Young boy, Liberia, Sierra Leone, GPE/Kelley Lynch

# Mapping early childhood development publications in sub-Saharan Africa

## Report on analysis from international databases

REAL
Research for Equitable Access and Learning

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Education Sub Saharan Africa

## Authors

The writing of this report was led by Daniel Hawkins Iddrisu, who conducted the searches for publications and the analysis. Scovia Adrupio supported the coding of data. Pauline Rose provided oversight of the process, together with guidance and report review and editing.

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# Contents



# List of tables



# List of figures

## List of abbreviations

| | |
|---|---|
| AU | African Union |
| ECD | Early Childhood Development |
| ECDAN | Early Childhood Development Action Network |
| ECE | Early Childhood Education |
| ESSA | Education Sub Saharan Africa |
| FCDO | Foreign, Commonwealth and Development Office |
| NGO | Non-governmental Organisation |
| SSA | sub-Saharan Africa |
| UN | United Nations |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNICEF | United Nations Children's Agency |
| USAID | United State Agency for International Development |
| WHO | World Health Organization |

## Summary

This report summarises the bibliometric analysis of publications on Early Childhood Development (ECD) identified in international databases that include authors based in sub-Saharan Africa (SSA). Searches for publications were conducted using Dimensions, Scopus, Web of Science, and PubMed databases over the period 2020 to 2022. These databases primarily include journal articles in English.

The importance of ECD to ensure young children are able to achieve their full potential in later life, and to address inequality gaps, is widely recognised. This has been increasingly reflected in international policy agendas in recent years. The education Sustainable Development Goal 4.2 includes a focus on 'access to quality early childhood development, care, and pre-primary education so that they are ready for education' (UN, 2015). Similarly, the African Union Agenda 2063 under the Continental Education Strategy (African Union, 2016) emphasised ECD as the foundation for quality education and training. This focus is based on evidence that identifies the benefits of ECD for school readiness and its broader impact on individual and societal prospects.

The searches revealed a substantial number of ECD publications by SSA-based researchers in international journals. Across the period 2020-2022, 2,796 publications were retrieved in total, with a similar number per year. However, there is a wide variation in the number of publications across countries, with around half identified from five countries: Ethiopia, Nigeria, Kenya, Ghana, and Uganda.

There is a considerable difference in the number of publications by ECD sub-component. More than two thirds of the publications are health and nutrition-focused, with just 11 percent, 10 percent, and 6 percent for education, responsive caregiving, and play, respectively. There are some publications that include an intersection between ECD components, predominantly between health and nutrition, as well as between education and play.

Nearly half of the total publications reported no funding. Where funding was received, it was primarily focused on health or nutrition, and involved collaboration with researchers outside SSA. In cases where education and play received funding,

it was mainly for publications that intersect with health. Funding was primarily obtained from international organisations and external philanthropists. Government funding for ECD research was limited, accounting for only 2 percent of funding.

Despite the United Nations' ‘leave no one behind’ agenda, there was little attention paid in the publications to equity and inequality factors such as disability, gender, poverty, religion, and ethnicity. When addressed, poverty was more prominent, while disability was barely mentioned.

With respect to gender of authors, we found a ratio of 3 females to every 7 males, with variation across ECD sub-components. For health publications, only 3 out of 10 researchers were female, whereas for education and play, the ratio was around 4 females to every 6 males. We also found that 52 percent of the publications resulted from international co-authorship, while only 9 percent involved collaboration among researchers and institutions within SSA.

Overall, the findings underscore the need for increased funding for research on education and play, greater collaboration within SSA, and a more concerted effort to address equity and inequality factors in African ECD research. By addressing these issues, we can work towards ensuring that all children, regardless of their background or circumstances, can reach their full potential. Our recommendations include:

- **Diversify research focus.** Encourage and fund research in underrepresented ECD components such as play, responsive caregiving, and education to create a more balanced understanding of child development in SSA.
- **Promote intra-African collaboration.** Develop funding mechanisms and incentives that specifically encourage collaboration among African researchers and institutions working on ECD-related topics, fostering a more sustainable and locally driven research ecosystem.
- **Address inequality dimensions.** Prioritise research that explicitly addresses inequality dimensions related to poverty, gender, ethnicity, religion, and disability in ECD studies to ensure inclusive development strategies.

- **Improve gender balance in research.** Implement policies and programs to increase female participation in ECD research, particularly in education and play research where gender disparities are more pronounced.
- **Enhance local research capacity.** Invest in capacity-building initiatives that strengthen the skills and expertise of African ECD researchers, enabling them to lead high-quality research projects and secure funding with less reliance on international collaborations.

# 1. Introduction

Early childhood development (ECD) has received increased attention globally. This has been reflected in international policy agendas. For example, it is included as a target in the education Sustainable Development Goal 4.2, which calls on governments and individuals to promote 'access to quality early childhood development, care, and pre-primary education so that they are ready for education' (UN, 2015). Specifically, the SDG target tracks progress towards the 'proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being…' (SDG 4.2.1). Similarly, the African Union Agenda 2063 under the Continental Education Strategy (African Union, 2016) stressed the need for holistic development for children. It emphasised ECD as the foundation for quality education and training.

This focus relates to evidence that identifies the benefits of ECD for school readiness and its broader impact on individual and societal prospects (Naumann, 2018; Nyeko, 2012). Yet, the realisation of these targets in many countries in sub-Saharan Africa (SSA) is far from reality. For example, SSA, among other low- and middle-income contexts, has over 250 million children not meeting their holistic developmental needs – social, emotional, cognitive, linguistic, and physical developments (Black et al., 2016; World Health Organization, UNICEF & World Bank, 2018).

A report analysing international and domestic sources of ECD funding in low- and middle-income countries showed that ECD is underfinanced relative to need. This is despite global consensus that at least 1 percent of GDP should be invested in ECD to ensure quality services (Putcha et al., 2016).

Contextually relevant evidence is necessary to support national and global actors' campaigns, interventions, policy development, and practices to create favourable conditions for children's development. In this report, we contribute to this aim by mapping available research publications conducted by SSA-based researchers. This enables us to present an overview of the landscape of SSA ECD research, and identify the challenges and opportunities to leverage. This report aims to support the

visibility and use of evidence by SSA-based researchers to have an impact on context-specific policies and inform global ECD debates.

For the purposes of our mapping using international databases, ECD is divided into six components: education, play, health, nutrition, responsive caregiving, and environment and protection. In this study, we included a particular category for play and extended it to education for preschool-age children instead of the narrower focus of early learning in the Nurturing Care Framework.

## 2. Methods

The methodology of mapping publications analysed in this report is detailed in a protocol developed to guide this exercise (Iddrisu, Williams & Rose, 2024). We searched for publications in four major international databases – Dimensions, Scopus, Web of Science, and PubMed, from 2020 to 2022. There was no language restriction to the searches, although the vast majority of publications in these databases were in English and were primarily articles in internationally recognised, peer reviewed journals (98 percent of those identified for analysis from the international databases were journal articles, with just 2 percent being book chapters).

We used the Nurturing Care Framework as the starting point for identifying and categorising sub-groups (components) of ECD. We developed this further based on other related frameworks by international organisations, including a specific category for play and an extension of 'early learning' (0–3 years) as used in the Nurturing Care Framework to 'education,' focusing on the pre-primary age group (0–8) (see Table 1). Figure 1 depicts the six components of ECD adopted for this protocol and to guide the searches.

