment with the JBI approach, establishing the risk of bias/critical appraisal of  
19 evidence is not required for a scoping review<sup>22</sup> therefore will not be conducted for this  
20 study.  
21  
22  
23  
24  
25

### 26 Risk of searching bias

27 All studies selected will be those published in English language presenting, therefore  
28 introducing a searching bias. The reviewers acknowledge that other studies written in  
29 languages especially those published in low-income countries will not be included,  
30 because the reviewers are not competent in these languages.  
31  
32  
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### 36 Data analysis

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

55 A table will be used to present the findings as capturing data in the table will enable  
56 comparison of concepts and instruments. A table such as Table 2 below will be used  
57 to capture information on the instruments:  
58  
59  
60

Name	Format	Number of Items	Domains/Aspects assessed	Where it was used

Table 2: Presentation of Instruments

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

### 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

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2  
3 that are most suitable for low-middle income countries. The discussion could explore  
4 the appropriateness of such instruments for contexts such as South Africa where there  
5 is diversity.  
6  
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10

## 11 Acknowledgements

12 I am grateful to Patricia Chikuni and Gill Morgan; the Librarians at the University of  
13 Cape Town that assisted with the process of refining the search strategy. Thank you  
14 to Mary Shelton for the extensive LMIC list (Appendix 2).  
15  
16  
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19

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21 This research is currently not funded.  
22  
23  
24

## 25 Competing interests

26 None  
27  
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29

## 30 Contributorship statement

31 The first author (M.C.R) conceptualised, planned and wrote the first draft article  
32 alone. The second author (W.O.E) contributed to the revisions following first review  
33 and will be the second reviewer in this scoping review.  
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## 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 Tadzkhikistan OR Tajikistan OR Tadzhhik 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 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)) 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

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4 Economy OR Under Developed Countries OR Under Developed Country OR under developed nations  
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6 Underdeveloped Countries OR Underdeveloped Country OR underdeveloped economies OR  
7 underdeveloped nations OR underdeveloped population OR Underdeveloped World OR  
8 Underserved Countries OR Underserved Nations OR Underserved Population OR Underserved  
9 Populations))

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12 388 05:46:22

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14 #31

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

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25 1,116 05:45:12

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27 #30

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

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33 1,134,909 05:44:33

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35 #29

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

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39 2,194 05:44:19

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

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48 #27

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

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54 1,809,423 05:41:53

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56 #26

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



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3 5,202,607 05:38:32  
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5 #25

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7 Search: ((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR  
8 ("Quality of Life"[Mesh])  
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10 7,959,606 05:37:27  
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14 Search: "Quality of Life"[Mesh] Sort by: Most Recent

15 209,127 05:37:15  
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19 Search: (well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")  
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21 7,959,606 05:36:41  
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23 #22

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25 Search: (((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR  
26 surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR operating  
27 room nurses))  
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29 38,682 05:34:39  
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31 #21

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33 Search: (operating room nurse OR operating room nurses)  
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39 Search: "Operating Room Nursing"[Mesh] Sort by: Most Recent

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44 Search: (theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR  
45 surgical nurses)  
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## Appendix 2

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

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

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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 Tadzhik 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

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4 Zimbabwe  
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9 **Scopus**

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11  
12 **Advanced search, select TITLE-ABS-KEY, and copy terms between the brackets ()**

