

# Clinical nursing and midwifery research: grey literature in African countries

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**Aim:** This study reviewed grey literature to assess clinical nursing and midwifery research conducted in southern and eastern African countries over the past decade.

**Background:** The shortage of published nursing research from African countries severely limits the ability of practicing nurses and midwives to base clinical decisions on solid evidence. However, little is known regarding unpublished or unindexed clinical research ('grey literature'), a potentially rich source of information. Identifying these sources may reveal resources to assist nurses in providing evidence-based care.

**Introduction:** This scoping review of grey literature on clinical nursing and midwifery research in southern and eastern African countries helped to identify gaps in research and assess whether these gaps differ from published research.

**Methods:** Systematic searches of grey literature were performed. Research was included if it was conducted by nurses in 1 of 25 southern or eastern African countries, between 2004 and 2014 and included patient outcomes. Data were extracted on location, institution, research topic, institutional connections and author information. Chi-square tests were performed to compare differences between indexed and non-indexed literature.

**Results:** We found 262 studies by 287 authors from 17 southern and eastern African countries covering 13 topics. Although all topics were also found in indexed literature and there were statistically significant differences between the number of times, fewer topics were covered in grey literature vs. indexed.

**Discussion:** Patient satisfaction and experience and traditional health practices were more likely to be published, whereas chronic disease, assault and paediatric-related research were less often published.

**Conclusions and Implications for Nursing and Health Policy:** Generally, there is a paucity of clinical nursing research in this region. This could reflect the shortage of nurses prepared to conduct research in this region. Nurses may find additional resources for evidence in the grey literature. A complete understanding of the state

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of nursing science in southern and eastern African countries will help nurses and midwives to understand gaps in clinical research knowledge, potentially direct their research to more critical topics, and inform funding bodies and policy-makers of the situation of nursing science in southern and eastern African countries.

*Keywords:* Advanced Practice, Developing Countries, Evidence-Based Practice, Indigenous Health, International Issues, Literature Reviews, Maternity, Midwifery, Nursing, Research

## Introduction

Nursing and midwifery research in African countries is an area that is seldom the focus of review (Adejumo & Lekalakala-Mokgele 2009). However, as the nursing shortage in African countries expands (Kinfu et al. 2009) concomitantly with the rise of both chronic healthcare conditions and acute healthcare crises in this region (World Health Organization 2012), it becomes increasingly important to ensure that nurses and midwives have access to the best evidence available. To ensure this need is met, it is critical that nursing and midwifery research be aligned with healthcare priorities identified by countries and regions to achieve improved population health.

As has been evident with the recent Ebola outbreak in west African countries, equipping nurses with the proper information to perform their responsibilities is of utmost importance (Goodman 2014). Furthermore, information that has been generated by and for high-income countries may not be applicable or transferable in middle- and low-income countries with challenged resources (Chen & Liu 2010; Setlhare et al. 2014). Expanding nursing and midwifery knowledge in every area is important in order to ensure culturally sensitive and appropriate interventions and improve nursing knowledge. However, *clinical* nursing research is important to strengthen clinical practice and has been somewhat neglected as a focus of research (Adejumo & Lekalakala-Mokgele 2009; Sun & Larson 2015). Therefore, it is important to assess existing clinically focused research, as well as to identify gaps in the literature and priorities for future nursing and midwifery research in order to adequately prepare practicing nurses and midwives with the best available evidence.

Recently we conducted a scoping review (Sun & Larson 2015), which allows for the mapping of a broad spectrum of research (Armstrong et al. 2011). This review included published peer-reviewed clinical nursing and midwifery literature in African countries in the past ten years that was cited in indexed databases. It was clear, however, that many important sources of research were not identified in this review and that much important evidence for clinical nursing and midwifery practice may be found in other sources such as unindexed journals, sources identified by clinical nurse research experts from south-

ern and eastern African countries, and information found through universities within the region. We hypothesized that such sources, often referred to as 'grey literature', might be a rich source of additional clinical research and evidence that would be relevant to clinical practice. Although grey literature may not be a primary source for information, it is pertinent to the understanding of the current state of nursing science in the region. Furthermore, it is possible that it is, in fact, already being used in those instances where insufficient information is found in indexed sources; understanding what is available may help in understanding which sources nurses in the region use. Additionally, it is possible that although limited information was found in the indexed literature, important research is being conducted but researchers are encountering difficulty with publication due to lack of training, mentorship, experience or language barriers.

