African Journal of Emergency Medicine 13 (2023) 331–338

Contents lists available at ScienceDirect

African Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/afjem

ORIGINAL ARTICLE

Quality of systematic reviews in African emergency medicine: a cross-sectional methodological study

J. van Niekerk *, T. Fapohunda, A. Rohwer, M. McCaul

Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Stellenbosch University

ARTICLE INFO

Keywords:
Emergency medicine
Systematic review
Methodological quality
AMSTAR II

ABSTRACT

Introduction: Reliable systematic reviews are essential to inform clinical practice guidelines, policies and further research priorities in Africa. For systematic review findings to be trustworthy, they need to be conducted with methodological rigour and reported transparently. We assessed the methodological quality of systematic reviews published in African emergency medicine journals, comparing them to those published in international emergency medicine journals. Additionally, we describe the types of review literature published in the African journals.

Methods: We performed a cross-sectional methodological study of systematic reviews published in selected African and international emergency medicine journals from 2012 to 2021. Studies were eligible if they were i) a systematic review on an emergency medicine topic, ii) published in one of the top five emergency medicine journals in the African region or internationally and iii) published between January 2012 and December 2021 in English or French. We searched PubMed, Web of Science and Scopus databases and hand-searched selected journals. Two authors screened titles, abstracts and full texts independently and in duplicate. Data extraction was performed by one reviewer, using a standardised form, after completing a calibration exercise. We described the characteristics of systematic reviews and assessed methodological quality using AMSTAR II.

Results: We identified 34 (37%) African and 511 (54%) international systematic reviews from 92 and 948 review articles respectively across 10 journals. We included all 34 African and a random sample of 100 international systematic reviews. Methodological quality was low or critically low for all the African systematic reviews (n=34, 100%) and all but three international systematic reviews (n=97, 97%). The median number of critical domain weaknesses was 4 (IQR 4;5) and 2 (IQR 2;4) for African and international systematic reviews respectively. The most common weaknesses across both African and international systematic reviews were i) not establishing *a priori* review protocols, ii) unclear selection of study designs iii) not providing a list of excluded studies and iv) unclear reporting on funding sources for included studies.

Conclusion: Emergency medicine systematic reviews published in African and international journals are lacking in methodological quality. Reporting an *a priori* protocol, developing a comprehensive search strategy, appropriate evidence synthesis and adequate assessment of risk of bias, heterogeneity and evidence certainty may improve the quality of systematic reviews.

African relevance

- The unique and developing field of African emergency medicine needs reliable systematic reviews to effectively inform practices and policies
- The review landscape and quality of systematic reviews in African emergency medicine have not previously been investigated
- Consumers and producers of evidence synthesis literature in Africa should be aware of variations in the quality of reviews, impacting their usability
- The methodological quality of emergency medicine systematic reviews published in African and International journals is lacking
- Researchers are encouraged to collaborate with individuals or organisations with methodological expertise to facilitate skills transfer, increase awareness of the importance of evidence synthesis and improve review quality

* Corresponding author.
E-mail address: jaacvn@gmail.com (J. van Niekerk).

https://doi.org/10.1016/j.afjem.2023.10.001
Received 15 March 2023; Received in revised form 7 October 2023; Accepted 20 October 2023
Available online 24 November 2023

Introduction

Systematic reviews are valuable in answering clinical questions and to inform practice guidelines and healthcare policy due to their ability to reflect the totality of evidence on a topic in a transparent, comprehensive and rigorous manner [1]. In low- and middle-income countries (LMICs) where healthcare systems face unique and complex challenges, evidence synthesis is especially important to support governments' decisions regarding equitable healthcare delivery [2,3]. The increased recognition of the need for policy and practice to be informed by rigorous evidence is driving evidence synthesis activities across Africa [4]. With the rapid expansion of African emergency medicine literature, there is a need for local publishers to disseminate robust evidence-synthesis literature on topics with African relevance [5].

Published evidence syntheses consist of various design types, including systematic reviews, scoping reviews, narrative or traditional literature reviews, mixed methods reviews, umbrella reviews and rapid reviews [6]. Traditional literature reviews vary in their methodology and often do not report on their methods. Correctly identifying review types is important for knowledge users, as each has its purpose and is not to be confused with systematic reviews which have authority in informing practice and policy [7].

Systematic reviews are only reliable if their methods are sound. The absence of rigorous methods or incomplete reporting may result in confusion, inappropriate guidance and conflicting practice [8,9]. A distinction can be made between methodological quality and reporting quality. Methodological quality addresses how well a systematic review was designed and conducted (e.g. literature search, selection criteria and data pooling) and is synonymous with internal validity, while reporting quality refers to the description of the methodology and findings, affecting transparency and reproducibility of reviews [10,11]. Various tools exist to appraise the methodological quality of systematic reviews, the most recent and widely accepted being A MeaSurement Tool to Assess systematic Reviews (AMSTAR) [10,12]. The current updated AMSTAR II enables the appraisal of systematic reviews of randomised and non-randomised studies of healthcare intervention [13]. For reporting, The Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) is the most commonly used checklist [11].

The quality of systematic reviews across various fields has been investigated in previous methodological cross-sectional studies, exploring differences and the association of quality with certain study characteristics towards improving future reviews [14–16]. Some of these characteristics include factors related to the journal, region, authors, funding and year of publication [17–20]. The use of the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) system of rating certainty of evidence is gaining traction and might be a useful tool in improving the overall quality and utility of systematic reviews [21].

The conduct and reporting quality of emergency medicine systematic reviews have been examined in previous methodological reviews [22], with many having major flaws limiting their validity [23]. Currently, no literature exists assessing the methodological quality of systematic reviews published in African emergency medicine journals, comparing it to those published in international journals.