13  
14 TITLE-ABS-KEY "Deprived Countries" OR "Deprived Population" OR "Deprived Populations" OR  
15 "Developing Countries" OR "Developing Country" OR "Developing Economies" OR "Developing  
16 Economy" OR "Developing Nation" OR "Developing Nations" OR "Developing Population" OR  
17 "Developing Populations" OR "Developing World" OR "LAMI Countries" OR "LAMI Country" OR "Less  
18 Developed Countries" OR "Less Developed Country" OR "Less Developed Economies" OR "Less  
19 Developed Nation" OR "Less Developed Nations" OR "Less Developed World" OR "Lesser Developed  
20 Countries" OR "Lesser Developed Nations" OR LMIC OR LMICS OR "Low GDP" OR "Low GNP" OR  
21 "Low Gross Domestic" OR "Low Gross National" OR "Low Income" OR "Lower income" OR "Lower  
22 GDP" OR "Lower Gross Domestic" OR "Middle Income" OR "Poor Countries" OR "Poor Country" OR  
23 "Poor Economies" OR "Poor Economy" OR "Poor Nation" OR "Poor Nations" OR "Poor Population"  
24 OR "Poor Populations" OR "poor world" OR "Poorer Countries" OR "Poorer Economies" OR "Poorer  
25 Economy" OR "Poorer Nations" OR "Poorer Population" OR "Poorer Populations" OR "Third World"  
26 OR "Transitional Countries" OR "Transitional Country" OR "Transitional Economies" OR "Transitional  
27 Economy" OR "Under Developed" OR "Under Served" OR "Underdeveloped Countries" OR  
28 "Underdeveloped Country" OR "underdeveloped economies" OR "underdeveloped nations" OR  
29 "underdeveloped population" OR "Underdeveloped World" OR "Underserved Countries" OR  
30 "Underserved Nations" OR "Underserved Population" OR "Underserved Populations"  
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43 TITLE-ABS-KEY Afghanistan OR Albania OR Algeria OR "American Samoa" OR Angola OR Armenia OR  
44 Azerbaijan OR Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR  
45 Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR "Burkina Faso" OR Burundi OR  
46 "Cabo Verde" OR "Cape Verde" OR Cambodia OR Cameroon OR "Central African Republic" OR Chad  
47 OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR "Costa Rica" OR "Côte  
48 d'Ivoire" OR Cuba OR "Democratic People's Republic of Korea" OR Djibouti OR Dominica OR  
49 "Dominican Republic" OR Ecuador OR Egypt OR "El Salvador" OR Eritrea OR Ethiopia OR "Equatorial  
50 Guinea" OR Fiji OR Gabon OR Gambia OR Gaza OR "Georgia Republic" OR Georgia OR Ghana OR  
51 Grenada OR Grenadines OR Guatemala OR Guinea OR "Guinea Bissau" OR Guyana OR Haiti OR  
52 Herzegovina OR Hercegovina OR Honduras OR India OR Indonesia OR Iran OR Iraq OR "Ivory Coast"  
53 OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Korea OR Kosovo OR Kyrgyz OR  
54 Kirghizia OR Kirghiz OR Kyrgyzstan OR "Lao PDR" OR Laos OR Lebanon OR Lesotho OR Liberia OR  
55 Libya OR Macedonia OR Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR  
56 Mali OR "Marshall Islands" OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR  
57 Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR  
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5 Senegal OR Serbia OR “Sierra Leone” OR “Solomon Islands” OR Somalia OR “South Africa” OR “South  
6 Sudan” OR “Sri Lanka” OR “St Lucia” OR “St Vincent” OR Sudan OR Surinam OR Suriname OR  
7 Swaziland OR Syria OR “Syrian Arab Republic” OR Tajikistan OR Tadjhikistan OR Tajikistan OR Tadjhik  
8 OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR Tunisia OR Turkey OR Turkmen OR  
9 Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR Uzbekistan OR Vanuatu OR Venezuela  
10 OR Vietnam OR “West Bank” OR Yemen OR Zambia OR Zimbabwe  
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### 19 **Web of Science, Ebsco databases**