Although other methods of reviewing many studies at once, such as a meta-analysis, require selection of a specific research topic and method so that a comparison of quality of studies can be assessed, we chose to conduct a scoping review because of its ability to assess a breadth of topics and types of studies over a wide time span, providing a more holistic picture of existing grey literature than other methods might provide. Therefore, we performed a scoping review of grey literature to answer the question, 'What non-indexed clinical nursing and midwifery research in southern and eastern African countries has been conducted between January 1, 2004 and December 10, 2014?' The results of this search were then compared with the findings of the scoping review conducted in 2014.

## Methods

### Search strategy

The search focused on the 25 southern and eastern countries in Africa, including the eastern countries of Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mayotte, Mozambique, Réunion, Rwanda, Seychelles, Somalia, South Sudan, Uganda, United Republic of Tanzania, Zambia and Zimbabwe, and the southern countries of Botswana, Lesotho, Namibia, South Africa and Swaziland, as

defined by the United Nations (United Nations Statistics Division 2013). We chose to focus on this area because (1) this region includes the areas with the most established nursing research in Africa (Klopper & Uys 2013), (2) narrowing the region enhances the generalizability and relevance of findings to similar regions, and (3) we had established collaborations with African nursing and midwifery research leaders within this region. For this study, we defined a southeast African nursing research leader as one with a leadership role in a nursing school, a doctoral degree in nursing or related field, who conducted and published nursing research and resides in a southern or eastern African country.

We adopted the definition of grey literature from The Fourth International Conference on Grey Literature, 'That which is produced on all levels of government, academics, business and industry in print and electronic formats, but which is not controlled by commercial publishers (The New York Academy of Medicine 2015)', in this case, research that is not indexed in most common health sciences search engines. Using this as the conceptual definition, we operationalized this to include seven sources of information: (1) southern and eastern African university websites, (2) personal contact with African nursing research leaders as defined above, (3) unindexed nursing journals, (4) referrals from major non-governmental organizations, (5) governmental organizations, (6) international scholarly nursing research organizations, or (7) top ranking nursing schools.

Through these sources, a more comprehensive list of possible sources for discovery of nursing and midwifery research in Africa was compiled which consisted of websites of (1) major non-governmental organizations (e.g. The World Health Organization), (2) governmental organizations (e.g. President's Plan For AIDS Relief), (3) sites suggested by leaders of nursing research in African countries identified in the literature search or core collaborators of the parent grant, (4) international scholarly nursing or midwifery research organizations [e.g. Forum of University Nursing Deans In South Africa (FUNDISA), International Confederation of Midwives, International Council of Nurses], (5) a recent comprehensive publication on the State of Nursing and Nursing Education in Africa (Klopper & Uys 2013), (6) since the majority of funding for healthcare research on HIV and AIDS in African countries comes from the United States (The Henry J. Kaiser Family Foundation, 2014a,b); websites of the universities with the highest funding rates for nursing research from the National Institutes of Health in 2012 and (7) top ranking US schools of nursing (identified through the US News and World Report; U.S. News and World Report, 2014), as well as (8) referral websites from any of the above sources. We decided to search grey

literature from the past ten years to present the most recent progress within this region. Searches were performed between 1 August 2014 and 10 December 2014.