In this study, we sought to provide an overview of the review types published in African emergency medicine journals and assess the methodological quality of systematic reviews. We compared the quality of systematic reviews published in African emergency medicine journals to those published in international emergency medicine journals. Finally, we explored possible predictors of methodological quality among systematic reviews published in African emergency medicine journals.

Methods

We conducted a methodological cross-sectional study of existing systematic reviews published in emergency medicine journals between 2012 and 2021 to determine their methodological quality. Selected African and international emergency medicine journals were searched for eligible systematic reviews. We sampled systematic reviews from African and international journals for data extraction and appraisal. We were guided by methods suggested for methodological studies and followed the reporting framework for meta-epidemiological studies [17,24]. We followed an *a priori* protocol (Appendix B) available in SUN-ScholarData [25]. Ethical approval was obtained from Stellenbosch University (X22/10/028).

Eligible studies

We included systematic reviews on emergency medicine topics published in English or French. A published study was considered a systematic review if it followed systematic methods, including, at least, pre-specified eligibility criteria, transparent searching, explicit screening and a transparent data synthesis plan – similar to the definition used in previous methodological reviews [16]. Relevant emergency medicine topics were considered eligible if they included the initial evaluation, diagnosis, treatment, and coordination of care for unforeseen illness or injury [26]. We excluded studies available only as abstracts, primary research and non-systematic reviews or related papers such as scoping reviews, narrative reviews, guidelines and editorials.

Eligible journals

We identified journals for searching through the SCImago Journal & Country Rank website, a publicly available portal that includes journal and country scientific indicators, and used the emergency medicine subject category filter [27]. SCImago determines regions according to the location of the publisher. Only two African journals were available, the African Journal of Emergency Medicine (AFJEM) and Emergency Medicine International (EMI). To supplement these, we searched the African Journals Online (AJOL) database and identified three additional relevant journals: South African Medical Journal (SAMJ), South African Journal of Critical Care (SAJCC) and the African Journal of Anaesthesia and Intensive Care (AJAIC) [28]. For international journals the top five journals according to H-index were selected: Annals of Emergency Medicine (AoEM), Resuscitation, Academic Emergency Medicine (AEM), Injury and Shock. The journal H-index is the number of papers (h) published in a journal that has been cited at least h times [29].

Identifying systematic reviews for inclusion

One author (JvN) searched online databases including PubMed, Web of Science and Scopus with filters for selected journals. The search string was developed with the assistance of a librarian, using keywords proven to be sensitive for identifying systematic reviews, including "search", "review", "systematic review" and "meta-analysis" [30]. For African journals, we supplemented the online search with hand searching, as these journals are not always indexed in databases. Appendix C contains the complete search strategy (Appendix C1), reported according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses literature search extension (PRISMA-S) guidelines, where applicable (Appendix C2) [31].

Screening systematic reviews

After deduplication, independent title and abstract screening were done by two reviewers (JvN and TF) in duplicate, using the Systematic Review Accelerator [32]. Full texts of potentially eligible studies were retrieved and reviewed independently and in duplicate (JvN and TF).

Disagreements were resolved by consensus between reviewers. Disputes were adjudicated by a senior author (MM or AR). Reasons for full-text exclusions were recorded as: no methods section, non-systematic review methods or full text not available (Appendix D).

Sample size estimation and sampling

We calculated an ideal sample size of 95 systematic reviews per group (African and International journals) to determine a minimal important difference of 20% for critically low or low AMSTAR II scores between systematic reviews from African compared to International journals with 80% power, similar to previous studies [15].

We aimed to sample 100 systematic reviews per region using proportional stratified random sampling, stratifying by journal. We used an online random number sequence generator [33]. Each journal's contribution was proportional to the total number of systematic reviews it contributed to the group. We did not reach the intended number for the African journals group and therefore included all eligible systematic reviews.

Data extraction

A standardised form was used for extracting data. Data validity was ensured by a calibration process where two reviewers extracted a 10% sample until 80% agreement was achieved. One author (JvN) then completed the extraction process. Data was captured in Microsoft Excel. We extracted general characteristics (such as study and journal title, journal H-index, nationality of primary author's institution, year of publication and study focus) and methodological characteristics (relating to the authors, protocol, study methods, use of reporting guidelines, funding and use of the GRADE approach). Data sources were study articles and online available supplementary files and protocols.

Assessment of methodological quality

We used AMSTAR II to assess the methodological quality of the included systematic reviews [13]. AMSTAR II consists of 16 domains, of which seven are considered critical domains. The overall score translates into one of four global quality ratings: high (no or one non-critical domain weakness), moderate (more than one non-critical weakness), low (one critical weakness with or without non-critical weaknesses) and critically low (more than one critical weakness with or without non-critical weaknesses). The methodological quality was assessed by the primary investigator (JvN) after calibration with a co-reviewer (TF). Uncertainties were discussed with a senior author (MM or AR) until consensus was achieved.

Data analysis

Analysis was conducted in STATA 17 [34]. Review types were described using frequencies and percentages. Study characteristics were described using frequencies and percentages for categorical data. Continuous data was described using means with standard deviations or medians and interquartile ranges (IQR), depending on the distribution. We planned multivariate logistic regression analysis to determine quality predictors, but this was not reported as there were too few events for meaningful interpretation.

Results

We identified 10 861 records (Africa n=1893, international n=8968), of which 5790 were duplicates. After title and abstract screening, 1080 (Africa n=96, international n=984) full texts were sought for retrieval. Forty were only available as abstracts and could not be retrieved. Full-text screening yielded 545 eligible systematic reviews, 34 in the African and 511 in the international journals. The final sample for analysis comprised 34 systematic reviews from African journals and 100 systematic reviews from international journals (Fig. 1). A reference list for studies excluded at full-text (Appendix D) and studies included in the analysis (Appendix E) is provided as supplemental material.

