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Uncovering Africa's hidden crisis of early childhood malnutrition and the path forward

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Systematic Review

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Abstract

Early childhood nutrition serves as a critical foundation for lifelong health, cognitive development, and economic potential. Across Africa, malnutrition remains a persistent and complex public health crisis, with approximately 30% of children under five experiencing stunted growth and millions more affected by wasting and micronutrient deficiencies. This scoping review systematically examines the current evidence on early childhood nutrition in Africa, analyzing 120 peer-reviewed studies and program evaluations published between 2000 and 2023. The review adopts a multi-dimensional framework to assess dietary patterns, nutritional biomarkers, intervention efficacy, and socio-cultural determinants across diverse African contexts. Our analysis reveals that childhood malnutrition in Africa stems from a synergistic interplay of structural and immediate factors. At the structural level, poverty cycles, climate-related food insecurity, and weak health systems create persistent barriers. Proximate determinants include suboptimal infant and young child feeding practices, high disease burdens, and gender disparities in caregiving resources. While nutrition-specific interventions like vitamin A supplementation and therapeutic feeding programs demonstrate efficacy in controlled settings, their real-world effectiveness is often compromised by implementation challenges. These include inadequate coverage, discontinuities in service delivery, and low community engagement. Nutrition-sensitive approaches that integrate agriculture, social protection, and WASH (water, sanitation, and hygiene) show promise but require stronger evidence on contextual adaptability and cost-effectiveness. The review identifies several critical knowledge gaps that hinder progress. First, there is insufficient longitudinal data tracking nutritional trajectories from infancy through school age. Second, research often fails to capture the urban-rural nutrition divide, particularly in rapidly urbanizing settings. Third, few studies employ rigorous mixed-methods designs to unpack the cultural dimensions of feeding ractices. Emerging areas requiring investigation include the nutrition implications of climate change, the role of food environments, and the potential of digital technologies in behavior change communication. To accelerate progress toward SDGs 2 (Zero Hunger) and 3 (Good Health and Well-being), we recommend a three-pronged approach: (1) strengthening nutrition governance through multisectoral policy coordination, (2) scaling up proven interventions while investing in implementation research, and (3) empowering communities through participatory program design. Strategic investments in early childhood nutrition today will yield substantial returns through improved human capital, reduced healthcare burdens, and greater economic productivity. Future research should prioritize intervention adaption studies, cost-benefit analyses, and systems-level evaluations to inform Africa's nutrition transformation agenda.

Introduction

Early childhood, which includes the time from conception to eight years old, is a crucial period for growth and development. During this time, proper nutrition is vital for physical growth, brain development, and a strong immune system [1]. Unfortunately, malnutrition in the form of undernutrition, vitamin and mineral deficiencies, and obesity remains a major public health problem in Africa. The World Health Organization (WHO) reports that Africa has a
disproportionately high rate of malnutrition, with stunting, wasting, and underweight rates among the

highest in the world [2]. For instance, in 2022, 30% of African children under five years old were stunted, compared to the global average of 22% [3].

Rationale for the Review

There is a need for a comprehensive synthesis of the evidence specific to Africa, despite the growing body of literature on early childhood nutrition. This scoping review aims to fill this gap by mapping the existing research, identifying trends, and highlighting areas where evidence is lacking. The review will inform policymakers, researchers, and practitioners working to improve early childhood nutrition in Africa.

Methods

Search Strategy

A systematic search was conducted in electronic databases, including PubMed, Scopus, Web of Science, and African Journals Online (AJOL). The search terms included "early childhood nutrition," "Africa," "malnutrition," "dietary practices," "nutritional interventions," and related keywords. The search was limited to studies published in English between 2000 and 2023. Since it is a scoping review of the existing studies, ethical approval was not applicable.

Inclusion and Exclusion Criteria

Studies were included if they focused on early childhood nutrition in African countries, addressed dietary practices, nutritional status, interventions, or socio-cultural factors, and were peer- reviewed. Exclusion criteria included studies focusing solely on maternal nutrition, those conducted outside Africa, and grey literature.

