Children playing at reception centre, Kiryandongo refugee settlement, Uganda.
GPE/Henry Bongyereirwe

Mapping early childhood development research outputs in sub-Saharan Africa

Uganda country report

REAL
Research for Equitable Access and Learning

ESSA
Education Sub Saharan Africa

Authors

The writing of this report was led by Stephen Acquah, Scovia Adrupio, Laté Lawson and Eunice Mueni Williams. Julian Apio conducted the searches for research outputs and the analysis. Samuel Asare and Pauline Rose provided overall oversight of the process, together with guidance and report review.

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List of abbreviations

AERD	African Education Research Database
AJOL	African Journals Online
CESA	Continental Education Strategy for Africa
ECD	Early Childhood Development
ESSA	Education Sub Saharan Africa
ECCE	Early Childhood Care and Education
MoH	Ministry of Health
NIECD	National Integrated Early Childhood Development
NGO	Non-governmental Organisation
SDG	Sustainable Development Goal
SSA	sub-Saharan Africa
UNICEF	United Nations Children's Fund
UNESCO	United Nations Science and Cultural Organization
USAID	United States Agency for International Development
WHO	World Health Organization

Summary

This report presents the findings from the mapping exercise of research outputs focusing on Early Childhood Development (ECD) in Uganda. A comprehensive search strategy was adopted for the period 2010 to 2022. This included searching across local institutional repositories, national and regional journals, online academic repositories, international and local charities' websites, and other organisations implementing ECD interventions. Research outputs that qualified for inclusion were journal articles, working paper series, PhD theses, books (chapters), and evaluation and intervention reports produced by a Ugandan researcher affiliated with a home-based institution. We compared the results with publications identified from international journals, limiting it to the 2020-2022 period.

The analysis revealed 221 research outputs meeting the inclusion criteria between 2010 to 2022, with an increasing trend over the period. Journal articles, totalling 196, were the most prevalent type of research output identified. ECD research topics related to health and nutrition were the top two most researched areas, with 90 percent and 41 percent of the research outputs respectively including this focus. Conversely, issues related to play, responsive caregiving and education were less investigated. For the period 2020 to 2022, 220 publications were identified in international databases compared to 43 research outputs from county-level searches.

Overall, 72 percent of the research outputs included a focus on inequality. Issues related to gender and poverty were covered in 41 percent and 32 percent of research outputs respectively, while disability was assessed in only 6 percent of the research outputs.

Almost two thirds of the research outputs received funding from either international or national sources. Funding was mainly provided by international organisations and external philanthropy, which represented 73 percent and 21 percent of funding sources, respectively.

Most authors were male: with six male researchers for every four female researchers. This gender inequality in authorship was more pronounced when considering ECD components such as responsive caregiving, and environment and protection.

Publications from international databases portrayed a similar pattern, although no disparity was observed across ECD components.

Of all reported collaborations, 46 percent were within Uganda. Collaborations outside SSA were twice as high as those involving partners based in SSA (33 percent and 16 percent, respectively). For the period 2020 to 2022, within-country collaborations were more prevalent in outputs identified through country-level searches (53 percent) compared to international databases (19 percent). Conversely, collaborations involving partners outside of SSA showed the opposite trend at 27 percent and 65 percent, respectively. The largest numbers of research outputs involved authors from Makerere University.

In conclusion, the report underscores the need for concerted efforts to address the identified gaps in knowledge, funding, gender and inequality and to enhance the quality and inclusivity of ECD research in Uganda.

Recommendations include:

- ECD researchers should conduct more research on education, play and responsive caregiving to provide a holistic picture of ECD in the country.
- Increase funding for ECD research.
- Support more women to undertake and publish research on ECD through targeted grants, scholarships, and fellowships.
- Advocate for aspects of inequality (gender, socio-economic status, disability, ethnicity, religion, among others) to be included in ECD research.
- Develop a strong collaborative research community.
- Develop functional online repositories.

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 (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, 2016).

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. AJOL, 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 Uganda.

2. Uganda ECD policy context

According to Uganda's most recent census data, approximately 15.8 percent of the population are children aged below five years who are of pre-primary school going age (Uganda Bureau of Statistics, 2024). Despite this significant demographic presence, there are notable gaps in access to essential ECD services.

Young Ugandan children lack safe and adequate home learning environments, with over 70 percent of children between 3–6 years lacking toys to support home-based play and learning (Muhoozi et al., 2018; Strachan et al., 2020). Communities, particularly mothers of 3–6-year-olds, have positive attitudes towards home-based play and learning activities and are willing to support such initiatives, they also urge stakeholders to support the establishment of inclusive home learning centres especially in marginalised communities (Ejuu et al., 2022).

When considering health and nutrition indicators, data from the 2016 Household Demographics survey found that 29 percent of children under 5 were stunted, 11 percent were underweight and 4 percent were wasted (Nalwanga et al., 2020). Under-nutrition, malnutrition and poor health of under 5 years old in Uganda is adversely affected by the high prevalence of diseases such as HIV and AIDS, malaria and pneumonia, which lead to an overall mortality of 25 percent among malnourished Ugandan children (Nankinga et al., 2019). In terms of education, among children aged 3-5 years, enrolment rates in pre-primary education remain alarmingly low, with recent data indicating a pre-primary net-enrolment rate of 9.1 percent (UNICEF, 2023; UBOS, 2021).

ECD within Uganda is still viewed as a ‘survival’ discourse and is yet to transition to a ‘thrive’ discourse (Strachan et. al., 2020). A survival discourse implies that ECD prioritises the basic needs of children such as adequate food, safety and healthcare to reduce childhood mortality. A thrive discourse however goes beyond ensuring children survival and focuses on providing optimum environments for children to develop in all domains. The ‘survival’ ECD discourse in Uganda further aggravates the risk of reduced developmental potential among Ugandan children and if left unaddressed, threatens the subsequent economic implications at individual and national levels.