21 Deprived Countries OR Deprived Population OR Deprived Populations OR Developing Countries OR  
22 Developing Country OR Developing Economies OR Developing Economy OR Developing Nation OR  
23 Developing Nations OR Developing Population OR Developing Populations OR Developing World OR  
24 LAMI Countries OR LAMI Country OR Less Developed Countries OR Less Developed Country OR Less  
25 Developed Economies OR Less Developed Nation OR Less Developed Nations OR Less Developed  
26 World OR Lesser Developed Countries OR Lesser Developed Nations OR LMIC OR LMICS OR Low GDP  
27 OR Low GNP OR Low Gross Domestic OR Low Gross National OR Low Income OR Lower GDP OR  
28 lower gross domestic OR Lower Income OR Middle Income OR Poor Countries OR Poor Country OR  
29 Poor Economies OR Poor Economy OR Poor Nation OR Poor Nations OR Poor Population OR Poor  
30 Populations OR poor world OR Poorer Countries OR Poorer Economies OR Poorer Economy OR  
31 Poorer Nations OR Poorer Population OR Poorer Populations OR Third World OR Transitional  
32 Countries OR Transitional Country OR Transitional Economies OR Transitional Economy OR Under  
33 Developed Countries OR Under Developed Country OR under developed nations OR Under  
34 Developed World OR Under Served Population OR Under Served Populations OR Underdeveloped  
35 Countries OR Underdeveloped Country OR underdeveloped economies OR underdeveloped nations  
36 OR underdeveloped population OR Underdeveloped World OR Underserved Countries OR  
37 Underserved Nations OR Underserved Population OR Underserved Populations  
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42 Afghanistan OR Albania OR Algeria OR American Samoa OR Angola OR Armenia OR Azerbaijan OR  
43 Bangladesh OR Belarus OR Byelarus OR Belorussia OR Belize OR Benin OR Bhutan OR Bolivia OR  
44 Bosnia OR Botswana OR Brazil OR Bulgaria OR Burma OR Burkina Faso OR Burundi OR Cabo Verde  
45 OR Cape Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR China OR  
46 Colombia OR Comoros OR Comores OR Comoro OR Congo OR Costa Rica OR Côte d'Ivoire OR Cuba  
47 OR Democratic People’s Republic of Korea OR Djibouti OR Dominica OR Dominican Republic OR  
48 Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR  
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4 Solomon Islands OR Somalia OR South Africa OR South Sudan OR Sri Lanka OR St Lucia OR St Vincent  
5 OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR Syrian Arab Republic OR Tajikistan OR  
6 Tadjikistan OR Tajikistan OR Tadjik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR  
7 Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR  
8 Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR  
9 Zimbabwe  
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16 Web of Science: default to 'all databases' before starting search, filter date

17  
18 Search results: exclude Medline  
19

20  
21 Mary Shelton  
22

23 June 2019  
24

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

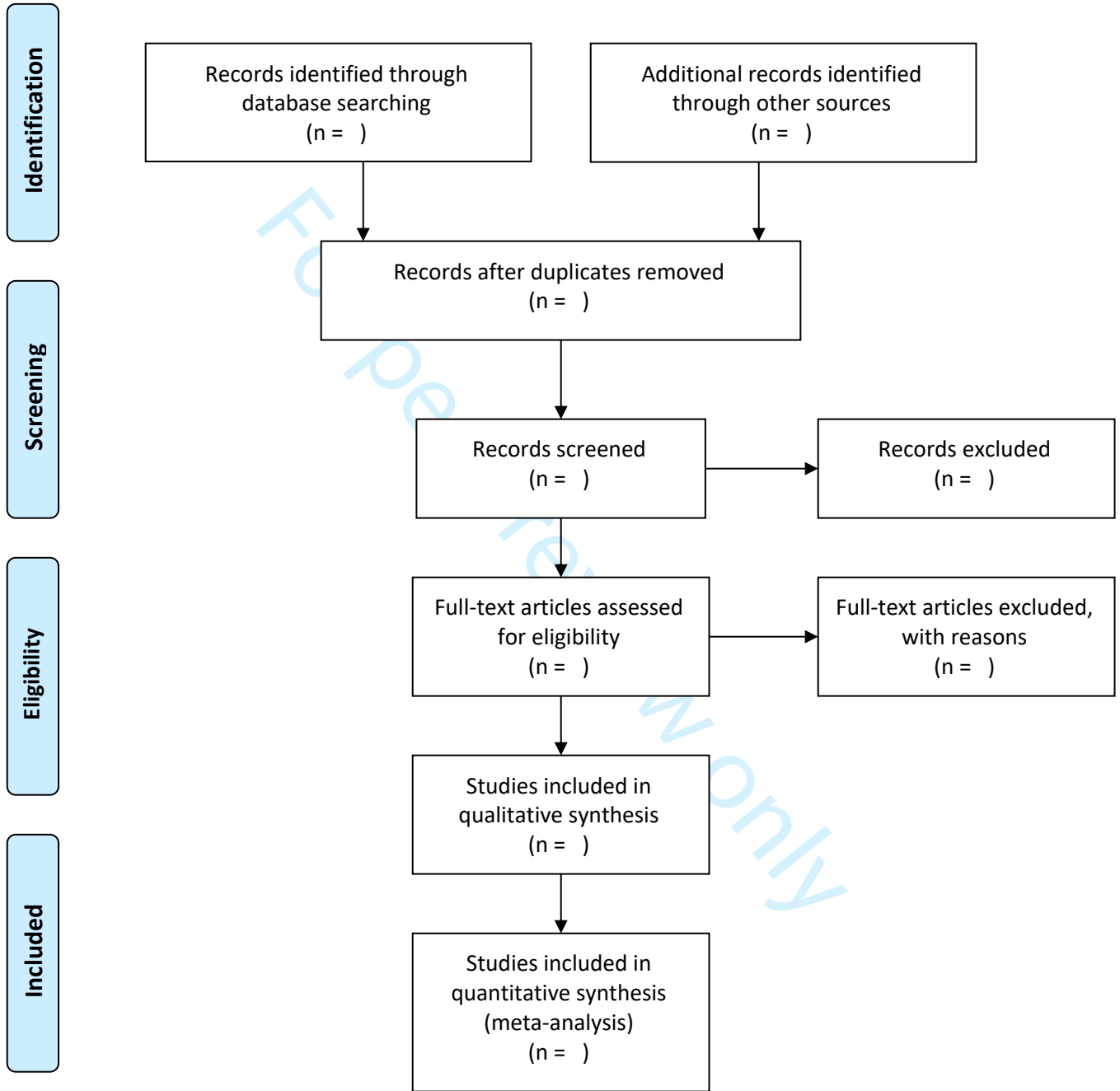
27 <https://guides.lib.unc.edu/c.php?g=8369&p=784120#s-lg-box-9898133>  
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29  
30 Countries based on World Bank Country and Lending Groups

