

Mapping the evidence of emergency nursing research in who Afro-region states: A Scoping Review

Geldine Chironda^{a,b,*}, Pretty Mbeje^a, Tanya Heyns^c, Petra Brysiewicz^a

^a College of Health Sciences, School of Nursing and Public Health, University of KwaZulu-Natal, Durban, South Africa

^b Seed Global Health, St John of God University, Mzuzu, Northern Malawi

^c Department of Nursing Science, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa

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ABSTRACT

Introduction: The introduction of emergency nursing in Africa has resulted in the establishment of several training schools across the continent. This has translated into a growing body of emergency care research being carried out by nurses; however, the breadth and extent of evidence remains unclear. The aim of the review was to map and collate the available literature on emergency nursing research in WHO Afro-region states.

Methods: The review adopted the methodology of the Joanna Briggs Institute (JBI) scoping reviews. The review protocol was registered on 27 June 2022 (osf.io/5wz3x). The Population (nurse), Concept (emergency nursing research), Context (WHO Afro-region) (PCC) elements guided the development of the inclusion and exclusion criteria. Papers were searched across seven electronic data bases and two search engines using a three-search strategy. The screening was performed initially on the abstract and title and lastly on full text. The reporting for the review was guided by the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).

Results: One hundred and thirteen papers were included in the review. Publication of emergency nursing research occurred from 2000 to 2022. The year 2017 and 2019 recorded the highest number of publications (n = 14). The country with the most publications was South Africa (n=50). Emergency nursing research used predominantly quantitative methodologies (n=58). The professional groups involved in research were nurses (n=69) as well as nurses and doctors (n=26). The identified papers focused primarily on emergency nursing education (n=23) and epidemiology (n=24).

Conclusion: There is a notable increase in the number of publications on emergency nursing research in WHO Afro-region states, however from only 11 countries. Since most of the research is still at descriptive level, there is need to encourage emergency nursing research on interventions and measuring outcomes and impact in the emergency care system.

African Relevance

- The introduction of emergency nursing in Africa has resulted in the establishment of several training schools across the continent.
- Thus, a growing body of emergency nursing research carried out by nurses has been noticed in WHO Afro region.
- This paper identifies evidence regarding research conducted by nurses in emergency care is crucial to identify the gaps and inform progress, change in practice, policy development and implications for future studies within the WHO Afro region.

Introduction

The burden of emergency cases, coupled with the recent Covid-19 pandemic, continues to increase leading to approximately 54% of global morbidity and mortality [1-3]. In low-and middle-income countries, an estimated 21% of the burden of disease emanates from Sub-Saharan Africa [1]. Thus, emergency care systems have become essential in the delivery of health care in preventing complications, disability, and death [4]. Considering the increasing burden of disease,

* Corresponding author.

E-mail address: gerrychironda@yahoo.co.uk (G. Chironda).

aging population, and projections for a rise in road traffic collisions by 2030, there is a need to strengthen emergency care in line with meeting the Sustainable Development Goals [5]. However, the practice of emergency care is still challenging in Africa due to the lack of qualified emergency nurses. Due to these challenges faced throughout, the quality of services offered is being compromised.

The rise in usage of emergency healthcare in Africa translates to the need for increased training of highly skilled, resilient healthcare workers, which includes emergency nurses [6]. Nurses, often referred to as the “backbone” of the health care system, are especially important in the emergency care context where the nurse is usually the first, and maybe the only, point of care for a patient [7]. Emergency nursing emphasizes the use of complexity and technological innovations [8] in the diagnosis, care provision and treatment for vulnerable populations, trauma, and injury prevention, managing emergency chronic and acute conditions, including ensuring patient quality and safety [9,10].

Despite the rapid expansion in the specialty and scope of emergency nursing over the last five decades, there is shortage of qualified clinical staff and educators [9], especially in Africa, and more coordination in developing the emergency nursing practice is still needed. The widespread emergence of Covid-19 brought stringent lockdown regulations and measures throughout the world, further worsening the existing shortages of emergency nurses [11]. This is further supported by the World Health Organization (2021) who highlighted the need for nine million nurses and midwives to achieve universal health coverage by 2030 [12]. The introduction of emergency nursing in Africa has resulted in the establishment of several emergency nurse training schools across the continent [6], thus translating into a growing body of emergency nursing research carried out by nurses, however, the breadth and extent of this evidence remains unclear.

The available information reveals coalesced evidence on emergency care research, only tailored to emergency medicine both at global [13, 14] and at the African continent level [15,16,17]. A summary of evidence regarding research conducted by nurses in emergency care is crucial to identify the gaps and inform progress, change in practice, policy development and implications for future studies within the African continent. Therefore, a scoping review was deemed necessary to map and collate the available literature on emergency nursing research in WHO Afro-region states, and to answer the following questions: 1) What are the publication trends and country distribution? 2) What type of research designs/methodology is used? 3) Which participant groups are included in the research? 4) Which Professional groups are conducting the emergency nursing research? 5) What is the focus area of this research?

Methodology

This scoping review adopted the methodology of the Joanna Briggs Institute (JBI) scoping reviews as described in the 2020 JBI Manual for Evidence Synthesis [18]. The scoping review protocol was registered on 27 June 2022 (osf.io/5wz3x). The Preferred Reporting Items for Systematic Reviews (PRISMA) Statement extended to Scoping Reviews (PRISMA-ScR) ensured that the review conformed to the reporting standards of a scoping review [19].

Eligibility criteria

The scoping review Population, Concept, Context (PCC) elements guided the development of the search terms and inclusion and exclusion criteria (Table 1).

Type of articles

The following type of studies were considered: peer reviewed quantitative, qualitative or mixed methods, review studies and opinion pieces in the form of editorials. Further, unpublished papers in the form

Table 1

PCC: Search terms and eligibility criteria.

Variable	Description	Inclusion criteria	Exclusion criteria
Population	Nurse researcher; any category/level of nurse irrespective of the specialisation. A nurse is someone who is registered as a nurse (and level of nurse) in their country and is conducting research within the emergency care context. Or any allied healthcare professional doing research on nurses in the emergency department.	English studies conducted by a nurse as an author on practice, education, or management etc. with nurses, patients, families, and other healthcare professionals, within the emergency care context.	Non-English studies Studies done by other allied healthcare professionals without nurses participating as co-authors. Patients and families attended to outside the emergency care context.
Concept	Emergency nursing; trauma nursing, acute care, accident & emergency nursing, prehospital, community-based emergency care, interfacility transfers, emergency environment, emergency discharge, research, nursing research	Studies concerned with emergency care delivered by a nurse either prehospital, interfacility or within the hospital.	Medical surgical, critical care and perioperative nursing.
Context	Africa*, OR WHO-Afro region*, OR east Africa*, OR central Africa*, OR Sub-Saharan Africa*, OR SSA; OR west Africa*, OR Southern Africa *Emergency care *Prehospital emergency settings*Accident and emergency unit; trauma unit, emergency centre; emergency department; Nursing, Emergency Room; Emergency Room Nursing; Nursing, Emergency	Studies conducted in any of the 47 WHO Afro-region member states. Conducted in all contexts irrespective of settings including educational, healthcare and community.	African countries not part of the 47 WHO Afro-region member states

of thesis and dissertations were included in the review, as well as documents from professional emergency nursing organisations. Book chapters were excluded from the review.

Electronic data bases and search engines

The electronic databases namely; PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science, Scopus, African Journals online (AJOL) and Sabinet, as well as the meta-database EBSCO Host were used to gather articles used for this review. The search engines, Google and Google Scholar were also used as they contained more information. Grey literature sources in the form of thesis and dissertations including emergency nursing research professional organisations were consulted by searching the ProQuest Dissertation and Theses Global (PQDT), as well as Google and Google Scholar.

Search terms

Search terms emanated from the diverse combination of the PCC. A

specialist librarian was consulted and verified the search terms and selected databases thus improving the rigor of the scoping review. The Boolean operators of AND and OR and their relevant strings were used. Truncations were used in the search terms to broaden the search. Box 1 revealed a sample search done in PubMed using 2 different search words combinations as informed by the PCC (Box 1).

Search strategy

Searching of papers from electronic data bases and search engines were done over a period of 4 months (July to September 2022). The last search was performed in January 2023 to capture all the eligible papers published in November and December 2022. The search strategy included undertaking all identified keywords and index terms searching across the eight data bases and identified search engines [20]. The search was confined to papers in English due to the authors' competence in languages.