While Uganda has made some progress in formulating policy frameworks to address ECD, significant gaps persist in implementation and coverage. Some policies, such as the National Early Childhood Care and Education Policy (Ministry of Education and Sports, 2018), primarily focus on specific components of ECD. The 2016-2021 National Integrated Early Childhood Development Policy Action Plan (NIECD) is more holistic (Ministry of Gender, Labour and Social Development, 2016). The NIECD action plan aims to address the multidimensional needs of young children from conception to 8 years by building more effective and coherent efforts among sectors to achieve positive early childhood development outcomes for all children in Uganda. It outlines several focus areas, including early childhood care and education (ECCE); primary healthcare, sanitation and environment; nutrition and food security; child protection; family support and strengthening; multi-sectoral partnerships and coordination; and advocacy and resource mobilisation. The NIECD policy action plan has also significantly contributed to the development of other ECD components in Uganda. For example, the NIECD, community health extension workers supported families to create conducive environments for children's development from an early age. These community health workers provided community-level health education, nutrition education and treatment to children under 5 years suffering from common life-threatening illnesses including malaria and pneumonia.

3. Methods

The methodology of mapping of research outputs analysed in this report is detailed in a protocol developed to guide this exercise (Williams, Iddrisu and Rose, 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 key researchers. Most of the participants in the online survey were drawn from ESSA's database, and therefore more likely to be education researchers. This means that there could be a greater representation of education research outputs in this report.

Research output types included are national and regional 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 foundations. Appendix 1 provides a list of institutions where searches were made. We also compare these outputs with publications on ECD in Uganda as identified from international databases.

For this mapping, research outputs were identified as relevant if they included research that:

- Was conducted by at least one researcher based in Uganda.
- Was published from January 2010 to 2022.
- Addressed at least one of the ECD components: health, nutrition, environment and protection, education/early learning, responsive caregiving/parenting, and play.
- Paid particular attention to children of 0–3 years, while also including 4–8 years.

We used the Nurturing Care Framework as the starting point for identifying and categorising sub-groups of ECD. We developed this further based on other related frameworks by international organisations, including a specific category for play, and extending to education. In addition, we extended '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 that guided the searches.

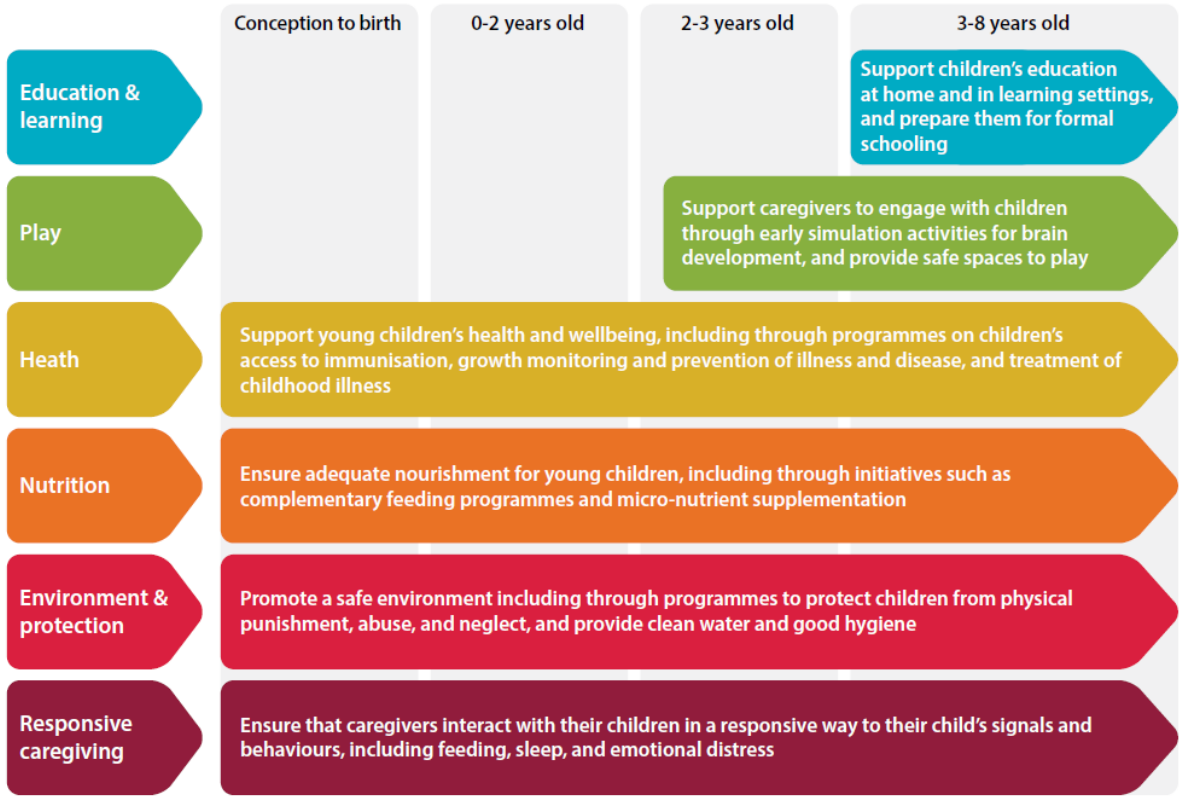
We focused on 0-3 years and extended this to include publications focusing on children up to 8 years provided they were related to early childhood development. This was to ensure we captured early childhood education along with other components of early childhood development. In most countries, the pre-primary education age-range is 4-6 years but could extend to age 8 (particularly where children are over age). The cut off age was also informed by other related frameworks drawn from various institutions as shown in Table 1.

Table 1: ECD component by selected institutions

	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 a number of keywords for each ECD component in combination or individually, depending on the platform. Examples of search strings used included:

"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 care-giving" OR "parenting" OR "caregiving" AND (year)

"early stimulation" OR "play" OR "play space" AND (year)

"child health" OR "child wellbeing" OR "child well-being" 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)

"child safety" OR "child protection" OR "water, sanitation and hygiene" OR "WASH" OR "water and sanitation" OR "hygiene" AND (year)

All identified research outputs were collated in a Microsoft Excel spreadsheet. Subsequently, bibliometric analysis was undertaken, delving into different dimensions of the selected research outputs, encompassing the research topic, abstract, research methods employed, inequality indicators included, funding sources, collaborative efforts among researchers, institutional affiliations, gender demographics of contributors and their contact details, among others.