We focused on 0–3 years and extended this to include publications focusing on children up to 8 years, provided they were related to early childhood development. This was to ensure we captured early childhood education along with other components of early childhood development. In most countries, the pre-primary education age range is 4-6 years but could extend to age 8 (particularly where

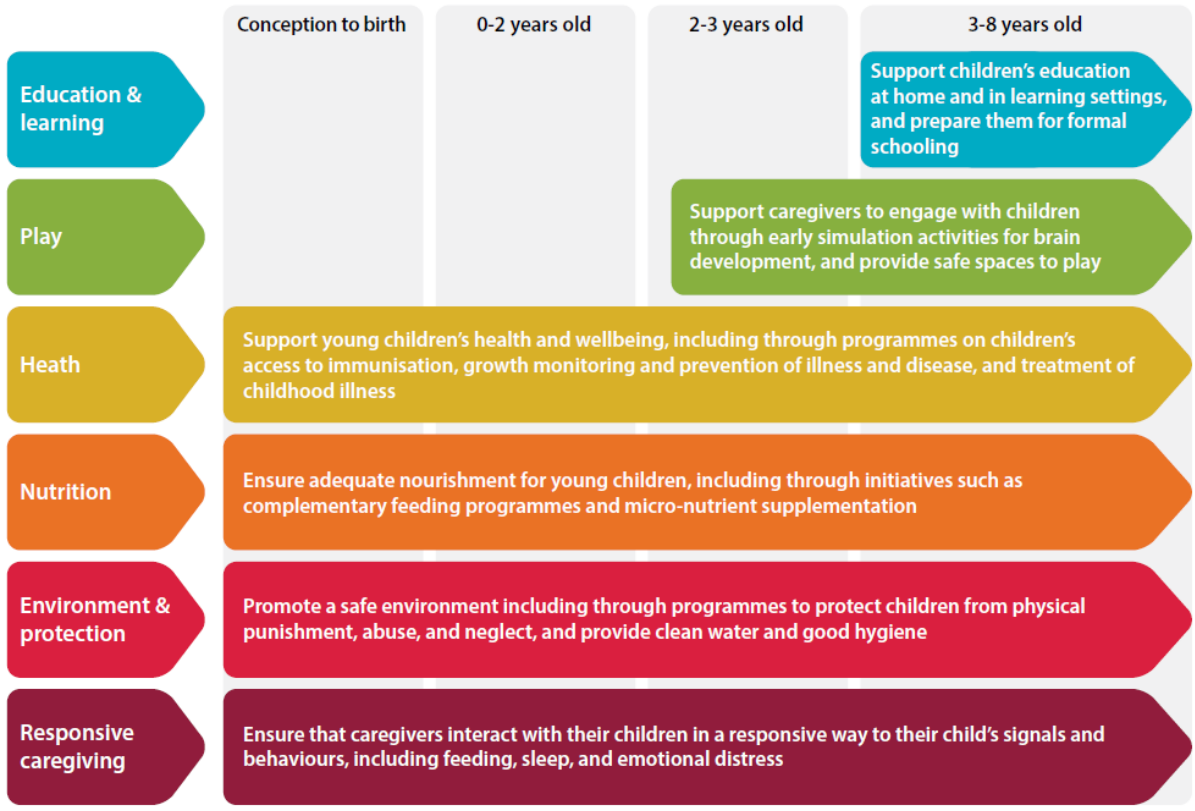
children are over age). The cutoff age was also informed by other related frameworks drawn from various international organisations, as shown in Table 1.

*Table 1: ECD components identified by selected international organisations*

| | UNICEF/WHO | ECDAN | UNESCO | World Bank |
|---|---|---|---|---|
| Education | Early Learning | Learning | Education/learning | Learning |
| Nutrition | Nutrition | Nutrition | Nutrition | Nutrition |
| Health | Health Care | Health | Health | Health |
| Caregiving | Responsive Caregiving | Responsive Caregiving | Parental/family support | Nurturing care |
| Play | Play, sing etc | Playful parenting | | |
| Environment/ Protection | Protection from Harm | Safety and Security | Social Protection | Protection from exposure to stress |
| Age group | 0 – 3 years | 0 – 3 years | 0 – 8 years | 0 – 5 years |

*Source: Compiled from the organisations' websites.*

*Figure 1: An integrated approach to ECD*




*Source: Adapted from Zubairi & Rose 2021; WHO, UNICEF & World Bank, 2018.*

In line with the general protocol for the African Education Research Database (Iddrisu, Williams & Rose, 2024; Mitchell & Rose, 2018), we used a number of keywords for each ECD component. The composition of the keywords and search strategy were drawn from existing systematic reviews, as outlined in the protocol (see Iddrisu, Williams & Rose, 2024). The publication search was guided by the following relevance/inclusion criteria:

- Publication containing at least one SSA-based researcher.
- Addressing one or more of the six components of ECD.
- Included a focus on children aged 0-8 years.
- Conducted in any of the 48 SSA countries.[i]
- Published in 2020, 2021 or 2022.
- Published in any language.

Publications were excluded if they did not meet all the above relevance criteria. Pre-print publications were also excluded from the final results. Based on the criteria above, search results were compiled in one spreadsheet from all four international databases. After combining all datasets, duplicates were extracted and deleted.

A thorough screening process was undertaken using the titles and abstracts of all publications. This was followed by full-text screening and cataloguing of relevant information. Analysis was conducted after we had completed cataloguing all three years of the publications identified (for 2020-2022).

Each of the publications was coded in a spreadsheet for analysis with the following information:

- The type of ECD component(s) addressed in the study.
- The type of publication (e.g. peer-reviewed article, book chapter, etc.).
- The country where the study was conducted.
- The type of research methods employed in the study.
- Whether the study received funding, the funder, and the type of funding.
- The nature of collaboration, i.e. whether the study involved collaboration within the same country, across different countries within SSA, and/or with researchers outside SSA.

- The study's inclusion of inequality factors such as poverty, disability, gender, religion, location (rural-urban).
- The authors' institutional affiliations and gender.

This information allowed us to analyse the publications to provide insights into the current state of ECD research in SSA, the characteristics of the researchers involved, and the nature of their funding and collaborations. This analysis aims to support identification of trends, gaps, and opportunities for further research and policy priority areas in the field of ECD in SSA.

# 3. Findings

This report presents findings on a wide range of areas related to ECD research and researchers, including the trend of publications over a three-year period, the focus of publications across six components of ECD, types of research publications, research collaborations within and outside SSA, institutional affiliations, gender disparities among authors, and funding sources and types. Furthermore, we evaluated how inequality dimensions had been examined in ECD publications and the research methods employed to study childhood development.

