JACC VOL. 87, NO. 15, 2026

SYSTEMATIC REVIEW

African Representation in Randomized Controlled Trials Published in Leading Medical and Cardiovascular Journals, 2019-2024

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ABSTRACT

BACKGROUND Despite accounting for a substantial proportion of the global population and disease burden, African countries are underrepresented in randomized controlled trials (RCTs), including those informing cardiovascular (CV) care.

OBJECTIVES In this study, we sought to quantify African representation in RCTs published from 2019 to 2024 in: 1) 5 leading general medical journals; and 2) 3 leading CV journals.

METHODS We conducted a systematic review of RCTs published from 2019 to 2024 in the *British Medical Journal*, the *Journal of the American Medical Association*, *The Lancet*, *Nature Medicine*, and the *New England Journal of Medicine*, and in *Circulation*, the *European Heart Journal*, and the *Journal of the American College of Cardiology*. Eligible studies included traditional, pragmatic, cluster, and stepped-wedge RCTs. African representation was assessed by trial scope (Africa-only vs multicontinental), country and regional participation, disease category, and African authorship.

RESULTS Among 2,138 RCTs published in leading general medical journals, only 83 (3.9%) were conducted exclusively in Africa, and 195 (9.1%) were multicontinental studies including at least 1 African site. In the CV journals, 2 out of 334 RCTs (0.6%) were conducted exclusively in Africa, and African sites were included in only 9 multicontinental trials (2.7%). South Africa accounted for the majority of Africa-based RCTs across both journal categories. Regionally, southern Africa predominated and central Africa was minimally represented. Trials published in general medical journals and conducted exclusively in Africa largely focused on infectious diseases (n = 63; 75.9%), with only 3 addressing cardiovascular disease (CVD). In contrast, Africa-including multicontinental trials more frequently investigated noncommunicable diseases, including CVD. African leadership was common in Africa-only trials but rare in multicontinental studies.

CONCLUSIONS African countries are profoundly underrepresented in RCTs published in the world's most influential medical and CV journals. Addressing this imbalance requires expanding African participation in global trials, investing in local research capacity, and promoting equitable leadership to strengthen the relevance and validity of clinical evidence. (Underrepresentation of African Countries in Randomized Controlled Trials: A Systematic Review of Leading General Medical and Cardiovascular Journals; CRD42024603157) (JACC. 2026;87:1892-1906) © 2026 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

ISSN 0735-1097 https://doi.org/10.1016/j.jacc.2026.02.5097

Randomized controlled clinical trials (RCTs) play a critical role in evidence-based medicine by shaping clinical practice and guiding health care decisions globally.[1] These trials are specifically designed to understand mechanisms and evaluate the safety and effectiveness of treatments, offering valuable insights into disease management, treatment outcomes, and the risks of adverse effects in target populations.[2] Globally, there is growing evidence that geographic diversity of RCT study sites and participants enrollment has been predominantly limited to high income countries (HICs).[3-8] To enhance the generalizability and applicability of RCT findings, it is essential to include racially and ethnically diverse participants from regions where the research outcomes will be implemented[9,10]—for several reasons.

The first reason is to promote health care equity by ensuring that interventions are studied in populations with varying genetic, environmental, sociocultural, and behavioral backgrounds which may affect treatment uptake and responses.[11] A second reason is to improve the external validity and generalizability of trial findings, making it easier to apply these findings to the real-world clinical practice. And a final reason is to address ethical concerns by ensuring that all individuals, regardless of background, have the opportunities to benefit from the latest advances in medical science.[12]

African countries have consistently been underrepresented in RCTs.[13] Although the prevalence of noncommunicable diseases (NCDs) in African countries has reached levels similar to, or even exceeding, those seen in HICs,[14] there remains a significant need for clinical guidance on safe and effective interventions tailored to local African contexts. In particular, the burden of cardiovascular diseases (CVDs) has risen dramatically over the past 30 years in the continent, accounting for around 38% of NCD-associated deaths.[15-17] Importantly, the distinct disease profiles in African populations, such as the higher prevalence of rheumatic heart disease, hypertension, and dilated cardiomyopathy compared with atherosclerotic CVD, and unique characteristics and risk factor profiles of the population, such as younger age, higher prevalence of infectious diseases, and varied responses to pharmacotherapy, raise concerns about the applicability of existing clinical evidence.[18]

Although RCTs published in leading general medical and cardiovascular (CV) journals strongly

ABBREVIATIONS AND ACRONYMS

CV = cardiovascular

CVD = cardiovascular disease

HIC = high-income country

NCD = noncommunicable disease

RCT = randomized controlled trial

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the Author Center.

Manuscript received June 23, 2025; revised manuscript received February 14, 2026, accepted February 19, 2026.

CLINICAL IMPLICATIONS

Despite bearing 25% of the global disease burden, including a rising toll from CVD, Africa is underrepresented in RCTs. From 2019 to 2024, only 3.9% of RCTs published in leading general medical journals were conducted exclusively in Africa, with a further 9.1% incorporating African sites as part of multicontinental RCTs. This underrepresentation was even more pronounced in CV-focused journals, where African sites contributed to only 9 multicontinental RCTs (2.7%), and just 2 studies (0.6%) were conducted exclusively in Africa during the study period. This disparity, exacerbated by regional imbalances and an overemphasis on infectious diseases, undermines health equity and limits generalizability of findings globally. To address this gap, strengthening African research capacity is essential through enhanced collaborations and research training, increased funding, and improved infrastructure, ensuring that global clinical research more accurately reflects the diversity of the world's population.

influence global standards of care, African representation in these highly influential sources has not been systematically evaluated over time. Previous studies have primarily described regional publication output or Africa's contribution to trials informing specific CV guidelines.[19] In contrast, the present study examined African inclusion in the most authoritative general medical and CV journals through a comparative multiyear analysis.

The study had 2 objectives: 1) to assesses African representation in RCTs published in leading general medical journals across countries, regions, and disease categories, including CVDs; and 2) to evaluate African representation in RCTs published in leading CV journals over the same time period. By comparing trends across journal types and over time, this study addresses, and raises awareness of a critical gap in understanding the equity of African inclusion in trials that inform global clinical practice, initiate discussions, and inform efforts to improve geographic diversity, inclusivity, and equity in global CV and clinical research.

