Primary school children, Ghana
GPE/Kelley Lynch

Mapping early childhood development research outputs in sub-Saharan Africa

Ghana country report

REAL
Research for Equitable Access and Learning

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Education Sub Saharan Africa

Authors

The writing of this report was led by Stephen Acquah, who conducted the searches for research outputs and the analysis. Samuel Asare, Pauline Essah, Pauline Rose and Eunice Williams provided overall oversight of the process, together with guidance and report review.

Acknowledgements

This work on mapping unpublished and locally published Early Childhood Development (ECD) research is a joint initiative by Education Sub Saharan Africa (ESSA) and the Research for Equitable Access and Learning (REAL) Centre at the University of Cambridge, United Kingdom, with funding from the Conrad N. Hilton Foundation (grant number 28192). The authors are grateful to the entire team at ESSA and REAL Centre for their invaluable support in reviewing, proofreading, editing and designing this report. Any errors are the responsibility of the authors.

Suggested citation

Acquah, S., Asare, S., and Essah, P. (2024). *Mapping early childhood development research outputs in sub-Saharan Africa: Ghana country report*. REAL Centre, University of Cambridge and ESSA.

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List of abbreviations

AERD	African Education Research Database
AJOL	African Journals Online
CESA	Continental Education Strategy for Africa
ECCD	Early Childhood Care and Development
ECD	Early Childhood Development
ECE	Early Childhood Education
GDP	Gross Domestic Product
NGOs	Non-governmental Organisations
SDGs	Sustainable Development Goals
SSA	sub-Saharan Africa
UNICEF	United Nations Children's Fund
WBG	World Bank Group
WHO	World Health Organization

Summary

This report summarises the bibliometric analysis of research outputs on Early Childhood Development (ECD) in Ghana, focusing on research outputs from country-level sources for the period 2010-2022, and compared to publications identified from international databases, limited to the period 2020-2022. It is focused on ECD research by Ghanaian authors. The review of research outputs was conducted using various sources including institutional websites, regional databases e.g. African Journals Online (AJOL), online academic and publication profiles of researchers identified via online surveys and in-country engagement, as well as asking experts within the ECD field to recommend publication resources potentially missed. The type of research outputs of interest are journal articles, working paper series, PhD theses, books (chapters), and evaluation and intervention reports.

The analysis revealed a total of 222 research outputs meeting the inclusion criteria for the Ghana in-country searches for 2010-2022, with an increasing trend over the period. Articles in international journals are more prevalent, with 247 publications identified from international databases, compared to 68 research outputs from in-country searches for 2020-2022.

Inequality such as gender, disability, ethnicity, poverty and religion received limited attention in ECD research, particularly in country searches

More research on the education component of ECD was recorded through the country-level searches relative to those from international databases. The larger proportion of research outputs on education amongst those identified through country searches could in part be due to the team's closer engagement with education researchers, as some were found through contacts with researchers themselves. Overall, 24 percent of the research outputs from country-level searches received funding compared to 44 percent funding for the research outputs from international database searches. For all the funded research outputs from both searches, international organisations were the main source of funding, while government funding was minimal. ECD publications in international databases are approximately two times more likely to receive funding from international sources.

Female authors represented only about one third of the authors of ECD research in Ghana. Most of the studies identified through the country-level searches involved collaboration within country (60 percent), compared with 30 percent for publications in international databases, while collaborations outside SSA were higher for publications in international databases (55 percent) compared to 18 percent of those from country-level searches for the 2020-2022 period. The most prolific ECD research-producing institution is the University of Ghana. Other institutions, such as the University of Cape Coast, University of Education Winneba, Kwame Nkrumah University of Science and Technology, and the University of Development Studies featured prominently.

Based on our analysis, recommendations include:

- Encourage research outputs in those ECD components for which there is the least research, notably on play, environment and protection, and responsive caregiving.
- Support research to include analysis by inequality (such as gender, socio-economic status, disability, ethnicity, religion, among others).
- Support more women to undertake and publish research on ECD.
- Increase funding for ECD research., focusing in particular on education and environment and protection research.
- Develop functional online repositories for research outputs.

1. Introduction

The early childhood period is recognised as a crucial stage to invest in children to help them survive, thrive and achieve their full potential. Evidence shows the importance of early childhood development (ECD) for lifelong health, productivity and wellbeing (Black et al., 2017; Yoshikawa & Kabay, 2015). ECD involves the creation of favourable conditions to facilitate the cognitive, social, emotional, linguistic, and physical development of young children (World Health Organization (WHO) et al., 2018). Commitments by the global and regional community to improve ECD is captured in several global, regional and national policies and development frameworks. For example, the Sustainable Development Goals committed to ensuring equitable access to quality ECD and early learning opportunities by 2030. Target 4.2 aims to ensure that 'by 2030 all nations will provide access to quality early childhood development, care and pre-primary education so that all girls and boys are well prepared when they enter primary education' (United Nations, 2015). Regionally, the Continental Education Strategy for Africa (CESA 2016 – 2025) identifies early childhood education as the pillar on which future learning and training are grounded, and the next frontier if Africa is to realise sustained quality education and training (African Union, 2015).

Despite the recognition from global and national commitments that highlight the importance of ECD for school readiness and future life opportunities, there is a concern about the insufficient efforts aimed to support children to get a good start in life. For example, '250 million children (43%) younger than five years in low and middle-income countries are at risk of not achieving their developmental potential.' (Black et al. 2017, p.77). ECD has yet to attract the resources needed to expand access and deliver quality services for all young children. A recent 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).

There is a need to understand the status, challenges and opportunities for improving ECD in African countries, and to systematically analyse evidence on ECD and its

various components. The Nurturing Care Framework for Early Childhood Development (2018), which reframed ECD as an outcome and not a specific intervention or programme, provides a systematic approach to analysing ECD research in Africa (WHO & United Nations Children's Fund (UNICEF), 2023).

Building on the Nurturing Care Framework for Early Childhood Development, for the purposes of our mapping, ECD is categorised into six components, namely education, play, health, nutrition, responsive caregiving and environment, safety and protection. Our searches in international databases show that there are a number of publications on ECD by African scholars indexed in international databases, although most focus on health and nutrition (Iddrisu, 2023). The limited number of publications on education and play in international databases could imply limited research activity by African scholars in these areas. This means that locally contextualised research which is better placed to inform local investments, policy, and practice is likely to be left out. However, it is possible that further research outputs are available within countries that are not included in the international databases.[i] Making this local evidence, knowledge and expertise more visible will contribute to a shift in global knowledge, with local evidence playing a bigger role in local and global contexts. It will also widen the evidence base, thus influencing the types of evidence funded and generated to better serve decision-makers.

To identify these locally based research outputs, we extended searches related to evidence on ECD by Africa-based authors to incorporate national and regional databases in sub-Saharan Africa (SSA) countries (excluding South Africa[ii]). This entailed searching various institutional websites, regional databases e.g. African Journals Online, reviewing online academic and publication profiles of researchers identified via online surveys and in-country engagement, and contacting experts within ECD for recommendations for research outputs we may have missed out. Because this is a labour-intensive undertaking, country-level mapping was limited to four countries: Kenya, Tanzania, Uganda, and Ghana.[iii] This report focuses on Ghana.

2. Ghana ECD policy context

ECD is a prioritised area in Ghana, as documented in the National Medium-term Development Policy framework for 2022-2025 (National Development Planning Commission, 2021) and the Sustainable Development Goals (SDGs), specifically SDG 4. Ghana's Early Childhood Care and Development (ECCD) Policy covers the period from pregnancy to age eight, highlighting key developmental areas such as early learning and protection, health, nutrition, responsive caregiving, caring for the caregiver, and family support. The ECD index shows that approximately 68 percent of Ghanaian children aged three to four years are developmentally on track in literacy, numeracy, physical, social, and emotional learning domains, with a greater proportion being girls and urban dwellers. Nationally, around 71 percent of children in this age group access Early Childhood Education (ECE) (Ghana Statistical Service, 2019; UNICEF, 2020).

In contrast, one child in every five in Ghana experiences stunted growth during the first 1000 days of life, caused by inadequate nourishment, frequent illness, and an unhealthy environment (UNICEF Ghana, n.d.). These affect the physical, social, and cognitive development of children (Black et al., 2017). This can negatively impact brain development which further affects learning at an early age, school performance and ultimately, socio-economic development. The under-five mortality rate remains high at 40 deaths per 1000 live births in 2022 (Ghana Statistical Service & ICF, 2023). This translates to one child in every 11 born in Ghana not surviving to their fifth birthday.

Moreover, in spite of the progress that Ghana has made in improving access to school, ECD progress remains poor (as measured by the physical, cognitive, linguistic, and socio-emotional development of children aged 0–8 years) (Lim et al., 2023). Many children also lack the required literacy and numeracy skills, which poses a significant concern for their overall development (UNICEF Ghana, n.d; Lim et al., 2023).

The Ghanaian government, in its effort to provide a conducive environment for children to access essential ECD services, developed the ECCD Policy in 2004 (Ministry of Women and Children's Affairs, 2004), and subsequently developed

ECCD Standards for children from birth to three years old in 2018 (Ministry of Gender, Children and Social Protection, 2018). The ECCD Standards are necessary to augment the ECCD policy because the latter is silent on defined standards for children within this age group (i.e., what they should know and be able to do). This led to a dearth of understanding among stakeholders regarding the developmental and stimulation requisites for these children (Ministry of Gender, Children and Social Protection, 2018). These standards and indicators are also being used at the kindergarten level to provide guidance on recommended support for achieving the objectives of the policy. This has led to the operation of a new vision for kindergarten education with emphasis on activity-based learning (Ministry of Gender, Children and Social Protection, 2018).

The ECCD Standards also stress the importance of the teacher's understanding of how the child develops and learns (Ministry of Gender, Children and Social Protection, 2018). It is therefore imperative to invest in cross-cutting research to inform policymakers on the impact of these initiatives as well as the problems that exist in the ECD domain.

3. Methods

The methodology of mapping research outputs analysed in this report is detailed in a protocol developed to guide this exercise (Williams et al., 2024). We searched for research outputs in AJOL, institutional repositories, google scholar, as well as unpublished literature databases, and websites of international charities and organisations implementing ECD interventions. We asked participants in an online survey to share their research outputs, and we also identified additional research outputs by searching academic and online profiles of identified researchers. Most of the participants in the online survey were drawn from ESSA's database, and therefore more likely to be education researchers rather than researching all components of ECD. This means that there could be a greater representation of education research outputs in this report.

Research outputs included in the searches are journal articles, working paper series, PhD theses, books (chapters), and evaluation and intervention reports undertaken by universities, other research institutions and policy think tanks, NGOs, international aid agencies, government departments, and individual researchers. Appendix 2 provides a list of publication sources and their access links.

The identified ECD research outputs met the following criteria for inclusion:

- authored by at least one Ghanaian affiliated with an institution based in Ghana,
- authored from the year 2010 to 2022,
- address at least one of the ECD components – health, nutrition, environment and protection, education/early learning, responsive caregiving/parenting, and play,
- focus on children aged 0–8 years.