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

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 (Iddrisu, Adrupio & Rose, 2024), 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

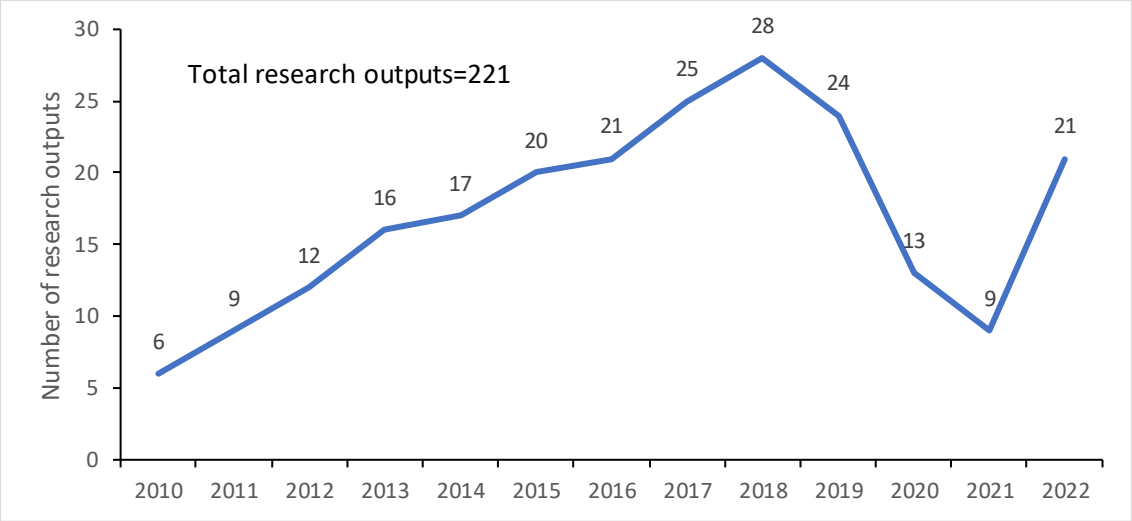
In this section, the analysis of the identified research outputs and the research authors is presented to enable us to understand the landscape of ECD research published by SSA-based researchers. We show the annual trend of research outputs, the type of research output, and whether the research is funded 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 Uganda, 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

A total of 221 ECD research outputs were identified over the period 2010 to 2022, based on the inclusion criteria. A rapid and steady increase in ECD research outputs was noticeable from 2010 to 2019 (Figure 2). A significant decrease was observed in 2020 and 2021, followed by an upward trend in 2022. This could be attributed to the Covid-19 pandemic, as also identified by Abramo et al. (2022).

From international databases for the period 2020-2022, we identified 220 publications in total. This is five times the number of research outputs identified from country-level searches for the same period (43). This implies that ECD researchers in Uganda are more likely to publish in international journals than in local/regional journals.

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

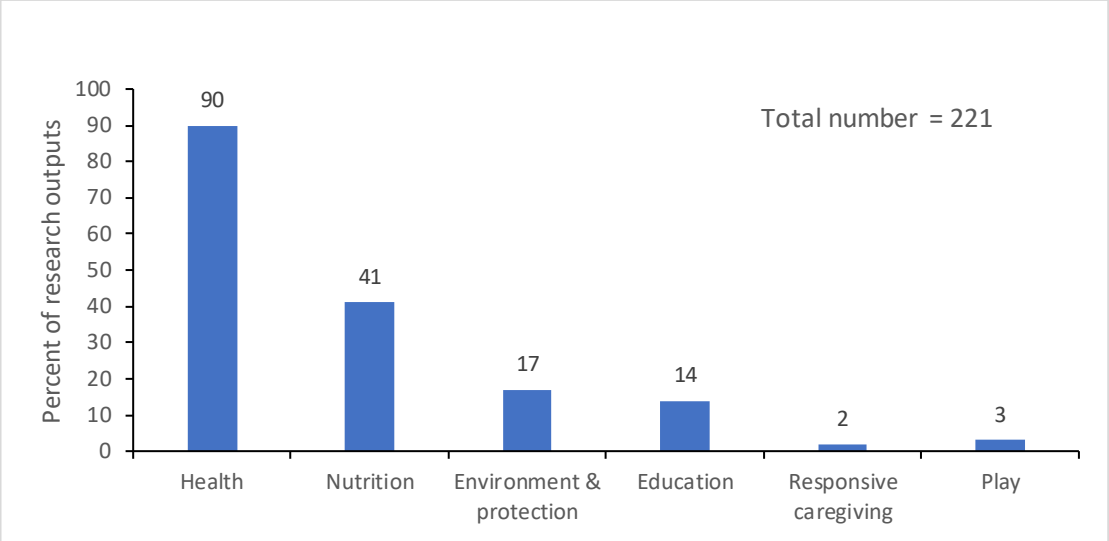


Research outputs by ECD components

Among the different components of ECD, health yielded the highest number of research outputs (90 percent), followed by nutrition (41 percent), environment and protection (17 percent), and education (14 percent) (Figure 3). Only a very small number of research outputs were identified for play (3 percent) and responsive caregiving (2 percent).

Some studies addressed multiple components of ECD. For example, only 3 percent of studies addressed nutrition, health and education, 6 percent addressed health and education, while 39 percent addressed both health and nutrition.