An initial search was conducted (GC, PM) using two databases (PubMed and CINAHL), followed by an analysis of the text words contained in the titles and abstracts of the retrieved papers. The index terms used (key words and MeSH terms) were then discussed with the research team, made up of experts in this area, to further refine the search terms [20].

Secondly, other data bases namely; Web of Science, Scopus, African Journals online (AJOL) and Sabinet, and the meta-database EBSCO Host were searched. Grey literature was searched through initially searching the relevant grey literature database namely ProQuest Dissertation and Theses Global (PQDT). The second search was done in Google and google for emergency nursing documents published on the Internet. Thirdly, emergency nursing research professional organisations were browsed for additional articles. Lastly, experts in emergency nursing were contacted for additional documents. Step three included searching the reference lists of all the included papers for additional papers and two authors of primary studies were contacted when additional information was required [20]. All papers identified in the searches were loaded into the software Rayyan [21].

Process of source selection

The process of selection was carried out from February 2023 to May 2023. Initially the duplicates were removed and the selection process involving title and abstract screening was then piloted, using the first 15 papers. The selection process involved two reviewers (GC, PM) functioning independently, blinded to each other until the process was complete for the selected 15 articles. The level of agreement between the two reviewers was 63% and to solve the disagreements, meeting was

held to clarify the PCC. Thereafter, the rest of the papers based on title and abstract were independently screened with agreement level of more than 75% reached. Minor disagreements were solved through discussion. Full text screening followed [19] with involvement of third (TH) and fourth (PB) reviewers to solve the discrepancies. Involvement of all the reviewers in different stages of selection process eliminated the risk of elimination bias. The Prisma flow diagram showed the process of selection (Fig. 1).

Data extraction

The data extraction process continued from July to September 2023 over a series of online meetings. Two reviewers (GC, PM) developed a priori data screening form using the PCC pre-developed variables to address the research questions and to extract the data. A draft charting table was developed, piloted, and refined as necessary. All reviewers (GC, PM, TH, PB) met twice to determine if the extracted data was consistent with the study questions, while acquainting themselves with the abstraction form. Finally, charting of data was revised with consistent modifications during data extracting process based on the PCC format and review questions. The two initial reviewers (GC, PM) thereafter went through the research papers again to recheck the data, especially focusing on the authors and publication date, source or country of origin, country of authors, study design, participant groups, settings, and the research focus area. The third and fourth reviewers (TH, PB) were used to reach consensus. Two authors of studies were contacted for clarification and additional information for the missing information which was required for the data extraction. Involvement of all the reviewers in different stages of the data extraction process ensured the capturing of correct information thus mitigating information bias.

Data presentation and analysis

The extracted data was charted and presented in maps (Fig. 3), bar charts (Fig. 3), (Tables 1 and 2). A descriptive summary and narrative analysis of the study results was undertaken. Reviewers of this study numerically counted and summarized using simple descriptive statistics on information regarding publication characteristics in terms of year of study and country, professional groups conducting research, country of authors, research design, setting, sample size and strategy and participants involved in the study. Content analysis aided in analysing and describing the focus area into themes.

Search 1: (((Emergency care or Emergency nursing or trauma nursing or acute care or prehospital or community based emergency care or interfacility transfers or emergency environment or emergency discharge) AND (Nursing or research or Nursing research)) AND (Africa or sub-Saharan Africa or east Africa or southern Africa or west Africa or central Africa)) AND (Prehospital emergency settings or Accident and emergency unit or trauma unit or emergency centre or emergency department emergency care) 4,597 05:01:12

Search 2: (((Emergency nursing or trauma nursing or acute care or prehospital or community-based emergency care or interfacility transfers or emergency discharge) AND (Nursing or research or nursing research)) AND (Prehospital emergency settings or accident and emergency unit or trauma unit or emergency centre or emergency department)) AND (Africa or sub-Saharan Africa or East Africa or West Africa or Central Africa or Southern Africa) 1,511 05:11:43

Box 1. Sample search in PubMed data base.

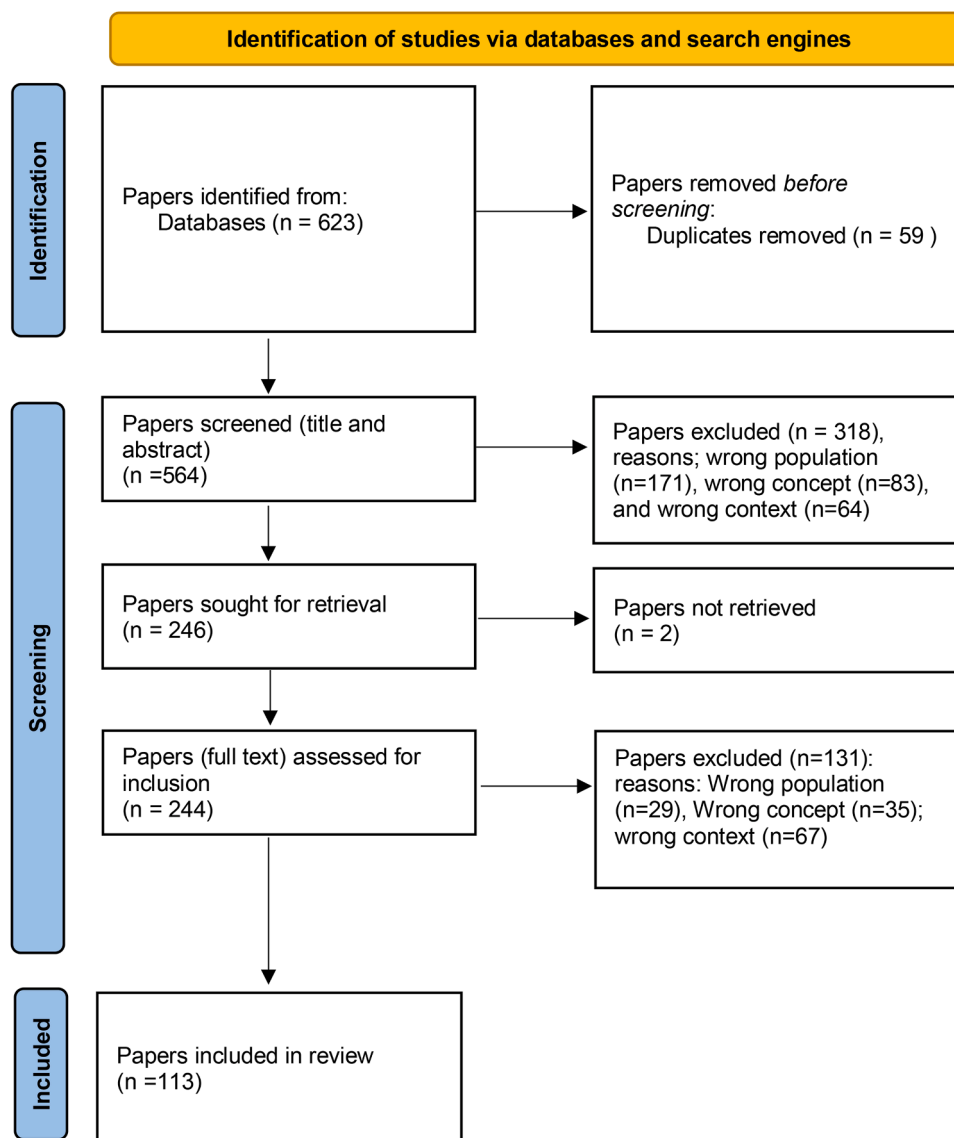


Fig. 1. The PRISMA-ScR flow chart for selection of articles on emergency nursing.

Results

Search results

A systematic search of 7 electronic databases and 2 search engines, including grey literature, generated 623 papers (Fig. 1). There were 59 duplicates removed to remain with 564 papers. The selection process involving title and abstract screening resulted in the exclusion of 318 papers: reasons being wrong population (n=171), wrong concept (n=83), and wrong context (n=64). Two full text papers could not be found and were excluded. Full text screening of 244 papers followed and resulted in the exclusion of 131 papers. One hundred and thirteen papers (113) were finally selected and included in the write up of this review (Fig. 1; Table 2).