Of the 92 full-text review articles published in African journals, 34 (37%) were systematic reviews, 8 (9%) scoping reviews, 18 (20%) narrative reviews with methods (systematic style) and 32 (35%) traditional literature reviews without reported methods.

Characteristics of included systematic reviews

The general and methodological characteristics of the included systematic reviews are summarized in Tables 1.1 and 1.2. Systematic reviews in African journals increased from 9 to 25 when comparing 2012-2016 to 2017-2021. African systematic reviews commonly had primary authors affiliated with African (n=12, 35%) and Northern American (n=9, 27%) institutions, while international systematic review authors were mostly from North America (n=44, 44%). Most systematic reviews addressed questions on the effectiveness of interventions, although more than a third of African systematic reviews had a focus other than diagnosis, prognosis, prevalence or effectiveness. This was a diverse group, including systematic reviews combining multiple research questions or answering a very specific question, for example regarding service delivery or healthcare systems.

Regarding methodological characteristics, very few systematic reviews in the African journal subgroup included an author with methodological expertise (n=1, 3%), had librarian assistance (n=3, 9%), developed an *a priori* protocol (n=5, 15%), reported on or had funding (n=10, 30%), or referenced a scoping review (n=0, 0%). The GRADE approach was used infrequently in both the African (n=2, 6%) and international (n=24, 24%) journal groups. More than two-thirds (n=24, 71%) of African systematic reviews did not identify themselves as such in the title.

Methodological quality

The majority of included systematic reviews scored poorly when assessed for methodological quality. Overall, all African and all but three international systematic reviews had a global quality score of either low or critically low (Table 2). Systematic reviews published in African journals had a median of four (IQR: 4,5) critical domain weaknesses compared to a median of two (IQR: 2,4) in systematic reviews published in international journals.

Systematic reviews published in international journals had better scores for all individual AMSTAR II domains, compared to systematic reviews published in African journals (Fig. 2). We observed similar scores for some domains and notable differences for others. Seventy-four percent (n=25) of African, compared to 99% (n=99) of international journals had an adequate research question and inclusion criteria (domain 1). Only 6% (n=2) of African systematic reviews developed an *a priori* protocol, compared to 41% (n=41) of international ones (domain 2). No African (n=0, 0%) and very few international (n=4, 4%) systematic reviews adequately explained the selection of study designs for inclusion (domain 3). The literature search strategy was judged to be comprehensive in none of the African (n=0, 0%) and 30% (n=30) of the international systematic reviews (domain 4). Duplicate study selection was performed in 62% (n=21) and 89% (n=89) of African and international systematic reviews respectively, and duplicate data extraction in 41% (n=14) and 63% (n=63) respectively (domains 5 and 6). A list of excluded studies with justifications was rarely provided, only in 3% (n=1) of African and 5% (n=5) of international systematic reviews (domain 7). Included studies were described adequately in 24% (n=8) and 36% (n=36) of African compared to international systematic reviews (domain 8). Satisfactory risk of bias assessment was done in only 9% (n=3) of African, compared to 56% (n=56) of international, systematic reviews (domain 9). Reporting of funding for included studies