Data Extraction and Synthesis

Data were extracted using a standardized form, capturing study characteristics, key findings, and implications. Thematic analysis was used to synthesize the findings, with themes emerging from the data.

Results

Overview of Included Studies

The review included 120 studies from 30 African countries. Most of the studies were conducted in East Africa (40%), followed by West Africa (30%), Southern Africa (20%), and Central Africa (10%). The studies

used different research methods such as cross-sectional surveys, longitudinal studies, and intervention trials.

As indicated in the diagram above, a comprehensive search was conducted across multiple electronic databases to identify relevant studies on early childhood nutrition in Africa. The search yielded a total of 1,400 records, with 500 records from PubMed, 400 from Scopus, 300 from Web of Science, and 200 from African Journals Online (AJOL). Additionally, 50 records were identified through other sources, such as reference lists of relevant articles. After removing duplicates, 1,200 records remained for screening.

The 1,200 records were screened based on their titles and abstracts. Of these, 900 records were excluded for the following reasons: 600 records were not related to early childhood nutrition, 200 records were conducted outside Africa, and 100 records focused solely on maternal nutrition. This left 300 full-text articles to be assessed for eligibility.

The 300 full-text articles were thoroughly reviewed for eligibility. Of these, 180 articles were excluded for the following reasons: 50 articles were not peer-reviewed, 30 articles were grey literature, and 100 articles did not report relevant outcomes. After this exclusion process, 120 studies were deemed eligible and included in the scoping review.

The figure above shows where studies on early childhood nutrition in Africa are located, highlighting the differences in research focus among different regions. East Africa (48 studies, 40%) and West Africa (36 studies, 30%) have a good number of studies, while Southern Africa (24 studies, 20%) and Central Africa (12 studies, 10%) have fewer studies, with Central Africa having the least representation. It is important to address these gaps in order to create effective interventions that are specific to each context and improve child nutrition fairly throughout the continent.

Results and Discussion

Dietary Practices and Nutritional Status

The review identified significant variability in breastfeeding practices across Africa, with exclusive breastfeeding rates ranging from <30% to >60% [4,5]. Suboptimal complementary feeding practices characterized by untimely introduction, low dietary diversity, and micronutrient deficiencies were prevalent [6]. Household food insecurity emerged as a critical barrier, disproportionately affecting rural and low-income populations [7]. These findings align with global evidence that poor infant and young child feeding (IYCF) practices perpetuate intergenerational cycles of malnutrition [1,5].

Stunting rates remained alarmingly high (30% continent-wide), driven by poverty, recurrent infections, and low maternal education [8]. Wasting was concentrated in conflict zones and areas with

climate-related food shortages [9], while micronutrient deficiencies (iron, vitamin A, zinc) exacerbated anemia and developmental delays [10]. These results underscore the need to address both immediate and structural determinants of malnutrition, as highlighted in the UNICEF conceptual framework [3].

Intervention Efficacy and Challenges

Nutrition-specific interventions (For instance, vitamin A supplementation, therapeutic feeding) demonstrated efficacy in controlled settings but faced real-world implementation gaps, including low coverage and community engagement [11]. Nutrition-sensitive approaches (For example, agriculture-social protection-WASH integration) showed promise but lacked robust evidence on cost-effectiveness and scalability [17]. Multi-sectoral programs combining health, education, and gender empowerment were most effective [12], echoing the Lancet's emphasis on "bundled interventions" [11].

Socio-Cultural and Structural Determinants

Higher maternal education correlated with improved child nutrition [13], reinforcing the role of women's empowerment in breaking malnutrition cycles. Cultural practices like food taboos and gender dynamics such as women's decision-making power significantly influenced feeding behaviors [14,15]. These findings support calls for culturally adapted interventions that engage grandmothers and male caregivers [14].

Emerging Challenges: Climate Change

Climate change exacerbated malnutrition through reduced crop yields, water scarcity, and displacement [21-25]. For example, drought-resistant crop adoption and climate-smart agriculture were identified as potential solutions [28], though evidence on their nutritional impacts remains limited a critical gap for future research.