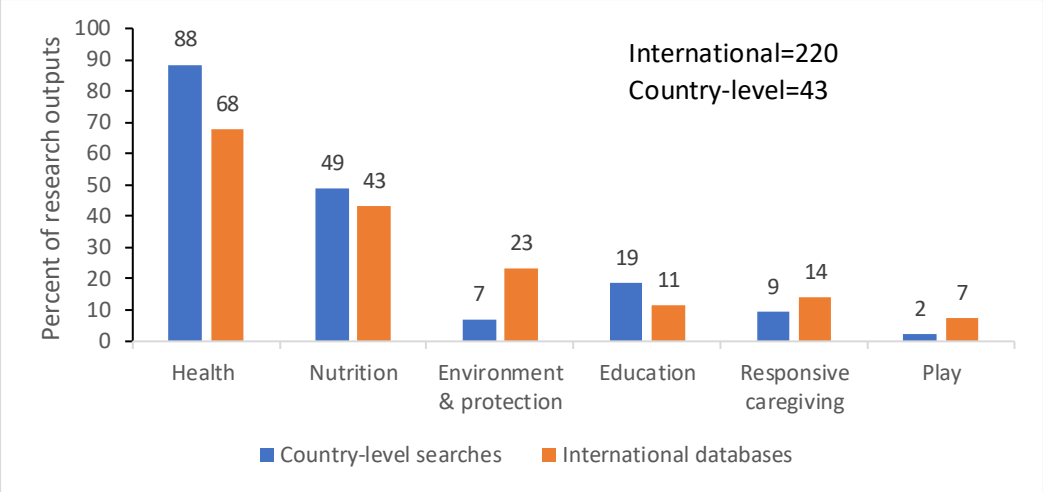
Figure 3: Research outputs by ECD component from country-level searches (2010-2022)



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

Comparison of the country-level searches to those from international databases for 2020-2022 revealed a similar distribution (Figure 4). This suggests that ECD research in Uganda primarily focuses on two main components: health and nutrition. The least investigated components were responsive caregiving and play.

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.

ECD research outputs identified from the country-level searches in Uganda comprised journal articles, books, research reports, PhD theses, and working papers. In total, 196 ECD research outputs, representing nearly 90 percent of the total, were published as journal articles. This is followed by research published in the form of books or book chapters (7), reports (7), PhD theses (5), and working papers (6). Although the dominance of journal articles could reflect the pressure to publish as a requirement for academic promotion, it could also imply that other research outputs such as working papers and research, or evaluation reports are not made available online. Their lack of visibility could also be because researchers are not incentivised to upload unpublished research to institution repositories, or funders restrict their distribution online.

The search results from international databases over the period between 2020 and 2022 show a similar distribution for the type of ECD research outputs in Uganda. Of the 220 research outputs identified from international databases, 218 were journal articles, indicating that ECD researchers in Uganda mainly share their work in the form of journal articles. Journal articles were the main type of research output across all components of ECD (Figure 6).

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

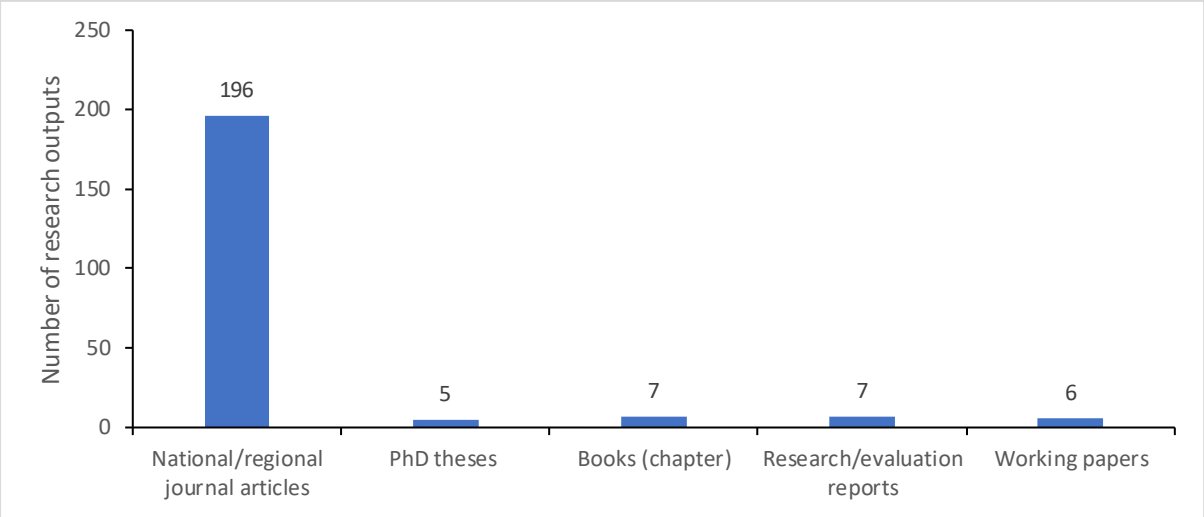
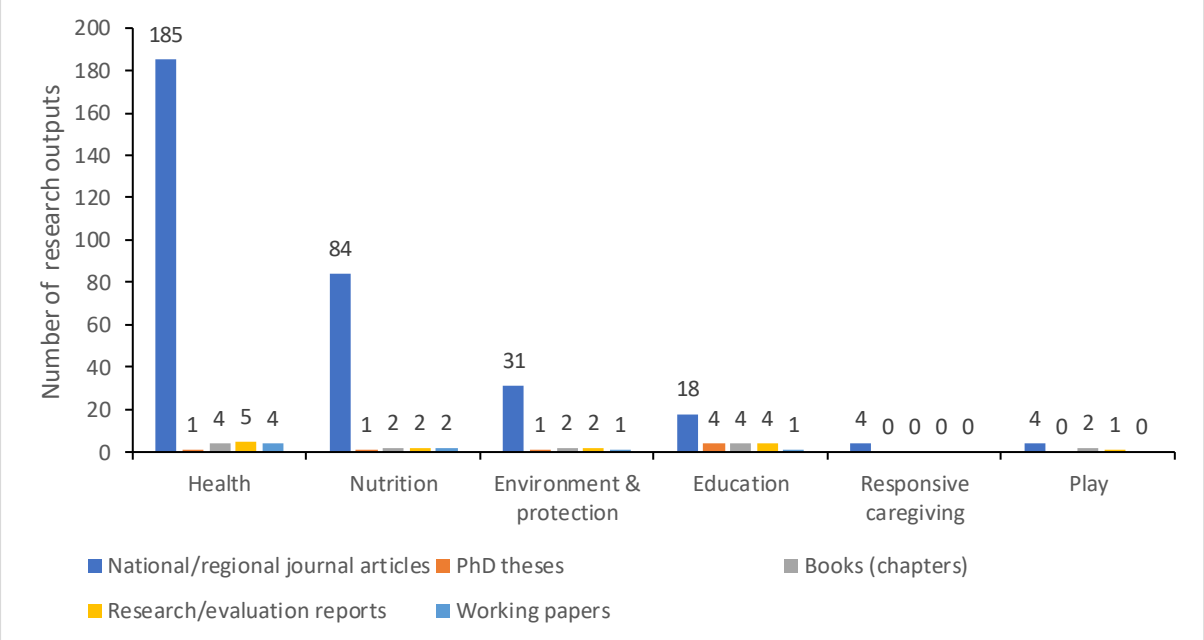