#### Data selection, extraction and analysis

Each web-based source index site (or home page) was searched as well as any identified root pages until all possible links were explored and no new content was identified. Relevant books and journal articles that were unavailable through the web were obtained through the Columbia University Health Sciences Library. Telephone interviews were conducted with nurse leaders from Kenya, Malawi and South Africa. We searched descriptions of current research and research centres to identify topics of clinical nursing research as well as those conducting clinical nursing research in African countries. If a project was reported via a website without a link to a researcher, we then separately searched for researcher profiles to complete the data extraction process. We included research even when the author information was not obtained or we were unable to identify the date of the research.

Criteria for inclusion were institutions and nurse scientists conducting clinical nursing or midwifery research in one of the 25 southern or eastern African countries in the last ten years (between January 2004 and 15 December 2014). Research that included patient outcomes and conducted by nurses was considered clinical nursing research. We excluded research not conducted in the region, without patient outcomes (pedagogical, organizational, workforce related or policy research), that was not in English or where we were unable to discern whether the scientist conducting the research was a nurse.

Included sources were scanned and data were extracted on the following: (1) locations of research in African countries, (2) institution where research is conducted, (3) clinical research topic, (4) institutional connections (including location and type of collaboration), and (5) names of nurse researchers conducting research in Africa along with their title, email address, institution and address (when available). A note was made when identification of nursing research was not possible, credentials were required to access material, the author, website, or research was a duplicate of a previous finding, or if the website was not working.

Duplicates were eliminated, extracted data were compiled in an Excel workbook and results were reviewed by core collaborators to confirm that the search was as comprehensive as possible. Descriptive statistics were performed in Microsoft Excel (Microsoft, 2003). To compare the differences between the results of the scoping review and the grey literature review, Fisher's exact tests were performed using IBM SPSS (Sun & Larson 2015).

## Results

The number of grey literature citations by country is outlined in Table 1. We identified 105 unique sources that could potentially lead to information regarding clinical nursing or midwifery research (see Table 2 for the complete list). Websites contained between 1 and 312 subpages, each of which was reviewed to find additional information. These sites included major non-governmental organizations ( $n = 3$ ); governmental organizations ( $n = 5$ ); sites suggested by leaders of nursing and midwifery research in African countries identified in the literature search or core collaborators of the parent grant ( $n = 25$ ); international scholarly nursing or midwifery research organizations ( $n = 35$ ); universities with the highest funding rates for nursing research from the National Institutes of Health in 2012 ( $n = 15$ ); top ranking schools of nursing ( $n = 30$ ); and referral websites from any of the above sources ( $n = 25$ , included in the above categories) (Table 2). In total, we found information on 262 research projects with 287 unique authors from 17 of the 25 southern and eastern African countries (68%), most often South Africa ( $n = 89$ ), Malawi ( $n = 28$ ) and Kenya ( $n = 24$ ).

We categorized the findings into 13 topics: most frequently midwifery/maternal health and mortality/women's health; infectious disease (including HIV and tuberculosis); paediatrics (including adolescents); and health promotion/disease prevention (Table 3). Much of the research did not have a publication date ( $n = 82$ ); of those that did, 2011 was the year with the

greatest number of clinical research citations (Fig. 1). Four websites were missing or malfunctioning; one site was not in English, one site only included pedagogical research, one required credentials to search, and seven sites contained research that had no identifying markers or notations for research conducted by nurses or midwives; these sources were omitted.

A comparison of the number of times a topic was cited in indexed vs. grey literature is listed in Table 3. Seven of the 13 research topics were identified in both searches in similar proportions. Clinical research on assault/abuse/violence/substance abuse, chronic disease and paediatrics were found significantly more often in the grey literature rather than the indexed literature. Research regarding patient satisfaction and experience were found more often in the indexed rather than the grey literature. Some topics found in the published literature, such as traditional health practices and other topics (such as nursing scope of practice and task shifting), were not found in the grey literature search.