Policy and Research Implications

Multi-sectoral Action: Strengthen governance frameworks to coordinate agriculture, health, and social protection policies [16,17].

Context-Specific Solutions: Prioritize interventions tailored to urban-rural disparities and cultural contexts [19].

Climate Resilience: Integrate climate adaptation (For instance, early warning systems) into nutrition programs [31].

Research Priorities: Longitudinal studies, cost-benefit analyses, and mixed-methods designs are needed to evaluate interventions and unpack cultural nuances [18-20].

Limitations

Several limitations in the current scoping review need to be mentioned:

Language Bias: Only English-language studies were included in the review, and this could have potentially excluded studies that were conducted and published in other languages (French, Portuguese, or local African languages). This would potentially introduce a language bias and restrict the generalizability of the findings to non-English-speaking parts of Africa.

Exclusion of Grey Literature: The review only included peer-reviewed literature and excluded grey literature, including government agency and NGO reports. In excluding grey literature, it protected against the inclusion of low-level evidence but possibly missed useful practice-based information.

Study Design and Quality Variability: The studies included were heterogeneous in study design, methodology, and quality. Some of the studies, for instance, were cross-sectional and used self- report measures, which are subject to recall bias. Others were low sample size intervention trials and therefore with low generalizability. The heterogeneity in this regard makes it challenging to make some conclusions about the efficacy of certain interventions.

Geographical Differences: As highlighted in the report, there was an uneven geographical spread of the studies, and Central Africa especially was under-represented. This makes drawing conclusions for the entire continent difficult.

Temporal Confinements: The review featured studies from between 2000 and 2023. As much as it gives a comprehensive overview of what has been shown in recent years, it does not include old studies that would provide historical insights or inform us about long-term trends.

In spite of these constraints, this scoping review offers an important synthesis of current evidence around early childhood nutrition in Africa and points to key areas for future policy action and research.

Conclusion

Early childhood nutrition in Africa remains a pressing public health challenge, with persistently high rates of stunting, wasting, and micronutrient deficiencies undermining the continent's human capital development. This scoping review of 120 studies reveals that malnutrition stems from complex, interconnected factors including poverty, food insecurity, suboptimal feeding practices, limited healthcare access, and climate-related vulnerabilities. While nutrition-specific interventions show promise in controlled settings, their real-world effectiveness is often hampered by implementation challenges and lack of contextual adaptation.

The evidence highlights three key priorities for progress: (1) integrated, multi-sectoral approaches linking nutrition interventions with agriculture, social protection, and education to tackle malnutrition's root causes; (2) climate-resilient solutions like climate-smart agriculture and water management to protect nutrition gains; and (3) empowerment-focused strategies centered on maternal education, women's agency, and community participation to drive lasting change. To advance Africa's nutrition transformation, critical steps include enhancing cross-sector policy coordination, boosting investment in implementation research, addressing urban-rural disparities, and strengthening monitoring systems for long-term impact tracking.

Addressing early childhood malnutrition is not merely a health priority but a fundamental investment in Africa's sustainable development. The returns in terms of cognitive potential, economic productivity, and resilience to future challenges will far outweigh the costs. Future research must prioritize longitudinal studies, cost-effectiveness analyses, and culturally grounded interventions to accelerate progress toward SDG targets and ensure all African children can thrive.

Declarations

Author(s) Declaration

Conflict of Interest: No conflict of interest is reported.

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Clinical Trial Number: Not applicable

Author Contributions: Dereje Dakamo Tomora conceptualized the study, conducted reviews, analyzed data, and wrote the original draft. Dr. Biruk Dakamo Tomora reviewed/edited the manuscript. All authors approved the final version.

Ethical Consideration: Not applicable

Consent to Participate: Not applicable

Consent to publish: Not applicable.