Figure 6: Type of research output by ECD component based on country-level searches (2010-2022)



Research funding

Around 63 percent of all studies reported being funded (Figure 7). This however varied across the ECD components, with 66 percent of health and 60 percent nutrition

research reporting funding, while responsive caregiving and play were the least likely to be funded, at 25 percent and 29 percent respectively.

Although almost the same proportion of publications in international databases report receiving funding (68 percent), the pattern reverses across the ECD components, where play and responsive caregiving report the highest funding, at 90 percent and 68 percent, respectively, while nutrition and health research report the lowest, at 49 percent each (Figure 8).

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

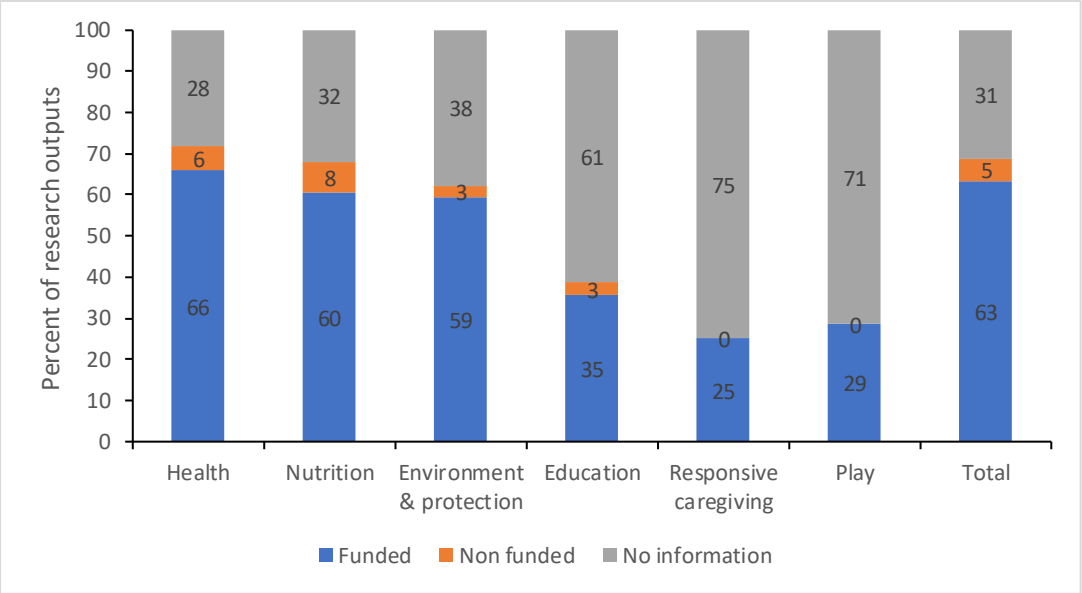
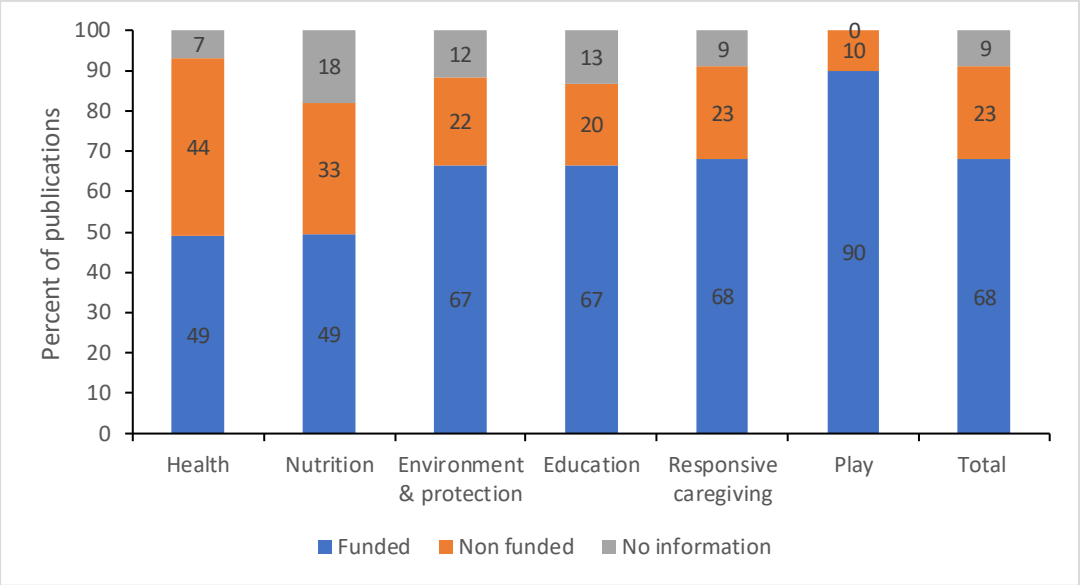
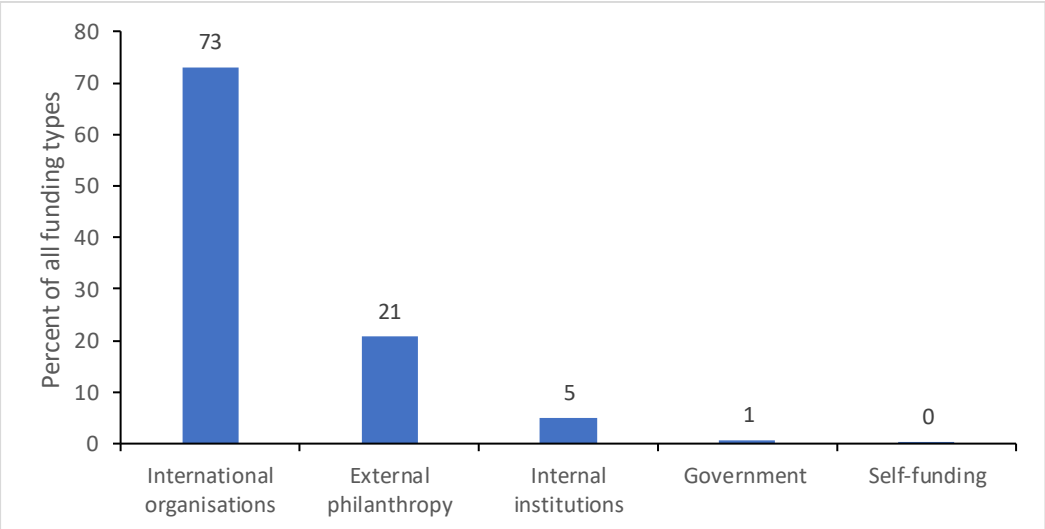