31 [https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)  
32 [lending-groups](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)  
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# 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).

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

<b>Scoping Review Details</b>	
Scoping Review title:	
Review objective/s:	
Review question/s:	
<b>Inclusion/Exclusion Criteria</b>	
Population	
Concept	
Context	
Types of evidence source	
<b>Evidence source Details and Characteristics</b>	
Citation details (e.g. author/s, date, title, journal, volume, issue, pages)	
Country	
Context	
Participants (details e.g. age/sex and number)	
<b>Details/Results extracted from source of evidence</b> (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	

# BMJ Open

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

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<b>Primary Subject Heading</b>:	Nursing
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Keywords:	Quality in health care < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, PREVENTIVE MEDICINE, MENTAL HEALTH

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Manuscripts



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2  
3 **Title:** Protocol for scoping review on well-being among theatre nurses in large public  
4 hospitals in low-middle income countries  
5  
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51 Word count:  
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## Abstract

**Introduction:** Theatre nurses report higher levels of stress and burnout 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-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-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 studies 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-middle income contexts.

**Keywords:** well-being; quality of life; theatre nurses; scrub nurses; anaesthetic nurses; theatre recovery nurses; operating room nurses; surgical nurses; instruments; scoping review

## 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 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

## Introduction

The interdependent relationship between well-being and quality of care among health professionals is widely acknowledged. Burnout, a characteristic of poor well-being has been extensively reported among health professionals. A systematic review on burnout among frontline primary health workers in low-middle-income countries reported high levels of burnout among these workers<sup>1</sup> and similar findings were documented for a systematic review and meta analyses on burnout among inpatient and outpatient health care providers in high income countries.<sup>2</sup> Burnout 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 burnout<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,