We used the Nurturing Care Framework as the basis for identifying and categorising sub-groups (components) of ECD and 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) to 'education,' focusing on the pre-primary age group (0–8) (Table 1).

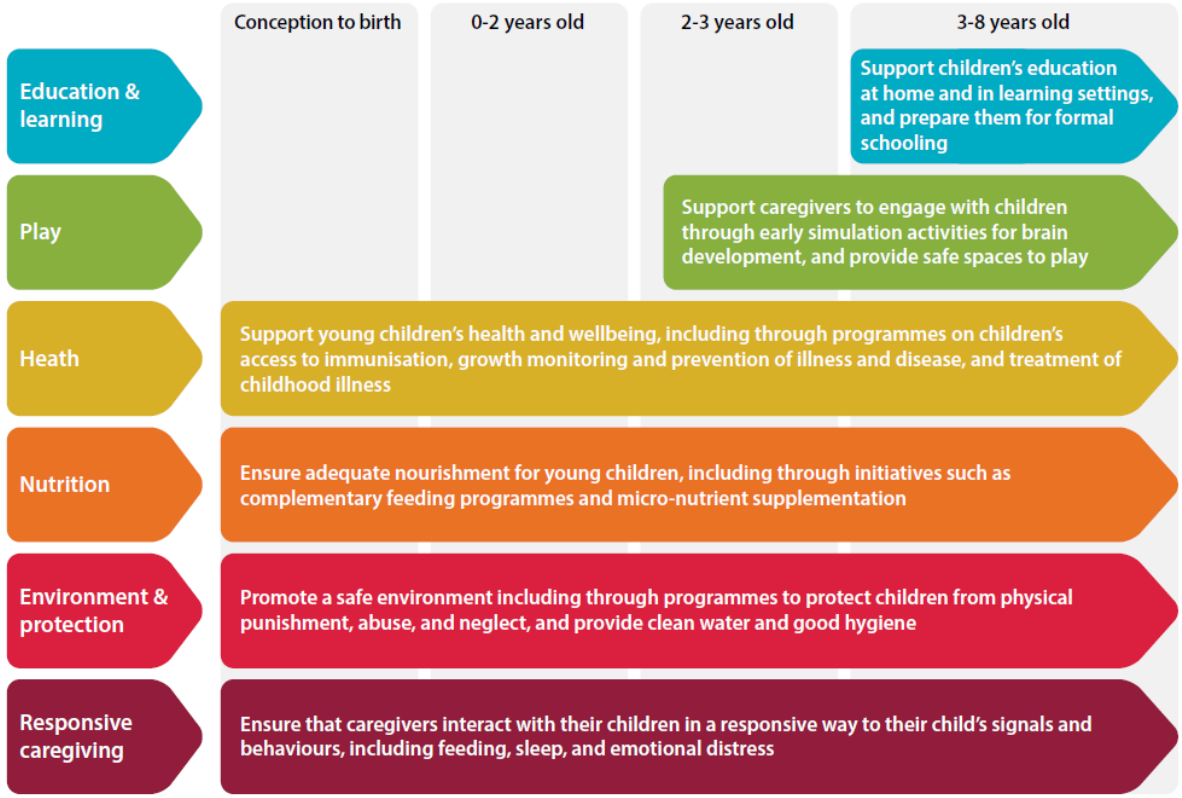
The focus was on children aged 0–3 years, extended to include research focusing on children up to 8 years, provided they were related to ECD. This approach ensured the capture of ECE along with other components of ECD. The pre-primary education age range typically spans 4–6 years but can extend to age 8 in certain contexts (particularly where children are over age). The cutoff age was also informed by related frameworks from various organisations, as shown in Table 1. Figure 1 depicts the six components of ECD that guided the searches.

Table 1: ECD component identified by selected 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 ECD protocol (Williams, Iddrisu & Rose, 2024) and the general protocol for the African Education Research Databases (AERD) (Iddrisu, Williams & Rose, 2024; Mitchell & Rose, 2018), we used specific keywords for each ECD component, either in combination or individually, depending on the search platform. Examples of search strings used include:

> “early childhood development” OR “child growth” OR “child development” AND (year);
>
> “early childhood education” OR “Pre-primary” OR “pre-school” OR “early learning” AND (year);
>
> “responsive parenting” OR “responsive caregiving” OR “parenting” OR “caregiving” AND (year);
>
> "early stimulation" OR "play” OR "play space" AND (year);
>
> "child health" OR "child wellbeing” OR "child wellbeing" OR “child growth” AND (year);
>
> "child nutrition" OR "supplement” OR "child feeding" OR “child food” OR “breastfeeding” AND (year);
>
> “malnutrition” OR “malnourish” OR “stunting” OR “wasting” OR “underweight” AND (year).

All identified research outputs were collated in a spreadsheet where bibliometric analysis was conducted, listing the topic of research, location of study, sociodemographic characteristics of research participants (gender, disability, wealth/income status, religion, ethnicity), source of funding, collaboration with other researchers, institution of affiliation, gender of researcher, and contact details.

To ensure quality, only research outputs that had undergone some form of peer review, or that included a rigorous method section that we could review, were included in the mapping.

Furthermore, a comparative analysis was conducted on research outputs from country-level searches for the period 2020–2022, alongside those identified from international databases —Scopus, Dimensions, and Web of Science, employing similar search strategies. This analysis aimed to provide a comprehensive

understanding of the recent ECD research within the country (2020-2022) and the broader period from 2010 to 2022. It highlights progress, disparities and implications for policy, practice, and future research directions in the field of ECD.

Although our aim for the country-level searches was to identify research outputs not captured in international databases, it is possible that some journal articles indexed in international databases were also captured during the country-level searches. In the cases where we identified this overlap, particularly for 2020-2022 where a similar mapping exercise was conducted in international databases, all identified publications were deleted from the country-level search list to avoid duplication. This was the case for a relatively small number of publications. As our analysis of comparisons in the report between country-level searches and searches of international databases only covers 2020-2022, there is not a concern of potential double-counting. For the 2010-2019 period which were covered only by the country-level searches, it is possible that some international journal articles could still be included in the analysis of country searches. However, we expect this to be a relatively small number, and so do not anticipate it would affect the results significantly.

4. Findings

In this section, the analysis of the identified research outputs and the research authors is presented to enable us to understand the landscape of ECD research published by SSA-based researchers. Through the Ghana country-level searches we show the annual trend of research outputs from 2010-2022, the type of research output, and whether the research is funded or not. We analysed research outputs based on the ECD component addressed, whether individually or cross-cutting, the research location, and the forms of inequality addressed in the research. Analyses also included the gender of researchers, their institutional affiliations, and whether research outputs reported collaboration with co-authors in Ghana, in SSA and/or outside SSA. Where relevant and possible, we provide comparisons between the country-level searches and those in international databases.

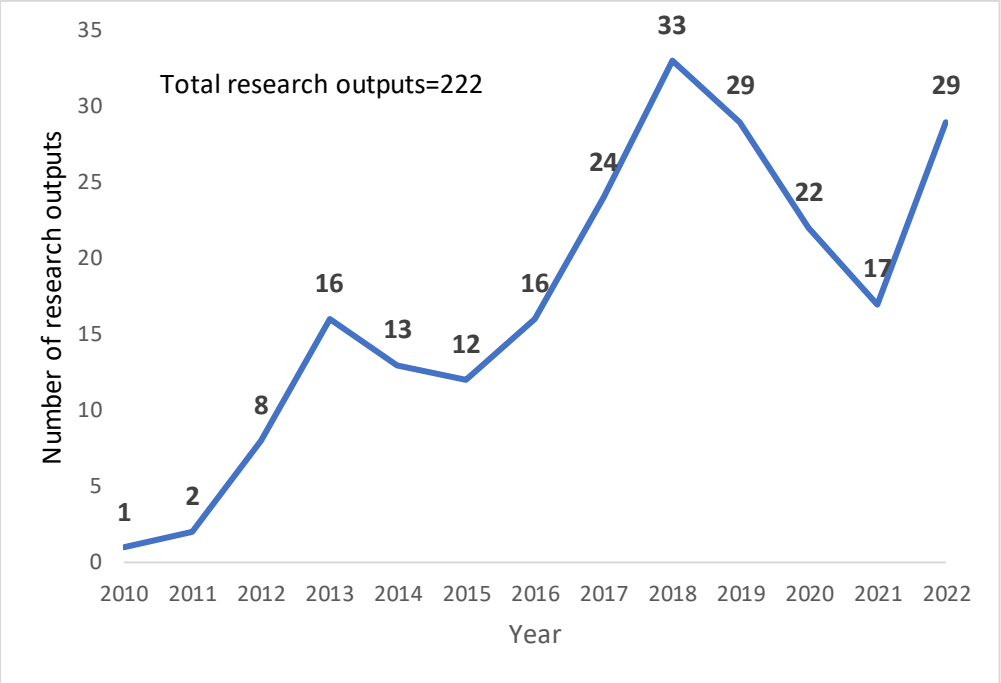
Research outputs and trends

This analysis aims to provide insights into the progression and trends of ECD research outputs in Ghana over a 13-year period by examining the yearly distribution of research outputs that met the inclusion criteria. Additionally, research outputs resulting from the Ghana in-country searches for the period of 2020-2022 are compared to those of the international databases searches of the same time period.

The total number of ECD research outputs resulting from the Ghana in-country searches for the thirteen-year period was 222. There has been a gradual increase in the number of research outputs since 2010 (Figure 2). A modest increase was observed initially until 2018 before falling in 2021, possibly as a result of the COVID-19 pandemic. By 2022 numbers of research outputs rose again to 29. Findings from a case study conducted at two universities in West Africa highlighted an overall decrease in research outputs at the University of Cape Coast since the COVID-19 pandemic (ESSA, Université Félix Houphouët-Boigny, & University of Cape Coast, 2021).

Comparing in-country and international databases searches for the period 2020-2022 identified a far higher number of international publications (247) compared with research outputs within Ghana (68). This implies that ECD research in recent years is more likely to be published in international journals indexed by Scopus, Dimensions or Web of Science.