Figure 8: Funding status based on international database searches (2020-2022)



The main sources of funding were international organisations followed by external philanthropy, contributing 73 percent and 21 percent of funding sources, respectively (Figure 9). Internal organisations, and government sources played a much smaller role, financing 5 percent, and 1 percent of ECD research, respectively. Funding from local organisations was not reported in any of the publications identified.

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

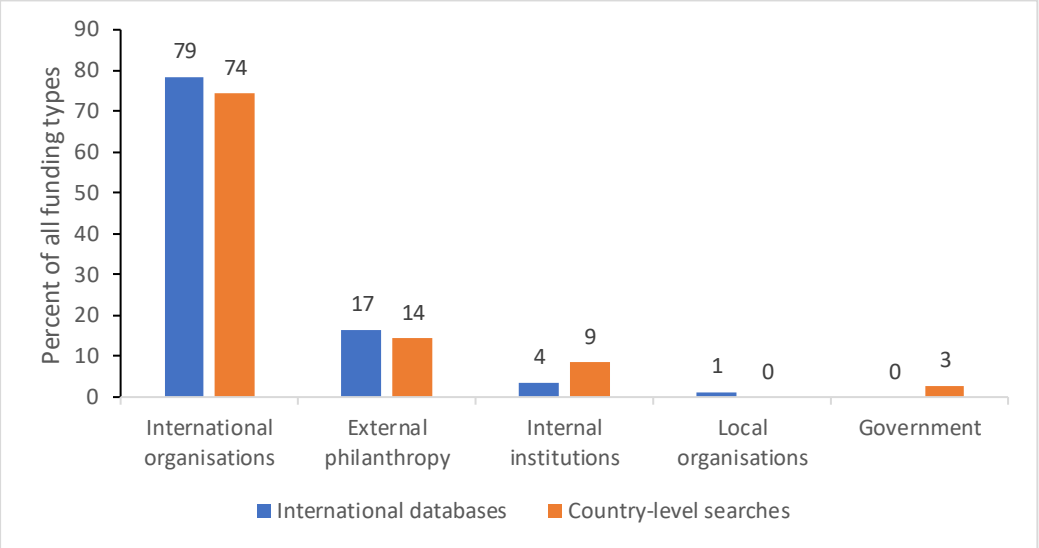


Comparing country-level and international databases searches over the period between 2020 and 2022 showed similar patterns, with international organisations and external philanthropies responsible for almost 90 percent of all funding (Figure 10).

Overall, the limited government funding for ECD research (3 percent) can be associated with Uganda's overall public expenditures on research and development, at about 0.14 percent of the country's GDP in 2022 (UNESCO Institute for Statistics, 2023). This result mirrors the case of other disciplines as reported in Uganda's National Research Outlook Report 2023, where official data indicates that between 2015 and 2019, government funding accounted for less than 4 percent of funded studies (Uganda National Council for Science and Technology, 2023).

Despite the limited government funding for ECD research, it is noteworthy that Uganda had the highest proportion of research outputs funded among the four countries included in our overall analysis, at 63 percent compared to a low of 24 percent in Ghana (Williams & Rose, 2024). The funding is mainly provided by international organisations. Corroborating the findings presented in Figures 9 and 10, Uganda's National Research Outlook Report acknowledges the significant contribution of international partners in supporting research in Uganda, estimating that the Global North contributes approximately 65 percent of the total research expenditure in the country (Uganda National Council for Science and Technology, 2023).

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



Note: Some publications may have more than one funding source.

The top institutions funding ECD research in Uganda using data from the country-level (2010-2022) and international databases (2020-2022) include the UK Medical Research Council, Wellcome Trust, the Bill & Melinda Gates Foundation, USAID, the World Food Programme, the Nestlé Foundation, and the National Institute of Health (Table 2).

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.**	**%**
National Institute of Health	20	14	National Institute of Health	29	20
Wellcome Trust	17	11	UK Medical Research Council	21	14
Bill & Melinda Gates Foundation	16	11	Wellcome Trust	18	12
UK Medical Research Council	14	9	World Food Programme	18	12
USAID	9	6	Nestlé Foundation	8	5
Eunice Kennedy Shriver National Institute of Child Health and Human Development	8	4	Department for International Development (DFID), UK	7	5

Figure 11 indicated that international organisations dominate the funding landscape within each ECD component, followed by external philanthropy. International organisations were the sole funders for research on play and responsive caregiving. Government funding only supported health-related research, accounting for only 1 percent of all the funders identified in health research.

International organisations and external philanthropy supported ECD research across almost all components for research outputs from both international databases and country-level searches for the 2020-2022 period, with minimal differences across the search level, except for play and responsive caregiving research, neither of which reported funding (Figure 12).