## Number of publications and trends

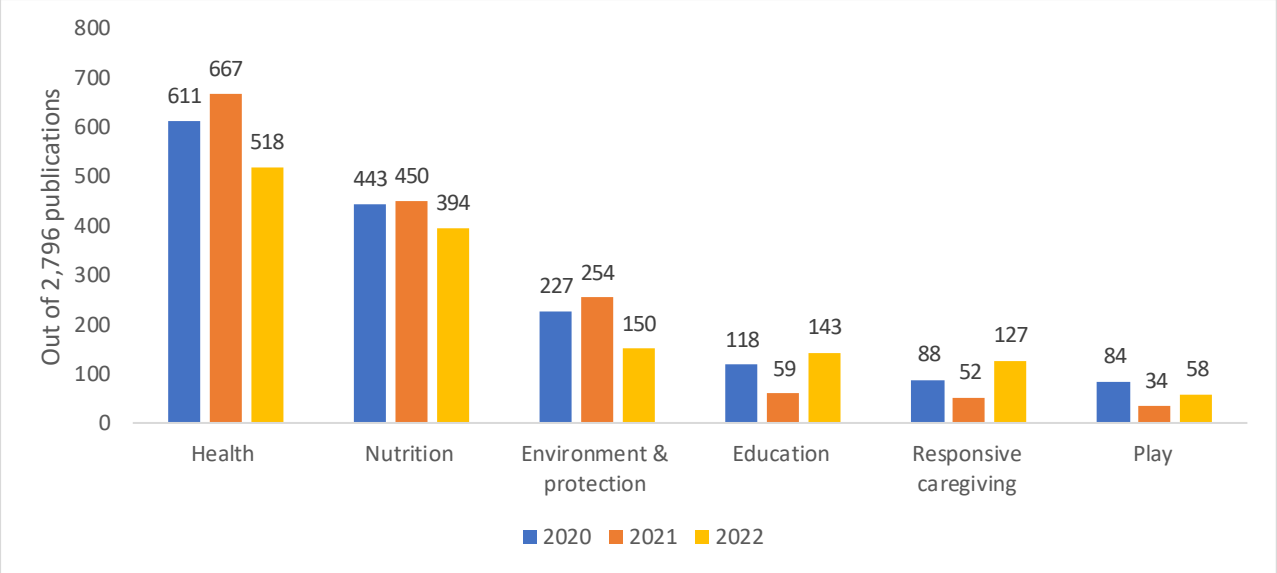
In total, 2,796 relevant publications were catalogued for analysis over the three-year period 2020 to 2022. The number of outputs per year was similar, with 957 identified in 2020, a slightly lower number in 2021 (887), perhaps because of COVID-19, and returning to 952 in 2022.

The relatively stable number of publications over the three-year period contrasts with search results for research outputs produced in national sources (such as in national journals, PhD thesis repositories, etc.) within Kenya, Ghana, Tanzania and Uganda. Over the period 2020 to 2022, national research outputs in Kenya showed a downward trend. In the other three countries, there was a dip between 2020 and 2021 (perhaps because of COVID-19), but the number of outputs recovered by 2022 (Williams & Rose, 2024).

## Publications by ECD component

Of the 2,796 publications identified over the three years, the majority (64 percent) focused on health, followed by 46 percent on nutrition. A much lower proportion was identified for the other four components, with environment and protection accounting for 23 percent, while education, responsive caregiving, and play each accounted for just 11 percent, 10 percent and 6 percent, respectively. A similar pattern is evident across the three years, with some fluctuations for each of the components (Figure 2).

*Figure 2: Number of publications by ECD component (2020-2022)*



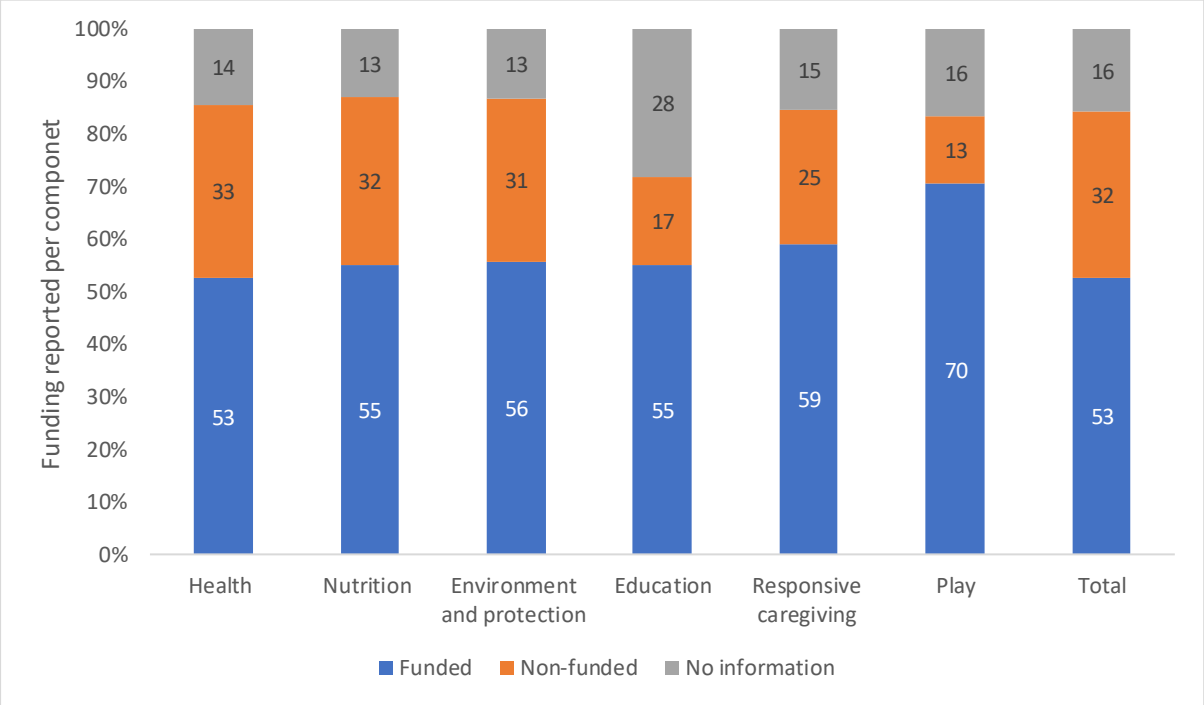

Recognising the importance of the intersection of ECD components for a child's wellbeing and future opportunities, we reviewed the extent to which this was a feature of the research. We found that the publications often encompassed two or more components with most common combinations including: health and nutrition (31 percent), education and play (45 percent), education and health (33 percent), and education and nutrition (30 percent).

## Research funding

This section analyses the funding sources and patterns in SSA ECD research, including from international and national sources. Our analysis revealed that around 53 percent of the SSA ECD research publications identify that they received funding, with minimal variations across all components except for play, where 70 percent of

the publications were funded (Figure 3). However, this is in a context of a much smaller number of publications on play. While 55 percent of education research received funding, we observed that those publications receiving funding were more likely to intersect with health (and possibly with nutrition).