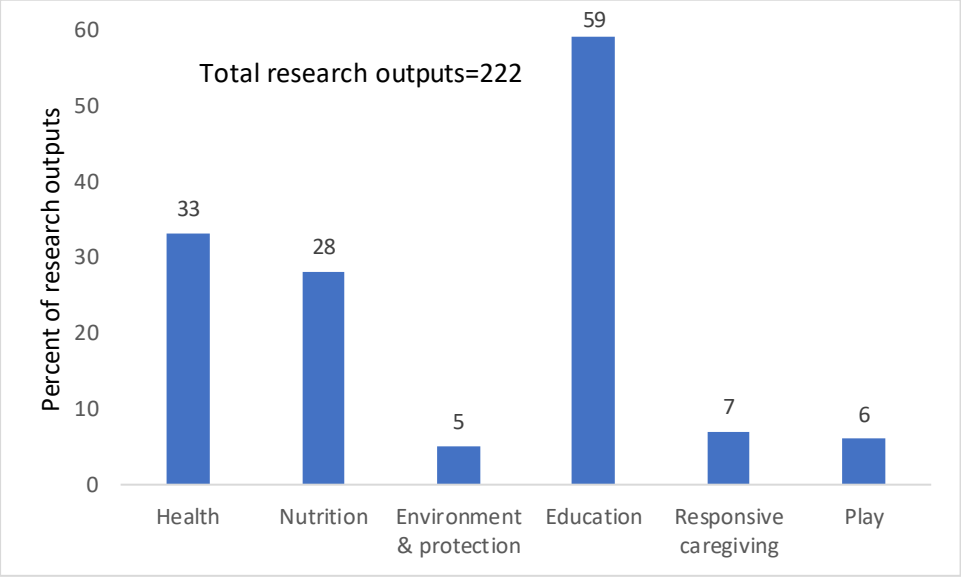
Figure 2: Number of research outputs based on country-level searches (2010-2022)



Research outputs by ECD component

For the research outputs resulting from in-country searches for 2010 to 2022, the ECD component with the most research outputs was education, followed by health, nutrition, responsive caregiving, play, and environment and protection (Figure 3).

Figure 3: Research output by ECD component based on country-level searches (2010-2022)

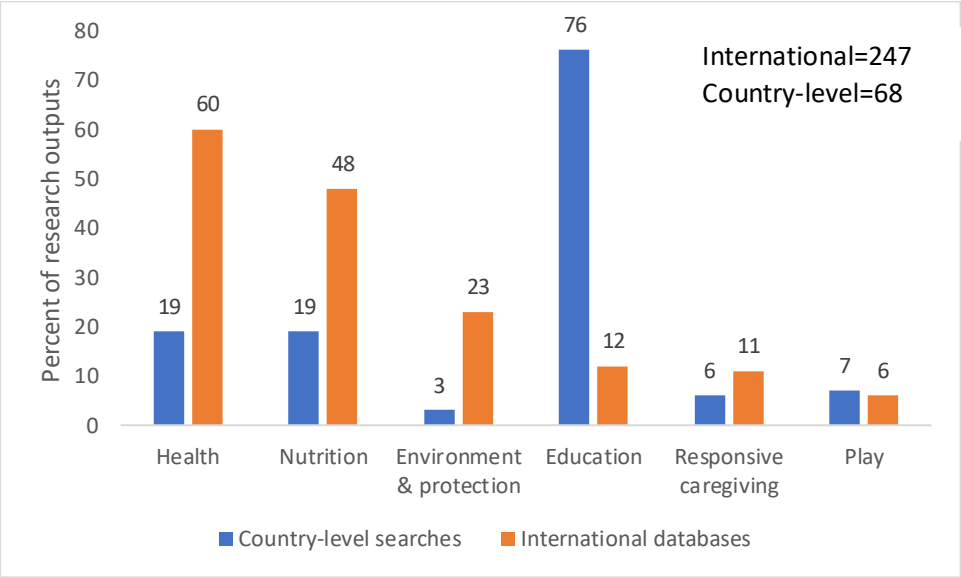


Note: The total is more than 100 percent because some research outputs focus on more than one component.

Comparing research outputs from in-country searches between 2020 and 2022 with those from international databases for the same period reveals different patterns across ECD components (Figure 4). The most pronounced disparity is in the education component, where country-level searches recorded 76 percent of research outputs focused on this domain, compared to only 12 percent in international databases. This higher proportion of research outputs on education from in-country searches could partly be due to ESSA networks reaching more education researchers as part of the search strategy.

Conversely, international databases reported higher percentages of ECD research outputs in health (60 percent), nutrition (48 percent), compared to country-level searches, which recorded 19 percent each for health and nutrition. ECD research outputs on play were similar in country-level searches and international database results (7 percent and 6 percent, respectively).

Figure 4: Comparison between country-level and international database searches by ECD component (2020-2022)



Note: The total is more than 100 percent because some research outputs focus on more than one component.

Journal articles were the most prevalent form of research output for the searches from in-country level for the period 2010 to 2022 (n = 191). Working papers are non-existent, while PhD theses, reports and book chapters were few, indicating 18, 7 and

6 studies, respectively (Figure 5). This suggests Ghanaian ECD researchers prefer academic journals, possibly because they are prioritised in terms of promotion, prestige, and other reward schemes. Additionally, this result could imply that PhD theses, reports, book chapters and working papers are mostly not made available online. This pattern is consistent across the six ECD components (Figure 6).

Figure 5: Type of research output based on country-level searches (2010-2022)

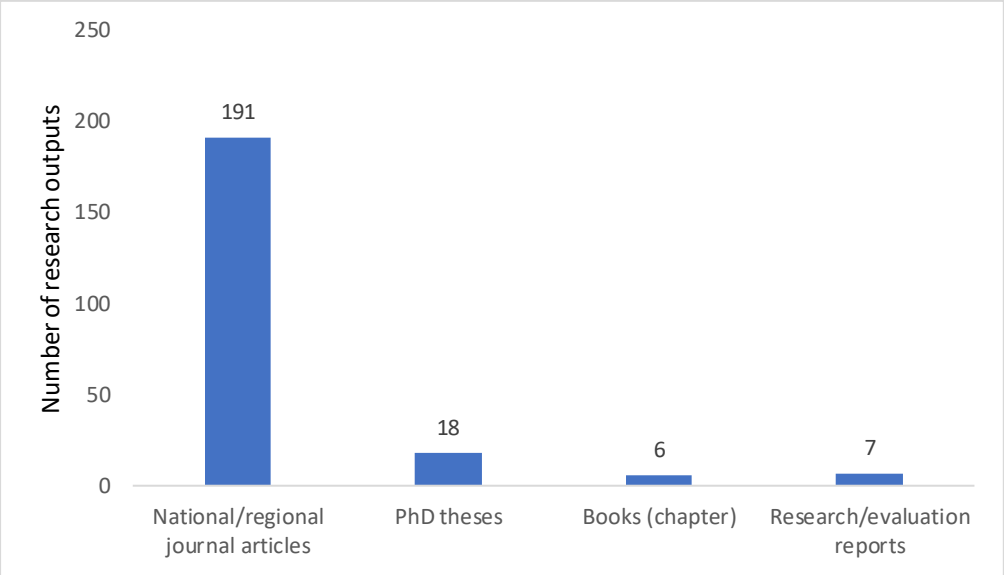
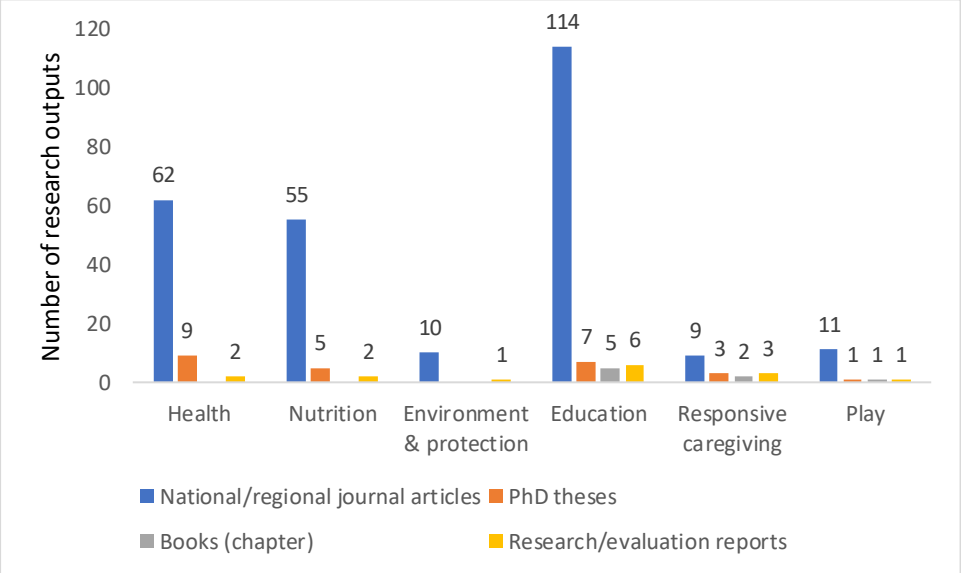


Figure 6: Type of research output by ECD component based on country-level searches (2010-2022)



For the period 2020-2022, we identified 60 journal articles from the country-level searches compared to 244 articles from the international databases. This suggests that Ghanaian researchers are more likely to publish in international journals than national or regional ones.

Research funding

For the research outputs resulting from country-level searches for the period 2010-2022, only 24 percent reported being funded (Figure 7). There was a marked variation in funding among the ECD components. While only a small proportion of research outputs on environment and protection and on education were funded, this increased for research outputs on nutrition, responsive caregiving, health and play.

At the international level, 44 percent of all publications identified funding for the period 2020-2022 (Figure 8). All ECD components reported a greater proportion of funding compared with the country-level searches.

Figure 7: Funding status based on country-level searches (2010-2022)