References

1. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, Ezzati M, Grantham- McGregor S, Katz J, Martorell R and Uauy R. 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet* 382(9890):427-451. https://doi.org/10.1016/S0140-6736(13)60937-X

2. World Health Organization (WHO). 2022. *Global Nutrition Report 2022: Africa Regional Overview*. Geneva: WHO. Available at: https://www.who.int/publications/i/item/9789240060652 [Accessed 15 June 2023].
3. United Nations Children's Fund (UNICEF). 2022. *The State of the World's Children 2022: Nutrition in Africa*. New York: UNICEF. Available at: https://www.unicef.org/reports/state-worlds-children-2022 [Accessed 15 June 2023].
4. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N and Rollins NC. 2016. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet* 387(10017):475-490. https://doi.org/10.1016/S0140-6736(15)01024-7
5. Rollins NC, Bhandari N, Hajeebhoy N, Horton S, Lutter CK, Martines JC, Piwoz EG, Richter LM and Victora CG. 2016. Why invest, and what it will take to improve breastfeeding practices? *The Lancet* 387(10017):491-504. https://doi.org/10.1016/S0140-6736(15)01044-2
6. Dewey KG and Adu-Afarwuah S. 2008. Systematic review of the efficacy and effectiveness of complementary feeding interventions in developing countries. *Maternal and Child Nutrition* 4(S1):24-85. https://doi.org/10.1111/j.1740-8709.2007.00124.x
7. Food and Agriculture Organization (FAO), International Fund for Agricultural Development (IFAD), United Nations Children's Fund (UNICEF), World Food Programme (WFP) and World Health Organization (WHO). 2022. *The State of Food Security and Nutrition in the World 2022*. Rome: FAO. https://doi.org/10.4060/cc0639en
8. Prendergast AJ and Humphrey JH. 2014. The stunting syndrome in developing countries. *Paediatrics and International Child Health* 34(4):250-265. https://doi.org/10.1179/2046905514Y.0000000158
9. Black RE, Allen LH, Bhutta ZA, Caulfield LE, de Onis M, Ezzati M, Mathers C and Rivera J. 2008. Maternal and child undernutrition: global and regional exposures and health consequences. *The Lancet* 371(9608):243-260. https://doi.org/10.1016/S0140-6736(07)61690-0
10. Bailey RL, West KP Jr and Black RE. 2015. The epidemiology of global micronutrient deficiencies. *Annals of Nutrition and Metabolism* 66(S2):22-33. https://doi.org/10.1159/000371618
11. Bhutta ZA, Das JK, Rizvi A, Gaffey MF, Walker N, Horton S, Webb P, Lartey A and Black RE. 2013. Evidence-based interventions for improvement of maternal and child nutrition: what can be done and at what cost? *The Lancet* 382(9890):452-477. https://doi.org/10.1016/S0140-6736(13)60996-4
12. Gillespie S, Hodge J, Yosef S and Pandya-Lorch R. 2015. *Leveraging Agriculture for Nutrition in South Asia and East Africa: What Do We Know, and What Have We Learned?* IFPRI Discussion Paper 01485. Washington, DC: International Food Policy Research Institute. https://doi.org/10.2499/9780896295642
13. Smith LC and Haddad L. 2015. Reducing child undernutrition: past drivers and priorities for the post-MDG era. *World Development* 68:180-204. https://doi.org/10.1016/j.worlddev.2014.11.014
14. Aubel J. 2012. The role and influence of grandmothers on child nutrition: culturally designated advisors and caregivers. *Maternal and Child Nutrition* 8(1):19-35. https://doi.org/10.1111/j.1740-