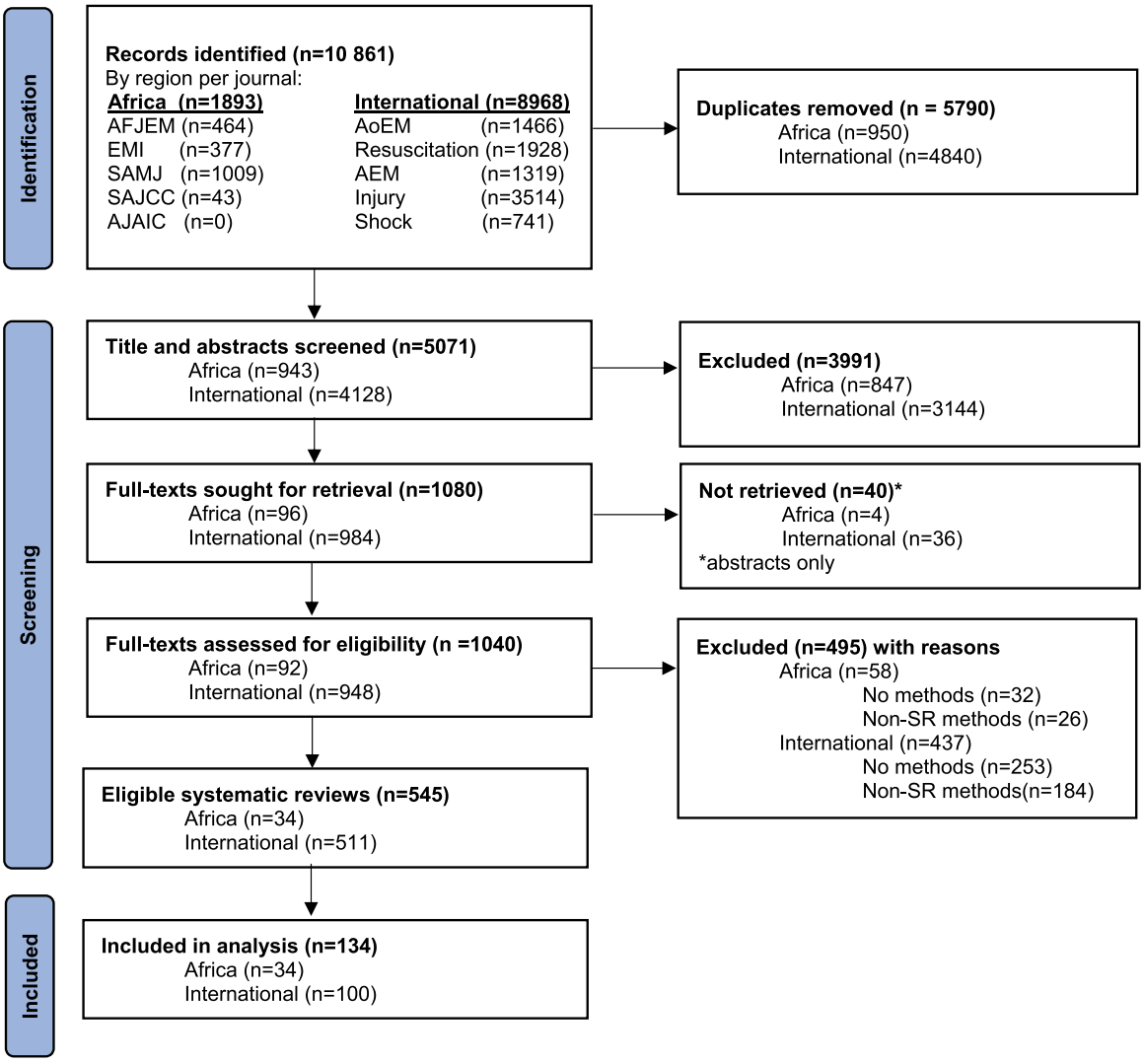

Fig. 1. PRISMA flow diagram of included reviews.
AEM, Academic Emergency Medicine; AFJEM, African Journal of Emergency Medicine; AJAIC, African Journal of Anaesthesia and Intensive Care; AoEM, Annals of Emergency Medicine; EMI, Emergency Medicine International; SAJCC, Southern African Journal of Critical Care; SAMJ, South African Medical Journal.

was never (n=0) done in African systematic reviews and only done in 5% (n=5) of international systematic reviews (domain 10). Appropriate methods for statistical combination of results during meta-analysis was used in 21% (n=7) of African and 47% (n=47) of international systematic reviews (domain 11). Assessment of the potential impact of risk of bias in individual studies on the results of the meta-analysis was done in 18% (n=6) of African and 26% (n=26) of international systematic reviews (domain 12). When interpreting results, only 15% (n=5) of the African and 57% (n=57) of the international systematic reviews accounted for risk of bias in individual studies (domain 13). A satisfactory discussion and explanation of heterogeneity in the results was present in 21% (n=7) of African, compared to 62% (n=62) of international, systematic reviews (domain 14). Twenty-nine percent (n=10) of African and 34% (n=34) of international systematic reviews carried out an adequate investigation of publication bias when performing quantitative synthesis (domain 15). Both African and international systematic reviews did well in reporting sources of conflict of interest, 85% (n=29) and 98% (n=98) respectively (domain 16).

Characteristics associated with methodological quality

We were unable to statistically analyse predictors of methodological quality. However, during appraisal we observed that systematic reviews with a protocol and those following a reporting guideline were more transparent. Reviews using the assistance of a librarian generally had more complete search strategies and the impact of the risk of bias and other factors was better explored in reviews using the GRADE framework.

Discussion

Our study evaluated and compared the quality of systematic reviews in African and leading international emergency medicine journals and found both to be lacking. However, systematic reviews in international journals scored better in all individual AMSTAR II domains. Our results may have been affected by the limited number of African systematic reviews available, compared to the large pool of international systematic reviews from which we sampled. Although we were unable to analyse quality predictors, greater reviewer capacity and evidence-synthesis skills among international author teams may account for the discrepancies.

In order to reduce research waste and prevent duplication of effort, identifying and appraising existing reviews on a topic is one of the first steps in evidence synthesis and guideline development [1]. Paramount

Table 1.1
General characteristics of included systematic reviews.

Characteristic	African (n=34)	International (n=100)
Journal contributions, n (%)		
AFJEM	13 (38)	-
EMI	13 (38)	-
SAJCC	2 (6)	-
SAMJ	6 (18)	-
AoEM	-	13 (13)
Resuscitation	-	36 (36)
AEM	-	20 (20)
Injury	-	25 (25)
Shock	-	6 (6)
Journal H-index, median (Q_1; Q_3)	19 (6; 19)	130 (129; 139)
Primary author region, n (%)		
Africa	12 (35)	0 (0)
Asiatic	7 (21)	17 (17)
Western Europe	3 (9)	30 (30)
Eastern Europe	0 (0)	0 (0)
Northern America	9 (27)	44 (44)
Latin America	1 (3)	2 (2)
Middle East	2 (6)	2 (2)
Pacific	0 (0)	5 (5)
Year of publication, n (%)		
2012-2016	9 (26)	37 (37)
2017-2021	25 (74)	63 (63)
Study focus, n (%)		
Effectiveness	11 (32)	45 (45)
Prevalence	5 (15)	6 (6)
Diagnostic	5 (15)	16 (16)
Prognostic	1 (3)	18 (18)
Other[a]	12 (35)	15 (15)

[a] diverse group, including systematic reviews with more than one focus or a niche focus

Table 1.2
Methodological characteristics of included systematic reviews.