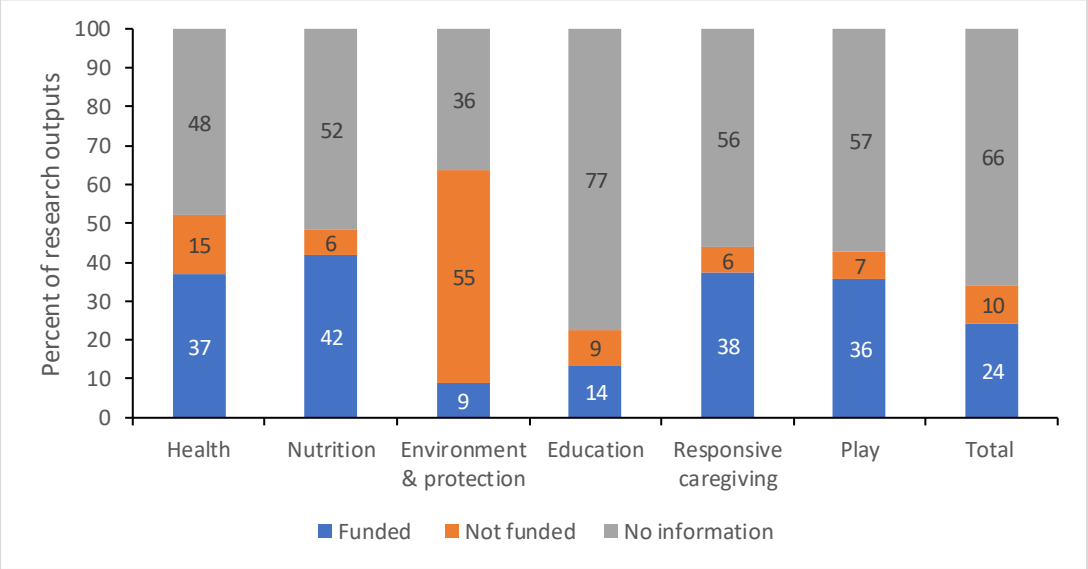
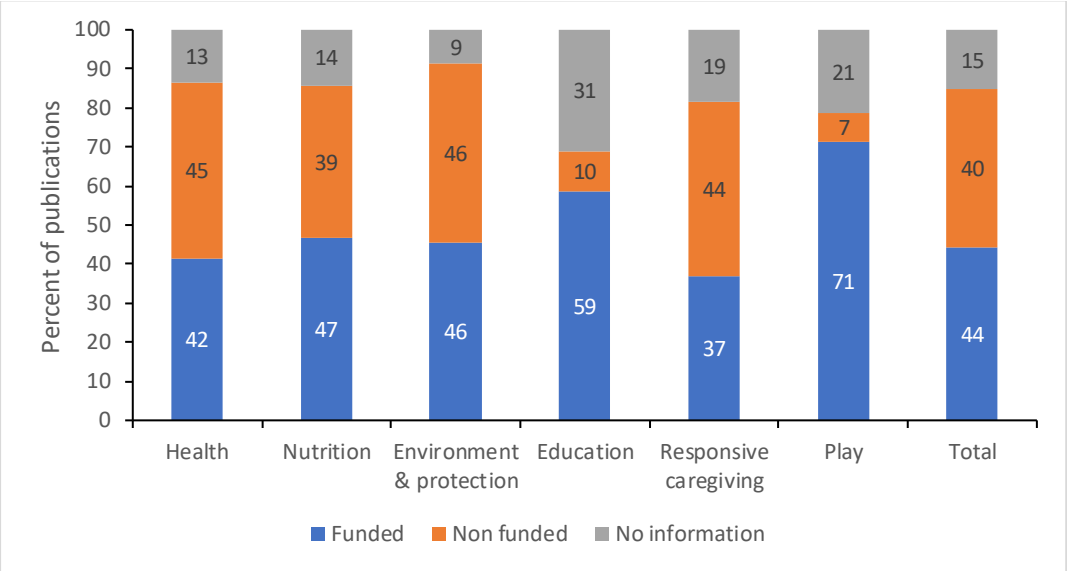
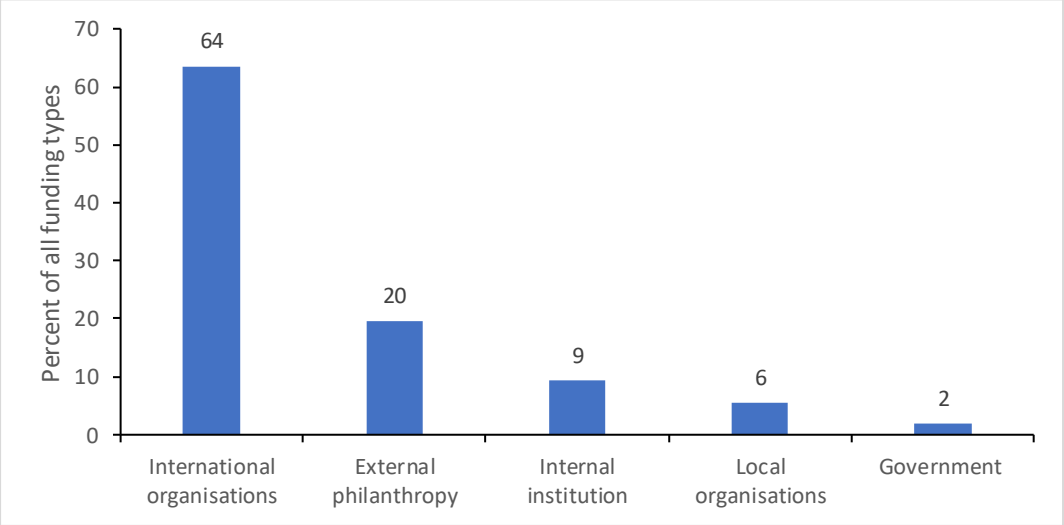


Figure 8: Funding status based on international database searches (2020-2022)



International organisations represented a substantial funding source, accounting for 64 percent (Figure 9). Funding from internal institutions and local organisations was extremely low, at 9 percent and 6 percent, respectively. Government funding registered an even lower proportion at 2 percent, reflecting limited direct governmental investment in ECD research initiatives. The limited government funding also reflects the small amount of funding provided for the entirety of research and development in the country, which stands at 0.38 percent of GDP (R&D World, 2022; World Bank, 2023).

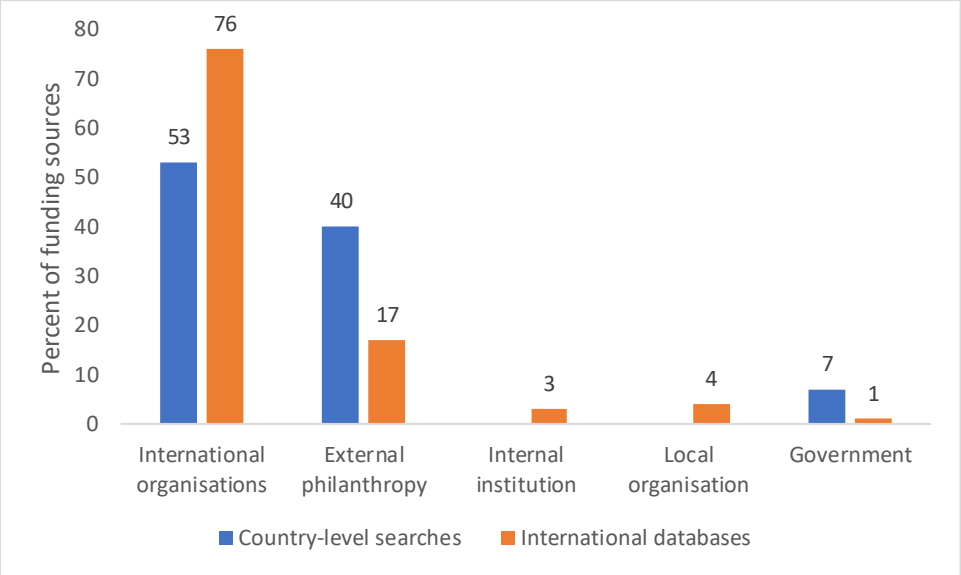
Figure 9: Funding types based on country-level searches (2010-2022)



Note: Some research outputs may have more than one funding source.

For the period 2020-2022, funding from international organisations accounted for a larger proportion of publications identified from international database searches (accounting for 53 percent of country-level and 76 percent of international database searches). Conversely, external philanthropic funding for country-level searches was a higher proportion than for international database searches, accounting for 40 percent and 17 percent, respectively. Notably, funding from internal institutions, government, and local organisations was relatively insignificant overall (Figure 10).

Figure 10: Funding types based on country-level and international database searches (2020-2022)



Note: Some research outputs may have more than one funding source.

There is a variation of funders between country-level and international database searches (Table 2). For international databases, the Bill & Melinda Gates Foundation accounted for 9 percent of all funders, while the World Bank represented 10 percent of all funders for research outputs from the country-level searches. Publications from international database searches show a more diverse range of funders compared to country-level searches.

Table 2: Most common funders identified in country-level and international database searches (2020-2022)

Publications from international database searches			**Research outputs from country-level searches**		
Funder	**No.**	**%**	**Funder**	**No.**	**%**
Bill & Melinda Gates Foundation	16	9	World Bank Strategic Impact Evaluation Fund	4	10
USAID	11	6	UBS Optimus Foundation	3	8
Children's Investment Fund Foundation	7	4	UK Aid	3	8
Fogarty International Centre	7	4	Catholic Relief Services	2	5
Global Affairs Canada	7	4	Leona M. & Harry B. Helmsley Charitable Trust	2	5
UNICEF	7	4	Africa Oxford Initiative grant	1	3

For the sources of funding across ECD components, international organisations accounted for at least half of the funding for health, nutrition, responsive caregiving and education. By contrast, international organisations accounted for no more than 20 percent of the funding for play and environment and protection (Figure 11).

External philanthropy was the sole source of funding for environment and protection, as well as funding over 15 percent of the research in all other ECD components. Government funding was not significant for any of the ECD components.

Comparing funding sources from country-level and international database searches for the period 2020 to 2022 revealed a predominance of international funding sources, including international organisations and external philanthropy across all ECD components (Figure 12).

Figure 11: Funding type by ECD component based on country-level searches (2010-2022)