Publication trends

The publication for emergency nursing research in Africa ranged from 2000 to December 2022. The year 2017 and 2019 recorded the highest number of publications (n = 14) followed by 2022 (n= 10) and 2021 (n= 9) (Fig. 2).

Country distribution

Within the regions, the southern region had most papers (n=55), followed by eastern region (n=31) and the least was from the western region (n=11). The country with the most publications on emergency nursing research was South Africa (n=50), followed by Ethiopia (n=14) and Ghana (n=10), while Sierra Leon and Zambia had the least publications (n=1) (Fig. 3). The multicounty emergency research noted were from different countries (n=5), Africa (n=5), Sub-Saharan Africa (n=2) as well USA and Africa (n=2) (Table 2).

Research designs/methodology

Emergency nursing research in WHO Afro-region used predominantly quantitative methodologies (n=58), followed by reviews (n=27) and qualitative (n=17) methodologies. (Fig. 4). The most often used quantitative research methodology was a descriptive cross-sectional design (n=43) and for qualitative studies, phenomenology (n= 9) (Table 2).

Table 2
Publication characteristics on Emergency Nursing Research in WHO AFRO-Region (n=113).

Author, year, Country	Professional groups conducting research (n) Country of authors		Methodology Research design	Setting	Sample; sampling	Participant
WHO: EAST AFRICAN REGION						
Admassie et al, 2022, Ethiopia [22]	Drs (4)	Ethiopia	Quant: Cross sectional survey	ED	153; Convenience sampling	Emergency nurses
Namukwaya et al, 2022, Uganda [23]	Nurses (4)	Uganda	Quant: descriptive cross-sectional survey	ED	49; Convenience sampling	Emergency nurses
Friedman et al, 2022, Uganda [24]	Drs (4)	USA; South Africa; Uganda	Mixed methods: MCQs; Likert-scale; FGDS	ED	137: 87(N); 41(D); 9(CO):	Nurses;
Ndung'u et al, 2022, Kenya [25]	Nurses (4); Public health specialists (n=2)	Kenya; UK	Quant: cross-sectional survey	ED	84; Convenience sampling	Emergency nurses
Nigatu et al, 2022, Ethiopia [26]	Drs (3)	Ethiopia	Quant: Descriptive cross-sectional survey	ED	102; Purposive sampling	Nurses
Carter & Norter, 2023, Zambia [27]	Nurses (2)	UK; Zambia	Review: Rapid	N/A	Not stated; Purposive	N/A
Takele et al, 2021, Ethiopia [28]	Nurses (5)	Ethiopia	Quant: Descriptive cross-sectional	Emergency room	299; Systematic random sampling	Patients admitted in emergency department
Yosha et al, 2021, Ethiopia [29]	Drs (1); Nurses (3)	Ethiopia	Quant: Cross-sectional retrospective chart review	Specialized tertiary hospital; Emergency department	846; Census sampling strategy	Records of patients
Majamanda et al, 2022, Malawi [30]	Drs (6); nurses (1)	Malawi; UK; Ireland	Quant: Quasi experimental	Primary Health Care Level	336 (HCW); 541 (SS)	Health care workers; support staff
Twangirayezu et al, 2021, Rwanda [31]	Nurses (3)	Rwanda; South Africa	Quant: Cross sectional analytical design	ED	96; Proportional stratified sampling	Registered nurses
Ndile et al (2020), Tanzania [Dissertation] [32]	Nurses (6)	Sweden; Tanzania	Quant: Before-after single-arm interventional pilot design	Tanzania Police Force	135; Not stated	Police officers
Fite et al, 2020, Ethiopia [33]	Nurses (5)	Ethiopia	Quant: Cross sectional design	ED	320 records; Simple random sampling.	Injured Patient records
Wubetie et al, 2020, Ethiopia [34]	Drs (3)	Ethiopia	Quant: cross sectional	ED	112; Census sampling strategy	Nurses
Duko et al, 2019, Ethiopia [35]	Drs (5)	Ethiopia	Quant: Institutional based cross-sectional study design	Emergency units	101; Systematic random sampling technique	Nurses
Geburu et al, 2019, Ethiopia [36]	Drs (2); nurse (1); Pharmacist (1)	Iran; Ethiopia	Review: Systematic	ED	8; Purposive sampling	Emergency department of health institution
Geburu et al, 2019, Ethiopia [37]	Public health specialists (3) Nurses (2); Pharmacists (1)	Iran; Ethiopia	Review: Systematic	ED	4; Purposive sampling	Clients/patients
Maina et al, 2019, Kenya [38]	Clinical Psychologists (3)	Kenya	Quant: Descriptive design	Accident and ED	64; Purposive sampling	Nurses
Mukabagire et al, 2019, Rwanda [Thesis] [39]	Nurse (3)	Rwanda; South Africa	Quant: Descriptive cross-sectional design	Emergency & ICU	124; Proportional sampling methods	Nurses
Mukagasirira et al, 2017, Rwanda [Thesis] [40]	Nurse (3)	Rwanda; South Africa	Quant: Retrospective descriptive study	Emergency Medical Service	1871 records; 39 participants; Purposive	Records of patients with head injury; EMS health care providers (nurses and anaesthetists)
Bulto et al, 2018, Ethiopia [41]	Nurses (3)	Australia; Ethiopia	Quant: Cross sectional design	ED, Surgical and Orthopaedic inpatient Units	382; Consecutive sampling over 2 months	Trauma patients
Kerie et al, 2018, Ethiopia [42]	Nurses (3)	Ethiopia	Quant: Cross sectional design	ED	189; Census sampling	Emergency nurses
Eyasu et al, 2017, Ethiopia [43]	Nurses (1); Pharmacists (1); Public health specialists (2)	Ethiopia	Quant: record review	Urban; ED	4 (Government hospitals); 998 cases; Census sampling strategy	Pregnancy and in other non-pregnant women
Nshutiyukuri et al, 2017, Rwanda [Thesis] [44]	Nurse (3)	Rwanda; South Africa	Quant: Descriptive cross sectional	Accident and emergency services	3 (H), 51 (P); Purposive, Census sampling.	Registered nurses
Bashar et al, 2015, Ethiopia [45]	Nurses (2); epidemiologist (1)	Ethiopia	Quant: Cross sectional study	ED	416; Systematic random sampling	Patients visiting the emergency department
Seid et al, 2015, Ethiopia [46]	Nurses (2); Drs (2); Public Health specialist (1)	Ethiopia	Quant: Prospective hospital-based design	Adults- ED	230; Consecutive sampling	Road traffic accident victims
Cunningham et al, 2017, Tanzania [47]	Drs (2); nurses (5)	Tanzania; South Africa;	Mixed method: Collaborative development of guiding document and piloting	Training regions within Tanzania	5 training regions	Nurses
Aloyce et al, 2014, Tanzania [48]	Nurses (3)	Tanzania; South Africa	Quant: descriptive cross-sectional and observational study designs	ED	66; Census sampling	Nurses

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Table 2 (continued)