Characteristic	African (n=34)	International (n=100)
Number of authors, n (%)		
1-3	13 (38)	23 (23)
4-6	12 (35)	46 (46)
>6	9 (27)	31 (31)
Authors included methodologist/ statistician, n (%)	1 (3)	12 (12)
Librarian assistance, n (%)	3 (9)	44 (44)
Title contains "SR" and/or "MA", n (%)	24 (71)	91 (91)
Synthesis type, n (%)		
Meta-analysis	12 (35)	57 (57)
Narrative synthesis	22 (65)	43 (43)
Protocol/methods developed *a priori*, n (%)	5 (15)	45 (45)
Registered on PROSPERO	3 (9)	41 (41)
Use of reporting guideline claimed, n (%)[a]	15 (44)	77 (77)
Funding, n (%)		
Not reported	24 (71)	22 (22)
Reported no external funding	5 (15)	49 (49)
Reported funding from non-profit organisations	5 (15)	29 (29)
Number of studies included, median (Q_1; Q_3)	16.5 (10.8; 41.0)	13.5 (10.0; 27.8)
GRADE approach used, n (%)	2 (6)	24 (24)
Commissioned for guideline development, n (%)	4 (12)	7 (7)
Informed by scoping review, n (%)	0 (0)	3 (3)

[a] Reporting guidelines: African systematic reviews used PRISMA (100%), International systematic reviews used PRISMA (94.8%), MOOSE (1.3%) or PRISMA and MOOSE (3.9%)

to this are easily identifiable, transparent and robust systematic reviews. We encountered various reviews without an appropriate description or reporting of methods. This may lead clinicians or policymakers to inappropriately use a review to inform policy and practice, resulting in misleading or conflicting treatment options. Some reviews were also labelled or reported as systematic reviews, without adhering to systematic review standards and methods – such as appropriate searching, screening, risk of bias assessment and evidence synthesis strategies. This issue is multifocal, where responsibility lies with the authors, peer-reviewers and journals. However, a good start to the solution lies in the use of systematic review reporting checklists and authors appraising their own work before submission [11,13,35].

Table 2
AMSTAR II results for African and International systematic reviews.

	Africa (n=34)	International (n=100)
Global quality rating, n (%)		
High	0 (0)	2 (2)
Moderate	0 (0)	1 (1)
Low	1 (3)	18 (18)
Critically low	33 (97)	79 (79)
Number of critical domain weaknesses, median (Q_1; Q_3)	4 (4; 5)	2 (2; 4)

Reliable healthcare policies and practice guidelines in African emergency medicine should be based on high-quality, relevant and transparent systematic reviews, with sufficient systematic review author capacity and evidence literacy [36]. Despite significant growth in resources and capacity building in evidence synthesis and guideline development in recent years, renewed efforts and action are warranted for emergency medicine journal editors, systematic review authors and peer-reviewers to improve systematic review reporting and quality [1,4,37]. This will require increased collaboration and capacity building among local and international review authors. The development of evidence-based healthcare initiatives in Africa is a welcome step in the right direction, and has been associated with increased research output, especially from South African authors [4,38]. Cochrane South Africa has played an instrumental role in building local capacity for evidence synthesis and connecting African researchers to the global network of reviewers [39]. Collaboration of new reviewers with Cochrane-trained methodologists has the potential to increase review quality significantly. In Africa, such collaboration has been shown to be impacted by personal and working relationships [40]. The importance of social networks, extramural collaboration and cross-disciplinary communication is essential to further increase research productivity [41]. Collaborative efforts will also lead to capacity building through mentorship, skills transfer and the exposure to tools such as reporting checklists and the Cochrane Handbook for Systematic Reviews [42,43]. Authors can further improve review capacity by joining local evidence-based initiatives and attending courses on evidence synthesis [4,44].

Based on our findings, critical indicators for consideration by systematic review authors, journals and peer-reviewers to improve the quality and reporting of systematic reviews are i) reporting of an *a priori* protocol, ii) appropriate support to develop a comprehensive search strategy, iii) adequate risk of bias assessment per study design across outcomes, iv) incorporating an assessment of certainty of evidence and v) appropriate evidence synthesis and heterogeneity assessment. For review authors, who are typically busy clinicians in emergency medicine, collaboration with evidence synthesis methodologists will be key, including advanced applications such as GRADE and populating Summary of Findings Tables. For journal editors, we suggest requiring transparent reporting through stricter adherence of studies to reporting guidelines and facilitating author training by connecting authors to local evidence-based initiatives and individuals with expertise in evidence synthesis.

The absence of these methodological characteristics points towards the limited capacity for conducting systematic reviews which is prevalent in LMICs [36]. Oliver *et al* (2015) found that capacity is often constrained at the individual, team, organisation and system level and