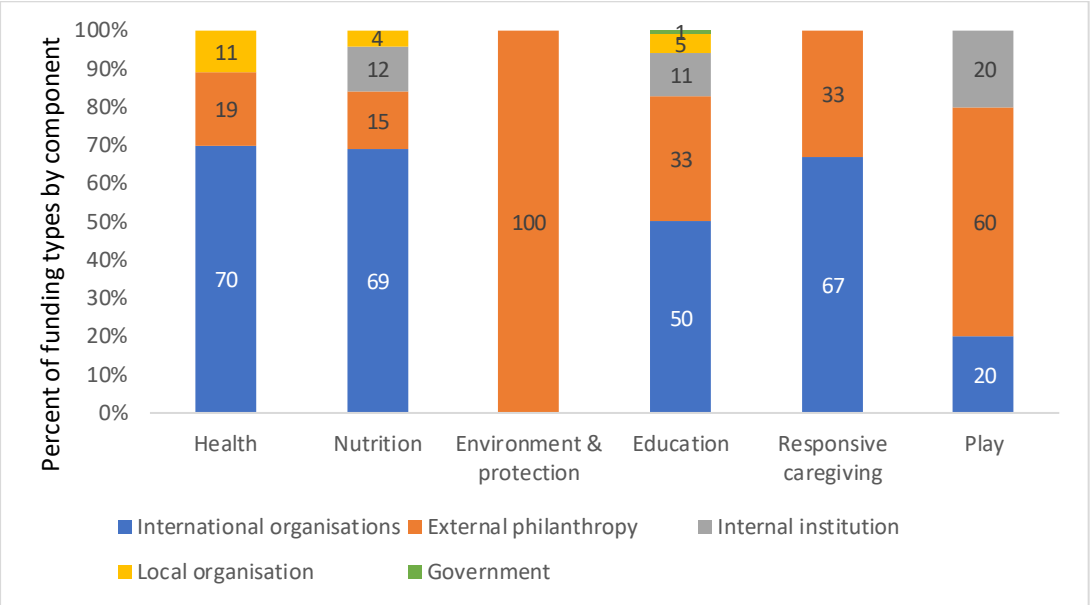
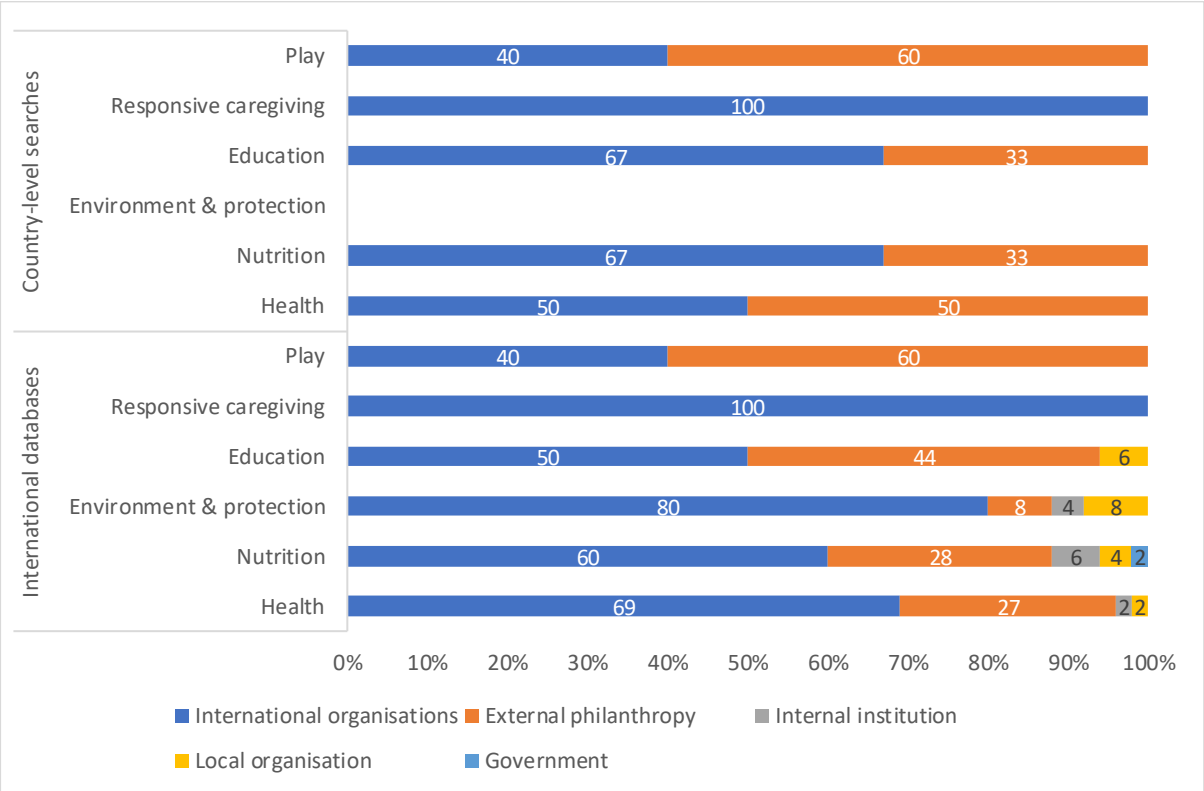


Figure 12: Funding sources by ECD component based on country-level and international database searches (2020-2022)

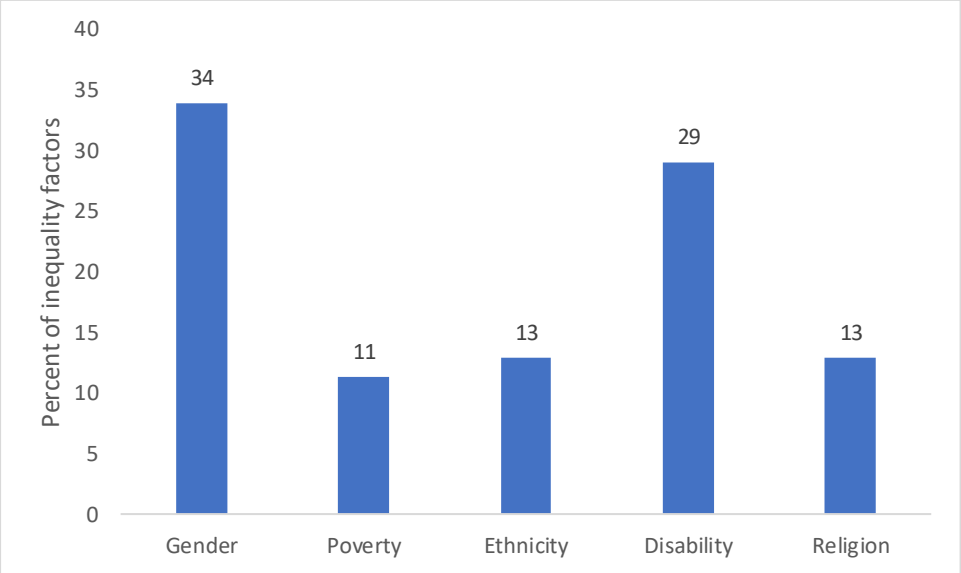


Inequality included in the research outputs

In line with the SDGs, Africa Union Agenda 2063 and its Continental Education Strategy for Africa 2016-2025 (African Union, 2016), we explored forms of inequality identified in ECD research. We assessed whether the research results were disaggregated by gender, social-economic status (poverty), disability, ethnicity and religion of research respondents and participants.

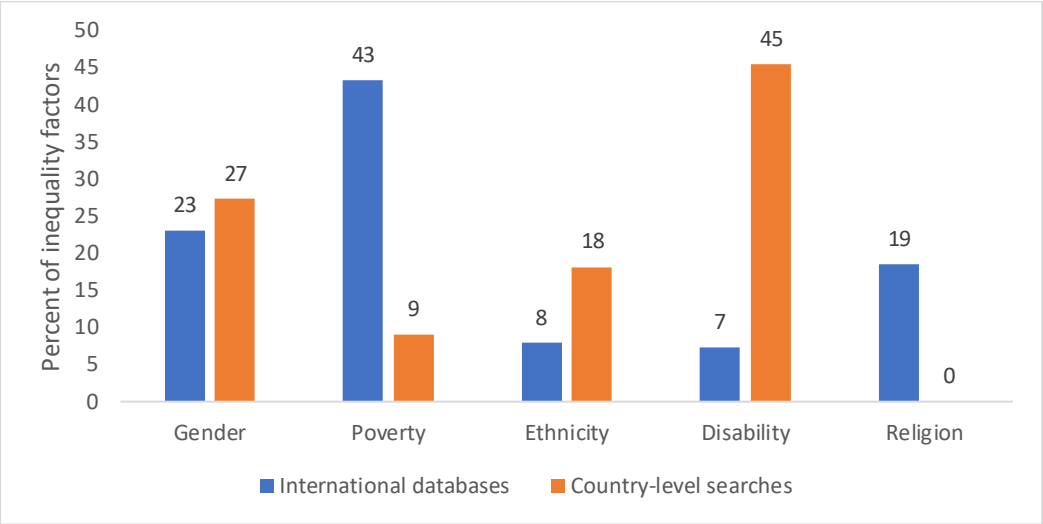
The findings showed that 27 percent of the research outputs included analysis that addressed inequality. Among the inequalities included, the most prevalent focus was gender at 34 percent and disability at 29 percent. Poverty, ethnicity and religion accounted for no more than 11 percent each (Figure 13). There is a need for a more comprehensive approach to addressing how different ECD interventions or practices affect different population groups in the country.

Figure 13: Inequality included in research outputs based on country-level searches (2010-2022)



Comparing research outputs from country-level searches with those of international database searches for the period 2020-2022 shows that poverty was more frequently explored in international journal articles. By contrast, disability was the most prominent in country-level searches (Figure 14).

Figure 14: Inequality included in research outputs based on country-level and international database searches (2020-2022)



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.

For the research resulting from country-level searches (2010-2022), 38 percent of the studies were conducted in both rural and urban settings (Figure 15). A quarter of the research outputs focused exclusively on urban settings, and 21 percent on rural settings.

A lower proportion of publications from international database searches for the period 2020-2022 focused on rural settings compared with those from country-level searches (Figure 16).

Figure 15: Research location based on country-level searches (2010-2022)

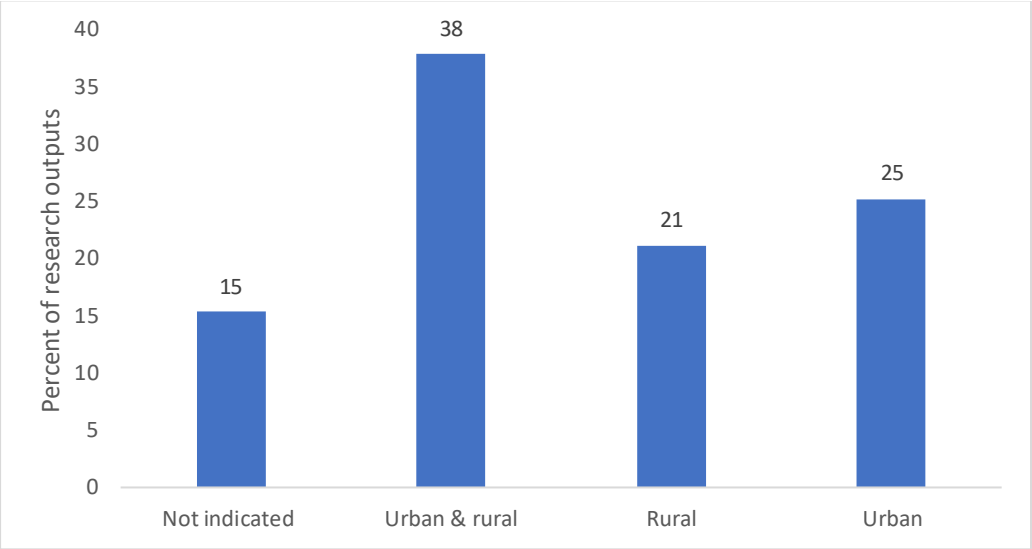
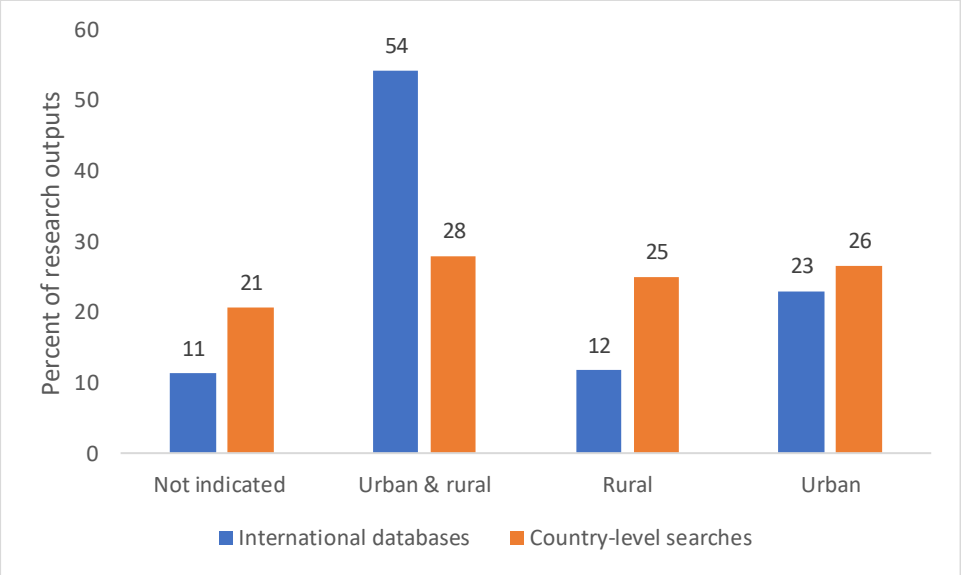