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3 accountable for their practice whilst patients are in theatre. This includes scrub nurses,  
4 anaesthetic nurses, recovery nurses, operating room nurses and surgical nurses.  
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8 There is increasing attention to well-being among health professionals<sup>10</sup> due to impact  
9 on the level of care. Studies that explore well-being among nurses and impact on  
10 patient outcomes have predominantly been conducted in high income countries with  
11 limited research in low-and-middle income countries.<sup>11</sup> For instance, the first large  
12 scale study exploring the work environment, quality of care and aspects of well-being  
13 among nurses in South Africa was conducted in 2013.<sup>12</sup> Assessing and monitoring the  
14 health and well-being of health personnel is important<sup>13</sup> to ensure improved patient  
15 outcomes.<sup>14</sup> The importance and urgency of this exercise has increased with the  
16 current COVID 19 pandemic and the impact on nurses in low-middle income countries.  
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26 There are various definitions of the concept of well-being due to multiple perspectives  
27 and philosophical frameworks that inform the perspectives.<sup>15</sup> As a result, it is  
28 acknowledged that well-being is a complex construct.<sup>16</sup> For instance, well-being is  
29 defined as “the pursuit of personal aspirations and the development and exercise of  
30 human capabilities, within a context of mutual recognition, equality, and  
31 interdependence.”<sup>17:5</sup> This definition foregrounds the role of context in attaining well-  
32 being. Another view of well-being is that it is a state of overall contentment with one's  
33 physical and mental health, self-esteem, sense of belonging, personal and economic  
34 security, and opportunities for self- determination and meaningful occupation.<sup>17 18</sup> The  
35 relationship between what people do and their experience of well-being is evident in  
36 this definition. In this review, the authors note that well-being, wellness and health,  
37 could be considered synonymous but, although the terms are related, they are distinct.  
38 Well-being and wellness are components of health,<sup>19</sup> as the World Health  
39 Organization (WHO)<sup>20</sup> definition of health states that health is a state of well-being in  
40 different aspects of the person. Wellness is considered freedom from illness and  
41 encompasses prevention of ill-health<sup>21, 19</sup> (for a more robust unpacking of the term  
42 wellness, see Kirkland, 2014).  
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56 Existing evidence on well-being varies considerably, due to the various perspectives  
57 and focus on different aspects of well-being. In turn, there is a variety of instruments  
58 used for measuring well-being. However, a review of literature or meta- analysis on  
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3 well-being and various tools used to assess well-being has not been reported in the  
4 last decade. This limits comparison of findings across studies and growth in  
5 scholarship in the area. In addition, education on well-being and development of  
6 strategies to improve well-being among theatre nurses could be lagging behind or  
7 focused on one aspect while neglecting others. The aim of this review is therefore to  
8 map out existing literature on well-being, key concepts and instruments used to  
9 measure well-being among theatre nurses working in public hospitals in low-middle  
10 income countries.  
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## 17 Objectives

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

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28 A scoping review methodology will be used. This method is suitable as it is a type of  
29 review method that is used to map existing evidence, map and clarify key concepts  
30 within an area of research.<sup>22-24</sup> This review will be guided by the Joanna Briggs  
31 Institute's methodological approach to conducting scoping reviews and two reviewers  
32 will conduct the review.<sup>22</sup> This approach has been refined from the original work by  
33 Arksey and O'Malley,<sup>24</sup> providing a guide that is systematic, rigorous and transparent,  
34 as well as providing tools for use, such as the PRISMA flow chart for Scoping  
35 reviews.<sup>22</sup> As a result, the JBI approach has become the most widely recognised  
36 approach for this type of knowledge synthesis. The scoping review will take place from  
37 1 May 2022 to 1 November 2022, completing the screening, data extraction and  
38 analysis phases.  
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## 49 Refining the research question

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51 The research question for this scoping review was developed using the PCC elements  
52 with 'P' denoting population, 'C', the concept and 'C', the context according to the  
53 Joanna Briggs Institute's methodological approach to conducting scoping reviews,<sup>19</sup>  
54 as depicted in Table 1 below:  
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PCC elements		
<b>P</b>	Population	Theatre Nurses
<b>C</b>	Concept	Well-being and measuring tools/instruments used
<b>C</b>	Context	Large public hospitals in low-middle income countries

Table 1: PCC Elements

The elements outlined above enabled the researcher 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-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 they 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 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 (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 studies 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:

*((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- and middle-income countries keyword (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 researcher. 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 re-read by both reviewers to ensure agreement on their exclusion. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (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 (Appendix 4) will be developed. The fields for this instrument will include the aspect 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.