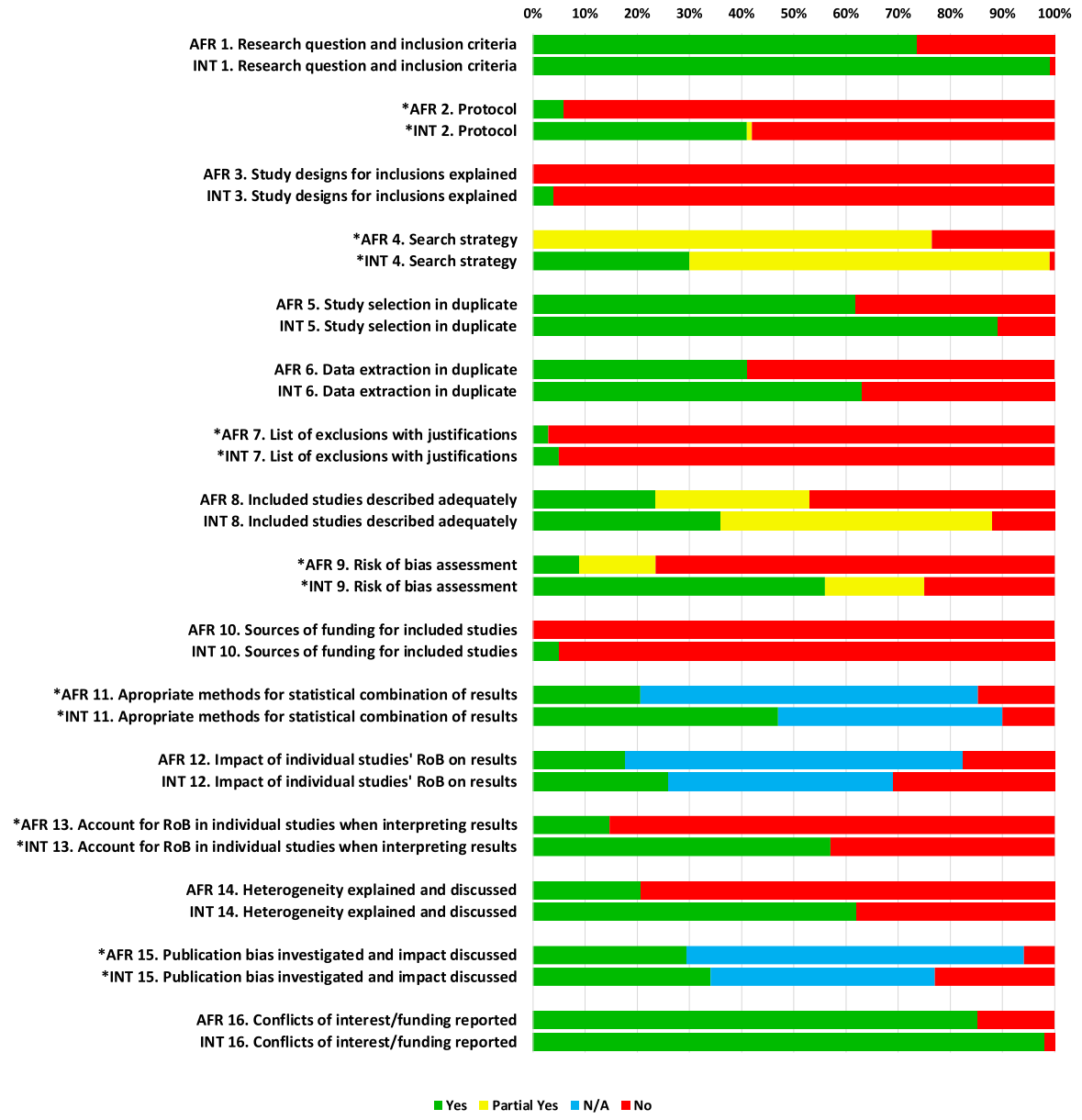

Fig. 2. AMSTAR II domain scores for systematic reviews published in African and International journals.
*Critical Domains.

that training without practice had a limited impact [36]. To facilitate systematic review skills development they suggest overcoming language barriers, increasing academic institutional support and integrating skills development into academic programmes and traditional career progression pathways. Improving systematic review quality will have the additional benefit of facilitating more relevant, higher quality primary research [45].

To our knowledge, this is the first study to assess the methodological quality of systematic reviews published in African emergency medicine journals. We followed methods established *a priori* and adhered to clear reporting standards. The language restriction is unlikely to have excluded any relevant studies [5]. Our study may have limited generalisability since we only searched selected journals and did not reach the estimated sample size in the African journals group. In addition, we only used information in the study reports, protocols (if available) and supplementary data, and did not contact authors. We recognise that unblinded quality assessment might have introduced bias. However, we are confident that our findings are robust since ≥80% of African systematic reviews contained more than 4 critical domain weaknesses, making it unlikely for the overall ratings to change significantly even if a different reviewer were to conduct the assessment.

Conclusion

Systematic reviews published in African and international emergency medicine journals are of poor methodological quality. Reporting of an *a priori* protocol, developing a comprehensive search strategy, adequate assessment of risk of bias and evidence certainty, appropriate evidence synthesis and heterogeneity assessment may improve the quality of systematic reviews. For future review authors, collaboration with evidence synthesis methodologists will be key. Future research should investigate barriers to systematic review authorship and enablers of institutional collaboration, providing insight into how evidence synthesis networks can be developed. An unified effort by reviewers, authors and journal editors to improve the quality of evidence synthesis will enable valuable skills transfer and ultimately improve patient care

by producing reliable reviews for knowledge users.

Dissemination of results

Presentation at Stellenbosch University Division of Epidemiology and Biostatistics Research Day, place of work presentations and dissemination via social media platforms.

Authors' contribution

Authors contributed as follows to the conception, research, drafting and revising the work critically for important intellectual content: JvN contributed 55%; TF: 10%; AR 15%; MM 20%. All authors approved the version to be published and agreed to be accountable for all aspects of the work.

Funding sources

This work has not received any funding.

CRediT authorship contribution statement

J. van Niekerk: Conceptualization, Methodology, Project administration, Investigation, Validation, Data curation, Formal analysis, Writing – original draft, Writing – review & editing. **T. Fapohunda:** Investigation, Validation, Data curation, Writing – review & editing. **A. Rohwer:** Conceptualization, Methodology, Writing – review & editing, Project administration, Supervision. **M. McCaul:** Conceptualization, Methodology, Writing – review & editing, Project administration, Supervision.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests

Michael McCaul (MM) is an editor of the African Journal of Emergency Medicine. MM was not involved in the editorial workflow for this manuscript. The African Journal of Emergency Medicine applies a double-blinded process for all manuscript peer reviews. The authors declared no further conflicts of interest.

Acknowledgments

The authors would like to acknowledge Ingrid van der Westhuizen and Pamela Nyokwana from Stellenbosch University Faculty of Medicine and Health Sciences Library for their support in developing the search strategies.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.afjem.2023.10.001.