*Figure 3: Funding status of publications across ECD components*



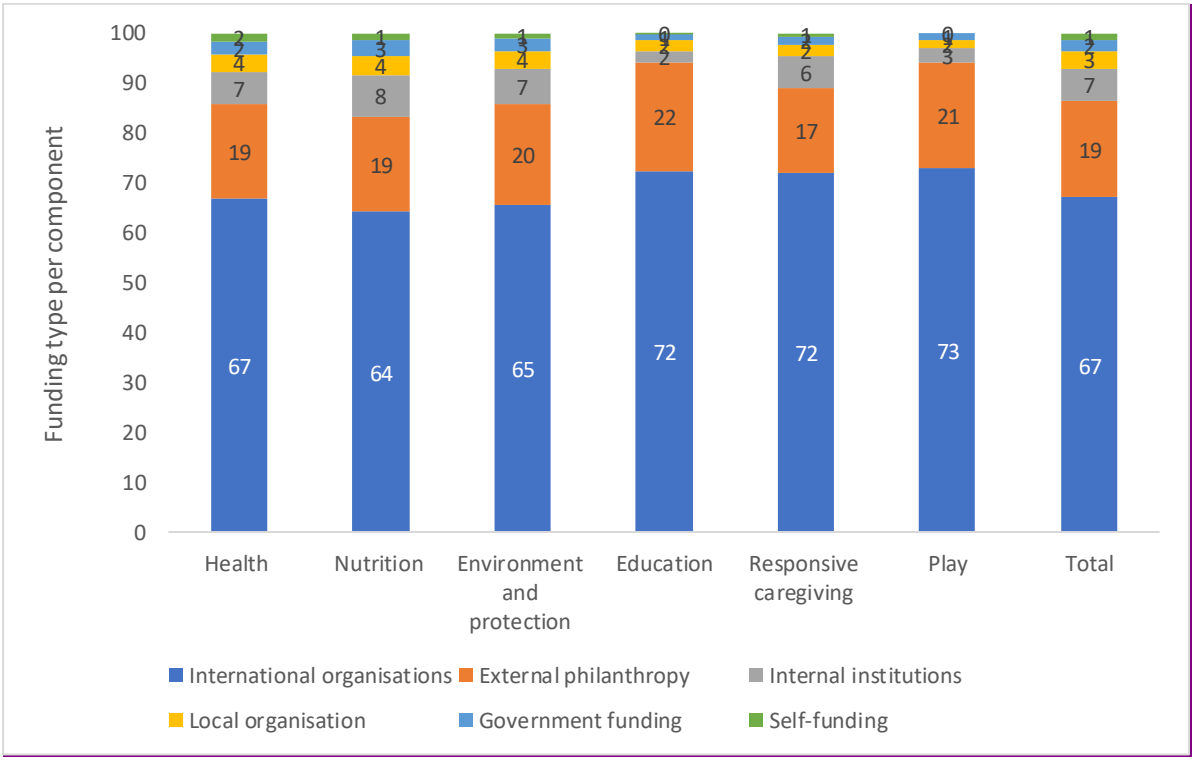

We categorised funding sources into six types: international organisations, external philanthropy, government, local organisations (based in SSA), internal institutions (universities and research institutions), and self-funding. International organisations were most prevalent, accounting for 67 percent of all funding types. This is similar across all ECD components (Figure 4). With respect to international organisations, the National Institute of Health of the USA, including its various centres and institutes, was a major contributor. Other prominent international funders included the World Health Organization, World Bank, USAID, FCDO, Grand Challenges Canada, UK Medical Research Council, Global Affairs Canada, and the European Commission.

External philanthropic organisations accounted for 19 percent of the funding, which was also similar across the ECD components. The most prevalent philanthropic funders were Bill and Melinda Gates Foundation, Wellcome Trust, Kavli Foundation,

Thrasher Research Fund, and Conrad N. Hilton Foundation. Internal institutions, such as universities and independent research institutions within SSA, contributed to 7 percent of the funding. Ethiopian universities, including Addis Ababa University, Hawassa University, Jimma University, and the University of Gondar, were notable internal institutional funders.

Local organisations within SSA played a minor role in funding ECD research, accounting for only 3 percent of funding sources. These included the African Academy of Sciences, Center for Disease Control and Prevention, African Development Bank, Addis Ababa City Health Bureau, amongst others. Government funding for ECD research in Africa was notably low, accounting for just 2 percent of the funding.

*Figure 4: Funding types identified across ECD components*




## Inequality included in the publications

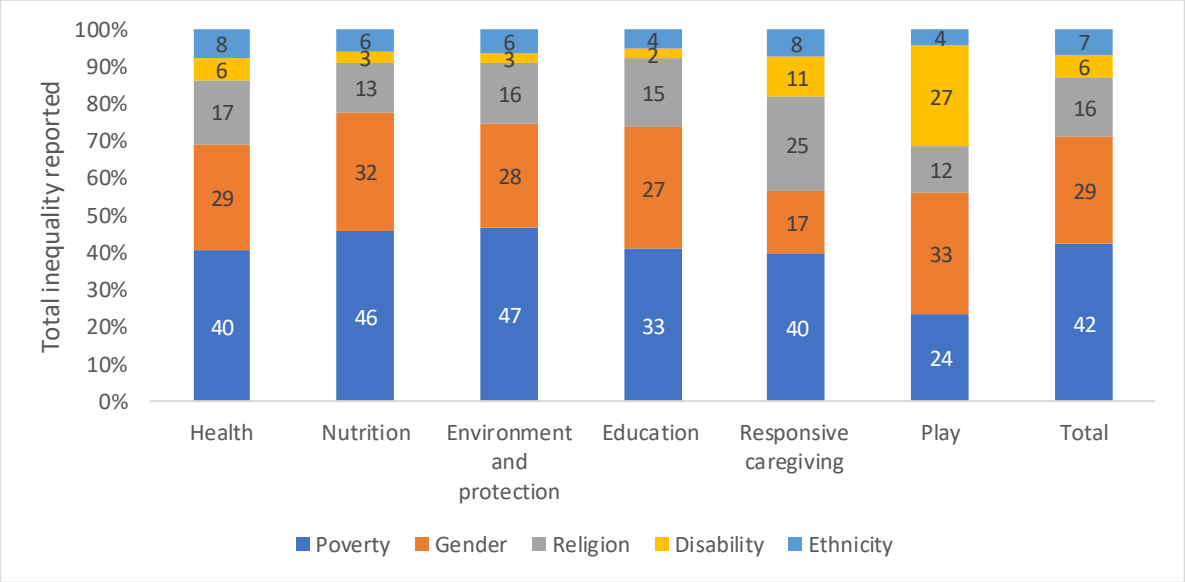
In line with SDG 10 and the Addis Ababa Action Agenda (UN, 2015), which aims to end poverty, ensure gender equality, and enhance girls' empowerment, we investigate whether inequality is addressed in ECD research in SSA. The inequality

factors examined included household poverty, gender, religion, ethnicity, and disability. The analysis included publications that assessed these factors in their analysis, excluding those that only mentioned them in less detail, such as just providing the number of male and female participants in a study.

Around one in five of the publications did not include any aspect of inequality (Figure 5). For those that did address inequality, poverty was the most frequent area included, with 42 percent of publications addressing this, with 29 percent addressing gender. Some publications examined multiple inequality factors. For example, 9 percent of the publications assessed both poverty and gender. Only 6 percent focused on children with disabilities.

The location of the research is important when interpreting results, as urban or rural areas may present different circumstances that could affect education opportunities, with rural areas often facing greater deprivation. Therefore, we grouped the locations as rural, urban, and both rural and urban. Around 18 percent of the studies were focused on rural settings, which are often the most deprived.