## Discussion

Of more than 1000 websites (including home pages and index sites), books, universities, nurse leaders and other sources scanned for clinical nursing research in southern and eastern African countries in the past ten years, we found 281 research projects covering 13 topics 374 times, an average of only one research project per country in this region, per year. While this represents almost fourfold the amount of research that was found in the scoping review of indexed literature, there remains little current evidence on which nurses and midwives can base their practice. This paucity is possibly due to the general shortage of nurses in this region, already unable to meet the demand for nurses at the clinical level and in most cases not retraining sufficient numbers to replace the outflow of nurses and midwives, as well as the clinical nurses not trained in research methodology (Kinfu et al. 2009). With such a deficit of nurses and midwives, it is not surprising that many countries in this region have only a handful of doctorally prepared nurses and midwives equipped to conduct research (Klopper & Uys 2013). However, there seemed to be a trend of increasing numbers of clinical nursing and midwifery research studies over the ten-year period we examined (Fig. 1). The fact that paediatric literature was significantly more likely to appear in indexed literature – and research on patient satisfaction and experience was more significantly more likely to appear in the grey literature – may reflect publication bias, increased funding for certain topics, a lack of resources or expertise to publish among some nurse scientists, nurses ill-prepared to write scientific articles; English as a second or third language makes publishing in high-impact

**Table 1** Number of times research from each country was cited in grey literature (281 citations in total)

Country	Number of times cited
South Africa <i>E</i>	122
Malawi <i>E</i> , Botswana <i>E</i>	36
Kenya <i>E</i>	24
United Republic of Tanzania <i>E</i>	13
Swaziland <i>E</i>	12
Zambia	7
Ethiopia <i>S</i> , Uganda <i>E</i> , Zimbabwe	6
Mozambique, Rwanda <i>E</i>	3
Namibia <i>E</i> , Lesotho <i>E</i>	2
Eritrea <i>E</i> , Mauritius <i>E</i> , Seychelles <i>E</i>	1
Burundi, Comoros, Djibouti, Madagascar, Mayotte, Réunion, Somalia <i>S</i> , South Sudan	0

Note: *E* = English is (one of) the official language(s) in this country.  
*S* = English is (one of) the spoken language(s) in this country.

Table 2 Sources searched for grey literature

	<i>Institution name</i>
CC	African Health Observatory; African Journal for Nursing and Midwifery; African Journals Online; African Midwifery Journal; African Midwives Network; Banda University; Collaboration for Higher Education of Nurses and Midwives in Africa; East African Journal; East Central and Southern Africa (ESCA) College of Nursing (ESCASON); Eritrea world health organization; FUNDISA; Grace Omoni (Kenya); Health Systems Trust; Human Sciences Research Council; International Confederation of Midwives; International Journal of Africa Nursing Sciences; International Journal of Nursing and Midwifery; International Nursing Alliance; International Planned Parenthood Federation; IntraHealth International; Kamuzu College of Nursing; Kenya Nursing Journal; Laerdeal Global Health; Malawi Medical Journal; Midwives Associations of Zambia and Malawi; Muhimbili University of Health and Allied Sciences – MUHAS; Nexus Database; Nurse Education Today; Sabina Wakasiaka; South African Medical Research Council; Southern Sudan Medical Journal; Strengthening Nurses' Capacity in HIV Policy Development in sub-Saharan Africa and the Caribbean; Tau Lambda At Large Chapter STTI; The Global Fund to fight HIV/AIDS, Tuberculosis, Malaria; The State of Nursing and Nursing Education in Africa; University of KwaZulu-Natal School of Nursing Science; University of Nairobi; UNISWA Research Journal of Agriculture; Science and Technology; University of Botswana; The Virginia Henderson Global Nursing e-Repository (STTI); West African College of Nursing
GO	Human Sciences Research Council Data sets; ICAP; IntraHealth International; Nursing Education Partnership Initiative (NEPI); Reducing Maternal and Child Mortality Through Strengthening Primary Healthcare in South Africa
ISNRO	Cape Peninsula University of Technology; Durban University of Technology Dept. of Nursing; Nelson Mandela Metropolitan University Dept of Nursing Science; North West University School of Nursing Science; Tshwane University of Technology Adelaide Tambo School of Nursing Science; University of Cape Town Child Nurse Practice Development Initiative; University of Cape Town School of Health & Rehabilitation Sciences; University of Johannesburg Department of Nursing Science; University of Limpopo; Dept. of Nursing Science; University of Fort Hare Dept. of Nursing Science; University of Pretoria; Dept. of Nursing Science; University of South Africa Dept. of Health Studies; University of Stellenbosch; Faculty of Health Science; Division of Nursing Science; University of the Free State School of Nursing Science; University of the Western Cape; University of Venda Dept. of Nursing Science; University of Witwatersrand; Department of Nursing Science; University of Zululand; Vaal University of Technology; Walter Sisulu University
NGO	ACONDA, Federal Ministry of Health (FMOH); World Health Organization
NIH & Top ranked	Columbia University, Johns Hopkins University, New York University; University of California Los Angeles; University of California San Francisco; University of Illinois Chicago; University of Michigan Ann Arbor; University of North Carolina Chapel Hill; University of Pennsylvania; University of Pittsburgh; University of Washington; Yale University
NIH Top ranked	University of Miami Coral Gables; University of Rochester; Virginia Commonwealth University Arizona State University; Boston College; Case Western Reserve University; Duke University; Emory University; Indiana University-Purdue University – Indianapolis; Oregon Health and Science University; Rush University; University of Alabama – Birmingham; University of Colorado – Denver; University of Iowa; University of Kentucky; University of Maryland – Baltimore; University of Minnesota – Twin Cities; University of Texas Health Science Center – Houston; University of Virginia; University of Wisconsin – Madison; Vanderbilt University