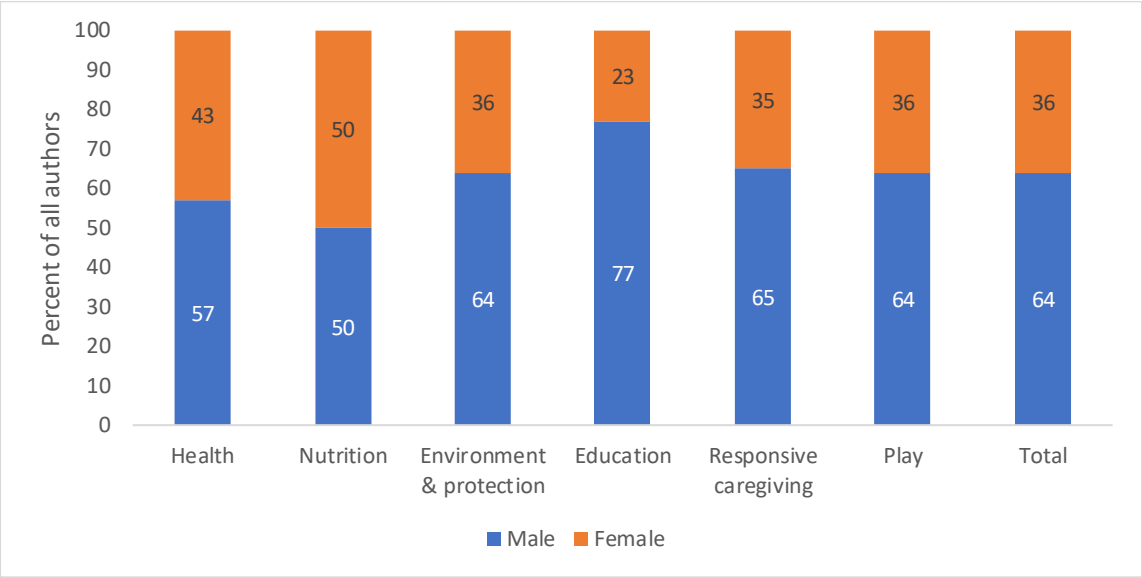
Figure 16: Research location based on country-level and international database searches (2020-2022)



Gender of researchers

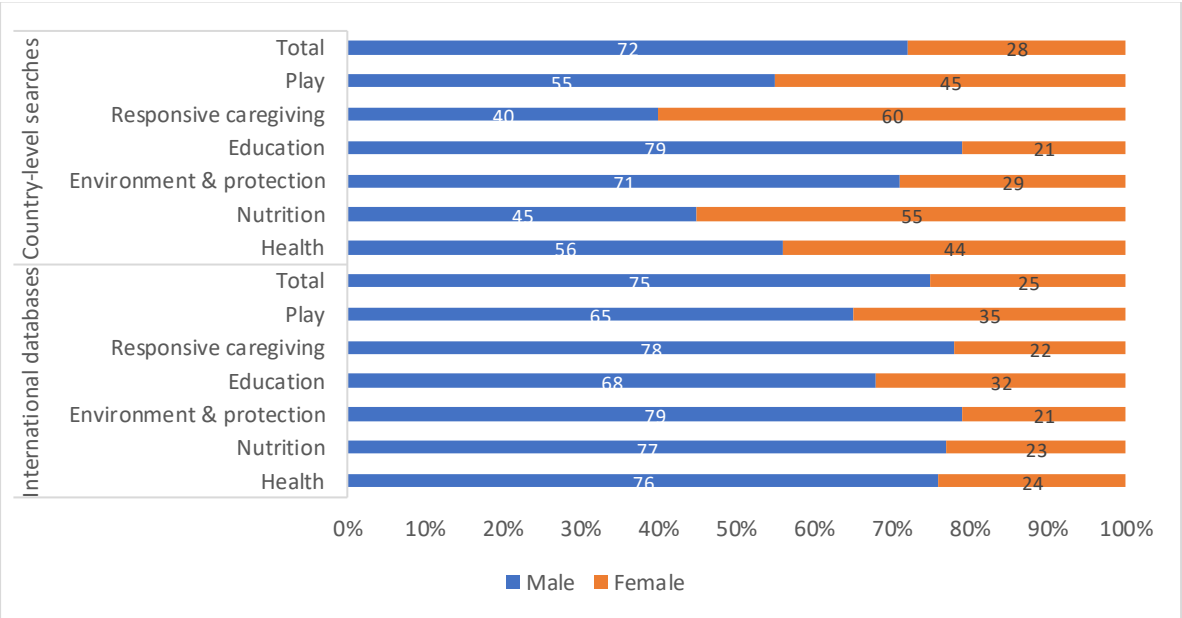
Male authors represented 64 percent of those identified. A similar distribution by gender was identified across the ECD components, other than nutrition where there was an equal proportion of male and female authors (Figure 17).

Figure 17: Researcher gender by ECD component based on country-level searches (2010-2022)



A comparison of the gender of authors across the ECD components for studies resulting from country-level searches and those from international databases for the period 2020-2022 showed a similar pattern. Female ECD researchers constituted only about a quarter of the total authors. There was a consistent male majority for all ECD components in the country-level searches except for nutrition and responsive caregiving where there was a higher proportion of female authors for country-level searches (Figure 18).

Figure 18: Researcher gender by ECD component based on country-level and international database searches (2020-2022)



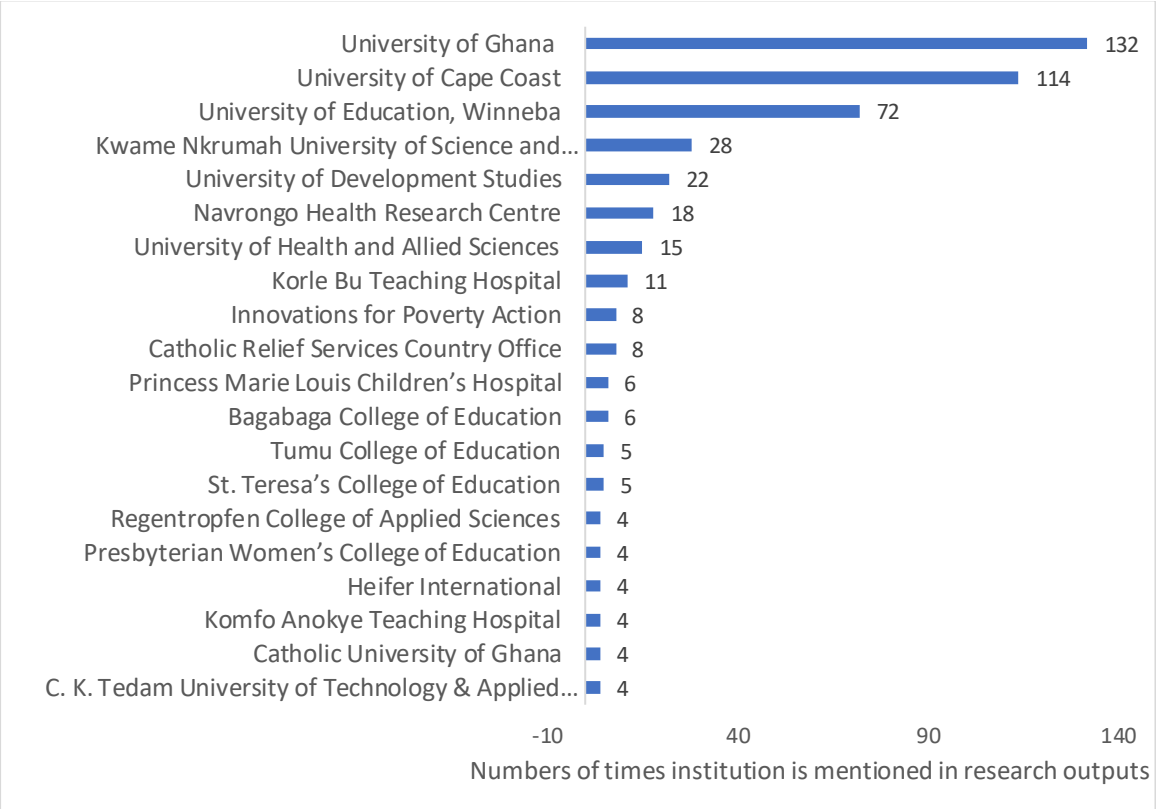
The male majority of researchers is also seen across academia in both Ghana and SSA, where male researchers outnumber female researchers. According to a study conducted by the Association of African Universities, ESSA and the Population Reference Bureau (2018) focusing on faculty in Ghana's public universities, only 8 percent of full professors were female. Additionally, women constituted only 24 percent of the academic staff of tertiary education institutions in SSA (UNESCO, 2020).

Institutional affiliation of researchers

Figure 19 shows the institutions that are mentioned more than three times in the research outputs resulting from the country-level searches for 2010 to 2022 (see Appendix 2 for details of all institutions). Most of the researchers are based in tertiary education institutions, followed by health institutions that have research centres. The leading public universities in the country include University of Ghana, University of Cape Coast, University of Development Studies, University of Education Winneba and the Kwame Nkrumah University of Science and Technology. These account for 68 percent of the overall institutional affiliations mentioned. University of Ghana is the most prolific single institution, followed by the other universities. Colleges of education, the Ministry of Education, NGOs, and privately owned universities and colleges were modestly represented.

These institutions were also seen across the search results for international database searches for the period 2020 to 2022. Notably, University of Ghana appeared as the most prolific single research institution for all search results (Figure 20).