*Figure 5: Inequality included in the publications by ECD component*

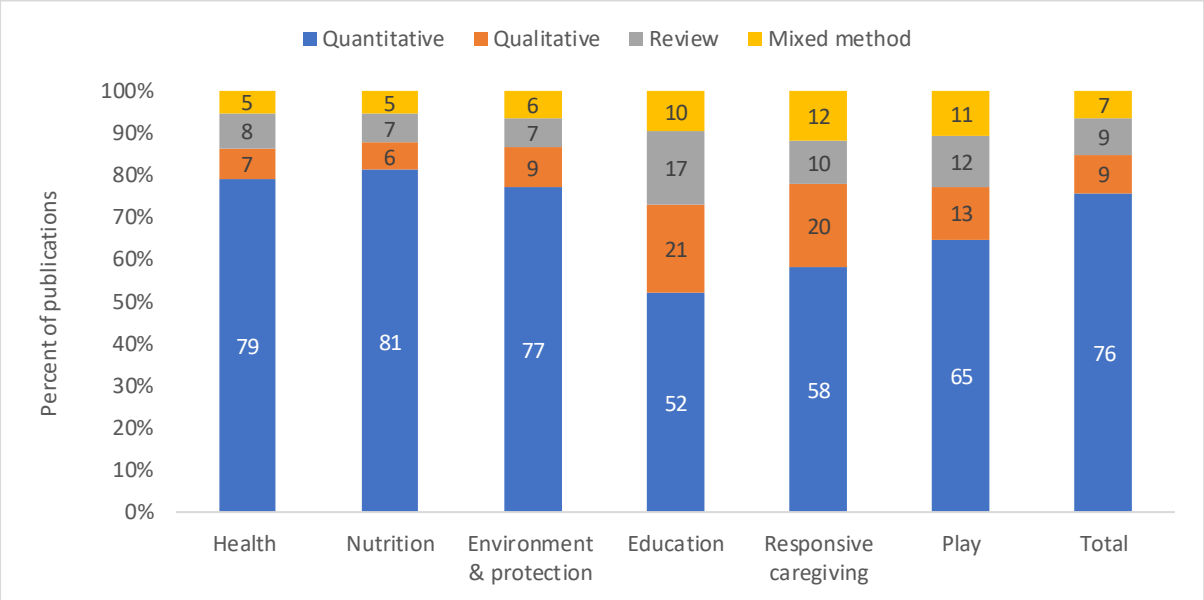



*Note: Some publications may include multiple forms of inequality.*

## Research methods

We categorised research methods into four types: quantitative, qualitative, mixed methods, and reviews. Over three quarters of the publications used quantitative methods (Figure 6). This is similar across almost all ECD components, except for education and responsive caregiving where a higher proportion of publications used qualitative methods.

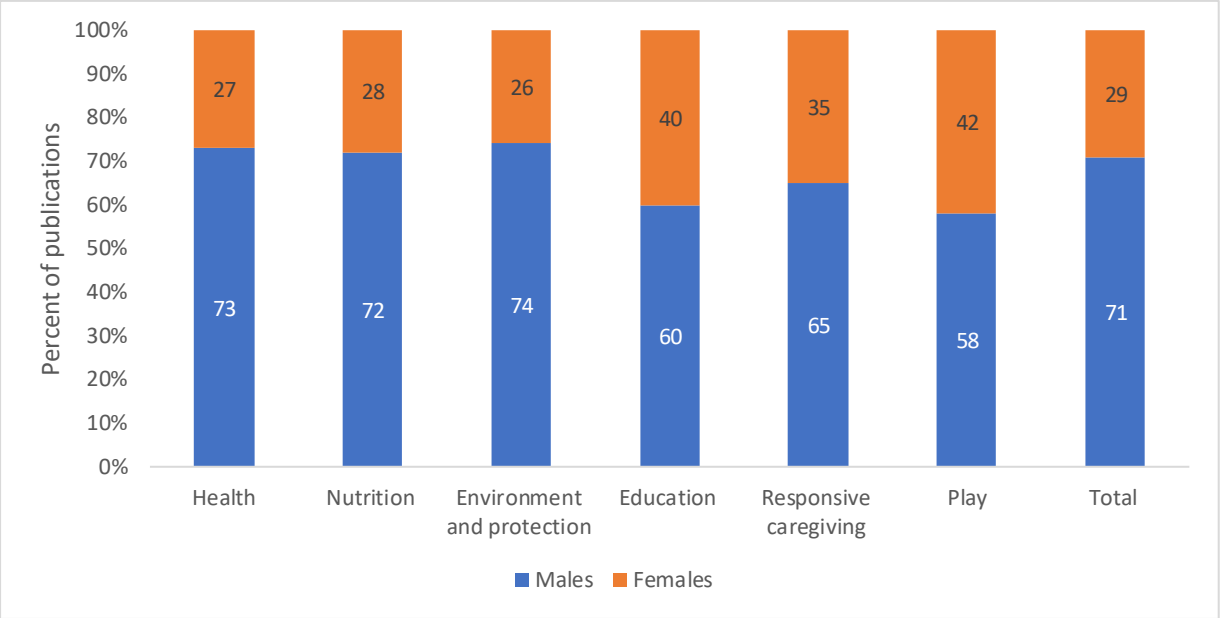
*Figure 6: Number of ECD publications by research method*




## Gender of ECD researchers

Among the 2,796 publications mapped, female authors represented only 29 percent of all identified authors. The gender gap is particularly high for health (73:27) and nutrition (72:28), which also have the largest number of publications overall (Figure 7). The gap is narrower among authors of education (60:40) and play (58:42) publications, although still sizeable. Our findings resonate with the latest UNESCO Institute for Statistics (UIS) data that show only 32 percent of researchers in SSA are women (UIS, 2024).

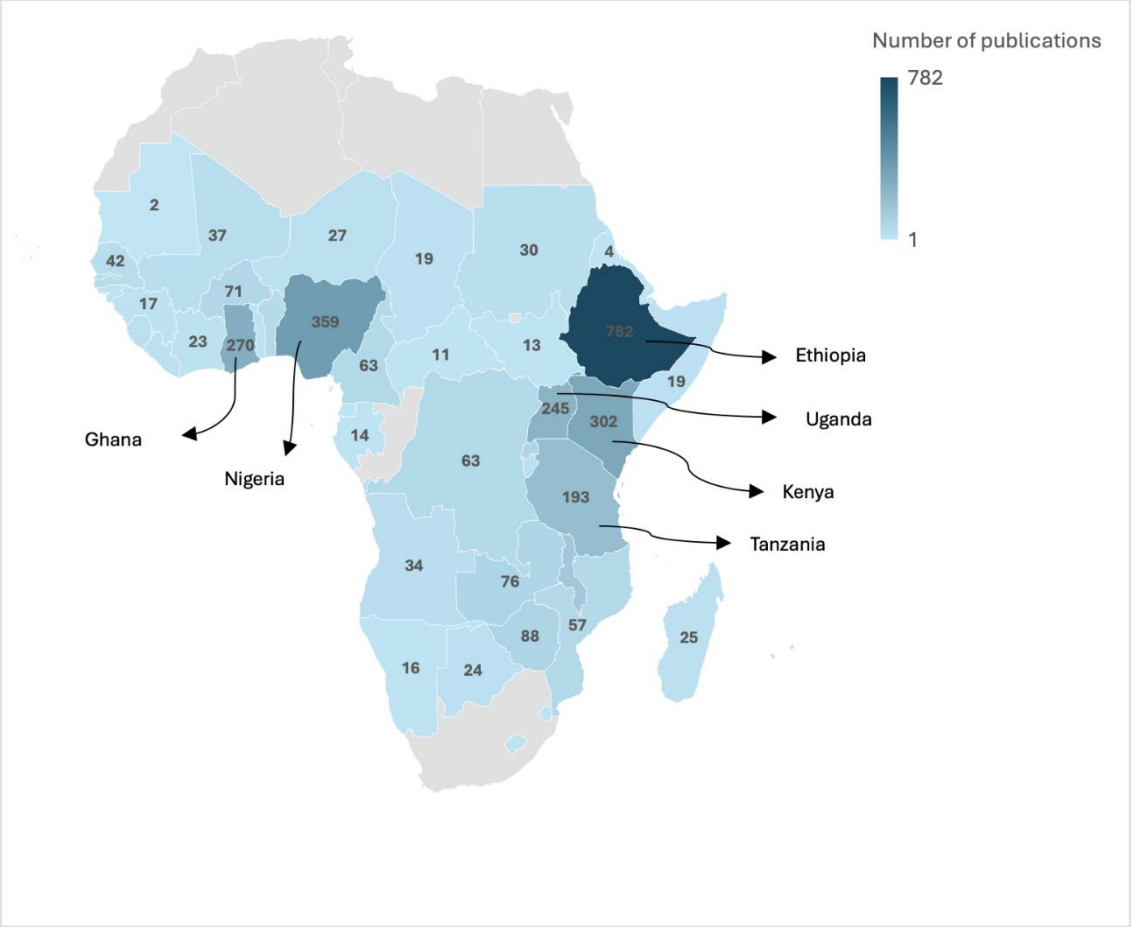
*Figure 7: Researcher gender by ECD component*