8709.2011.00333.x

15. Malapit HJ and Quisumbing AR. 2015. What dimensions of women's empowerment in agriculture matter for nutrition in Ghana? *Food Policy* 52:54-63. https://doi.org/10.1016/j.foodpol.2015.02.003
16. Hoddinott J, Alderman H, Behrman JR, Haddad L and Horton S. 2013. The economic rationale for investing in stunting reduction. *Maternal and Child Nutrition* 9(S2):69-82. https://doi.org/10.1111/mcn.12080
17. Ruel MT, Quisumbing AR and Balagamwala M. 2018. Nutrition-sensitive agriculture: what have we learned so far? *Global Food Security* 17:128-153. https://doi.org/10.1016/j.gfs.2018.01.002
18. Adair LS, Fall CHD, Osmond C, Stein AD, Martorell R, Ramirez-Zea M, Sachdev HS, Dahly DL, Bas I, Norris SA, Micklesfield L, Hallal P and Victora CG. 2013. Associations of linear growth and relative weight gain during early life with adult health and human capital in countries of low and middle income: findings from five birth cohort studies. *The Lancet* 382(9891):525-534. https://doi.org/10.1016/S0140-6736(13)60103-8
19. Myers SS, Gaffikin L, Golden CD, Ostfeld RS, Redford KH, Ricketts TH, Turner WR and Osofsky SA. 2013. Emerging threats to human health from global environmental change. *Proceedings of the National Academy of Sciences* 110(5):1831- 1838. https://doi.org/10.1073/pnas.1218656110
20. Intergovernmental Panel on Climate Change (IPCC). 2022. *Climate Change 2022: Impacts, Adaptation, and Vulnerability*. Geneva: IPCC. Available at: https://www.ipcc.ch/report/ar6/wg2/ [Accessed 20 June 2023].
21. Lobell DB, Schlenker W and Costa-Roberts J. 2011. Climate trends and global crop production since 1980. *Science* 333(6042):616-620. https://doi.org/10.1126/science.1204531
22. Funk C, Rowland J, Eilerts G, Kebebe E, Biru N, White L and Galu G. 2012. *A Climate Trend Analysis of Ethiopia*. US Geological Survey Fact Sheet 2012-3053. Reston, VA: USGS. Available at: https://pubs.usgs.gov/fs/2012/3053/ [Accessed 20 June 2023].
23. Bates BC, Kundzewicz ZW, Wu S and Palutikof JP (Eds.). 2008. *Climate Change and Water*. Technical Paper of the Intergovernmental Panel on Climate Change. Geneva: IPCC. Available at: https://www.ipcc.ch/report/ar4/wg2/ [Accessed 20 June 2023].
24. Internal Displacement Monitoring Centre (IDMC). 2022. *Global Report on Internal Displacement 2022*. Geneva: IDMC. Available at: https://www.internal-displacement.org/global-report/grid2022/ [Accessed 20 June 2023].
25. United Nations Office for the Coordination of Humanitarian Affairs (OCHA). 2022. *Horn of Africa Drought: Humanitarian Key Messages*. New York: OCHA. Available at: https://reliefweb.int/report/ethiopia/horn-africa-drought-humanitarian-key-messages [Accessed 20 June 2023].
26. Grace K, Davenport F, Hanson H, Funk C and Shukla S. 2015. Linking climate change and health outcomes: examining the relationship between temperature, precipitation and birth weight in Africa. *Global Environmental Change* 35:125-137. https://doi.org/10.1016/j.gloenvcha.2015.06.010

27. Berry HL, Bowen K and Kjellstrom T. 2010. Climate change and mental health: a causal pathways framework. *International Journal of Public Health* 55(2):123-132. https://doi.org/10.1007/s00038-009-0112-0
28. Lipper L, Thornton P, Campbell BM, Baedeker T, Braimoh A, Bwalya M, Caron P, Cattaneo A, Garrity D, Henry K, Hottle R, Jackson L, Jarvis A, Kossam F, Mann W, McCarthy N, Meybeck A, Neufeldt H, Remington T, Sen PT, Sessa R, Shula R, Tibu A and Torquebiau EF. 2014. Climate-smart agriculture for food security. *Nature Climate Change* 4(12):1068-1072. https://doi.org/10.1038/nclimate2437
29. Gentilini U, Almenfi M and Orton I. 2020. *Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures*. Washington, DC: World Bank. Available at: https://openknowledge.worldbank.org/handle/10986/33635 [Accessed 20 June 2023].
30. Rockström J, Falkenmark M, Karlberg L, Hoff H, Rost S and Gerten D. 2009. Future water availability for global food production: the potential of green water for increasing resilience to global change. *Water Resources Research* 45(7): W00A12. https://doi.org/10.1029/2007WR006767
31. Reid H, Alam M, Berger R, Cannon T, Huq S and Milligan A. 2009. Community-based adaptation to climate change: An overview. In: Reid H, Alam M, Berger R, Cannon T, Huq S and Milligan A (Eds.). *Community-Based Adaptation to Climate Change: Participatory Learning and Action* 60:11-30. London: International Institute for Environment and Development (IIED).