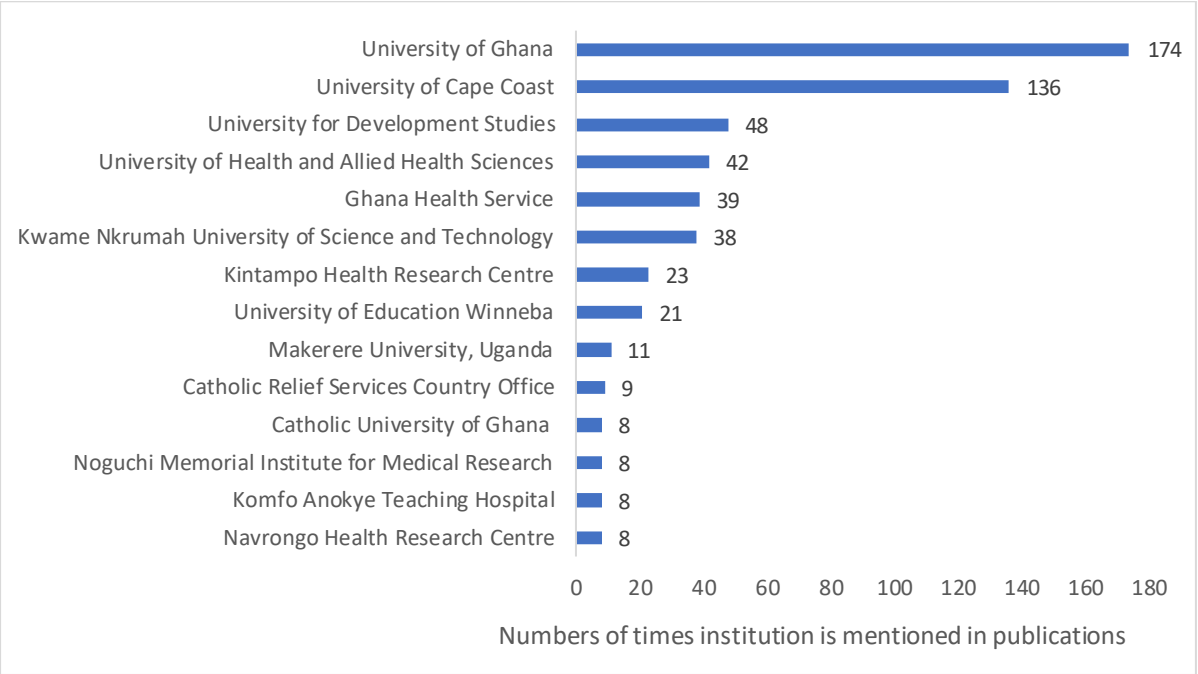
Figure 19: Institutional affiliation based on country-level searches (2010-2022)



Note: All institutions are in Ghana except where indicated.

Graph is limited to institutions mentioned more than three times in all research outputs.

Figure 20: Institutional affiliation based on international database searches (2020-2022)



Note: All institutions are in Ghana except where indicated.

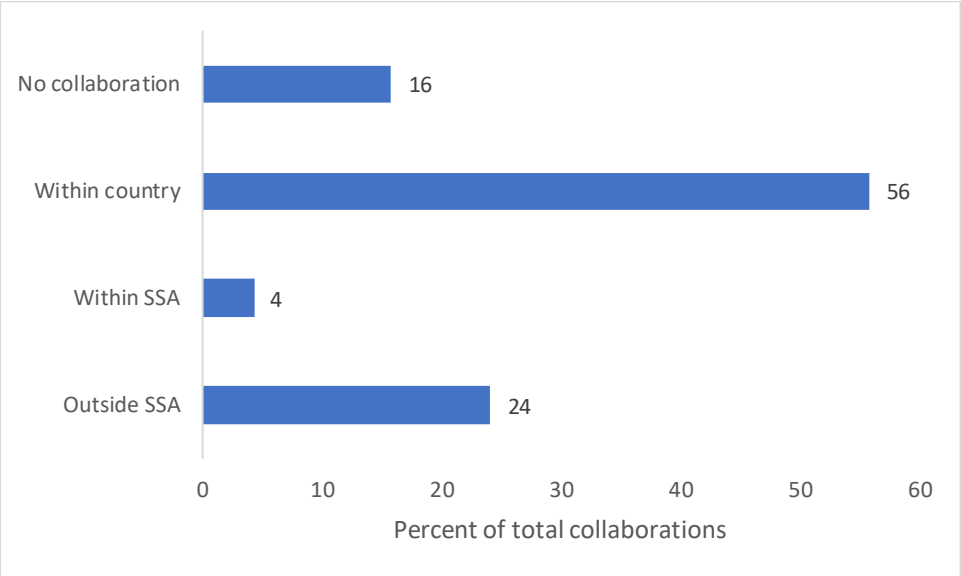
Graph is limited to institutions mentioned more than seven times in all publications.

Collaboration among researchers within and outside SSA

Collaboration among researchers promotes networking and learning among researchers in different countries and can potentially help mentoring and skills development of young career or less experienced researchers. Collaboration can also increase research diffusion and improve visibility. To understand the extent to which there is potential networking and learning among researchers in different countries, we looked at collaboration in Ghana, as well as within and outside SSA.

For 2010-2022, more than half of collaborations included one among Ghanaian researchers (Figure 21). By contrast, 4 percent represented collaborations across SSA, and 24 percent outside SSA.

Figure 21: Collaboration between researchers based on country-level searches (2010-2022)

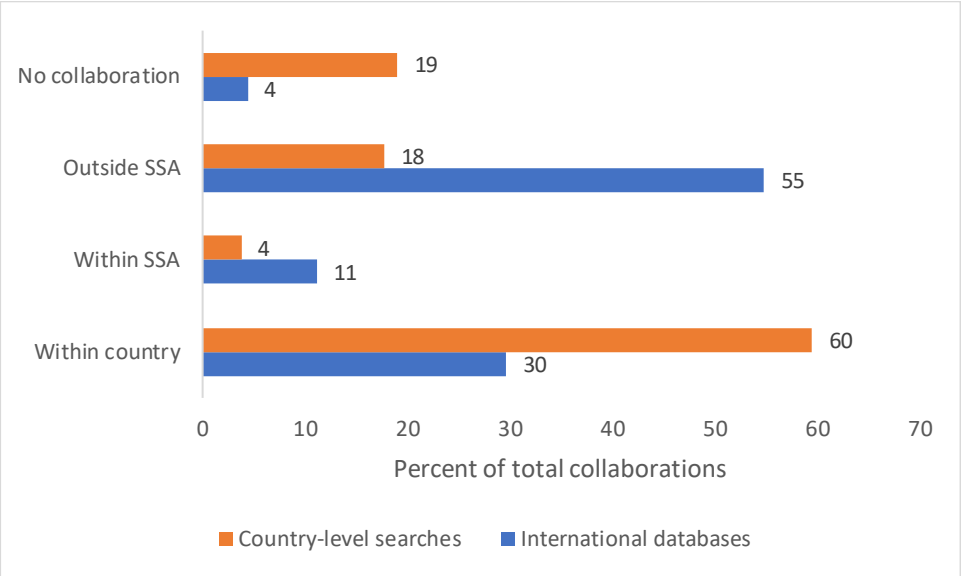


Notes: Some research outputs report multiple collaboration categories.

PhD theses were excluded from this analysis as they would be single authored.

A different picture was seen when the international databases search results were compared to the country-level search results for the period 2020 to 2022. Collaboration outside SSA was the most prevalent in publications from international databases, at 55 percent compared to only 18 percent for the country-level searches (2020-2022) (Figure 22).

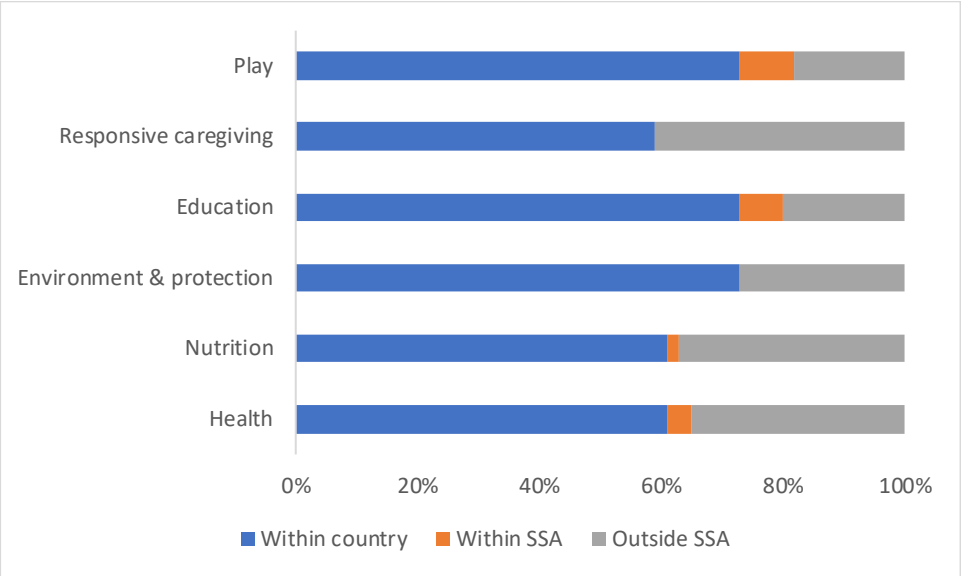
Figure 22: Collaboration between researchers based on country-level and international database searches (2020-2022)



Amongst other factors that influence research collaborations (e.g. Boshoff & Owusu-Nimo, 2017; Confraria et al., 2020), our findings suggest a link between collaboration and funding for ECD researchers in Ghana. For example, for research outputs based on collaborations outside SSA, 58 percent were funded. By contrast, for research outputs based on collaboration within Ghana, only 30 percent report funding.

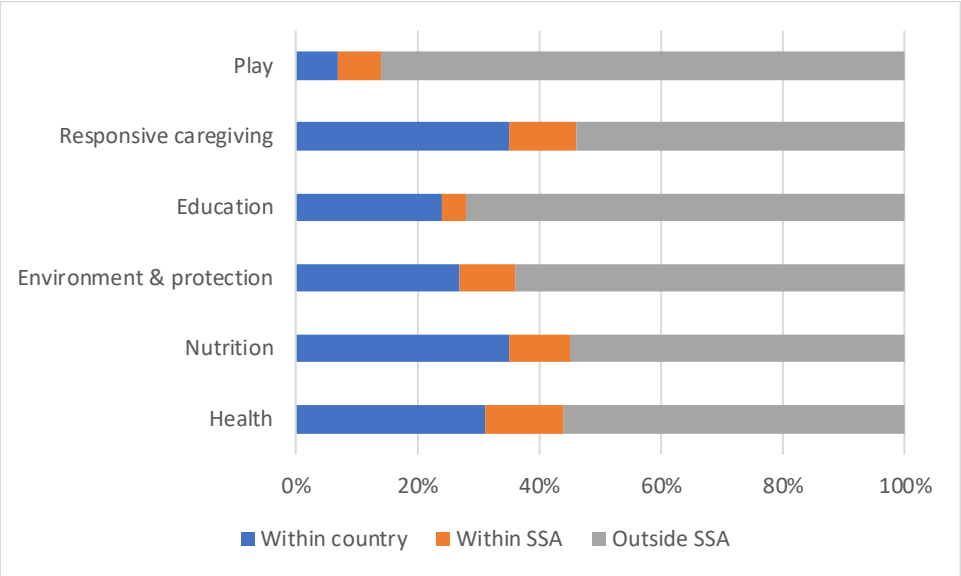
We further disaggregated the collaborations types by the ECD components for country-level searches for the period 2010 to 2022 (Figure 23). Research outputs on play (18 percent) and education (20 percent) had the lowest collaborations outside SSA. Collaborations within SSA were relatively minimal for research on all the ECD components. Conversely, collaborations within country were highest for research on all the ECD components, ranging from 59 percent for responsive caregiving to 73 percent each for education, play, environment and protection.