## Distribution of ECD research across SSA countries

Four countries accounted for almost two thirds of the total ECD research conducted in the region: Ethiopia (28 percent), Nigeria (13 percent), Kenya (11 percent) and Ghana (10 percent) (Figure 8). Given that languages such as French and Portuguese are hardly present in the four databases, this could be a reason why some countries such as Djibouti, Gabon, Togo and Cape Verde have fewer publications. However, related analysis of foundational literacy and numeracy research, for which French language databases have been extensively searched, has found a smaller number of publications from these countries (Binesse & Rose, 2024).

*Figure 8: Number of publications per country*




*Note: 2,796 publications in total.*

The same countries appear in the top five countries covering most of the ECD components: Ethiopia, Ghana, Kenya, Nigeria, Uganda (Table 2). Ethiopia has the highest number of publications (782) across four of the six ECD components (health, nutrition, environment & protection, and responsive caregiving), while it does not appear in the top five countries for education and play.

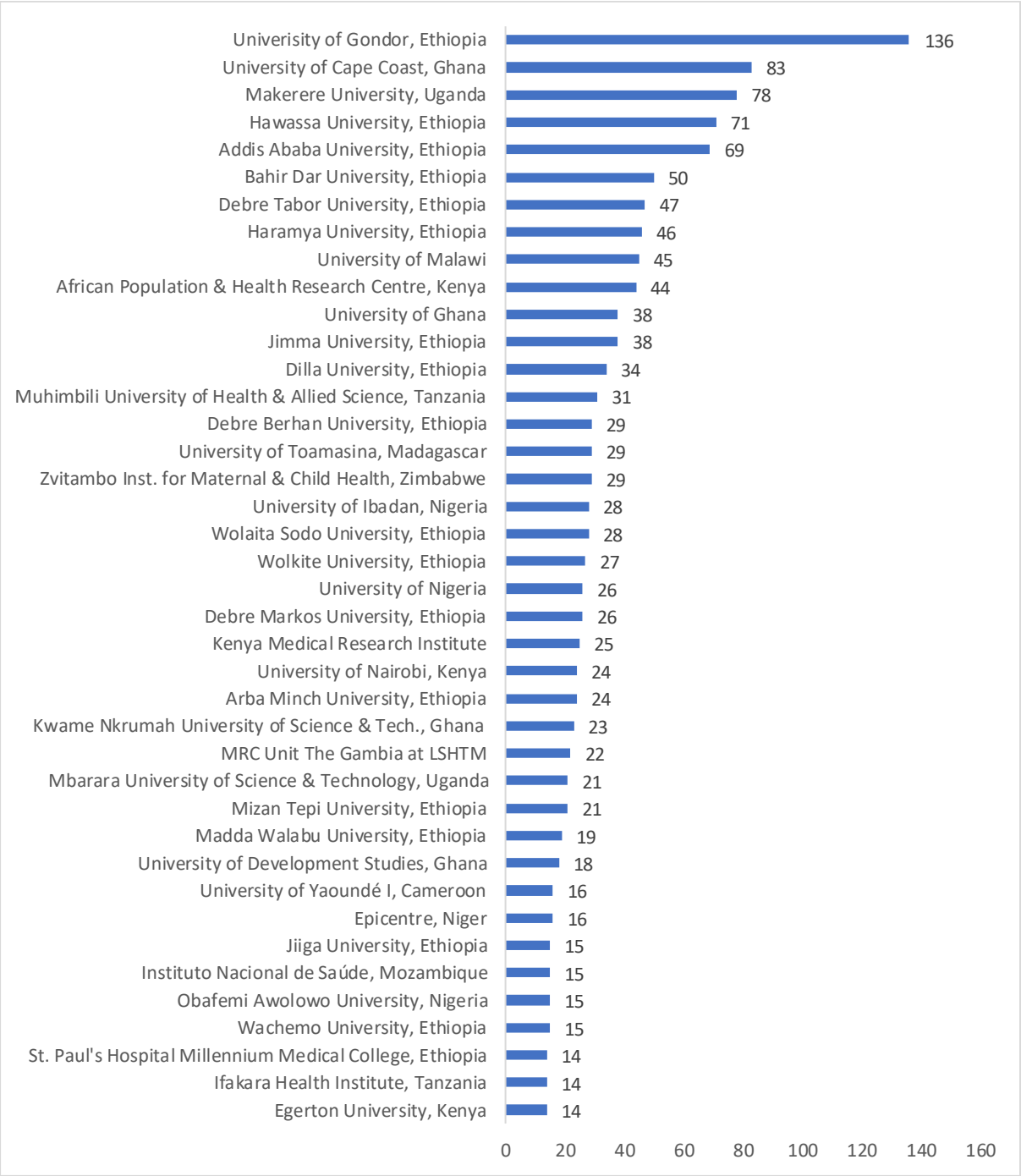
*Table 2: Top five countries across ECD components*

| Component | Top five countries | Number of times mentioned |
|---|---|---|
| **Health** | Ethiopia | 493 |
| | Nigeria | 268 |
| | Kenya | 200 |
| | Uganda | 171 |
| | Ghana | 164 |
| **Nutrition** | Ethiopia | 418 |
| | Kenya | 133 |
| | Ghana | 125 |
| | Nigeria | 109 |
| | Uganda | 99 |
| **Environment and protection** | Ethiopia | 179 |
| | Nigeria | 71 |
| | Kenya | 70 |
| | Ghana | 62 |
| | Uganda | 53 |
| **Education** | Kenya | 48 |
| | Nigeria | 43 |
| | Ghana | 34 |
| | Tanzania | 33 |
| | Uganda | 28 |
| **Responsive caregiving** | Ethiopia | 59 |
| | Kenya | 45 |
| | Uganda | 32 |
| | Nigeria | 31 |
| | Ghana | 28 |
| **Play** | Kenya | 30 |
| | Uganda | 18 |
| | Malawi | 17 |
| | Nigeria | 17 |
| | Ghana | 16 |

## Researcher institutional affiliation

Authors were affiliated with over 500 institutions across 48 countries. Affiliated institutions were mostly universities. Some were also hospital research units, research think tanks, government ministries, international and local NGOs, and private research institutions. Six of the top ten institutions are in Ethiopia (Figure 9).