Bisanzo et al, 2012, Uganda [49]	Nurses (3); Drs(6); Pharmacists (1)	USA; Uganda	Quant: Observational case series design	Rural ED	191 administrations by 6 nurses; Purposive	Nurses
Nsereko & Brysiewicz, 2010; Rwanda [50]	Nurses (2)	South Africa, Rwanda	Quant: retro descriptive survey, Checklists	ED	336 files; Systematic sampling	Injured patients
Gondwe et al, 2008, Malawi [51]	Nurses (2)	Malawi; South Africa	Review: Narrative	N/A	N/A	Emergency nurses
Rampanjato et al, 2006, Rwanda [52]	Drs (4)	Canada; Rwanda	Quant: Observational study	ED	53 patients; 28 Nurses;	Nurses: patients who had sustained a soft tissue or bony injury
WHO: SOUTHERN AFRICAN REGION						
Botes & Mabetshe, 2022, South Africa [53]	Nurses (2)	South Africa	Quant: Descriptive survey	Emergency centre	57; Census sampling strategy	Nurses
Smith et al, 2022, South Africa [54]	Nurses (4)	South Africa	Quant: Descriptive, retro audit of records	urban private hospital-emergency centre	389; Census sampling strategy	Nursing notes
Mashao et al, 2021, South Africa [55]	Nurses (3)	South Africa	Quant: Retrospective design	ED	100; Systematic sampling	Patients' files
Goode et al, 2021, South Africa [56]	Drs (2); nurses (8)	USA; South Africa	Quant: Retro Secondary Data Analysis; health systems' Hybrid Electronic Medical Registry.	Trauma department	6382 trauma admissions; not stated	Trauma patients
Kriel, 2020, South Africa [Thesis] [57]	Clinical psychologists (2)	South Africa	Qual: Exploratory descriptive phenomenological research	Hospital; ED	6; Purposive sampling	Emergency nurses: Registered nurses and registered nursing assistants
Phiri et al, 2020, South Africa [58]	Nurses (3)	South Africa	Qual: Phenomenological design	ED	10; Purposive sampling	Patients
Emmamally et al, 2020; South Africa [59]	Nurses (3)	South Africa; Sweden	Qual: Descriptive design	ED	9; Purposive sampling	Healthcare providers (nurses & doctors)
Bashir et al, 2019, South Africa [60]	Nurses (1); Drs (8)	South Africa	Quant: Retrospective review of Prospective digital registry	Trauma centre	1566; Census sampling	Blunt trauma patients
De Lange et al, 2018, South Africa [61]	Nurses (3)	South Africa	Qual: Participant observation	ED	20; unstructured participant observation session; Purposive & convenience sampling data.	Emergency care practitioners; healthcare professionals (Medical doctors and nurses)
Dulandas & Brysiewicz, 2018, South Africa [62]	Nurses (2)	South Africa	Quant: A descriptive survey	State and Private ED	128; Convenience sampling	Emergency nurses
Emmamally & Brysiewicz, 2018, South Africa [63]	Nurses (2)	South Africa	Quant: Descriptive survey design	ED	77; Census sampling strategy	Healthcare professionals (Nurses and doctors)
Buitendag et al, 2019, South Africa [64]	Nurse (1); Drs (6)	South Africa	Quant: Retro review from prospective digital trauma registry	Trauma centre	384; Census sampling over 2 years	Adult Patients with penetrating traumatic brain injury
Emmamally & Brysiewicz, 2019, South Africa [65]	Nurses (2)	South Africa	Quant: Survey design	ED	353; Purposive sampling	Family members
Green et al, 2019, South Africa [66]	Nurses (1); Drs (6)	South Africa	Quant: Retrospective review of a prospectively entered	Emergency surgical registry	677; Census sampling	Patients with surgical sepsis
Phukubye et al, 2019; South Africa [Thesis], 2021 [67]	Nurses (2)	South Africa	Quant: Non experimental research method	ED	84; Census sampling strategy	Nurses
van der Wath, 2019, South Africa [68]	Nurse (1)	South Africa	Qual: Foucauldian discourse analysis	Urban Public district hospital; ED	15; Purposive sampling	Emergency nurses
Barnes et al, 2018, South Africa [69]	Nurse (1); Drs (7)	South Africa	Quant: Prospectively HEMR Auditing	ED	8793 patients	Trauma patients
Filmater et al, 2018, South Africa [70]	Nurses (3)	South Africa	Mixed method: Action research design	ED	Not stated; Convenience sampling	Healthcare providers (Doctors and nurses)
Weale et al, 2018, South Africa [71]	Nurses (2); Drs (7)	South Africa	Quant: Retrospective review	Trauma centre	110; Census sampling strategy	Patients with Intraabdominal vascular injury
Almaze & de Beer, 2018, South Africa [72]	Nurses (2)	South Africa	Quant: Descriptive survey	ED	44; Convenience sampling	Emergency nurses (enrolled & registered nurses)
Buitendag et al, 2017, South Africa [73]	Nurses (1); Drs (5)	South Africa	Quant: Retro review of a prospectively entered and maintained hybrid electronic trauma registry	Trauma centre	463; Census sampling over 4 years	Children and adolescents treated for traumatic brain injury
Brysiewicz et al, 2017, South Africa [74]	Drs (4); nurses (1)	South Africa	Quant: Prospective digital trauma registry,	ED	1239; Census sampling	Paediatric trauma patients

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Table 2 (continued)

Goldstein et al, 2017, South Africa [75]	Drs (6); nurse (1)	South Africa	Quant: Retrospective review of records	Urban; ED	1091 triage forms; Consecutive sampling over one week	Nurses
Kong et al, 2017, South Africa [76]	Drs (4); nurse (1)	South Africa	Quant: Prospective digital trauma registry	Trauma centre	3301; Census sampling	Traumatic brain injury patients
Kong et al, 2017, South Africa [77]	Drs (4); nurse (1)	South Africa	Quant: Retrospective review of our prospectively maintained regional electronic	trauma registry	102; census sampling	Patients who sustained a cerebral gunshot wounds
Jerome et al, 2017, South Africa [78]	Nurses (2); Drs (4)	South Africa	Quant: Retrospective audit from hybrid electronic medical registry	Trauma centre	3301; Census sampling strategy	Records of patients treated with traumatic brain injury
van Hoving & Brysiewicz, 2017, Africa [79]	Drs (1); nurse (1)	South Africa	Quant: Survey design	Organisation of the African Federation of Emergency Medicine	168; Census sampling strategy	Emergency care providers
Van der Wath et al, 2016, South Africa [80]	Nurses	South Africa	Qual: Descriptive phenomenological design	Urban; Emergency setting	9; Purposive sampling	Nurses
Cunningham, 2015. Africa [81]	Nurse (1)	South Africa	Review: Narrative	Emergency	N/A	Nurses
Gassiep, 2015, South Africa [thesis] [82]	Nurse (1)	South Africa	Mixed method: Action research design	prehospital environment and the emergency room	N/A	Emergency nurse
Motseo, 2015, South Africa [Thesis] [83]	Nurses (2)	South Africa	Qual: Appreciative inquiry design	Tertiary public institution	20; Purposive sampling	Emergency nursing students
Van Wyk et al, 2013 (thesis), 2015, South Africa [84]	Nurse (3)	South Africa	Qual: Explorative, descriptive & contextual; Appreciative Inquiry approach	Nursing education institution	45; Purposive sampling	Emergency nursing students
Wentzel, Brysiewicz, 2014, South Africa [85]	Nurses (2)	South Africa	Review: Narrative	Trauma unit	N/A	Trauma nurse
Hardcastle et al, 2013, South Africa [86]	Drs (1); nurses (1)	South Africa	Review: Narrative	Trauma department	N/A	Researchers, Emergency care team
van der Wath et al, 2013, South Africa [87]	Nurses (3)	South Africa	Qual: Descriptive phenomenological inquiry grounded in Husserlian philosophy	Urban; Emergency units	11; Purposive sampling	Nurses
Brysiewicz, 2011, Africa [88]	Nurses (1)	South Africa	Opinion piece: Editorial	N/A	N/A	Emergency nurses
Brysiewicz, 2011, South Africa [89]	Nurses (1)	South Africa	Review: Commentary	N/A	N/A	Emergency care professionals
Hardcastle et al, 2011, South Africa [90]	Nurses (1), Drs (10)	South Africa	Review: Document revision of the Guidelines	Trauma centres	N/A	Executive committee of The Trauma Society of South Africa (TSSA)
Abdool & Brysiewicz, 2009, South Africa [91]	Nurses (2)	South Africa	Quant: Explorative descriptive design	ED	13 (H), 140(P); Cluster sampling for settings; Purposive sampling for participants	Nurses
Augustyn et al, 2009, South Africa [92]	Nurses (3)	South Africa	Quant: Descriptive explorative design	emergency unit	15; Purposive sampling	Nurses; Doctors
Brysiewicz, 2008, South Africa [93]	Nurses (1)	South Africa	Qual: interpretive hermeneutic phenomenology	ED	5; Purposive sampling	Bereaved family members sourced through the hospital Eds
Brysiewicz & Bruce, 2008, South Africa [94]	Nurses (2)	South Africa	Review: Narrative	N/A	N/A	Emergency nursing care; emergency health services
Bruijns et al, 2008, South Africa [95]	Drs (3)	South Africa	Quant: Retro and prospective, cross-sectional Study	Ed	323 before implementation of triage; 823 after implementation of triage	Hospital records of patients presenting to ED.
Drotske et al, 2007, South Africa [96]	Drs (2)	South Africa	Qual: Descriptive design	Accident and Emergency Unit	12; Convenience sampling	Nurses
Abdool & Brysiewicz, 2006, South Africa (Thesis) [97]	Nurses (2)	South Africa	Quant: Exploratory descriptive survey	ED	77; Cluster sampling	Emergency nurses
Chelenyane & Endacott, 2006, Botswana [98]	Nurses (2)	Australia; Botswana; United Kingdom	Mixed methods: Descriptive exploratory design	ED	22; Convenience sampling	Nurses
Heyns, 2006, South Africa (Thesis) [99]	Nurses (1)	South Africa	Quant: Cross-sectional	Emergency Care Environment	100; purposive sampling	Emergency nurses, clinical facilitators, emergency nurse educators