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

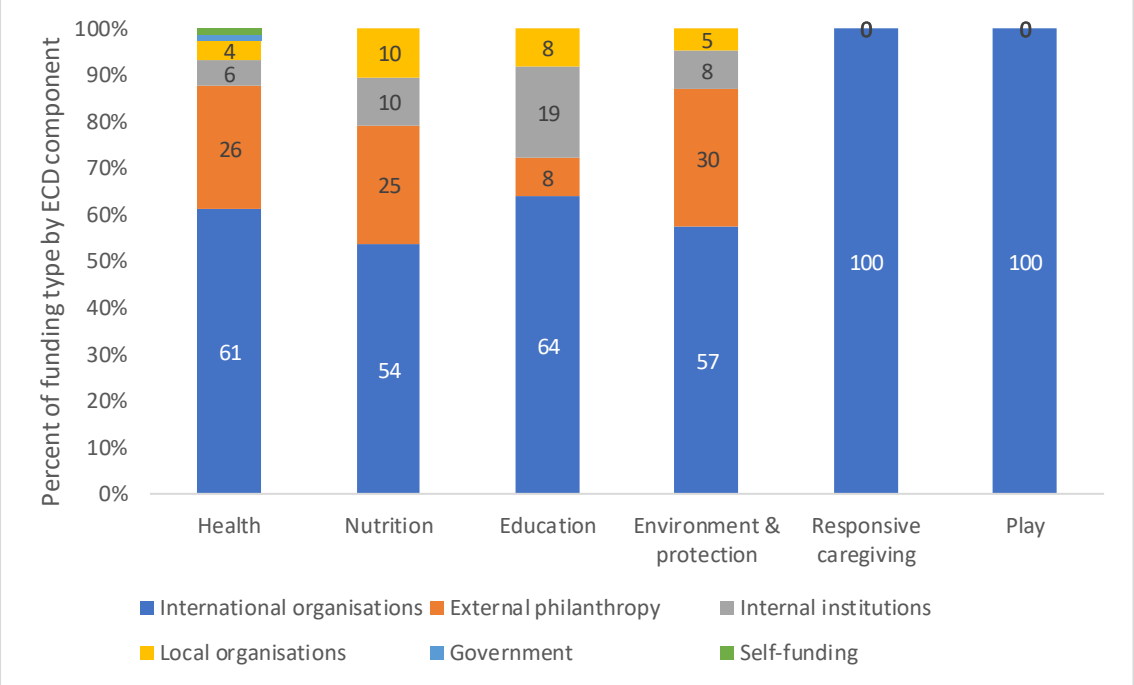
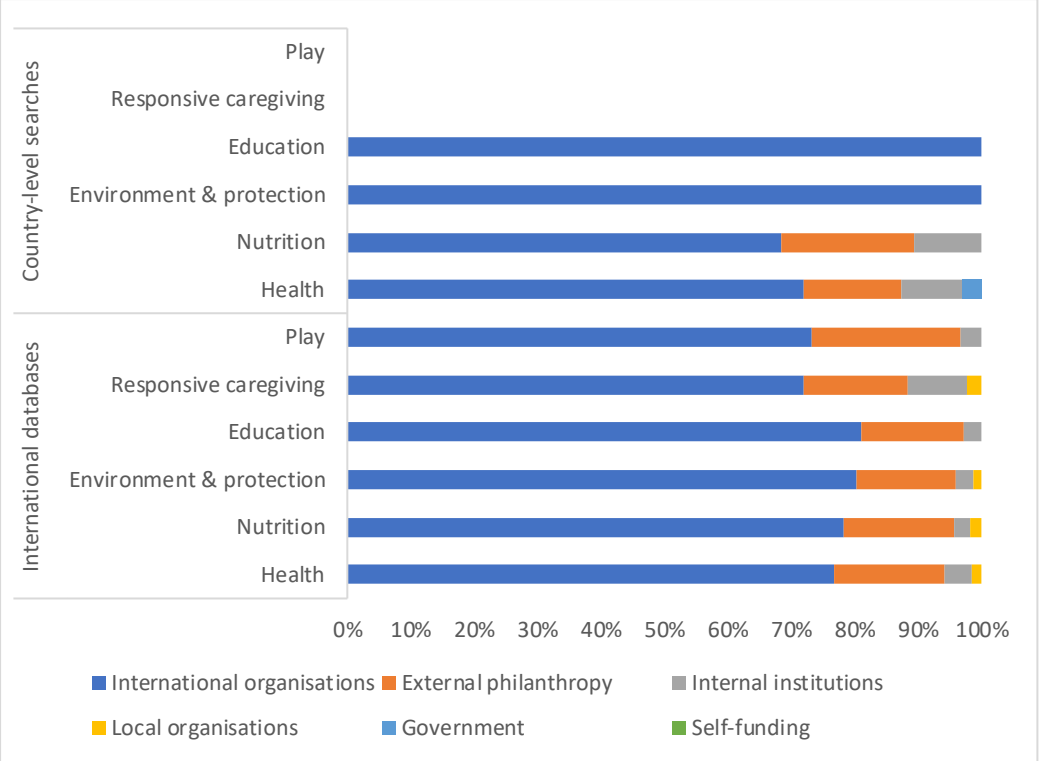


Figure 12: Funding type by ECD component based on country-level and international database searches (2020-2022)