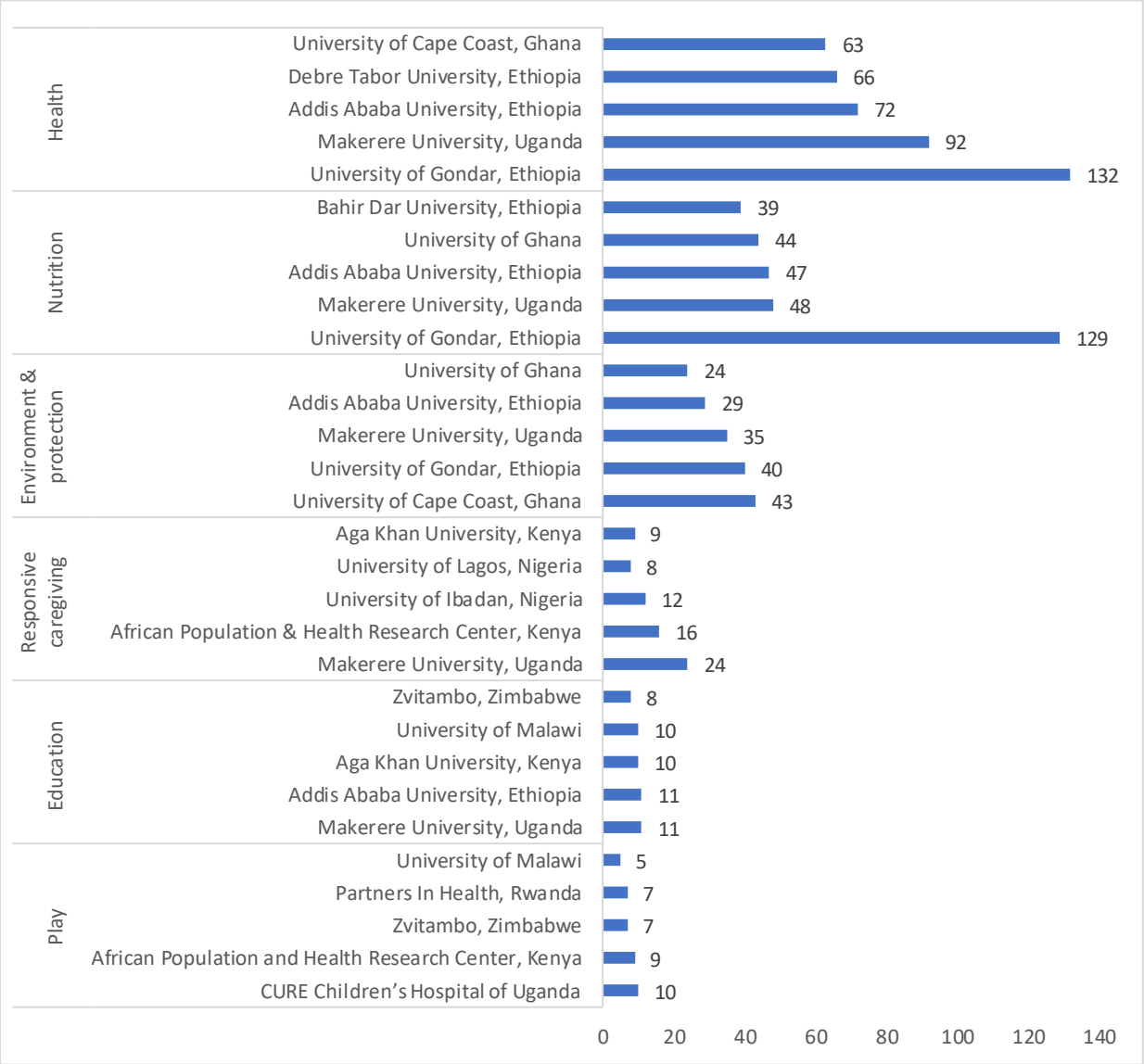
*Figure 9: Institutional affiliation of researchers*




*Note: This graph is limited to the top 40 institutions, with the most authors.*

With respect to ECD components, the University of Gondar is prevalent in health, nutrition and environment and protection (Figure 10). Other universities in Ethiopia are also amongst the top five across a number of the ECD components, with Addis Ababa University appearing across four components. Makerere University in Uganda appears in the top five of five of the ECD components, with a notable number of publications for health and nutrition.

*Figure 10: Institution by ECD component*



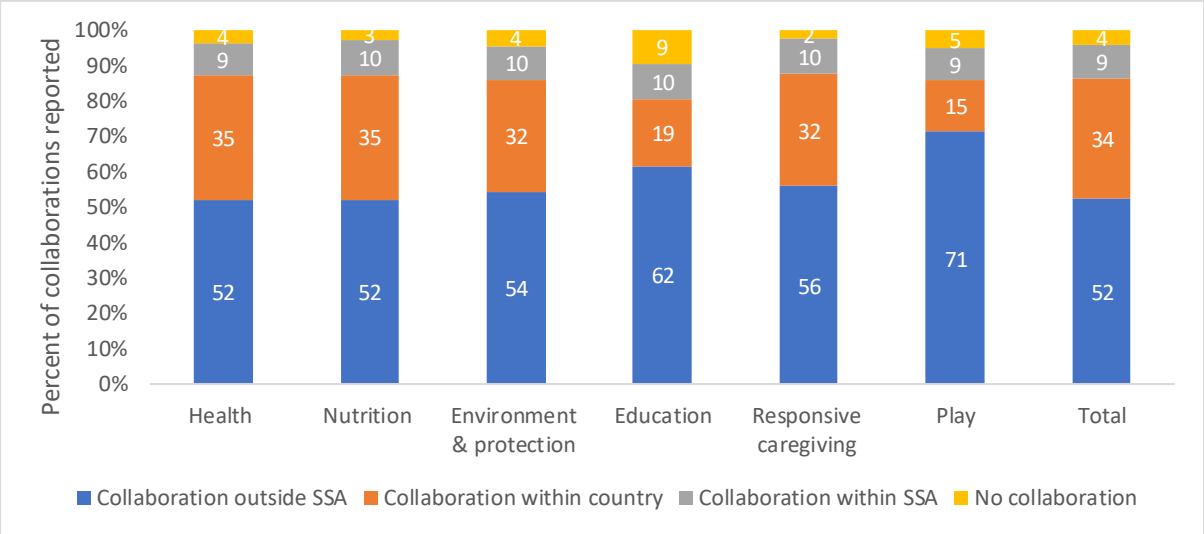

*Notes: This is limited to the top five institutions for each of the six components.*

## Research collaboration within SSA and outside SSA

Most publications involved some form of collaboration (95 percent) (Figure 11). This is similar across all ECD components (Figure 12). 52 percent of collaborations