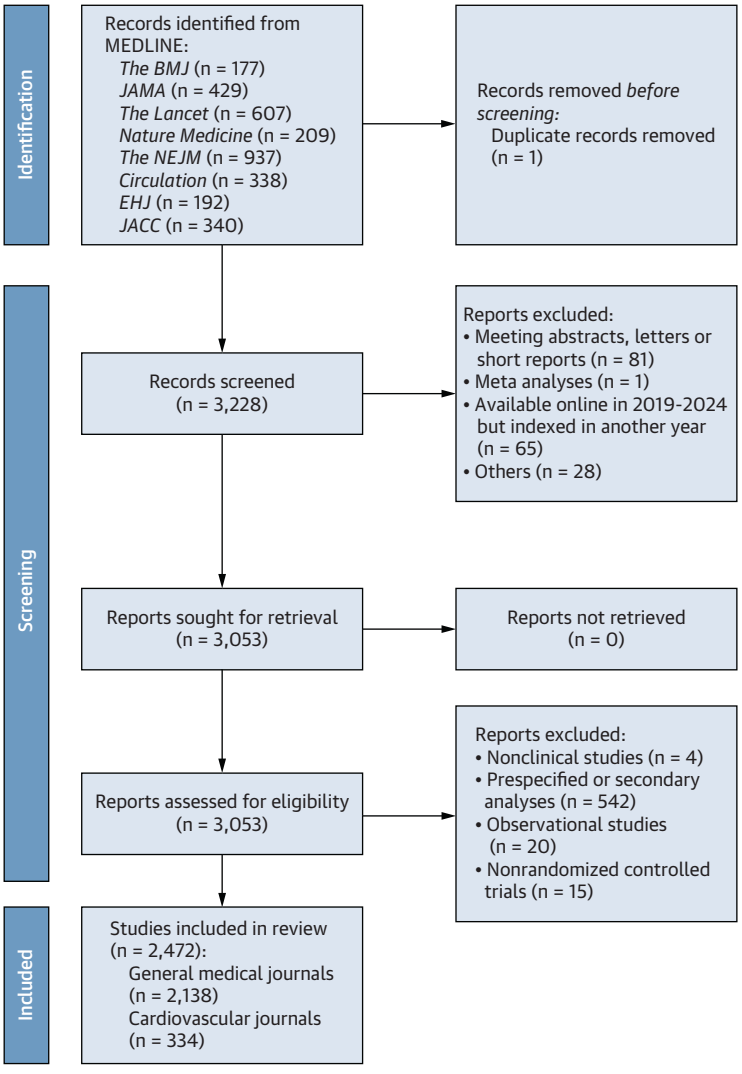
METHODS

SELECTION OF ARTICLES AND ELIGIBILITY CRITERIA. Full details of the study methods are available in the protocol registered in PROSPERO (CRD42024603157). A systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to identify relevant RCTs published in a 6-year period from 2019 to 2024 in 5 leading general medical journals—the *New England Journal of Medicine* (NEJM), *The Lancet*, the *Journal of the American Medical Association* (JAMA), *Nature Medicine*, and the *British Medical Journal* (BMJ)—as well as 3 leading CV journals: *Circulation*, the *European Heart Journal* (EHJ), and the *Journal of the American College of Cardiology* (JACC). The print date was used as the publication date when the study was made available online in the year before the print date. To identify eligible studies, we searched the Medline database with the following search strategy: ("randomized controlled trial"[Publication Type] AND 2019/01/01:2024/12/31[Date - Publication]) AND ("BMJ"[Journal] OR "JAMA"[Journal] OR "Lancet (London, England)"[Journal] OR "Nature medicine"[Journal] OR "The New England journal of medicine"[Journal] OR "Circulation"[Journal] OR "European heart journal"[Journal] OR "Journal of the American College of Cardiology"[Journal]). In addition, reference lists from the retrieved articles and relevant reviews were manually screened to identify any additional eligible studies. We excluded nonrandomized and noncontrolled trials, secondary analysis studies, systematic reviews and meta-analyses, observational studies, meeting abstracts, letters, and commentaries.

OUTCOMES. The primary outcome was the proportion of RCTs, including traditional, pragmatic and cluster trials, conducted solely in Africa. Secondary outcomes included: 1) the proportion of multicontinental RCTs that included at least 1 African location as a study site; 2) the geographic distribution of RCTs conducted across Africa, categorized by country and region; 3) African leadership classified into the following categories: lead author (first or senior author), co-lead author, collaborative co-authorship, and site-only participation; 4) the proportion of RCTs conducted in Africa, as either single- or multicontinental studies, stratified by type of disease studied; and 5) the proportion of African participants in the studies.

DATA COLLECTION AND SYNTHESIS. Eight independent reviewers (B.G., M.I.M., D.L.K., G.S., M.S., D.G., D.S., and A.A.) screened the titles and abstracts of the identified articles to determine eligibility for inclusion. Full-text articles of potentially eligible studies were then retrieved and assessed for final inclusion. Any discrepancies or disagreements were resolved through consensus. A standardized data extraction form was used to collect relevant information, including trial characteristics (eg, study design, intervention type), participating country, region, and continent location. Data extraction was performed independently by 2 reviewers, and any

FIGURE 1 Flow Diagram of Identification and Selection of Randomized Controlled Trials Published From 2019 to 2024 in Leading Medical and Cardiovascular Journals



BMJ = *British Medical Journal*; EHJ = *European Heart Journal*; JACC = *Journal of the American College of Cardiology*; JAMA = *Journal of American Medical Association*; NEJM = *New England Journal of Medicine*.

discrepancies were resolved through consensus or, when necessary, in consultation with a third reviewer.

The study site was used to determine the study location, with region of the African continent categorized based on the United Nations Statistics Division's Standard country or area codes (M49).[20] The type of diseases studied in RCTs were classified as CV and non-CV NCD, infectious disease, and type of CVD.

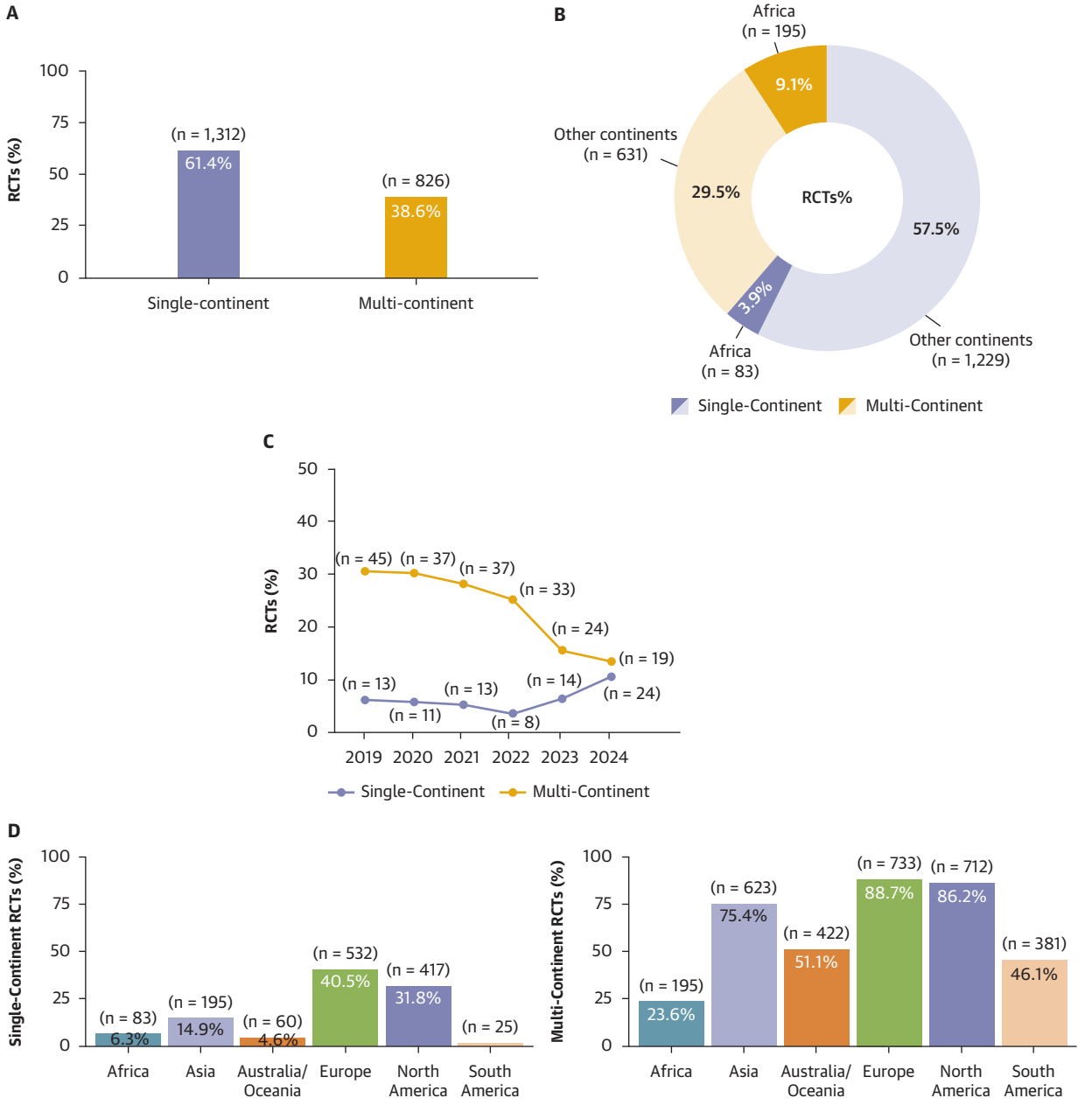
ETHICAL CONSIDERATIONS. This study involved a systematic review of published articles and did not involve direct contact with human participants. As such, it was exempt from ethical approval requirements.