Note: CC = sites suggested by leaders of nursing research in African countries identified in the literature search or core collaborators of the parent grant ( $n = 25$ ); GO = governmental organizations ( $n = 5$ ); ISNRO = international scholarly nursing research organizations ( $n = 35$ ); NGO = non governmental organization ( $n = 3$ ); NIH = universities with the highest funding rates for nursing research from the National Institutes of Health in 2012 ( $n = 15$ ) (USA); Top ranked = top ranked university as listed by *US News and World Report* ( $n = 30$ ).

English journals challenging; or other as yet unexplained factors. This highlights the importance of aligning research among academicians and clinicians in the region, funding sources and publishers with critical clinical research priorities.

### Limitations

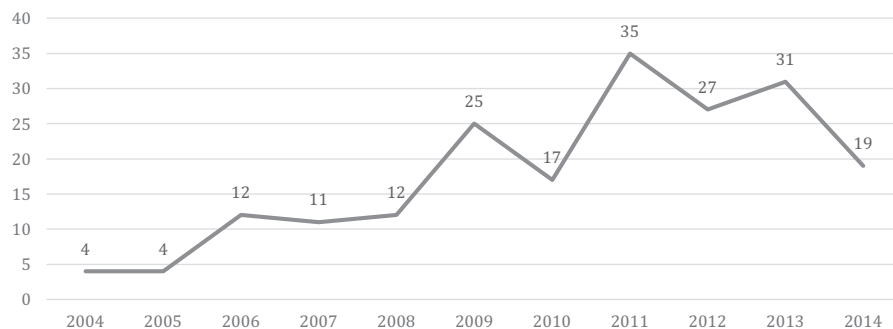
Because the purpose of this grey literature review was to understand current research topics, we did not evaluate the quality of the research identified. Although every effort was made to

ensure that each entry was unique, there is the possibility that some research projects may have been duplicates. Furthermore, additional research was certainly missed because it was not disseminated in the sources we searched. One repository required credentials to access material; in such cases, we were unable to gain access. Also, there may have been literature that was not identified because of problematic websites or improper labelling of information. While we limited our results to English, many of the countries in this area are English speaking (18 of 25, or 72%,

**Table 3** Topics uncovered in grey literature search compared to scoping review of published literature (Sun & Larson 2015) and statistical significance in differences