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Table 2 (continued)

Brysiewicz & Uys, 2005, South Africa [100]	Nurses (2)	South Africa	Qual: Phenomenology design	ED	13; Purposive	Health professionals (Doctors and nurses)
Spies (2004), South Africa [thesis] [101]	Human resource (1)	South Africa	Quant: Descriptive design	Trauma unit	53; Convenience sampling	Nurses
De Vasconcelos & Brysiewicz, 2003, South Africa [102]	Nurses (2)	South Africa	Review: Case study	ED	One; not stated	MVC patient
Brysiewicz, 2002, South Africa [103]	Nurse (1)	South Africa	Qual: Phenomenology approach	ED	Not stated; Purposive	Violent deaths; Emergency nurses
Goodnough & Brysiewicz, 2003, South Africa [104]	Nurses (2)	South Africa	Qual: Descriptive design	Level one emergency units	2; Theoretical sampling	Emergency staff
Brysiewicz, 2001, South Africa [105]	Nurse (1)	South Africa	Quant: Non-experimental design	Accident and ED	39; Convenience sampling	Paediatric collision patients
Brysiewicz, 2001, South Africa [106]	Nurse (2)	South Africa	Review: Narrative	N/A	N/A	Trauma patients
Brysiewicz & Bhengu, 2000, South Africa [107]	Nurses (2)	South Africa	Qual: Phenomenological design	Trauma unit	7; Purposive sampling	Trauma nurses
WHO: WESTERN REGION						
Bam et al, 2020, Ghana [108]	Nurses (6)	Ghana	Quant: Descriptive cross-sectional quantitative study	ED	109; Convenience sampling	Nurses
Afaya et al, 2017, Ghana [109]	Nurses (3)	Ghana	Quant: Descriptive cross-sectional design	ED	65; Purposive sampling	Registered nurses
Nyhus & Kamara, 2017, Sierra Leone [110]	Nurses (1); Drs (1)	UK; Sierra Leon	Mixed methods: Self-assessment, multiple-choice, focus group interviews & observational methods.	Urban; Emergency centre	42 (Self-assessment); 42 (Multiple choice questionnaire); 100h (Observation); 12 (4 focused groups of 3 nurses)	Emergency nurses
Atakro et al, 2016, Ghana [111]	Nurses (6)	Ghana; USA	Qual: Phenomenology design	ED	20; Purposive sampling technique	Registered General Nurses
Lori et al, 2016, Ghana [112]	Nurses (3); Dr (1)	USA	A mixed-methods descriptive study; review of hospital injury records, policies, and procedures	ED	45; Purposive sampling	Nurses
Bell et al, 2015, Ghana [113]	Nurses (3)	USA; Ghana	Review: Narrative Collaborative development with US	University of Ghana	N/A	Nurses
Martel et al, 2014, Ghana [114]	Drs (7); Nurse (1)	USA; Ghana	Review: Commentary on Collaborative Development of Sustainable Emergency Care	Not applicable	Not applicable	Nurses, Doctors
Hjelmeland et al, 2014, Ghana [115]	Psychologists (2); nurses (1); Social worker (1)	Ghana; Norway	Qual: Content analysis	Emergency ward	8 emergency ward nurses, 8 clinical psychologists, 8 police officers; Purposive (Snowballing)	Nurses; Clinical psychologists; Policy officers
Bell et al, 2014, Ghana [116]	Nurses (5)	Malawi, Ghana, South Africa, Tanzania	Mixed methods: Modified Delphi approach	ED	6; Not stated	Expert panel emergency nurses
Bell et al, 2014, Ghana [117]	Drs (4); nurses (5)	Ghana; USA	Review: Narrative Collaborative approach of developing an emergency nursing specialty diploma program with US university	University; Teaching hospital	N/A	Nurses; doctors
Ogundipe et al, 2013, Nigeria [118]	Drs (7)	Nigeria	Quant: Questionnaire based survey	ED	81; Purposive	Nurses
Romnski et al, 2011, Ghana [119]	Nurses (1); Drs (5)	USA; Ghana	Mixed methods: Initial needs analysis: Observed nursing practice. multiple choice exam, a self-assessment questionnaire; written. open-ended questions and focus groups.	Accident and emergency centre	37 (Self-assessment questionnaire-30 (MCQs); 102 (open ended scenarios), Convenience	Nurses
MULTICOUNTRY STUDIES						
Emmamally et al, 2022, Global [120]	Nurses (3)	South Africa; UK	Review: Scoping	Acute care settings	8; Purposive	Families
Botma et al, 2021, Global [121]	Nurses (4)	South Africa	Review: Narrative Short report	Tertiary institution	Not applicable	Emergency nursing students
Oyegbile & Brysiewicz, 2021, Global [122]	Nurses (2)	Nigeria; South Africa	Review: Scoping	ED	8; Purposive	Families
Brysiewicz et al, 2021, Africa [123]	Nurses (4)	Kenya, Ghana, UK; South Africa	Review: Narrative commentary	N/A	N/A	Emergency nurses

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Table 2 (continued)

Oyebile & Brysiewicz, 2020, Global [124]	Nurses (2)	Nigeria; South Africa	Review: Scoping	ED	10; Purposive sampling	Patients
Reimer & Austin, 2019, Sub-Saharan Africa [125]	Nurse (2)	USA	Review: Narrative	N/A	N/A	Nurses
Pincha Baduge et al, 2018, West Africa [126]	Nurses (3)	Australia	Review: Narrative	ED	20 papers; Purposive	Emergency nurses
Scott & Brysiewicz, 2017, Africa [127]	Nurses (2)	UK; South Africa	Review: Narrative	African continent	Not applicable	African emergency nurses
Brysiewicz & Emmamaly, 2017, Global [128]	Nurses (2)	South Africa	Opinion piece: Editorial	ED	N/A	Families
Calvello et al, 2016, Sub-Saharan Africa [129]	Nurses (1); Drs (9)	USA; South Africa	Review: Well-established approach developed in the WHO Monitoring Emergency Obstetric Care	2013 African Federation for Emergency Medicine Consensus Conference	40 (P),15 (C)	Working group that focused on emergency care delivery at health facilities
Scott & Brysiewicz, 2016, Africa [130]	Nurses (2)	UK; South Africa	Review: Commentary on Development of curriculum model	N/A	N/A	Emergency nurses
Leigh et al, 2016, West Africa (Liberia, Nigeria and Sierra Leone) USA [Thesis] [131]	Nurses (1); Public health specialists (4)	USA;	Quant: A descriptive cross-sectional design	Emergency settings	66; Purposive sampling	Emergency nurses
Difazio & Vessey, 2014, Africa; USA [132]	Nurses (2)	USA	Review: Narrative; commentary	Not applicable	Not applicable	Advanced practice registered nurses
Wolf et al, 2012, Africa [133]	Nurses (12)	USA, South Africa, Tanzania, Botswana, Namibia	Review: Narrative	Framework developed in South Africa	Not applicable	International emergency nursing workgroup (both academic and clinical)

Abbreviations used:

- ED – Emergency department
- HERM - Hybrid Electronic Medical Record
- Qual – Qualitative
- Quant – Quantitative
- Retro – Retrospective
- N/A – Not applicable
- USA – United states of America
- UK – United Kingdom