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3 The reviewers will work together to pilot the tool on a selection of five full-text articles.  
4  
5 The next step will be for the reviewers to continue the data extraction process  
6 independently. The extracted data from each reviewer will be consolidated into a  
7 single summary and disagreements will be resolved by re-reading the particular article  
8 together and discussing the extraction to reach a consensus. Other information that is  
9 deemed relevant for meeting the study objectives and strengthening description of  
10 findings will also be included in the results summary.  
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### 16 Risk of bias assessment

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

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

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

55 A table will be used to present the findings as capturing data in the table will enable  
56 comparison of concepts and instruments. A table such as Table 2 below will be used  
57 to capture information on the instruments:  
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Name	Format	Number of Items	Domains/Aspects assessed	Where it was used

Table 2: Presentation of Instruments

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

### 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-middle income countries. The discussion could explore

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3 the appropriateness of such instruments for contexts such as South Africa where there  
4 is diversity.  
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14  
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16  
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20  
21  
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### 23 Competing interests

24 None  
25  
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27

### 28 Contributorship statement

29 The first author (M.C.R) conceptualised, planned and wrote the first draft article  
30 alone. The second author (W.O.E) contributed to the revisions following first review  
31 and will be the second reviewer in this scoping review.  
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## 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 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)) 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

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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 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)) 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

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6 Underdeveloped Countries OR Underdeveloped Country OR underdeveloped economies OR  
7 underdeveloped nations OR underdeveloped population OR Underdeveloped World OR  
8 Underserved Countries OR Underserved Nations OR Underserved Population OR Underserved  
9 Populations))  
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12 388 05:46:22

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14 #31

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16 Search: (((((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse  
17 OR surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR  
18 operating room nurses))) AND (((well-being OR "well being" OR wellbeing OR quality-of-life OR  
19 "quality of life")) OR ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement  
20 OR measurements OR instrument OR instruments)))) AND (((state hospital OR state hospitals OR  
21 government hospital OR government hospitals OR public hospital OR public hospitals OR national  
22 hospital OR national hospitals)) OR ("Hospitals, State"[Mesh]))  
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27 #30

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29 Search: ((state hospital OR state hospitals OR government hospital OR government hospitals OR  
30 public hospital OR public hospitals OR national hospital OR national hospitals)) OR ("Hospitals,  
31 State"[Mesh])  
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35 #29

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37 Search: "Hospitals, State"[Mesh] Sort by: Most Recent  
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44 public hospital OR public hospitals OR national hospital OR national hospitals)  
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51 ("Quality of Life"[Mesh])) AND ((tool OR tools OR measuring OR measurement OR measurements OR  
52 instrument OR instruments))  
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58 Search: (tool OR tools OR measuring OR measurement OR measurements OR instrument OR  
59 instruments)  
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7 Search: ((well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")) OR  
8 ("Quality of Life"[Mesh])  
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14 Search: "Quality of Life"[Mesh] Sort by: Most Recent

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19 Search: (well-being OR "well being" OR wellbeing OR quality-of-life OR "quality of life")  
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23 #22

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25 Search: (((theater nurse OR theater nurses OR theatre nurse OR theatre nurses OR surgical nurse OR  
26 surgical nurses)) OR ("Operating Room Nursing"[Mesh])) OR ((operating room nurse OR operating  
27 room nurses))  
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33 Search: (operating room nurse OR operating room nurses)  
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## Appendix 2