Figures

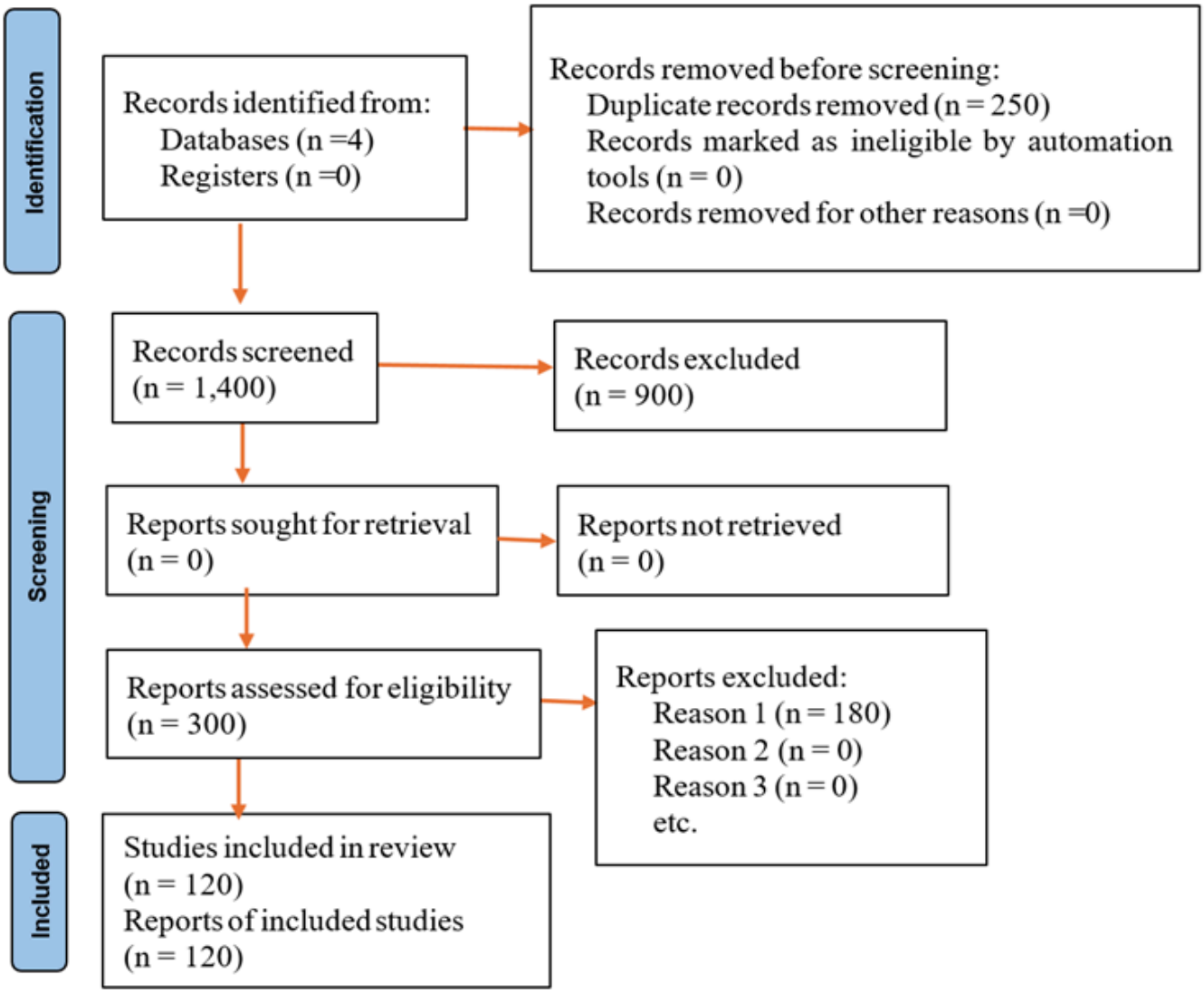


Figure 1

PRISMA Flow Diagram of Study Selection