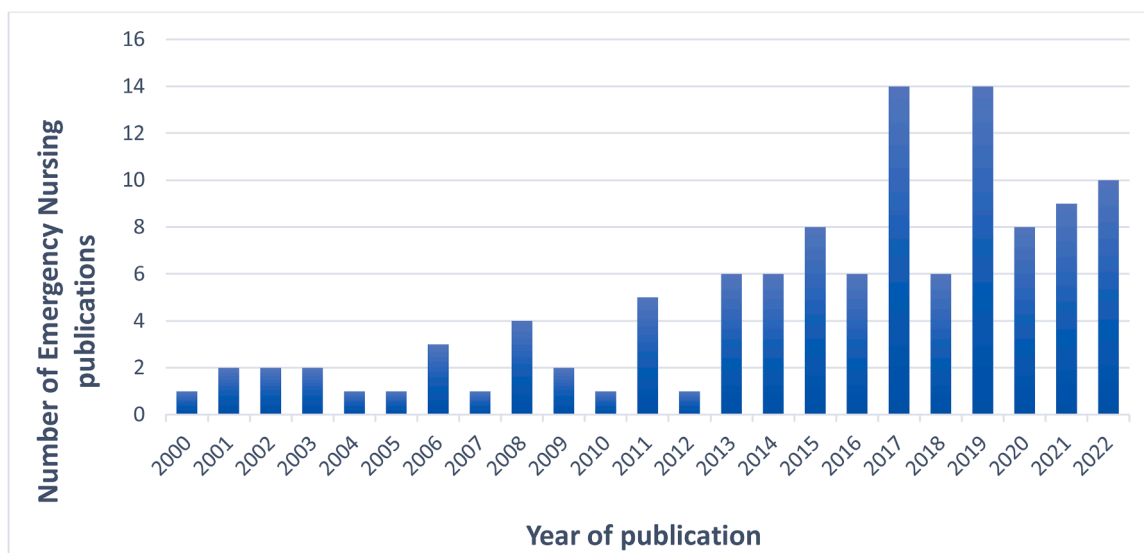


Fig. 2. Publication trends for Emergency Nursing Research in WHO Afro-region.



Fig. 3. The distribution of Emergency Nursing Research in WHO Afro-region.

Study participants included in the research

In terms of the sample involved, most study participants included nurses (n=57), patients admitted in emergency settings (n=12) and their records (n=11), and other healthcare professionals (n=11). Some other participants were family members (n=5), police officers (n=1) and professional organisations (n=2) (Table 2). Sample sizes in the various studies ranged from 5 to 3301.

Professional groups conducting the emergency nursing research

The professional groups (those doing the research) involved in emergency nursing research were nurses (n=69), doctors (n=8), nurses and doctors (n=26), public health specialists and nurses (2), public health specialists, nurses and pharmacists as well as clinical psychologists (n=2), psychologists, nurses and doctors (n=1), nurses, doctors, public health specialists and pharmacist (n=1), and human resource (n=1) being the least. Most of the researchers/authors involved in the research came from South Africa (n=52) and Ethiopia (n=11), with the least from Sudan (n=1) (Table 2) (Supplementary file).

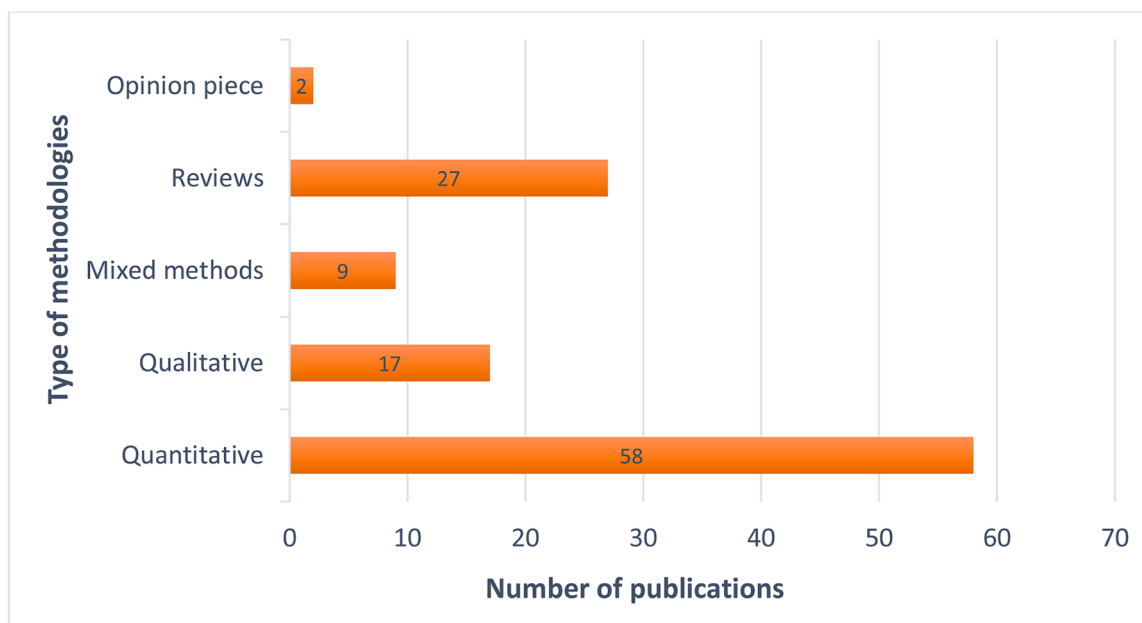


Fig. 4. Research methodologies for Emergency Nursing research.

Focus area of the research

The identified papers on emergency nursing research focused on a variety of focus areas including; Emergency Nursing Education (n=23); Epidemiology (n=24); Systems for Emergency Care (n=18); Out of Hospital (n=2); Triage (n=15); Clinical Management (n=8); Family Focused (n=9); Patient Focused (n=6); Psychosocial Support for staff (n=10); Departmental Management (n=2) and Prevention (n=1) (Table 3) (Supplementary file).

Discussion

Publication trends and country distribution

A scoping review of emergency nursing research in WHO Afro-region was conducted and found 113 papers [22-133], with an increase in publications noted in the last decade. This rise in publications may be explained by the establishment of a number of emergency nursing postgraduate programmes in various WHO Afro-region countries. These programmes contain a compulsory research requirement, thus translating into the production of more research, more experienced research supervisors and hence an increase in the number of publications over this period. The introduction of emergency care conferences held in a different African country every 2 years could also have fuelled this increase as these conferences specifically encourage emergency nursing research. However, the affect that the Covid-19 pandemic on research should also be considered as Riccaboni and Verginer describe the various ways in which the pandemic altered the amount and type of research being produced [134]. Emergency nurses were frontline workers during the pandemic [135] and this may have influenced their abilities to conduct research.

Most of the publications are reported to have come from South Africa. The reason for this is due to the fact that South Africa was among the first countries in Africa to start emergency nursing on the continent. In the early 1980s, a 6-month programme focusing on trauma nursing was introduced due to turbulent political climate in the country which was causing a rise in the number of trauma cases. A degree programme in trauma/emergency nursing (with or without critical care) was established at the University of Pretoria in 1997 and then at the University of KwaZulu-Natal (formerly University of Natal) in 1998, with

other South African universities and Nursing colleges following suit [94, 136]. South Africa also has a long history of postgraduate nursing education with many universities across the country offering postgraduate nursing programmes.

Many nursing students from across Africa travel to South Africa for their masters and doctoral studies, thus many students in other countries like Rwanda [31,39,40,44,50] and Nigeria [122,124] were therefore supervised by nurse researchers from South Africa. Furthermore, some emergency nurse academics in South Africa were involved in collaborative African projects aimed at establishing critical care and trauma/emergency nursing postgraduate programmes in various countries for example Tanzania, Rwanda, Sierra Leone, Zambia, Kenya, and Ghana [136]. These countries then went on to develop their own nursing programmes in this area. In Rwanda, the implementation of human resource for health programme in 2015 also enhanced the training of critical care and trauma speciality with a research component for nurses and midwives [137,138].

In Ethiopia, the formation of the Emergency Medicine Task Force (EMTF) in 2006 led to the development of multiple residencies as well as a nursing emergency and critical care training [139] and this might explain a significant number of publications (14) from this country [22, 26,28-29,33-37,41-43,45-46]. The launch of the African Federation for Emergency Medicine in 2009 provided an opportunity for nurses who were interested in emergency care across Africa to come together, share ideas regarding the development of emergency nursing and to work collaboratively. Collaborations of authors with other countries [24,25, 47,48,116,120,122-123,124] increased single and multicounty emergency nursing research in most WHO Afro-regions as evidenced in this review. Furthermore, the coming together of non-African authors from USA, UK, Iran, Canada, Australia and Norway with African authors [27, 30,32,36,37,41,49,52,98,113-115,117,119,127,129-130,133] increased the output of emergency nursing research, especially in Ghana, possibly due to the availability of external academic support and funding from these developed nations. However, in most WHO Afro region states, the Human Resources for Health (HRH) shortages and limited time to engage in research activities is a possible explanation to the lack of research knowledge.