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

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

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15 "Developing Countries" OR "Developing Country" OR "Developing Economies" OR "Developing  
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17 "Developing Populations" OR "Developing World" OR "LAMI Countries" OR "LAMI Country" OR "Less  
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19 Developed Nation" OR "Less Developed Nations" OR "Less Developed World" OR "Lesser Developed  
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21 "Low Gross Domestic" OR "Low Gross National" OR "Low Income" OR "Lower income" OR "Lower  
22 GDP" OR "Lower Gross Domestic" OR "Middle Income" OR "Poor Countries" OR "Poor Country" OR  
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25 Economy" OR "Poorer Nations" OR "Poorer Population" OR "Poorer Populations" OR "Third World"  
26 OR "Transitional Countries" OR "Transitional Country" OR "Transitional Economies" OR "Transitional  
27 Economy" OR "Under Developed" OR "Under Served" OR "Underdeveloped Countries" OR  
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46 "Cabo Verde" OR "Cape Verde" OR Cambodia OR Cameroon OR "Central African Republic" OR Chad  
47 OR China OR Colombia OR Comoros OR Comores OR Comoro OR Congo OR "Costa Rica" OR "Côte  
48 d'Ivoire" OR Cuba OR "Democratic People's Republic of Korea" OR Djibouti OR Dominica OR  
49 "Dominican Republic" OR Ecuador OR Egypt OR "El Salvador" OR Eritrea OR Ethiopia OR "Equatorial  
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6 Sudan” OR “Sri Lanka” OR “St Lucia” OR “St Vincent” OR Sudan OR Surinam OR Suriname OR  
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### 19 **Web of Science, Ebsco databases**

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28 lower gross domestic OR Lower Income OR Middle Income OR Poor Countries OR Poor Country OR  
29 Poor Economies OR Poor Economy OR Poor Nation OR Poor Nations OR Poor Population OR Poor  
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45 OR Cape Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR China OR  
46 Colombia OR Comoros OR Comores OR Comoro OR Congo OR Costa Rica OR Côte d'Ivoire OR Cuba  
47 OR Democratic People’s Republic of Korea OR Djibouti OR Dominica OR Dominican Republic OR  
48 Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR  
49 Gambia OR Gaza OR Georgia OR Georgia Republic OR Ghana OR Grenada OR Grenadines OR  
50 Guatemala OR Guinea OR Guinea Bissau OR Guyana OR Haiti OR Herzegovina OR Hercegovina OR  
51 Honduras OR India OR Indonesia OR Iran OR Iraq OR Ivory Coast OR Jamaica OR Jordan OR  
52 Kazakhstan OR Kenya OR Kiribati OR Korea OR Kosovo OR Kyrgyz OR Kirghizia OR Kirghiz OR  
53 Kyrgyzstan OR Lao PDR OR Laos OR Lebanon OR Lesotho OR Liberia OR Libya OR Macedonia OR  
54 Madagascar OR Malawi OR Malay OR Malaya OR Malaysia OR Maldives OR Mali OR Marshall Islands  
55 OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Moldova OR Mongolia OR Montenegro  
56 OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nepal OR Nicaragua OR Niger OR Nigeria  
57 OR Pakistan OR Palau OR Papua New Guinea OR Paraguay OR Peru OR Philippines OR Principe OR  
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3 Romania OR Rwanda OR Ruanda OR Samoa OR Sao Tome OR Senegal OR Serbia OR Sierra Leone OR  
4 Solomon Islands OR Somalia OR South Africa OR South Sudan OR Sri Lanka OR St Lucia OR St Vincent  
5 OR Sudan OR Surinam OR Suriname OR Swaziland OR Syria OR Syrian Arab Republic OR Tajikistan OR  
6 Tadjikistan OR Tajikistan OR Tadjik OR Tanzania OR Thailand OR Timor OR Togo OR Tonga OR  
7 Tunisia OR Turkey OR Turkmen OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Uzbek OR  
8 Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR  
9 Zimbabwe  
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16 Web of Science: default to 'all databases' before starting search, filter date

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18 Search results: exclude Medline  
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21 Mary Shelton  
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23 June 2019  
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25 Search filters adapted from: Developing Country / Low-Middle Income Searches, Public Health  
26 LibGuide, University of North Carolina, Chapel Hill