Figure 23: Collaboration by ECD component based on country-level searches (2010-2022)



Collaborations across ECD components in publications from international databases showed a different trend from that of the country-level for the period 2020-2022 (Figure 24). Publications on play (86 percent) and education (72 percent) had the highest collaborations outside SSA. Collaborations within country and those within SSA were relatively minimal for research on all the ECD components. This shows that publications addressing ECD issues in Ghana that are indexed in international databases are likely to be associated with collaborations between Ghanaian-based researchers and colleagues outside SSA.

Figure 24: Collaboration by the ECD component based on international database searches (2020-2022)



5. Challenges and limitations

Searching for unpublished or locally published research is time consuming as it entails screening a large volume of documents to identify which research outputs were relevant to the criteria. Further, most of the databases do not support systematic searches, and required copying information about each research output to the spreadsheet individually.

Although all efforts were made to identify all relevant research outputs available online, it is possible some relevant ones were missed. This includes research reports, working papers and books (chapters) that may not have been made available in institutional portals and websites. Some relevant research outputs identified were not accessible (require subscription) and thus are not included in the analysis. In addition, we only accessed research outputs via online sources, and so research available solely as physical research outputs is not included in this report.

We acknowledge that some of the research outputs identified from African Journals Online or institutional repositories may also be indexed in international databases including Scopus, Web of Science, among others. As such, the research presented in this report as sourced from national and regional journals and databases may not

be entirely exclusive of international journal articles. However, we expect this to be a relatively small number, and do not anticipate it would affect the results significantly.

Further, we also acknowledge that there could be a greater representation of education research in this report as the researchers we reached out to were those mostly in ESSA's database, who are more likely to be in education research. Searches of journal databases and repositories were not, however, limited to education and included ones across ECD sub-components. In some cases, the numbers were very small when disaggregating by ECD sub-components. As such caution is sometimes needed in making comparisons.

6. Conclusion and recommendations

Ghana has an increasing number of research outputs over the period 2010 to 2022, with a total of 222 identified from country-level searches. For the 2020-2022 period, 68 research outputs were identified from country-levels searches and 247 research outputs from international databases. This suggests that there is prominence of international journal articles amongst Ghanian researchers. Although most ECD research by Ghanaian researchers is visible in international databases, additional research remains unpublished or is published in journals not indexed by Scopus, Web of Science, and Dimensions. This highlights the existence of additional research on ECD that is unlikely to be visible in international spaces. This means they could be excluded when government and/or organisations develop international and local policies, and development agendas. The limited visibility of Ghanaian ECD research can lead to its exclusion from international, regional, and local policy development, highlighting an essential area for improvement. This underscores the need to enhance the visibility of ECD research authored by Ghanaian researchers on both regional and international platforms to inform and shape regional and global agendas for the development of children.

We report four key findings from the mapping exercise:

- There is a significant funding gap, with more than two-thirds of the research outputs receiving no financial support or explicitly indicating an external source of funding. The available funding predominantly came from international organisations, while contributions from the Ghanaian government and local sources were minimal. This was true among all the ECD components except for play, where international organisations accounted for only 20 percent of the research resulting from country-level searches (2010-2022) and 40 percent of the research from international databases.
- Inequality was rarely addressed in the research outputs identified particularly for country-level searches, where just over one quarter of identified research outputs accounted for inequalities.
- Almost two out of every three authors of research outputs were male.
- Public tertiary institutions, particularly universities, were at the forefront of research outputs, with intra-Ghana collaborations being the most common. However, collaborations outside SSA received the highest levels of funding.

Recommendations

The following are evidence-based recommendations tailored for ECD researchers, the Ghanaian government, NGOs, and bilateral/multilateral funders.

- **Encourage research outputs in those ECD components for which there is the least research.** Areas that deserve particular attention include play, environment and protection, and responsive caregiving.
- **Support research to include analysis by inequality (such as gender, socio-economic status, disability, ethnicity, religion, among others)**. ECD researchers should take account of inequality in their research to provide a more comprehensive understanding of how interventions affect different groups of children.

- **Increase funding for ECD research, targeting education and environment and protection.** The government of Ghana should increase investment in ECD research and a greater portion of the country's research and development budget should be allocated to ECD initiatives. This would foster the wider dissemination of and open access to ECD evidence.
- **Develop functional online repositories.** Institutions should be supported to develop functional online repositories to facilitate the visibility, accessibility, collation, and dissemination of evidence for use by ECD stakeholders, decision makers and actors.
- **Support more women to undertake and publish research on ECD.** The government of Ghana, NGOs, and funding bodies should advocate for and prioritise the inclusion of female researchers in ECD research and projects by offering them targeted grants, scholarships, and fellowships. The provision of funding for networking events, conferences, and workshops designed to showcase the achievements of female researchers in the ECD field could help to build a strong and collaborative community.
- **Encourage collaboration between African researchers within the continent.** The development of a strong collaborative research community, particularly across countries in sub-Saharan Africa, would enable the sharing of lessons and knowledge, and provide opportunities for mentorship for early career researchers.

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Appendices

Appendix 1: Institutional affiliation of ECD researchers identified through country-level searches

INSTITUTION	FREQUENCY
University of Ghana	132
University of Cape Coast	114
University of Education, Winneba	72
Kwame Nkrumah University of Science and Technology	28
University of Development Studies	22
Navrongo Health Research Centre, Ghana Health Service	18
School of Public Health, University of Health and Allied Sciences, Ho	15
Korle Bu Teaching Hospital, Accra	11
Catholic Relief Services Country Office, Tamale	8
Innovations for Poverty Action, Accra	8
Bagabaga College of Education, Tamale	6
Princess Marie Louis Children's Hospital, Accra	6
St. Teresa's College of Education, Hohoe	5
Tumu College of Education	5
C. K. Tedam University of Technology & Applied Sciences, Navrongo	4
Catholic University of Ghana, Fiapre	4
Department of Psychiatry, Komfo Anokye Teaching Hospital, Kumasi	4
Heifer International, Accra	4
Presbyterian Women's College of Education, Aburi	4
Regentropfen College of Applied Sciences	4
Ghana Health Service, Research and Development Division, Accra	3
Komenda College of Education, Komenda	3
Abetifi Presbyterian College of Education	2
Agogo Presbyterian Women College of Education, Akyem-Agogo	2
Dodowa Health Research Centre, Ghana Health Service	2
E.P College of Education, Amedzofe	2

Ghana Health Service, Accra	2
Ghana Health Service, Bolgatanga, Upper East Region	2
Jasikan College of Education	2
Kintampo M/A JHS, Ghana Education Service, Kintampo, Brong Ahafo Region	2
Wiawso College of Education	2
Accra Institute of Technology, Accra	1
Agogo College of Education	1
Akobima M/A Basic School	1
Apesika D/A JHS, Ghana Education Service, Jema, Brong Ahafo Region	1
Bia Lamplighter College of Education, Sewfi Debiso, Western North Region	1
Brekum College of Education	1
Cape Coast Teaching Hospital, Cape Coast	1
College of Health, Yamfo	1
Department of Public Health, Ensign College of Public Health, Kpong	1
Division of Special Education, Ghana Education Service, Accra	1
Enchi College of Education, Enchi	1
Fanteakwa District Assembly, Begoro	1
Gbewaa College of Education, Pusiga-Bawku	1
Ghana Atomic Energy Commission	1
Ghana Education Service	1
Hohoe Municipal Hospital, Hohoe, Volta Region	1
Holy Family Hospital, Department of Paediatrics, Eastern Region	1
Institute of Public Health, University of Heidelberg	1
Kete-Krachi District Health Directorate, Ghana Health Service	1
Kibi Presbyterian College of Education, Kibi	1
Kintampo Health Research Centre, Brong Ahafo	1
Komfo Anokye Teaching Hospital, Kumasi	1
NJA College of Education	1
Nsawam Adoagyiri Municipal Health Directorate, Eastern Region	1

Nutrition Unit, Food Research Institute, Council for Scientific and Industrial Research, Accra	1
Offinso College of Education	1
Ophthalmology Department, Tamale Teaching Hospital, Tamale	1
Peki College of Education	1
Point Hope Ghana, Central Region, Awutu Senya East District	1
Rabito Health Services, Tema	1
Research and Development Unit, Regional Health Directorate, Eastern Region	1
School of Hygiene, Environmental Health Programme, Ministry of Health, Tamale	1
School of Nursing, Garden City University College, Kumasi	1
SDA College of Education	1
Sekyere Central Education Office	1
Simon Diedong Dumbo University of Business and Integrated Development Studies	1
Tumu College of Education	1
Unipra South Inclusive Basic School, Winneba	1
University of Energy and Natural Resources, Sunyani	1
University of Professional Studies, Accra	1
University Post Office, KNUST Hospital, Kumasi	1

Appendix 2: List of country-level searches platforms and their access links

African Journals Online: https://www.ajol.info/index.php/ajol

Centre for Learning and Childhood development: https://www.clcdghana.org/eccd

Early Childhood Network Ghana: https://www.ecnghana.org/index.php

Ghana Education Service ECE Unit: https://ges.gov.gh/early-childhood/

Ghana Health Service Research and Development Division: https://ghs.gov.gh/research-and-development-division-rdd/

Google scholar: https://scholar.google.com/

Google: https://www.google.com/

Innovations for Poverty Action public data: https://poverty-action.org/our-studies-with-public-data

Kwame Nkrumah University of Science and Technology Repository: https://ir.knust.edu.gh/home

Presbyterian University Institutional Repository: http://185.172.57.33:8080/xmlui/

Researchgate: https://www.researchgate.net/

Right to Play: https://righttoplay.com/en/

Sabre Education: https://sabre.education/

Semantic scholar: https://www.semanticscholar.org/

UNESCO Ghana: https://unescoghana.gov.gh/

UNICEF Ghana: https://www.unicef.org/ghana/research-and-reports

University of Cape Coast Institutional Repository: https://ir.ucc.edu.gh/

University of Development Studies' Digital Repository: http://www.udsspace.uds.edu.gh/

University of Education, Winneba Institutional Repository: https://www.uew.edu.gh/uewlibrary/tutorials-research-guides/institutional-repository

University of Ghana Digital Collections: https://ugspace.ug.edu.gh/

Endnotes

[i] In recognition that searches went beyond published academic articles and books to include unpublished research such as working papers, in this report we refer to both published and unpublished research as research outputs.

[ii] South Africa was excluded because researchers there may not face the same challenges faced by the rest of the SSA countries, and thus there are many more publications indexed in international databases (see Mitchell & Rose, 2018).

[iii] A related process was done with Mozambique, but only 20 research outputs were found. We have not included it in this report as the process adopted was not identical to the other four countries, as detailed in the mapping protocol developed for this exercise.

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