Table 3
Research focus area for emergency nursing research in Africa (n=113).

Author, year, Country	Research focus area	Nature of Focus area										
		Emerg Nurs Ed	Epi	Syst Emerg Care	Out of Hosp	Tri	Clin Mx	Fam Focus	Pt Focus	Psych Supp Staff	Dept Man	Prev
Emergency Nursing education												
Namukwaya et al, 2022; Uganda [23]	Knowledge & Practice of EN	X										
Ndung'u et al, 2022; Kenya [25]	Self-Perceived Educational Needs	X										
Carter and Norter, 2022; Zambia [27]	Capacity building of emergency, trauma and critical care nurse education and practice	X										
Dulandas & Brysiewicz, 2018, South Africa [62]	Educational needs of emergency nurses	X										
Heyns, 2006; South Africa [99]	Core competencies of the accident and emergency nurse in life threatening situations	X										
Cunningham et al, 2017; Tanzania [47]	Developing an EN short course	X										
Difazio and Vessey, 2013; Africa; USA [132]	Emerging needs in emergency care	X										
Wolf et al, 2012; Africa [133]	Developing a framework for EN practice	X										
Scott and Brysiewicz, 2016; Africa [130]	Development of an EN curriculum model	X										
Romnski et al, 2011; Ghana [119]	Educational needs	X										
Bam et al, 2020; Ghana [108]	Self-assessed competencies	X										
Gassiep, 2015; South Africa [thesis] [82]	Role of the EN	X										
Motseo & Heynes, 2015; South Africa [Thesis] [83]	Evaluating the EN program	X										
Reimer and Austin, 2019; Sub-Saharan Africa [125]	Emergency trauma nursing	X										
Bell et al, 2014; Ghana [116]	EN training curriculum	X										
Botma et al, 2021; Global [121]	WhatsApp as a support strategy during the COVID-19 pandemic	X										
Brysiewicz et al, 2021; Africa [123]	Development of EN in Africa: challenges & successes	X										
Bell et al, 2015; Ghana [113]	EN degree program education	X										
Brysiewicz & Bruce, 2008; South Africa [94]	Developing EN roles	X										
Van Wyk et al, 2015; South Africa [84]	Pre-hospital learning environment during an EN programme	X										
Friedman et al, 2022; Uganda [24]	WHO basic emergency care course	X										
Bell et al, 2014; Ghana [117]	Development of an EN training curriculum	X										
Martel et al, 2014; Ghana [114]	EN Training Program	X										
Epidemiology												
Buitendag et al, 2019; South Africa [64]	Penetrating traumatic brain injuries		X									
Nsereko & Brysiewicz, 2010; Rwanda [50]	Injury surveillance		X									
Yosha et al, 2021; Ethiopia [29]	Mortality rate		X									
Seid et al, 2015; Ethiopia [46]	Injury characteristics and outcome of road traffic accident		X									
Fite et al, 2020; Ethiopia [33]	Severity of Injury and Associated Factors		X									
Gebbru et al, 2019; Ethiopia [37]	Prevalence, pattern, magnitude of trauma		X									
Bulto et al, 2018; Ethiopia [41]	Magnitude, causes and characteristics of trauma victims		X									
Eyasu et al, 2017; Ethiopia [43]	Acute poisonings		X									
Bashar et al, 2015; Ethiopia [45]	Injury and associated factors		X									
Goode et al, 2021; South Africa [56]	Risk Factors for Pulmonary Complications		X									

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Table 3 (continued)

Mashao et al, 2021; South Africa [55]	Prolonged hospital stays	X
Kong et al, 2017; South Africa [76]	Cost of TBI to the hospital services	X
Leigh et al, 2016; West Africa (Liberia, Nigeria and Sierra Leone) USA [Thesis] [131]	Ebola epidemic	X
Kong et al, 2017, South Africa [77]	Mortality in Civilian cerebral gunshot wounds	X
Jerome et al, 2017; South Africa [78]	Traumatic brain injury	X
Brysiewicz, 2001; South Africa [105]	Road traffic collisions	X
Green et al, 2019; South Africa [66]	Compliance with the surviving sepsis campaign guidelines for early resuscitation	X
Weale et al, 2018; South Africa [71]	Management of intra-abdominal vascular injury from trauma laparotomy	X
Buitendag et al, 2017; South Africa [73]	Traumatic brain injury	X
Brysiewicz et al, 2017; South Africa [74]	Predictors of mortality	X
Lori et al, 2016; Ghana [112]	Sharps injuries	X
Mukagasirira et al, 2017; Rwanda [Thesis] [40]	Prehospital management of head injury	X
Bashir et al, 2019, South Africa [60]	Adverse events & human error associated	X
Systems emergency care		
Gondwe et al, 2008; Malawi [51]	Emergency transportation; emergency care, Trauma; Emergency education of healthcare professionals; Emergency healthcare delivery	X
Calvello et al, 2016; Sub-Saharan Africa [129]	Operationalising emergency care delivery at health care facilities	X
Hardcastle et al, 2011, South Africa [90]	Guideline for the assessment of trauma centres	X
Hardcastle et al, 2013, South Africa [86]	Trauma care	X
Pincha Baduge et al, 2018; West Africa [126]	Preparedness for an ebola outbreak	X
Brysiewicz, 2011, Africa [88]	Essential in emergency care	X
Brysiewicz, 2011, South Africa [89]	Emergency care	X
van Hoving & Brysiewicz, 2017; Africa [79]	Attitudes and practices towards Research	X
Van der Wath et al, 2016; South Africa [80]	Coping with the exposure to survivors of intimate partner violence	X
van der Wath et al, 2013; South Africa [87]	Caring for survivors of intimate partner violence	X
Abdool and Brysiewicz, 2009; South Africa [91]	Forensic nursing role	X
Scott and Brysiewicz, 2017, Africa [127]	EN Global mentorship program	X
Abdool & Brysiewicz, 2006; South Africa (Thesis) [97]	Roles of forensic nursing	X
Brysiewicz, 2001, South Africa [106]	Trauma care	X
De Vasconcelos & Brysiewicz, 2003; South Africa [102]	MVA	X
Hjelmeland et al, 2014; Ghana [115]	Attitudes towards law criminalizing attempted suicide	X
De Lange et al, 2018; South Africa [61]	Patient handover	X
Ndile et al (2020); Tanzania [Dissertation] [32]	Post crash first aid educational program	X
Out of hospital emergency care		
Nshutiyukuri et al, 2017; Rwanda [Thesis] [44]	KAP on emergency care of road traffic accidents victims	X

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Table 3 (continued)