27 <https://guides.lib.unc.edu/c.php?g=8369&p=784120#s-lg-box-9898133>  
28

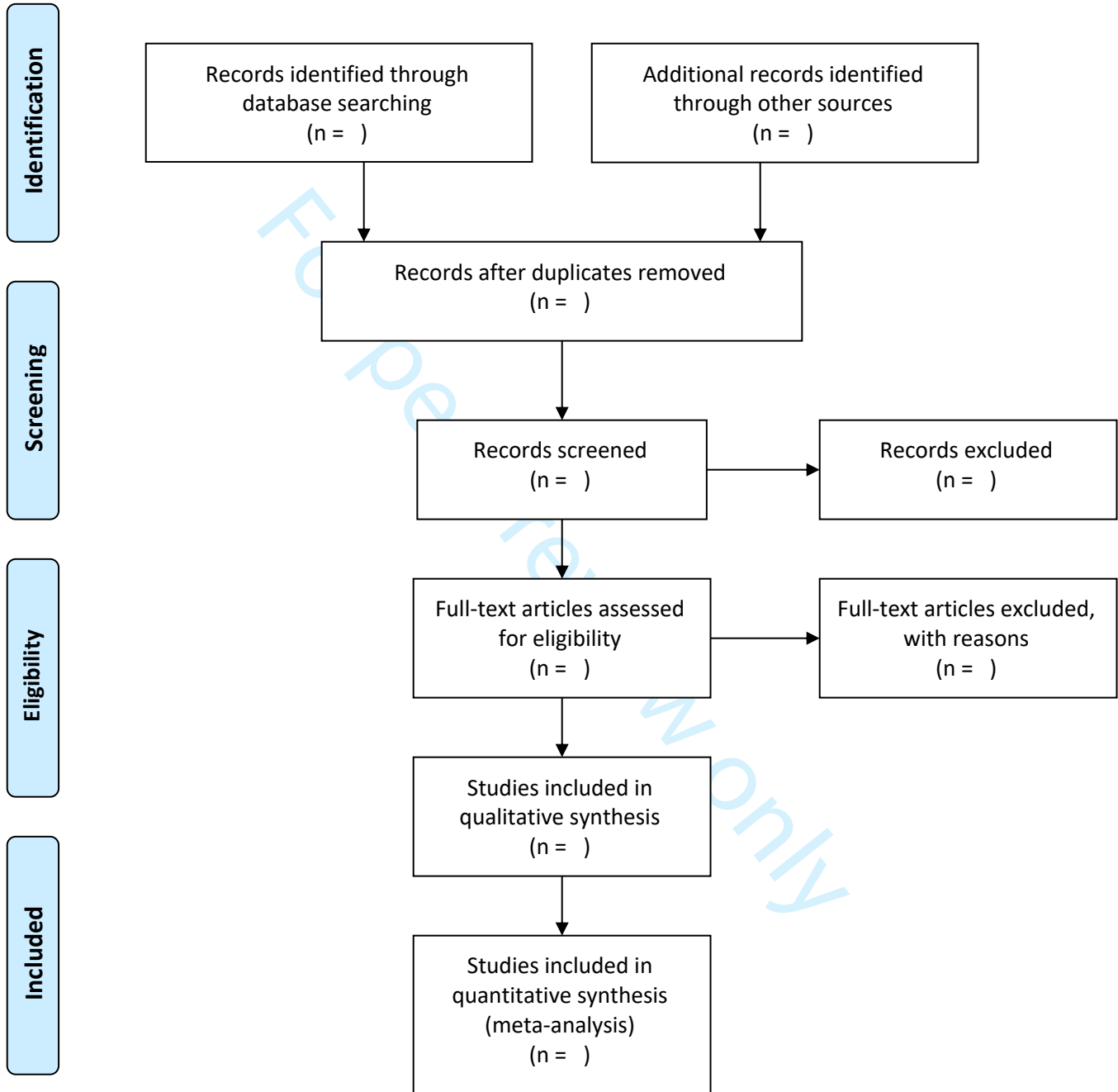
29  
30 Countries based on World Bank Country and Lending Groups

31 [https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)  
32 [lending-groups](https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups)  
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# 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).

For peer review only - <http://bmjopen.bmj.com/site/about/guidelines.xhtml>

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

<b>Scoping Review Details</b>	
Scoping Review title:	
Review objective/s:	
Review question/s:	
<b>Inclusion/Exclusion Criteria</b>	
Population	
Concept	
Context	
Types of evidence source	
<b>Evidence source Details and Characteristics</b>	
Citation details (e.g. author/s, date, title, journal, volume, issue, pages)	
Country	
Context	
Participants (details e.g. age/sex and number)	
<b>Details/Results extracted from source of evidence</b> (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	