ROLE OF THE FUNDING SOURCE. There was no funding source for this study.

RESULTS

CHARACTERISTICS OF INCLUDED TRIALS. A total of 3,229 relevant records were published in NEJM, Lancet, JAMA, Nature Medicine, BMJ, Circulation, EHJ, and JACC from 2019 to 2024, of which

FIGURE 2 Proportion of Single- or Multicontinental RCTs Published in Leading General Medical Journals From 2019 to 2024

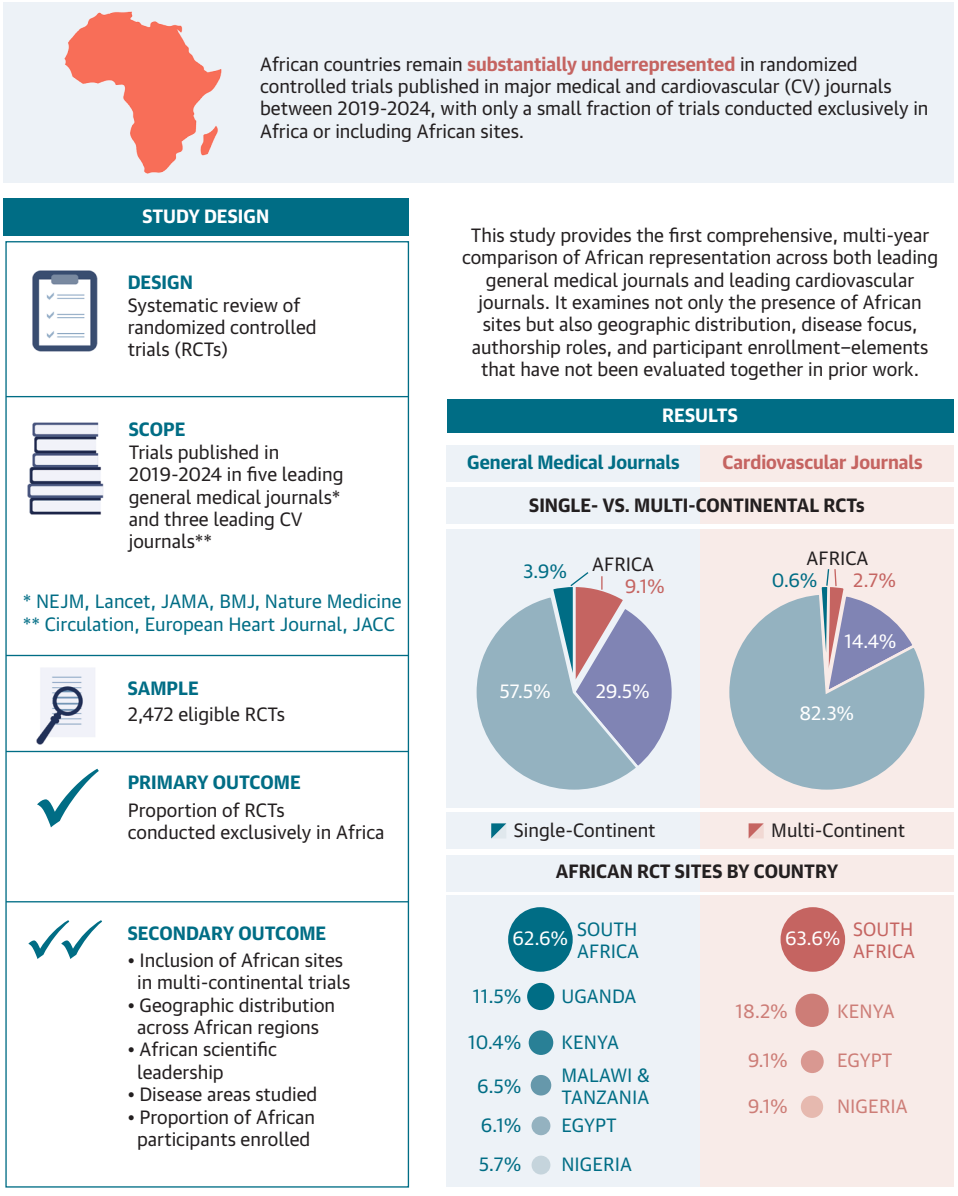


(A) Overall proportion of single- and multicontinental randomized controlled trials (RCTs). (B) Representation of Africa in single- and multicontinental RCTs across all studies. (C) Annual trend in Africa's representation in single- and multicontinental RCTs. (D) Proportion of single- and multicontinental RCTs by continent represented.

2,472 were deemed to be eligible for inclusion (Figure 1).

GENERAL MEDICAL JOURNALS. Among the 2,138 studies published in the general medical journals, the majority (1,312, 61.4%) were conducted on a single continent (Figure 2A). Only 3.9% of the RCTs included in our analysis were conducted exclusively in Africa, and 9.1% of the RCTs were multicontinental studies that included at least 1 African location as a study site (Figure 2B). From 2019 to 2024, RCTs in which Africa was represented shifted from being largely multicontinental to being

CENTRAL ILLUSTRATION **African Representation in RCTs Published in Leading Medical and Cardiovascular Journals, 2019-2024**