References

[1] McCaul M, Tovey D, Young T, Welch V, Dewidar O, Goetghebeur M, Kredo T, Tricco AC, Glover RE, Tufte J, et al. Resources supporting trustworthy, rapid and equitable evidence synthesis and guideline development: results from the COVID-19 evidence network to support decision-making (COVID-END). J Clin Epidemiol 2022;151:88–95. https://doi.org/10.1016/j.jclinepi.2022.07.008.

[2] Clarke M, Brice A, Chalmers I. Accumulating research: A systematic account of how cumulative meta-analyses would have provided knowledge, improved health, reduced harm and saved resources. PLoS One 2014;9(7):1–6. https://doi.org/10.1371/journal.pone.0102670.

[3] Stewart R, El-Harakeh A, Cherian SA. Evidence synthesis communities in low-income and middle-income countries and the COVID-19 response. Lancet 2020;396 (10262):1539–41. https://doi.org/10.1016/S0140-6736(20)32141-3.

[4] Young T, Garner P, Clarke M, Volmink J. Series: clinical epidemiology in South Africa. Paper 1: evidence-based health care and policy in Africa: past, present, and future. J Clin Epidemiol 2017;83:24–30. https://doi.org/10.1016/j.jclinepi.2016.06.006.

[5] Mould-Millman NK, Dixon J, Burkholder TW, Sefa N, Patel H, Yaffee AQ, Osisanya A, Oyewumi T, Botchey I, Osei-Ampofo M, et al. Fifteen years of emergency medicine literature in Africa: a scoping review. Afr J Emerg Med 2019;9 (1):45–52. https://doi.org/10.1016/j.afjem.2019.01.006.

[6] Sataloff YX, Bush ML, Chandra R, Chepeha D, Rotenberg B, Fisher EW, Goldenberg D, Hanna EY, Kerschner JE, Kraus DH, et al. Systematic and other reviews: criteria and complexities. J Neurol Surg 2021;56(7):687–90. https://doi.org/10.3760/cma.j.cn115330-20210430-00245.

[7] Murad MH, Asi N, Alsawas M, Alahdab F. New evidence pyramid. Evid Based Med 2016;21(4):125–7. https://doi.org/10.1136/ebmed-2016-110401.

[8] Ioannidis JPA. The mass production of redundant, misleading, and conflicted systematic reviews and meta-analyses. Milbank Q 2016;94(3):485–514. https://doi.org/10.1111/1468-0009.12210.

[9] Page MJ, Moher D. Mass production of systematic reviews and meta-analyses: an exercise in mega-silliness? Milbank Q 2016;94(3):515–9. https://doi.org/10.1111/1468-0009.12211.

[10] Shea BJ, Grimshaw JM, Wells GA, Boers M, Andersson N, Hamel C, Porter AC, Tugwell P, Moher D, Bouter LM. Development of AMSTAR: a measurement tool to assess the methodological quality of systematic reviews. BMC Med Res Methodol 2007;7:1–7. https://doi.org/10.1186/1471-2288-7-10.

[11] Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. J Clin Epidemiol 2009;62(10):1006–12. https://doi.org/10.1016/j.jclinepi.2009.06.005.

[12] Pussegoda K, Turner L, Garritty C, Mayhew A, Skidmore B, Stevens A, Boutron I, Sarkis-Onofre R, Bjerre LM, Hróbjartsson A, et al. Identifying approaches for assessing methodological and reporting quality of systematic reviews: a descriptive study. Syst Rev 2017;6(1):1–12. https://doi.org/10.1186/s13643-017-0507-6.

[13] Shea BJ, Reeves BC, Wells G, Thuku M, Hamel C, Moran J, Moher D, Tugwell P, Welch V, Kristjansson E, et al. AMSTAR 2: a critical appraisal tool for systematic reviews that include randomised or non-randomised studies of healthcare interventions, or both. BMJ 2017;358:1–8. https://doi.org/10.1136/bmj.j4008.

[14] Xu C, Liu Y, Jia PL, Li L, Liu TZ, Cheng LL, Deng K, Borhan ASM, Thabane L, Sun X. The methodological quality of dose-response meta-analyses needed substantial improvement: a cross-sectional survey and proposed recommendations. J Clin Epidemiol 2019;107:1–11. https://doi.org/10.1016/j.jclinepi.2018.11.007.

[15] Tian J, Zhang J, Ge L, Yang K, Song F. The methodological and reporting quality of systematic reviews from China and the USA are similar. J Clin Epidemiol 2017;85: 50–8. https://doi.org/10.1016/j.jclinepi.2016.12.004.

[16] Zhou X, Li L, Lin L, Ju K, Kwong JSW, Xu C. Methodological quality for systematic reviews of adverse events with surgical interventions: a cross-sectional survey. BMC Med Res Methodol 2021;21(1):1–10. https://doi.org/10.1186/s12874-021-01423-6.

[17] Mbuagbaw L, Lawson DO, Puljak L, Allison DB, Thabane L. A tutorial on methodological studies: the what, when, how and why. BMC Med Res Methodol 2020;20(1):1–12. https://doi.org/10.1186/s12874-020-01107-7.

[18] Ge L, hui Tian J, nan Li Y, xue Pan J, Li G, Wei D, Xing X, Pan B, long Chen Y, jian Song F, et al. Association between prospective registration and overall reporting and methodological quality of systematic reviews: a meta-epidemiological study. J Clin Epidemiol 2018;93:45–55. https://doi.org/10.1016/j.jclinepi.2017.10.012.

[19] Catillon M. Trends and predictors of biomedical research quality, 1990-2015: A meta-research study. BMJ Open 2019;9(9):1–10. https://doi.org/10.1136/bmjopen-2019-030342.