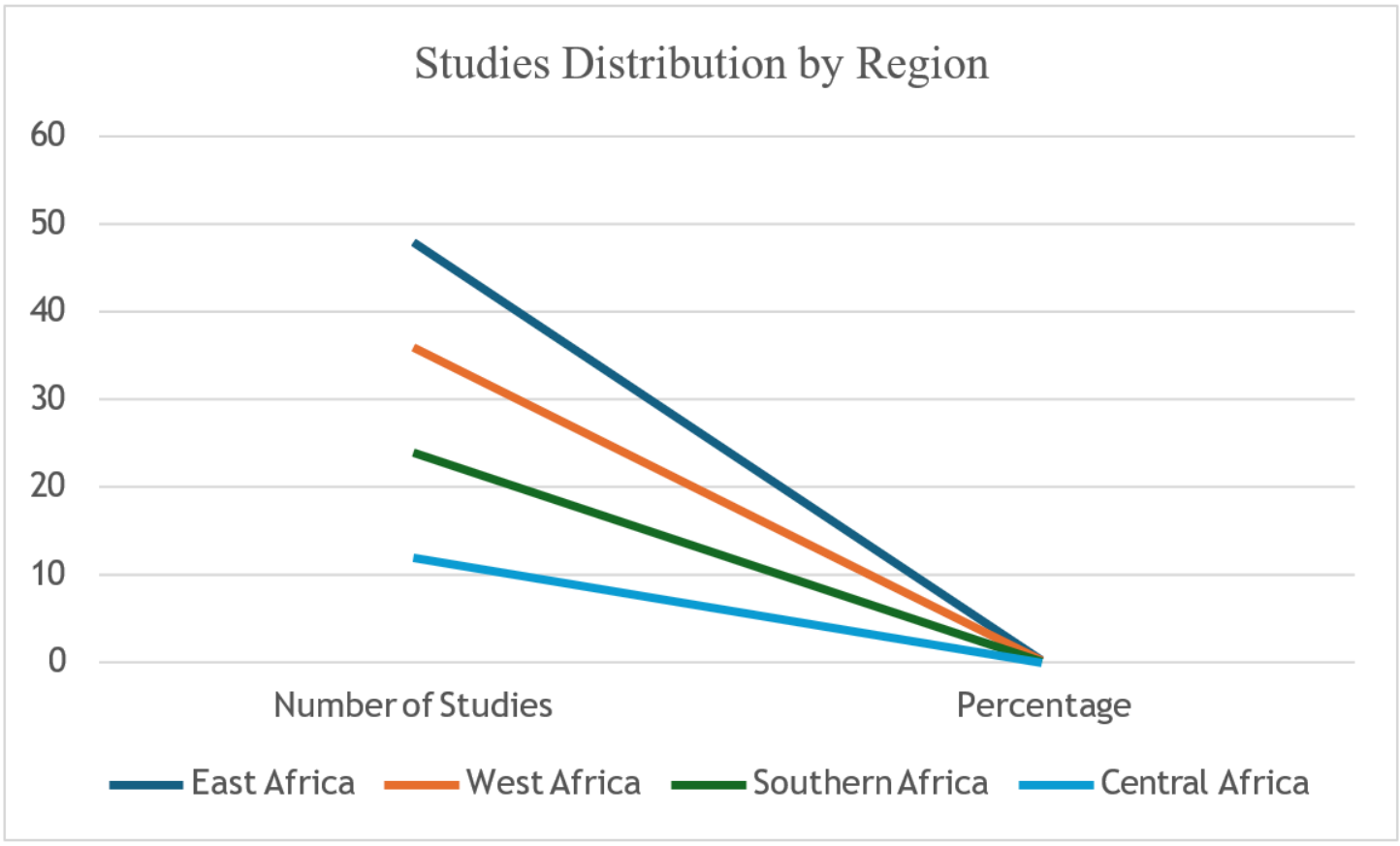


Figure 2

Distribution of Studies by Region