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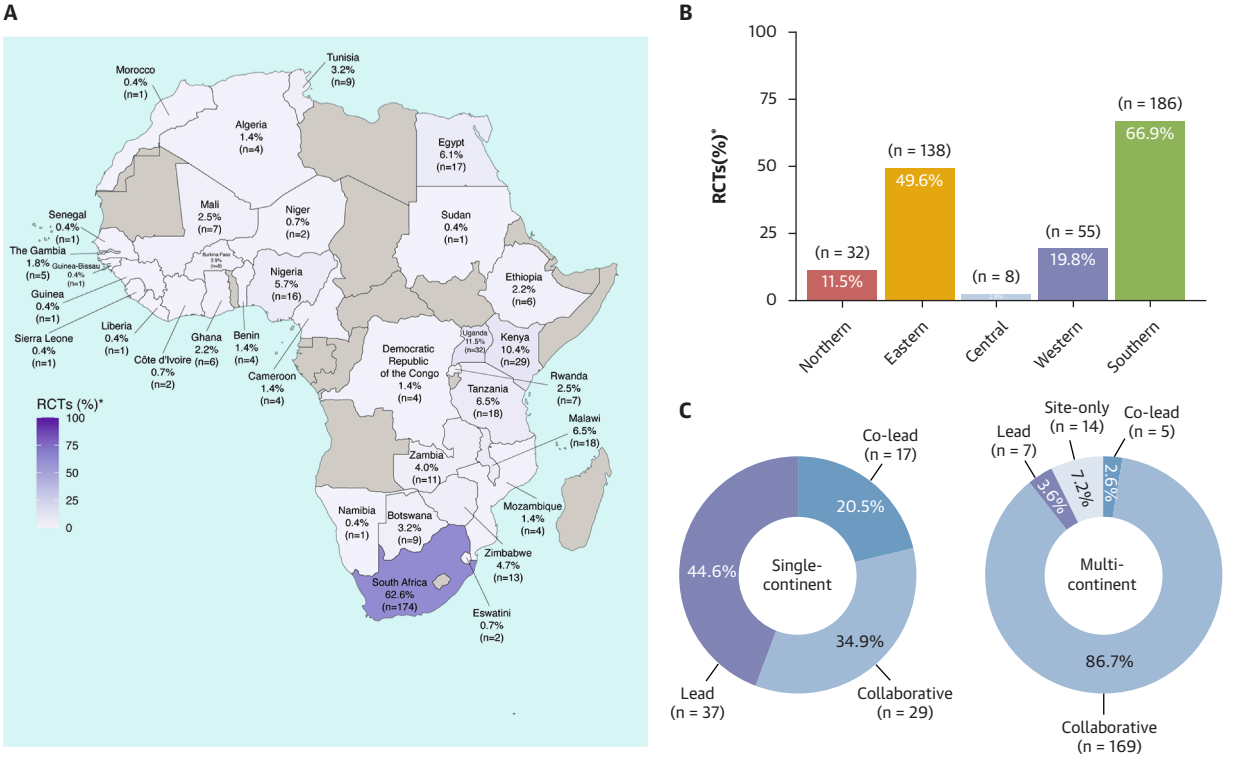
Proportion of single- or multicontinental randomized controlled trials (RCTs) and representation of Africa including the geographic distribution of trials conducted by country in leading general medical journals and cardiovascular journals. Based on 2,472 RCTs published from 2019 to 2024 in the *New England Journal of Medicine*, *Lancet*, *Journal of American Medical Association*, *British Medical Journal*, *Nature Medicine*, *Journal of the American College of Cardiology*, *Circulation*, and *European Heart Journal*.

conducted more often exclusively in Africa (Figure 2C, Central Illustration).

SINGLE-COUNTRY OR MULTICOUNTRY RCTs CONDUCTED ON A SINGLE CONTINENT. Among single-country or multicountry RCTs conducted on a single continent, Europe had the highest number, with 532 studies (40.5%), followed by North America (417 studies; 31.8%) and Asia (195 studies, 14.9%). In contrast, Africa contributed only 83 studies (6.3%), highlighting a significant underrepresentation given its substantial population size (Figure 2D).

FIGURE 3 Proportion of Single- or Multicontinent RCTs Conducted in Africa and Published in Leading General Medical Journals



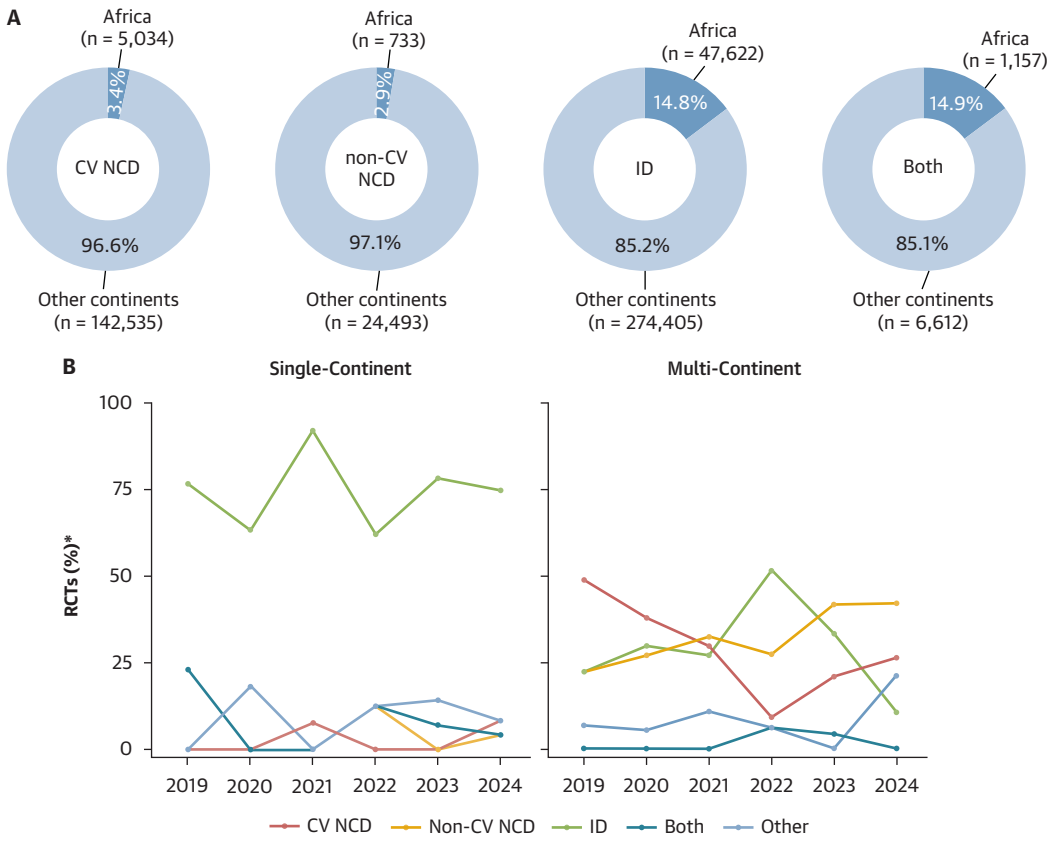
(A) Distribution by country. (B) Distribution by region. (C) African leadership in randomized controlled trials (RCTs) conducted in Africa. *Percentages represent the proportion of RCTs that included the country (A) or region (B) among all Africa-based RCTs (n = 278), combining single-continent (n = 83) or multicontinent (n = 195) trials.

MULTICONTINENTAL RCTs. Similarly, most multicontinental trials published across the 5 general medical journals included study sites in Europe (733, 88.7%), North America (712, 86.2%), and Asia (623, 75.4%) (Figure 2D). Africa was represented with study sites included in only 195 multicontinental RCTs (23.6%), despite being the continent with the greatest number of countries.