[20] Kaiser KA, Cofield SS, Fontaine KR, Glasser SP, Thabane L, Chu R, Ambrale S, Dwary AD, Kumar A, Nayyar G, et al. Is funding source related to study reporting quality in obesity or nutrition randomized control trials in top-tier medical journals. Int J Obes 2012;36(7):977–81. https://doi.org/10.1038/ijo.2011.207.

[21] Guyatt G, Oxman AD, Akl EA, Kunz R, Vist G, Brozek J, Norris S, Falck-Ytter Y, Glasziou P, Debeer H, et al. GRADE guidelines: 1. Introduction - GRADE evidence profiles and summary of findings tables. J Clin Epidemiol 2011;64(4):383–94. https://doi.org/10.1016/j.jclinepi.2010.04.026.

[22] Nawijn F, Ham WHW, Houwert RM, Groenwold RHH, Hietbrink F, Smeeing DPJ. Quality of reporting of systematic reviews and meta-analyses in emergency medicine based on the PRISMA statement. BMC Emerg Med 2019;19(1):1–8. https://doi.org/10.1186/s12873-019-0233-6.

[23] Kelly KD, Travers A, Dorgan M, Slater L, Rowe BH. Evaluating the quality of systematic reviews in the emergency medicine literature. Ann Emerg Med 2001;38 (5):518–26. https://doi.org/10.1067/mem.2001.115881.

[24] Murad MH, Wang Z. Guidelines for reporting meta-epidemiological methodology research. Evid Based Med 2017;22(4):139–42. https://doi.org/10.1136/ebmed-2017-110713.

[25] SUNScolarData. https://scholardata.sun.ac.za. [accessed November 14, 2022].

[26] American College of Emergency Physicians. https://www.acep.org/patient-care/policy-statements/definition-of-emergency-medicine/. [accessed February 4, 2022].

[27] Scimago Journal & Country Rank. https://www.scimagojr.com/. [accessed July 11, 2022].

[28] African Journals Online. https://www.ajol.info/index.php/ajol. [accessed July 11, 2022].

[29] Hirsch JE. An index to quantify an individual's scientific research output. Proc Natl Acad Sci U S A 2005;102(46):16569–72. https://doi.org/10.1073/pnas.0507655102.

[30] Montori VM, Wilczynski NL, Morgan D, Haynes RB. Optimal search strategies for retrieving systematic reviews from medline: analytical survey. Br Med J 2005;330 (7482):68–71. https://doi.org/10.1136/bmj.38336.804167.47.
[31] Rethlefsen ML, Kirtley S, Waffenschmidt S, Ayala AP, Moher D, Page MJ, Koffel JB, Blunt H, Brigham T, Chang S, et al. PRISMA-S: an extension to the PRISMA statement for reporting literature searches in systematic reviews. Syst Rev 2021;10 (1):39. https://doi.org/10.1186/s13643-020-01542-z.
[32] SR-Accelerator. https://sr-accelerator.com/#/. [accessed July 15, 2022].
[33] RANDOM.ORG - True Random Number Service. https://www.random.org/. [accessed August 5, 2022].
[34] StataCorp. Stata statistical software: release 17. college station. TX: StataCorp LLC; 2021.
[35] Baethge C, Goldbeck-Wood S, Mertens S. SANRA—a scale for the quality assessment of narrative review articles. Res Integr Peer Rev 2019;4(1):2–8. https://doi.org/10.1186/s41073-019-0064-8.
[36] Oliver S, Bangpan M, Stansfield C, Stewart R. Capacity for conducting systematic reviews in low- and middle-income countries: a rapid appraisal. Heal Res Policy Syst 2015;13(1):1–8. https://doi.org/10.1186/s12961-015-0012-0.
[37] McCaul M, Durao S, Kredo T, Garner P, Young T, Rohwer A. Evidence synthesis workshops: Moving from face-to-face to online learning. BMJ Evid-Based Med 2021;26(5):255–60. https://doi.org/10.1136/bmjebm-2020-111394.
[38] Uthman OA, Wiysonge CS, Ota MO, Nicol M, Hussey GD, Ndumbe PM, Mayosi BM. Increasing the value of health research in the WHO African Region beyond 2015 - Reflecting on the past, celebrating the present and building the future: a bibliometric analysis. BMJ Open 2015;5(3):1–8. https://doi.org/10.1136/bmjopen-2014-006340.
[39] Young T, Garner P, Kredo T, Mbuagbaw L, Tharyan P, Volmink J. Cochrane and capacity building in low- and middle-income countries: where are we at? Cochrane Database Syst Rev 2013:1–4. https://doi.org/10.1002/14651858.ed000072.
[40] Owusu-Nimo F, Boshoff N. Research collaboration in Ghana: patterns, motives and roles. Scientometrics 2017;110(3):1099–121. https://doi.org/10.1007/s11192-016-2221-x.
[41] Pan J, Zhong Y, Young S, Niezink NMD. Collaboration on evidence synthesis in Africa: a network study of growing research capacity. Heal Res Policy Syst 2021;19 (1):1–18. https://doi.org/10.1186/s12961-021-00774-2.
[42] Enhancing the quality and transparency of health research. https://www.equator-network.org. [accessed January 31, 2023].
[43] Cochrane Handbook for Systematic Reviews of Interventions. https://training.cochrane.org/handbook. [accessed December 7, 2022].
[44] Centre for Evidence Based Health Care. https://www.cebhc.co.za. [accessed December 8, 2022].
[45] Clarke M. ng new research? Don't forget the old - Nobody should do a trial without reviewing what is known. PLoS Med 2004;1(2):100–2. https://doi.org/10.1371/journal.pmed.0010035.