Topics of research (n = 13)	Number of times included in research projects in grey literature review n (%), N = 374	Number of times included in research projects in literature cited in scoping review n (%), N = 169	P-value
Acute care	7 (1.9)	5 (3.0)	0.37
Assault/Abuse/Violence/Substance abuse/High-risk behaviours	42 (11.2)	6 (3.6)	0.01*
Cancer	7 (1.9)	5 (3.0)	0.37
Chronic disease	15 (4.0)	1 (0.6)	0.04*
Disease prevention/Health promotion/Diet/Exercise	37 (9.9)	12 (7.1)	0.38
Infectious disease	80 (21.4)	24 (14.2)	0.88
Mental health	12 (3.2)	4 (2.4)	1.0
Midwifery/Maternal health and mortality/Women's health	101 (27.0)	36 (23.7)	0.50
Palliative care	6 (1.6)	4 (2.4)	0.49
Patient satisfaction/experience	33 (8.8)	36 (23.7)	<0.001*
Paediatrics	34 (9.1)	4 (2.4)	0.01*
Traditional health practices	0	9 (5.3)	<0.001*
Other	0	23 (13.6)	<0.001*

\*Statistically significant at the  $\alpha = 0.05$  level.



**Fig. 1** Number of times clinical nursing and midwifery research was cited by year from January 2010 through November 2014. Note: Missing are n = 84 research studies that did not list a study or publication date.

see Table 1), and most research in indexed journals or otherwise is published in English (Klopper & Uys 2013). Nevertheless, although using only English for our search may not pose a major threat to external validity for this review, it does highlight the fact that many nurses in southern and eastern African countries may have difficulty publishing because English is not their primary language. Finally, the results of this review may not be broadly generalizable, although they certainly have implications for the many millions of people who live in southern and eastern African countries. However, this demonstrates that even broad searches of literature from developing countries, as was done with the scoping review, may fail to identify a large proportion of clinical research, which may provide insight into true

gaps, and data needs for evidence-based practice and validate the need for a grey literature search such as this one.

## Conclusions

In this environmental scan of the grey literature, we found that many sources of clinical nursing and midwifery research remain unidentified if only traditional methods of searching the peer-reviewed and published literature are used. Valuable information that could be useful for evidence-based practice may be lost because of lack of direct access to some data sources, convoluted or underdeveloped websites, or simply because findings are not disseminated in ways that are readily accessible. This review helps to illuminate the current state of

nursing and midwifery research in southeast African countries by adding many research projects that were not included in searches of indexed research.

Clearly, a complete understanding of clinical nursing research priorities and needs can inform both the goals of the researchers as well as editors selecting research for publication. Furthermore, this environmental scanning process of grey literature may provide a template for identifying clinical nursing and midwifery research which could be applied in other regions. Challenges in the future will include aligning these clinical research priorities with research and research funding.

### Implications for nursing and health policy

This paper summarizes clinical nursing and midwifery research that has not been indexed and enhances our understanding of clinical nursing research being conducted in southern and eastern African countries. Although there is currently a shortage of nursing research in the area, nurses in these regions may find additional resources for evidence by investigating grey literature sources. This review points to gaps in current research and may guide health policy for research. Furthermore, understanding the current state of nursing and midwifery research may help ensure that resources are allocated towards the most essential needs. Future studies could include assessments of the quality of research conducted and other areas of research such as pedagogy or policy.

Understanding of the state of nursing science in southern and eastern African countries will help nurses and midwives to understand gaps in clinical research knowledge and potentially direct their research to other critical topics. Having a complete assessment of the literature will help to inform funding bodies and policy-makers of the serious situation of nursing science in many African regions, which may lead to a weak evidence-base and potentially affect patient outcomes. Additionally, it may also provoke thought about other developing regions, providing a template for similar assessments elsewhere. We hope that the findings here are not only relevant to readers in Africa, but might serve as a template for other regions that wish to explore grey literature in their region.

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### Author contributions

All authors contributed to the study conception and design. CS completed the data collection and analysis; EL independently

reviewed and confirmed the results. CS and EL drafted the manuscript; JD, AM, GO and HK provided important intellectual content, sources of grey literature and revisions.

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