GEOGRAPHIC DISTRIBUTION OF RCTs FEATURING AFRICA: COUNTRY AND REGIONAL PARTICIPATION. A comparative analysis of the inclusion of study centers in Africa by country revealed that South Africa participated in the majority of the RCTs published in the 5 general medical journals conducted on the African continent, with 174 studies (62.6%), followed by Uganda (32 studies, 11.5%), Kenya (29 studies, 10.4%), Malawi and Tanzania (18 studies, 6.5%), Egypt (17 studies, 6.1%), and Nigeria (16 studies, 5.7%) (Figure 3A). Notably, western Africa had the highest number of countries included, with 13 countries serving as study sites. However, southern Africa was most prominently represented in RCTs, with 186 studies (66.9%) conducted in this region (Figure 3B), whereas central Africa contributed to only 8 (2.9%) studies. African authors served as lead authors in 37 studies (44.6%) and as co-lead authors in 17 studies (20.5%) among RCTs conducted exclusively in Africa (Figure 3C). In contrast, leadership representation was markedly lower in multicontinental RCTs that included at least 1 African site, with African authors leading 7 studies (3.6%) and co-leading 5 studies (2.6%).

AFRICAN PARTICIPATION. Across all topic areas in the 5 general medical journals, participants recruited in Africa constituted a small minority of the total global trial populations among studies that reported participant numbers by country or continent. The lowest proportional representation was observed in non-CV NCD trials, at 2.9% (733 of 25,226 participants), followed closely by CV NCD trials, where 3.4% of participants were enrolled in Africa (5,034 of 147,569 participants) (Figure 4A). In contrast, trials focused on infectious diseases (47,662 of 322,027 participants) and those addressing both infectious

FIGURE 4 **Proportion of Participant Contribution and Study Topic Among RCTs Conducted in Africa and Published in Leading General Medical Journals**



(A) Participant contribution by study topic. (B) Study topics in single- and multicontinent trials by year. *Percentages represent the proportion of randomized controlled trials (RCTs) by study topic in single-continent (n = 83) or multicontinent (n = 195) Africa-based trials. Both = ID and NCD; CV = cardiovascular; ID = infectious disease; NCD = noncommunicable disease.

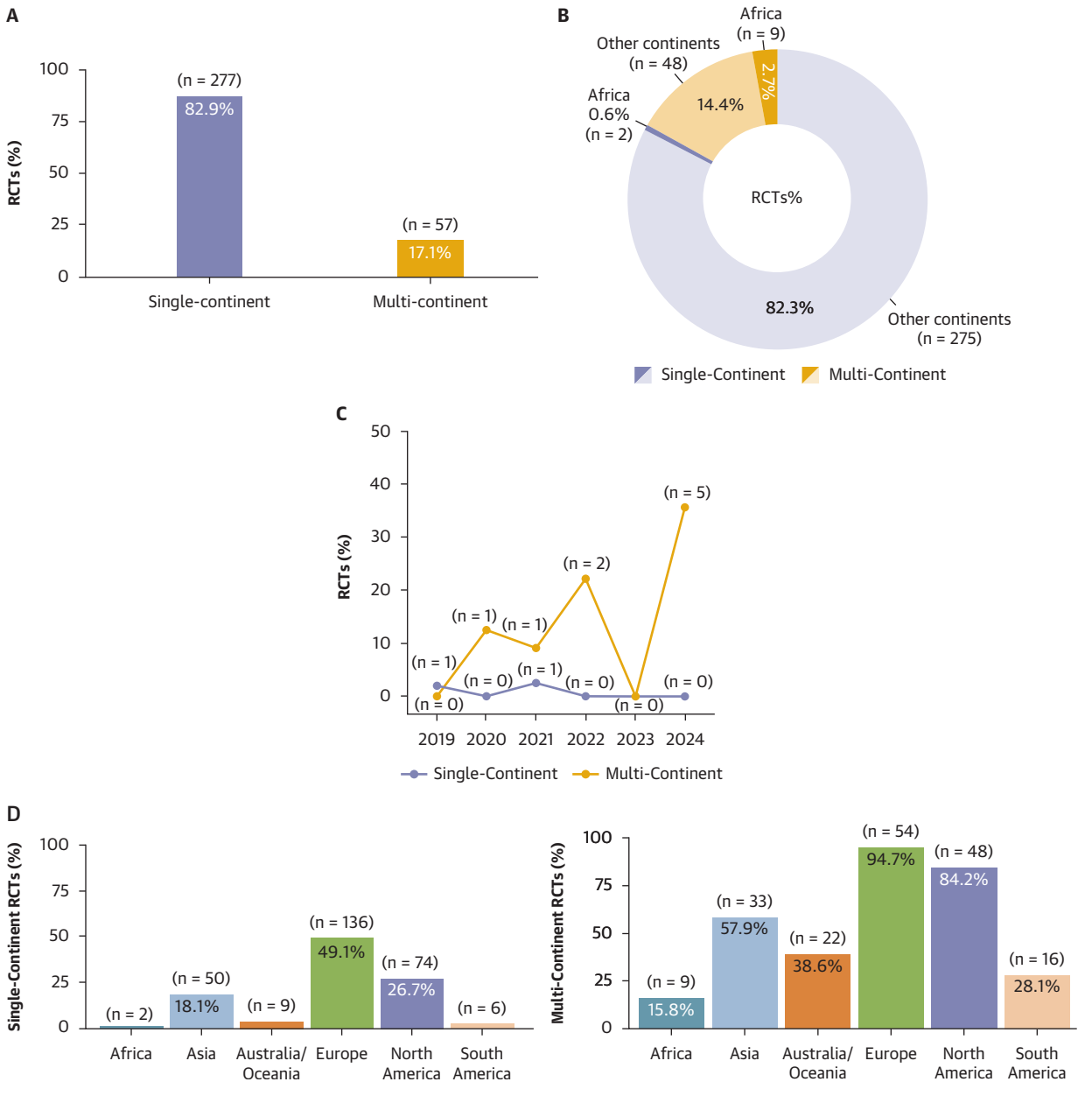
and NCDs (1,157 of 7,769 participants) had higher levels African participant enrollment. Among CV journal publications, 9 multicontinental trials were conducted in Africa; however, only 2 (22.2%) reported the number of participants enrolled by country or continent. Overall, African participants accounted for 2.0% of the total trial population (20 of 1,012).

TYPE OF DISEASES STUDIED. Studies conducted exclusively in Africa predominantly addressed infectious diseases, with 63 studies (75.9%) falling into this category, compared with only 7 studies focusing on NCDs, including 3 CV and 4 non-CV NCD trials. The distribution remained relatively stable from 2019 to 2024 (Figure 4B), with a notable peak in infectious disease trials observed in 2021, which likely reflects the impact of COVID-19.

In contrast, multicontinental RCTs that included African sites placed a stronger emphasis on NCD research. Of these studies, 58 (29.7%) addressed infectious diseases, and 119 (61.0%) focused on NCDs, with a similar distribution between CV (60 studies, 30.7%) and non-CV (59 studies, 30.3%) NCDs. Over the period of study, multicontinental trials demonstrated greater heterogeneity in disease focus. Infectious disease trials exhibited substantial year-to-year variability, peaking in 2022 before declining sharply by 2024. CV NCD trials declined from 2019 to 2022 but increased thereafter, whereas non-CV NCD trials showed a general upward trend, becoming the most prominent category in 2023-2024 (Figure 4B).