van Wyk et al, 2013; South Africa [Thesis] [84]	Pre-hospital learning environment	X	
Triage			
Majamanda et al, 2022; Malawi [30]	Capacity Building for Health Care Workers and Support Staff in Paediatric Emergency Triage Assessment and Treatment		X
Twangirayezu et al, 2021; Rwanda [31]	Knowledge and skills on Triage		X
Duko et al, 2019; Ethiopia [35]	Triage knowledge and skills		X
Aloyce et al, 2014; Tanzania [48]	Knowledge and skills of triage		X
Kerie et al, 2018; Ethiopia [42]	Triage skill and associated factors		X
Smith et al, 2022; South Africa [54]	Accuracy of nurse-led triage of adult patients		X
Phiri et al, 2020; South Africa [58]	Experiences of triage		X
Phukubye et al, 2019; South Africa [Thesis] [64]	Strategies to enhance knowledge of triage		X
Brujijns et al, 2008; South Africa [95]	Nurse triage on waiting times		X
Afaya et al, 2017; Ghana [109]	Perceptions and knowledge on triaging		X
Barnes et al, 2018; South Africa [69]	Traumatic shock triaging		X
Augustyn et al, 2009; South Africa [92]	Perceptions regarding the implementation of a triage system		X
Goldstein et al, 2017; South Africa [75]	Accuracy of nurse performance of the triage process		X
Clinical management			
Chelenyane et al, 2006; Botswana [98]	Infection control practices		X
Admassi et al, 2022; Ethiopia [22]	Knowledge & attitudes on Pain management		X
Rampanjato et al, 2006; Rwanda [52]	Pain management by nurses		X
Bisanzo et al, 2012; Uganda [49]	Administration of ketamine for sedation		X
Nigatu et al, 2022; Ethiopia [26]	Knowledge, Practice, towards Airway and Breathing Management		X
Goodnough & Brysiewicz, 2002; South Africa [104]	Witnessed resuscitation		X
Cunningham, 2015. Africa [81]	Resuscitation training		X
Mukabagire et al, 2019; Rwanda [Thesis] [39]	KAP on intra-hospital transportation management of the critically ill adult patients		X
Family focus			
Emmamally et al, 2020; South Africa [59]	Perceptions of relational practice with families		X
Emmamally et al, 2022; USA; UK; Iceland; Australia; Hong Kong; Netherlands [120]	In-hospital interventions to promote relational practice with families		X
Oyegbile and Brysiewicz, 2021; Global [122]	Tools to measure family experiences		X
Botes & Mabetshe, 2022; South Africa [53]	Attitudes regarding family presence during the management of acutely deteriorating patients		X
Emmamally & Brysiewicz, 2019; South Africa [65]	Families' perceptions of support		X
Brysiewicz & Emmamally, 2017; Global [128]	Family nursing		X
Emmamally & Brysiewicz, 2018; South Africa [63]	Family-centred practices		X
Almaze and de Beer, 2018; South Africa [72]	Patient- and family-centred care practices		X
Brysiewicz, 2008; South Africa [93]	Lived experience of losing a loved one to a sudden death		X
Patient focus			
Takele et al, 2021; Ethiopia [28]	Patient satisfaction towards emergency medical		X
Geburu et al, 2019; Ethiopia [37]	Client satisfaction on ED Services and quality of emergency medical care		X
Oyegbile & Brysiewicz, 2020; global [124]	Tools for measuring Patient experiences		X
van der Wath, 2019; South Africa [68]	Perceptions on Women exposed to intimate partner violence		X
Filmalter et al, 2018; South Africa [70]	Forensic patients & their patient care		X
Psychosocial support for staff			
Kriel, 2020; South Africa [57]	Psychological Impacts of Patient and Workplace Trauma		X
Atakro et al, 2016; Ghana [111]	Challenges experienced in the emergency department		X
Ogundipe et al, 2013; Nigeria [118]	Perceptions of violence		X
Spies (2004); South Africa [thesis] [101]	Occupational stressors, occupational stress and burnout		X
Wentzel, Brysiewicz, 2014; South Africa [85]	Compassion fatigue		X
Drotske et al, 2007; South Africa [96]	Resuscitation debriefing		X
Brysiewicz and Uys, 2005; South Africa [100]	Sudden death		X
Brysiewicz, 2002; South Africa [103]	Violent death		X
Brysiewicz & Bhengu, 2000, South Africa [107]	Lived experiences; Violent death		X
Departmental management			

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Table 3 (continued)

Family focus		
Wubetie et al, 2020; Ethiopia [34]	Staff turnover	X
Nyhus and Kamara, 2017; Sierra Leona [110]	Knowledge and skills on quality improvement in emergency service delivery	X
Prevention		
Maina et al, 2019; Kenya [38]	Suicide prevention	X

KEY: Emerg Nurs Ed=Emergency Nursing Education; Epi=Epidemiology; Syst Emerg Care=Systems for Emergency Care; Out of Hosp=Out of Hospital; Tri=Triage; Clin Mx=Clinical Management; Fam Focus=Family Focused; Pt Focus=Patient Focused; Psych Supp Staff=Psychosocial Support for staff; Dept Man= Departmental Management; Prev=Prevention

Professional groups, research methodologies and study participants

The professional groups conducting the research were mainly the nurses doing research with other nurses, doctors, and public health specialists, thus highlighting a united research approach. Collaborative research projects are crucial as they enhance teamwork, use of evidence in practice and decision-making [140]. However, some included studies reflected more non-nursing authors making up the team with often very few nurses. While other reviews on nursing research outputs in Africa have shown the use of more qualitative methodologies in the publications [141,142], the current review reveals predominantly quantitative approaches utilising descriptive cross-sectional design as being prevalent in emergency nursing research in Africa. The use of systematic literature review methodologies is gaining momentum in academia [143] and this is also evident in the current review.

Most nurses, especially from the academia, and some other healthcare professional research teams used nurses as the study participants thus highlighting the important role played by this health professionals' group in the WHO Afro-region. Siedleck and Albert went further to explain that nurses in an academic setting have advanced education and access to a variety of research resources [144]. However, there is need for nurses to divert their focus to patients as they are the major clientele for emergency nursing as the review revealed less emergency nursing research projects focused on patients. Although nurses in the clinical area may have access to emergency patients and their respective families, their involvement in emergency nursing research in their areas of practice is still limited. This is possibly due to the fact that many clinical nurses lack research knowledge, confidence, and access to research resources in order to do so [144,145]. It is interesting to note the inclusion of other healthcare professionals as participants for emergency nursing research thus indicating the multidisciplinary nature of the profession. Though still minimal, the inclusion of others such as family members and police officers as study participants reveals the other key players involved in emergency nursing who must not be overlooked.

Focus area of the research

The focus of emergency nursing research was mainly on emergency nursing education [23-25,27,47,62,82-84,94,99,108,113-114,116,117,119,121,123,125,130,131,132-133] with limited publications focusing on out of hospital care [44,84], departmental management [34,110] and prevention [38]. A reason for this could be due to the current emphasis on the continent being on establishing emergency nursing programmes, coupled with the fact that there are many barriers that clinical nurses in Africa face in attempting to conduct research [146]. Collaborations of all health professionals with backgrounds in epidemiology and biostatistics might explain the amount of emergency nursing research output with focus on epidemiology [29,33,37,41,43,45,46,50,55,56,60,64,71,73,76,77,78,131]. Although some of the emergency nursing research focus was on patients [28,37,68,70,124] and their family members [53,59,63,65,72,93,120,122,128], this is limited given that these are the major clientele in emergency nursing care practice. Given the challenges of the emergency department, conducting research with patients and their families is difficult.

Strengths and limitations

The review provided the first synthesized evidence on emergency nursing research from the WHO Afro-region states. Four reviewers were involved in the selection and data extraction of selected articles independently with comprehensive discussions where disagreement existed, thus eliminated possible selection bias, and improved the rigor of the review. Inclusion of grey literature sources (completed academic theses and dissertations) added to the breadth of evidence that was relevant emergency nursing research scoping review. The limitation of the review is however that only articles published in English were included. In addition, only countries in the WHO Afro-region were included in the review, thus eliminating the North African countries belonging to the Eastern Mediterranean Region.

Conclusion and Recommendations

Although there is a notable increase in the number of publications on emergency nursing research, only 11 countries within the WHO Afro-region states have produced outputs. Moreover, a qualitative study should be undertaken focusing on key informant interviews to explain why emergency nurses show little or no interest in research activities. Clinical nurses should be encouraged to undertake research with a specific focus on patients and families. There is also a need to ensure all research undertaken is disseminated and theses and dissertations need to be converted into peer reviewed publications, necessitating the guidance and mentoring of senior researchers in this regard. Since most of the current research is at a descriptive level, there is need to encourage emergency nursing research regarding development and evaluation of interventions, as well as measuring outcomes and impact of emergency nursing in the emergency care system. This might be done through research supervisors encouraging their students to focus on intervention studies. Moreover, utilization of multidisciplinary research teams to attract funding in emergency nursing research in the African context is crucial.

Dissemination of results

This was a secondary analysis of published literature on emergency nursing research in WHO Afro region. A scoping review protocol was disseminated on Open Science framework (osf.io/5wz3x).

Authors' contributions

The authors of this manuscript contributed to the conception or design of the work; the acquisition, analysis, or interpretation of data for the work; and drafting the work or revising it critically for important intellectual content equally as follows: GC 25%, PM 25%, TH 25% and PB contributed 25%. All authors approved the version to be published and agreed to be accountable for all aspects of the work.

Declaration of competing interest

All authors declare no conflict of interest.

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