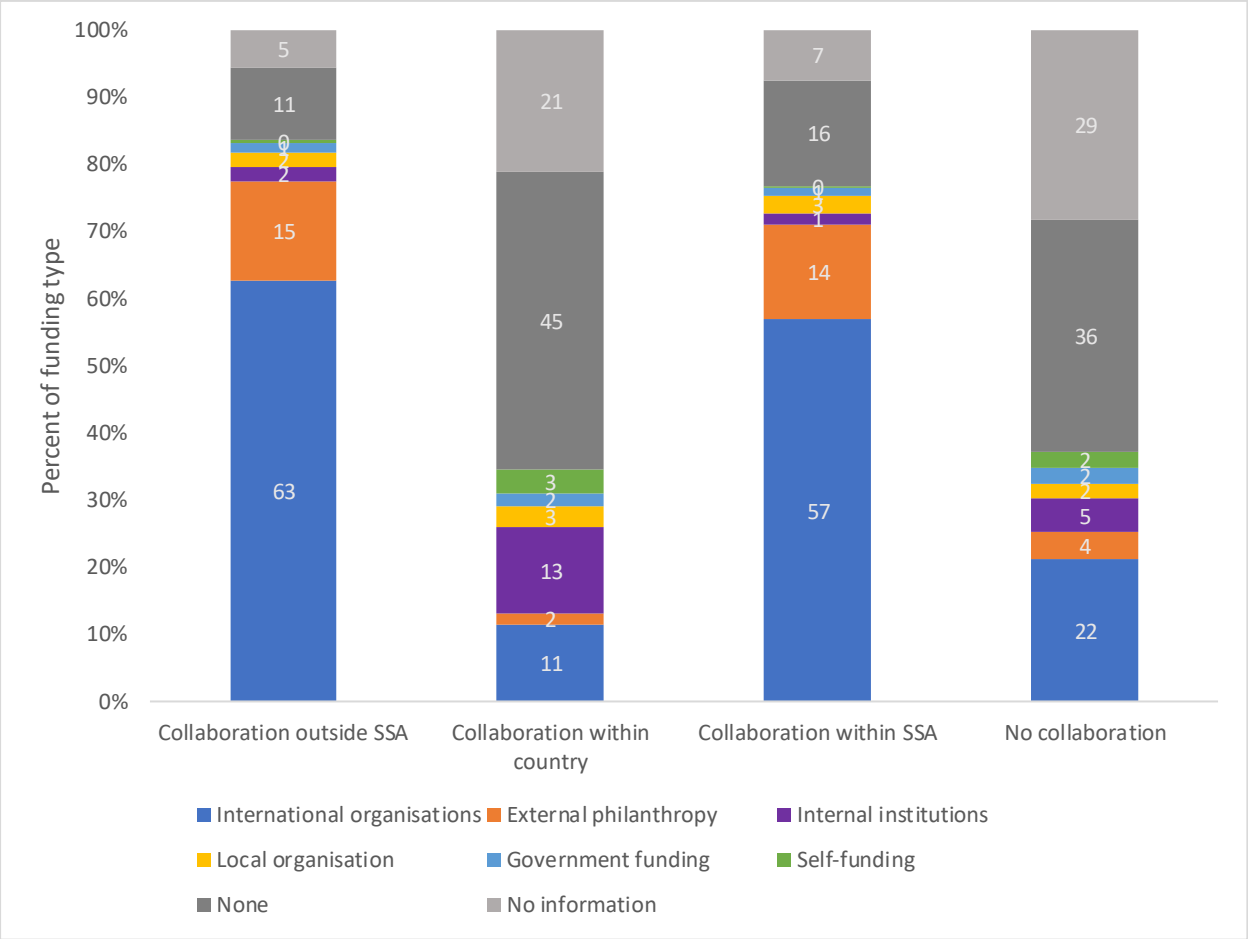
involved co-authorship with collaborators outside of SSA, with slightly higher proportions for education and play (61 percent and 72 percent, respectively). Collaboration with researchers and institutions within countries was more common than across SSA: with 34 percent of collaborations within the country, compared to only 9 percent among researchers and institutions across SSA, with a similar pattern across ECD components. Similarly, Kozma et al. (2018) found that collaboration involving African countries is relatively low compared to collaboration with international researchers outside Africa.

*Figure 11: Collaboration by ECD component within and outside SSA*




Publications reporting collaboration outside SSA were more likely to receive funding (84 percent), while those with no collaboration or collaboration within the country were least likely to receive any funding (35 percent and 34 percent, respectively) (Figure 12). It is also noteworthy that internal institutions were more likely to fund research reporting collaborations within the country.

*Figure 12: Collaboration by funding type within and outside SSA*




## 4. Challenges and limitations

The mapping exercise encountered several challenges. Developing appropriate search terms necessitated an extensive review of existing systematic and literature reviews to collate relevant keywords. Through trialling these, we found that some excluded a large number of publications, or included too many that were not relevant (Iddrisu, Williams & Rose, 2024). This process took time for us to resolve the best approach for searching the databases. While we took time to review publications in order to remove ones that were not relevant, it is still possible that we have missed relevant ones through our search process. However, given our attempt at trialling different approaches, we are confident that our approach was as comprehensive as possible.

The cataloguing process required a thorough reading of each publication to extract information, which also took time. Gathering authors' information, such as gender (which is often not explicitly stated in publications), contact details (e.g. email addresses), and institutional affiliations (if not recorded in the publication), often required further searching. Reporting on funders and authors' affiliations necessitated additional time for cleaning and standardising the names of funding organisations and institutions, as they were often reported in various irregular formats, potentially compromising the accuracy of the compiled list of funders and affiliated institutions. It was also not always possible to know whether a publication did not receive funding, or that the authors did not report it.

Given that the search terms were in English and most publications in the databases searched were in English, it is anticipated that research published in other languages has been overlooked. However, language restrictions were not imposed within these databases, enabling the retrieval of some publications in languages such as French and Spanish.

Notwithstanding these limitations, rigorous quality control measures, including reliability checks amongst those coding the data, were implemented prior to analysis to ensure the accuracy and integrity of the findings.

## 5. Conclusions and recommendations

The landscape of ECD research in SSA presents a complex picture of progress and challenges. While there is a significant number of publications, including authors from sub-Saharan Africa, with 2,796 publications spanning 48 countries from 2020 to 2022, the distribution across ECD components and geographical regions remains highly uneven. Health and nutrition are most prevalent, accounting for over 64 percent of total publications, while areas such as play, responsive caregiving, and education are more limited. This imbalance is further exacerbated by a concentration of research in just a few countries, with Ethiopia alone contributing 28 percent of the total publications.

Funding patterns and collaboration dynamics reveal additional imbalances. Approximately half of the ECD research was reported as receiving funding, with

studies with international collaboration more likely to secure funding. Moreover, the research landscape inadequately addressed crucial inequality dimensions related to poverty, gender, ethnicity, religion, and disability, with only 6 percent of publications focusing on children with disabilities. Gender disparities among researchers are also evident, with females accounting for only 29 percent of the total, a figure that is even lower in certain ECD components such as health and nutrition.

## Recommendations

- **Diversify research focus.** Encourage and fund research in underrepresented ECD components such as play, responsive caregiving, and education to create a more balanced understanding of child development in SSA.
- **Promote intra-African collaboration.** Develop funding mechanisms and incentives that specifically encourage collaboration among African researchers and institutions working on ECD-related topics, fostering a more sustainable and locally driven research ecosystem.
- **Address inequality dimensions.** Prioritise research that explicitly addresses inequality dimensions related to poverty, gender, ethnicity, religion, and disability in ECD studies to ensure inclusive development strategies.
- **Improve gender balance in research.** Implement policies and programmes to increase female participation in ECD research, particularly in education and play research where gender disparities are more pronounced.
- **Enhance local research capacity.** Invest in capacity-building initiatives that strengthen the skills and expertise of African ECD researchers, enabling them to lead high-quality research projects and secure funding with less reliance on international collaborations.

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## Endnote

[i] South Africa is excluded because preliminary analysis revealed that it has a markedly different research landscape to other countries in the region, with 3.5 times more education research outputs than Nigeria, the second most prolific country (Mitchell & Rose 2017a).

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