These findings offer contextual evidence of evolving research priorities over the study period, potentially influenced in part by the COVID-19 period, while recognizing that broader COVID-related

FIGURE 5 Proportion of Single- or Multicontinent RCTs Published in Leading Cardiovascular Journals From 2019 to 2024

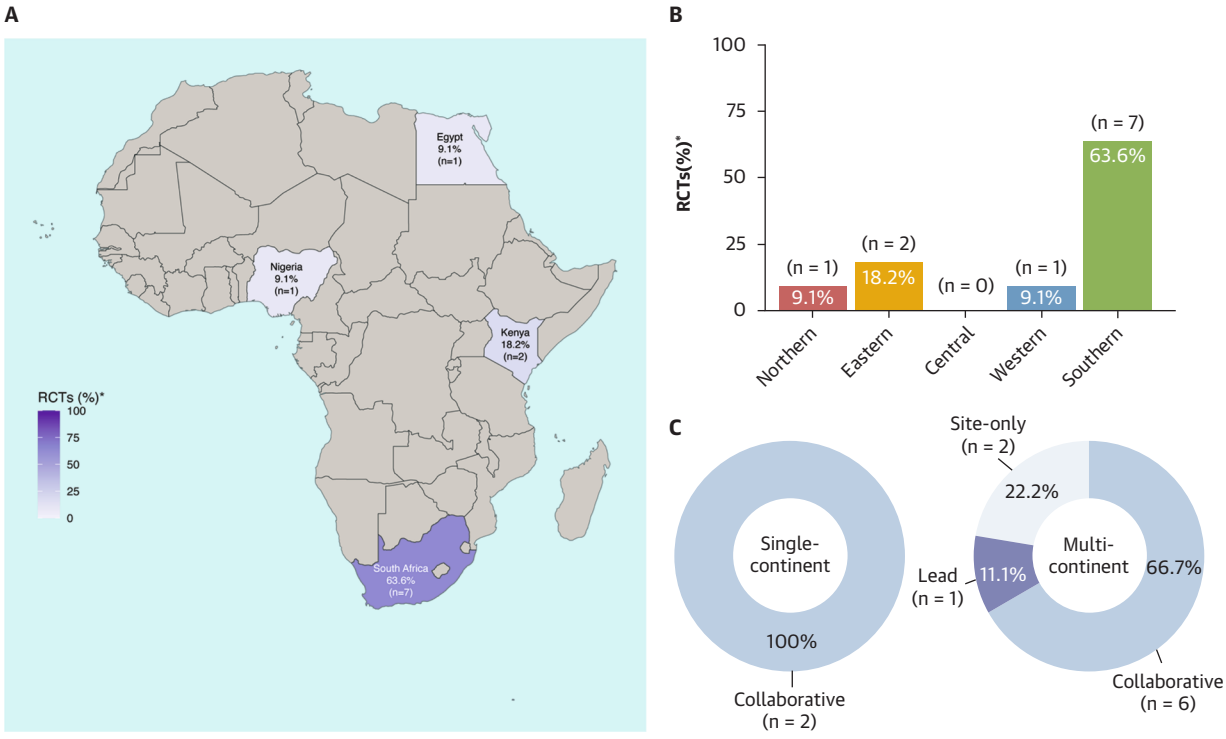


(A) Overall proportion of single- and multicontinent randomized controlled trials (RCTs). (B) Representation of Africa in single- and multicontinent RCTs across all studies. (C) Annual trends in Africa representation in single- and multicontinent RCTs. (D) Proportion of single- and multicontinent RCTs by continent represented.

impacts on funding allocation and trial distribution cannot be fully disentangled within the scope of the present analysis.

CV JOURNALS. Focusing on the 334 RCTs published in the 3 CV-themed journals, it was found that 277 (82.9%) were conducted on a single continent, and the remaining 57 (17.1%) were multicontinental (Figure 5A). African representation was limited, with only 2 studies (0.6%) conducted exclusively within Africa and 9 multicontinental studies (2.7%) including African participants (Figure 5B). Most of these trials were published in 2024 (Figure 5C). In contrast, Europe, North America, and Asia were far

FIGURE 6 Proportion of Single- or Multicontinent RCTs Conducted in Africa and Published in Leading Cardiovascular Journals



(A) Distribution by country. (B) Distribution by region. (C) African leadership in randomized controlled trials (RCTs). *Percentages represent the proportion of RCTs that included the specified country (A) or region (B) among all Africa-based RCTs (n = 11), combined single-continent (n = 2), or multicontinent (n = 9) trials.

more frequently represented, appearing in 49.1% and 94.7%, 26.7% and 84.2%, and 18.1% and 57.9% of single- and multicontinental RCTs, respectively (Figure 5D). Notably, even the substantially less populous continents of Australia and South America were more frequently represented than African countries.

Examination of the geographic distribution of the RCTs in Africa revealed that all of the studies originated from only 4 countries: South Africa, Kenya, Egypt, and Nigeria (Figure 6A). Consistently with general patterns above, southern Africa predominated among study locations, whereas no trials included sites in central Africa (Figure 6B). African leadership was absent in the trials conducted exclusively in Africa, and only 1 multicontinent study (11.1%) was led by an African investigator (Figure 6C).

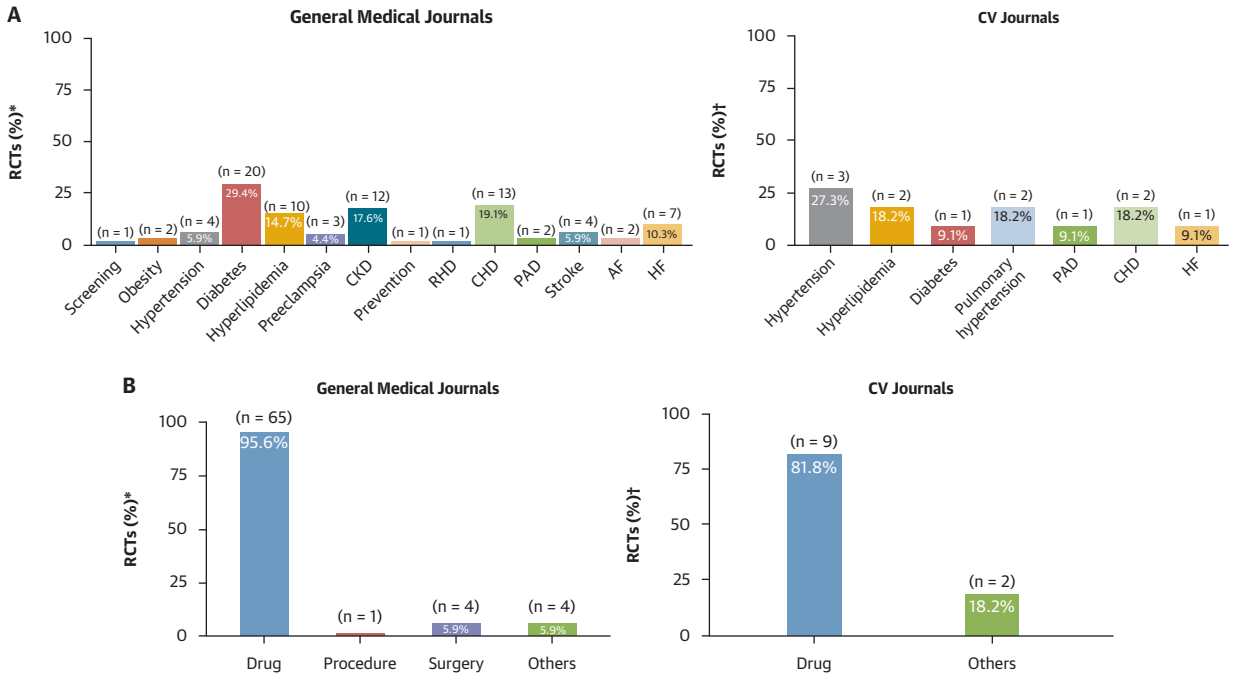
CARDIOVASCULAR TOPICS AND INTERVENTIONS IN CV RCTs. In general medical journals, Africa-including CV-related RCTs most commonly focused on diabetes, chronic kidney disease, and coronary heart disease, with fewer trials focusing on hypertension, hyperlipidemia, stroke, and heart failure (Figure 7A). In contrast, RCTs published in CV journals demonstrated a narrower thematic focus, with hypertension composing the largest proportion, followed by hyperlipidemia, coronary heart disease, and pulmonary hypertension.

Across both journal categories, pharmacologic interventions accounted for the majority of CV RCTs conducted in Africa (Figure 7B). Nonpharmacologic interventions, including surgical or interventional procedures were uncommon and were largely confined to general medical journals, whereas CV journals published almost exclusively drug-based trials.

DISCUSSION

This study highlights the concerning underrepresentation of African countries in RCTs published in the leading medical and CV journals from 2019 to 2024. Most Africa-only trials were skewed toward infectious diseases, and NCDs, including CVD, were underrepresented in those trials. Only 3.9% of

FIGURE 7 Proportion of Single- or Multicontinent RCTs Conducted in Africa and Published in Leading Medical and Cardiovascular Journals



(A) Distribution by cardiovascular-related study topic. (B) Distribution by type of intervention. *,†Percentages represent the proportion of Africa-based randomized controlled trials (RCTs) investigating cardiovascular-related topic published in *general medical journals (n = 68) and †cardiovascular journals (n = 11). AF = atrial fibrillation; CHD = coronary heart disease; CKD = chronic kidney disease; HF = heart failure; PAD = peripheral artery disease; RHD = rheumatic heart disease.

general medical trials and 0.6% of the CVD-focused trials were conducted exclusively in Africa, with African sites included in just a small fraction of multicontinental RCTs. Participation was also highly uneven across the continent, with South Africa most frequently represented. Some of the single-continent African trials published in the top-tier general medical journals were led by local teams, but scientific leadership was very limited in multicontinent trials across both journal categories. Notably, none of the single-continent trials published in CV journals were led by African investigators. This imbalance highlights a critical gap in global health research, raising concerns about equity, broad generalizability, and the capacity to address Africa's pressing health challenges.[9]

Inclusion of participants from across Africa in RCTs is essential to study the safety and efficacy of novel therapeutic interventions. Inadequate representation may lead to undetected population-specific effects and adverse outcomes. For example, Black patients receiving angiotensin-converting enzyme inhibitors (ACEIs) have an approximately 3- to 4-fold increased risk of ACEI-induced angioedema compared with non-Black patients[21]; evidence also indicates an elevated risk of gout associated with certain beta-blockers among African Americans with chronic kidney disease and hypertension[22]; and dipeptidyl peptidase (DPP4) inhibitors have been linked to higher risk of CV events in Black patients compared with White and Asian populations.[23] Beyond these clinical considerations, the persistent underrepresentation of African populations in global RCTs has broader systemic implications, including misalignment between national and regional health priorities and the global research agenda, sustained institutional fragility and external dependence, limited translation of research evidence into policy and clinical practice, and reduced generalizability of pivotal trial findings as they exclude African patients.

CURRENT PROBLEMS AND STRUCTURAL CHALLENGES. There are several factors contributing to the underrepresentation of African populations in RCTs.[24] Historically, research funding in Africa has typically been managed by international researchers and institutions. Although this has enabled important

global collaborations, it has often resulted in research agendas that do not fully align with the specific health priorities of African populations. This dynamic is particularly evident in CV research. Despite a rapidly rising burden of CVD, Africa accounts for a disproportionately small share of global CV RCTs. This gap reflects not a lack of clinical need or scientific capacity, but persistent structural constraints, including limited domestic investment, underdeveloped CV trial infrastructure, shortages of specialized research personnel, and funding that favors infectious diseases. In addition, pharmaceutical research and development activities are predominantly based in Europe and North America, with African countries primarily serving as hosts of their marketing departments. Importantly, prevailing assumptions of weak market incentives overlook the fact that Africa has an estimated middle class of approximately 300 million people,[25] representing a substantial and growing market for CV therapies and devices. Nonetheless, perceptions of limited purchasing power, reimbursement uncertainty, regulatory unpredictability, and concerns regarding intellectual property protection continue to discourage industry investment in CV trials across the continent.

For genuine progress in addressing Africa's health challenges, it is essential to empower African researchers and institutions to take the lead in defining and prioritizing their own research agendas.[26] In this context, factors such as lack of trust, cultural and language barriers, limited access to health care, and socioeconomic disparities can affect the feasibility and relevance of RCTs in African settings. In rural areas of Africa, for example, recruitment can be challenging because of high illiteracy rates, making it difficult to meet informed consent standards without the involvement of community leaders and elders.[27] Practical challenges, such as transportation to study sites, limited internet connectivity, energy insecurity, lack of national electronic health records, drug storage requirements, and underrecognition of adverse events owing to cultural or health system limitations, must be addressed to ensure ethical, feasible, and high-quality trial implementation.

Although there has been progress over the past decade with various initiatives aimed at empowering Africa to pursue clinical trials, such as the European and Developing Countries Clinical Trials Partnership, African Scientific Research and Innovation Council, Global Alliance for Chronic Diseases, and Joint Global Health Trials scheme, funding and training opportunities for African researchers remain insufficient.[28]

Within a global ecosystem dominated by industry-funded trials implemented by sponsors or Clinical Research Organizations (CROs), trial location decisions prioritize established infrastructure, regulatory predictability, and operational reliability, often sidelining regions with high disease burden but perceived higher risk. Expanding the number of African-based and African-led CROs is one potential strategy to increase the number of RCTs conducted in Africa.[29] Alternatively, prioritizing the strengthening of African research institutions could promote investigator-led research and reduce reliance on commercially driven research agendas.

Regulatory agencies such as the U.S. Food and Drug Administration (FDA) and European Medicines Agency (EMA) require comparison of novel interventions against high-quality standards of care as a part of a licensing application. This prejudice may fuel concerns about the interpretability and global relevance of trials conducted in lower-resourced settings. However, trials in high-income countries frequently underrepresent minority populations, limiting applicability of the findings to non-white groups.[30] Addressing these systemic disparities requires coordinated efforts beyond individual sponsors or investigators, including building political and regulatory confidence, transparent governance, and robust ethical oversight to reduce industry risk aversion.

OPPORTUNITIES AND POSITIVE MOMENTUM. Academic institutions can contribute by developing auditable business and governance models, supported initially by external oversight, while a federated network of leading African universities and research centers operating under harmonized standards could offer scale, diversity, and reduced fragmentation, thereby enhancing Africa's competitiveness and integration into global evidence generation.

At the same time, strengthening medical research-focused curricula within medical faculties represents a major opportunity to build the next generation of African clinical investigators. Expending training in essential skills such as methodology, biostatistics, and critical appraisal would further consolidate existing progress. In addition, providing support to scientists in areas such as securing funding, research integrity,[31] and developing leadership could increase the number of RCTs conducted across the continent. In our analysis, we found that central Africa, a predominantly French-speaking region, contributes the fewest RCTs, suggesting that language barriers may also limit publication in high-impact journals. To further boost clinical research, it is essential to establish competitive grant and fellowship programs that are managed by African institutions themselves.

BOX 1 Stakeholder Actions to Advance Equitable Clinical Trials in Africa

Stakeholder	Priority Action Areas
Funders	• Prioritizing research on CVDs in Africa • Make inclusion a condition of performing RCTs rather than an aspiration • Create ring-fenced African trial funding streams • Develop trial platforms rather than funding studies to ensure trail networks, coordinating centers, imaging cores, biorepositories, biostatistics and data centers, and regulatory and ethics units • Require equitable leadership and budget distribution • Simplify funding access and allow indirect cost recovery as well as providing pre-award support
Journals	• Mandate population diversity reporting • Require justification for exclusion • Encourage inclusive research • Strengthen African editorial participation • Promote equitable authorship standards • Support local dissemination of research findings
Academic societies	• Build regional trial networks • Provide protected training pipelines and research fellowships • Embed Africa in guideline development • Rotate conferences and scientific meetings to Africa • Create small grants for seed trials in Africa • Develop shared registries and data systems

In this regard, initiatives such as the Alliance for Medical Research in Africa (AMedRA) stands as a catalytic platform within this transformative agenda. AMedRA is strengthening Africa's research ecosystem by equipping scientists with advanced methodologic training, precision epidemiology expertise, and high-level grant-writing capabilities that translate into globally competitive policy-relevant science.[32]

Furthermore, strengthening partnerships between public and private institutions within African countries can offer crucial support for infrastructure, management, technical services, and strategic development planning. Building partnerships between African institutions in different countries is also vital for enhancing coordination across the continent. Ultimately, there is an urgent need for improved funding mechanisms that can drive change and foster sustainable research growth of African institutions.[33,34]

There are also important opportunities to be considered. Africa's demographic and epidemiologic shifts, combined with growing emphasis on prevention and rapid technologic development, create a highly relevant setting for contemporary RCTs. Potential cost efficiencies and enhanced recruitment capacity may improve trial feasibility and generalizability, and participation can expand access to structured care for underserved populations.

African academic and professional research organizations, universities, and research centers play a pivotal role in advancing scientific research by promoting science education at both secondary and tertiary levels. For example, as the leading professional CV society on the continent, the Pan-African Society of Cardiology (PASCAR) is uniquely positioned to reduce the burden of CVD through research. PASCAR is committed to promoting clinical research training on the continent, and acting as a convening platform linking investigators, industry sponsors, regulatory authorities, and journal editors to promote Africa-inclusive trial design,[35,36] which aligns directly with the gaps identified in this analysis (**Box 1**).

In parallel, global CV societies have increasingly recognized the importance of inclusive engagement with African scientists and institutions. The International Society of Hypertension (ISH) maintains regional advisory groups, including one for Africa, which serves to represent African clinicians and researchers within the global ISH community, distill and promote region-specific priorities, and encourage education, research, training, and good clinical practice in hypertension and related CVD across the continent. This regional structure provides Africans with formal access to global scientific networks, research collaborations, and educational resources. Similarly, the World Heart Federation (WHF) and the African Heart Network actively integrate African perspectives into heart health research and policy discussions through initiatives such as the WHF African Summits and best-practice forums, which convene clinicians, policymakers, researchers, and global partners to share data, develop coordinated action plans (eg, the Khartoum Action Plan), and address country-specific strategies for CVD prevention and control. Complementary programs, including "Colours to Save Hearts,"[37] further emphasize awareness, education, and culturally relevant public health messaging tailored to African contexts.

With the increasing burden of NCDs and CVDs in Sub-Saharan Africa, there is a pressing need for greater investment in RCTs targeting these conditions. Funding agencies and the pharmaceutical industry should broaden their focus beyond infectious diseases and start prioritizing research on CVDs in Africa. This shift is crucial to address the region's changing health landscape and develop interventions that are tailored to its specific needs (**Box 1**).[38-43]

CONCLUSIONS

Our specific objective was to evaluate the representation of African countries in leading medical and CV

journals, given the major influence that these journals exert on global clinical guidelines, standards of care, and research priorities. Importantly, trials published in these outlets frequently inform clinical practice worldwide, including within African health systems themselves. From this standpoint, the selection of these journals is not a limitation of our study but is instead central to its purpose. Nonetheless, this approach may not fully capture the broader landscape of clinical trials conducted on the African continent from 2019 to 2024. Trials published in other journals or platforms, particularly those based in Africa or published in Portuguese or French, may not have been included.

This study emphasizes the underrepresentation of African countries in RCTs published in leading medical and CV journals from 2019 to 2024, raising concerns about the applicability of trial findings to African populations. The inclusion of African populations in biomedical and clinical research is not simply an issue of representation. It is fundamentally a matter of innovation. Excluding African populations produces biased evidence, incomplete biology, reduced generalizability, suboptimal therapeutics, and missed discovery opportunities. Importantly, meaningful inclusion strengthens external validity, causal inference, precision medicine, drug safety, and novel discovery. Research that excludes Africa is scientifically incomplete. Academic institutions, funders, and regulators should set guidelines that prioritize diversity in clinical trials and demographic reporting, with particular emphasis on including African populations to ensure equitable and effective outcomes (**Box 1**).

FUNDING SUPPORT AND AUTHOR DISCLOSURES

Dr Gaye is supported by the Department of Biomedical Informatics, Emory University School of Medicine, Atlanta, Georgia, USA. Drs Morsy, Pellicori, and Owolabi are supported by the R.S. Macdonald Charitable Trust Seedcorn Funding for Multidisciplinary Stroke Research (grant GA-03503). Drs Owolabi and Maffia and are supported by the University of Glasgow Scottish Funding Council and the Global Challenges Research Fund, the Erasmus+International Credit Mobility (2020-1-UK01-KA107-078782), and Erasmus+ (2022-1-IT02KA171-HED-000075494). Dr Sattler is supported by the National Institute on Aging at the National Institutes of Health, USA (award 1 R21 AG070765-01A1). Dr Maffia is supported by a British Heart Foundation grant (PG/24/11946) and a Heart Research UK grant (SCOT24-100004), the University of Glasgow and International Science Partnership Fund, and the Italian Ministry of University and Research PRIN 2022 (2022T45AXH) funded by the European Union—Next Generation EU, Mission 4, Component 1, CUP E53D23012760006, and the European Union—Next Generation EU, Project CN00000041, Mission 4, Component 2, CUP B93D21010860004; these funders had no role in the study design, data collection, analysis, interpretation, or report writing. Dr Carter is supported by Health Data Research UK, which is funded by the UK Medical Research Council, Engineering and Physical Sciences Research Council, Economic and Social Research Council, Department of Health and Social Care (England), Chief Scientist Office of the Scottish Government Health and Social Care Directorates, Health and Social Care Research and Development Division (Welsh Government), Public Health Agency (Northern Ireland), British Heart Foundation, and Wellcome. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

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KEY WORDS African enrollment, equity in research, leading cardiovascular journals, leading general medical journals, randomized controlled clinical trials, underrepresentation

APPENDIX For an interactive Central Illustration, please see the online version of this paper.