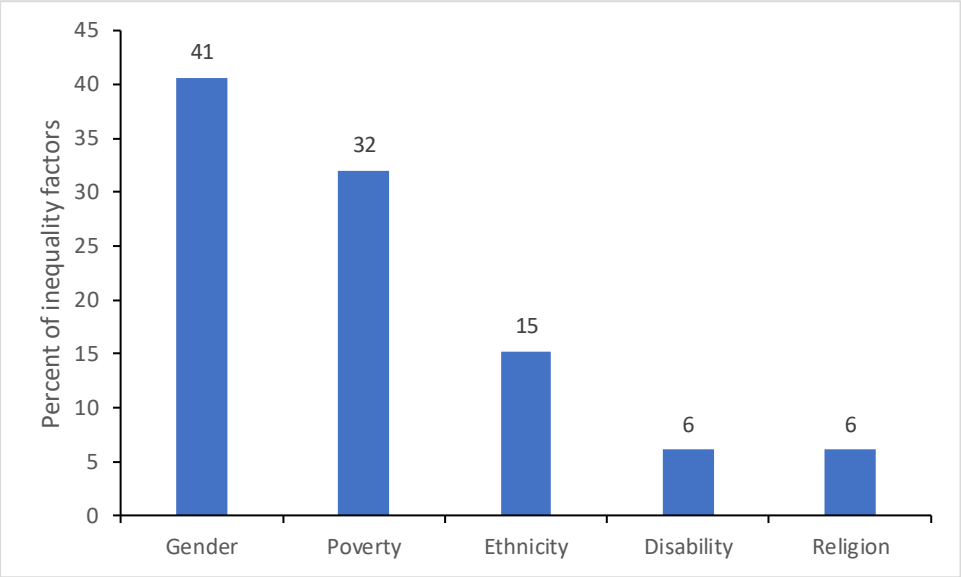
Inequality included in the research outputs

Uganda's Early Childhood Care and Education (ECCE) Policy is in alignment with the country's National Development Plan III (National Planning Authority, 2020) and SDG 4.2 (United Nations, 2015), and aims to ensure equitable access to quality, inclusive and sustainable ECCE. Therefore, reviewing ECD research outputs in Uganda, we sought to understand the emphasis researchers placed on inequalities.

Of the 221 research outputs identified through the country-level searches, almost three quarters (72 percent) considered at least one inequality indicator. Gender-related issues were the most common inequality explored, accounting for 41 percent of all inequalities, while poverty accounted for 32 percent (Figure 13). Although disability is among the factors affecting ECD and foundational learning (Soni et al., 2022), it only represented 6 percent of inequalities explored in the research outputs.

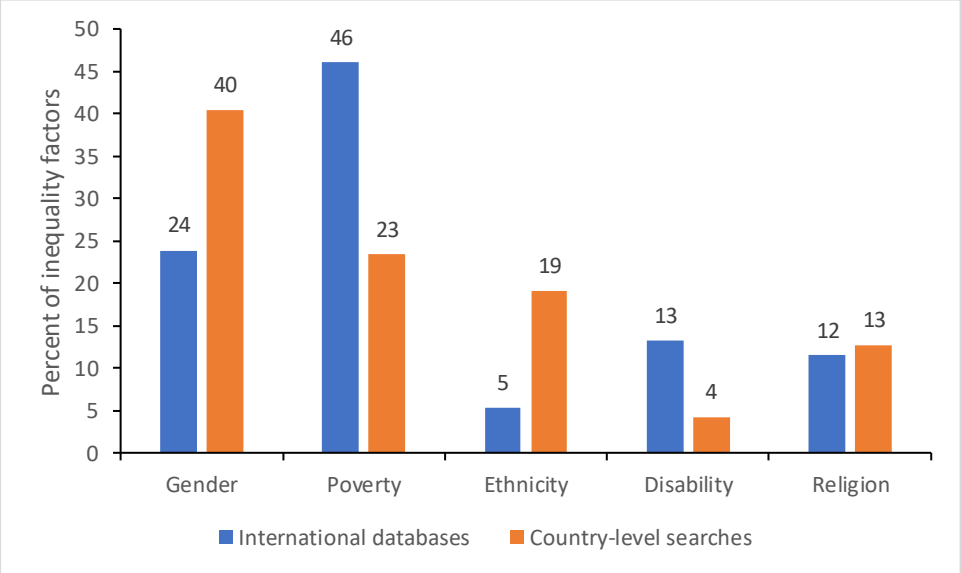
The comparative analysis of country-level and international databases search results over the period between 2020-2022 showed a different picture. While topics related to gender were ranked first in country-level searches, poverty was the most common inequality identified in publications from international databases (Figure 14).

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



Note: Some research outputs may include more than one form of inequality.

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



Note: Some research outputs may include more than one form of inequality.

Evidence suggests that living in urban areas is positively associated with child development in Africa (Bago et al., 2020; Haq et al., 2021). As such, 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. Twice as many studies were conducted in urban areas (21 percent) than in rural areas (11 percent) (Figure 15).

The comparative assessment using data from country-level searches and international databases between 2020 and 2022 showed a greater proportion of research outputs were located in rural areas in international publications (Figure 16).

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

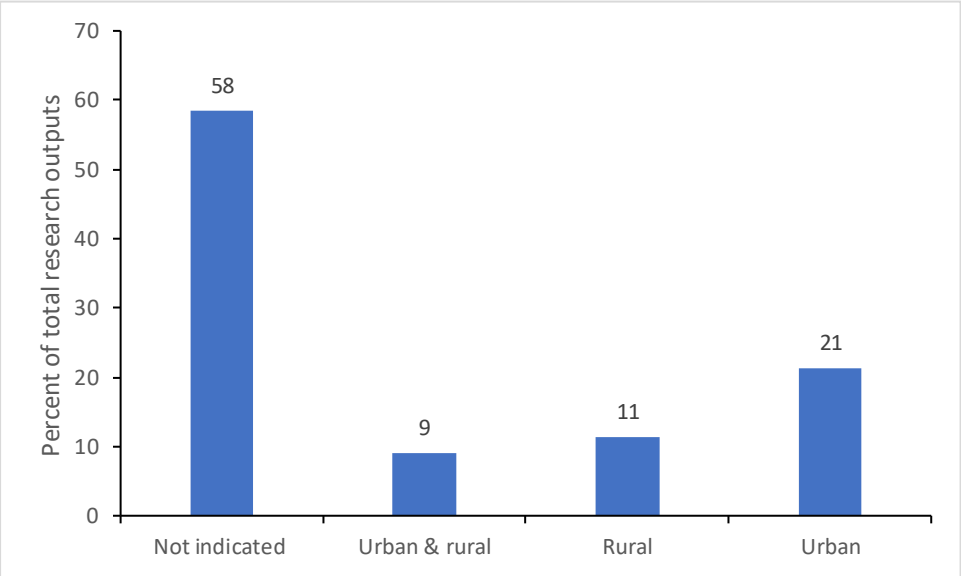
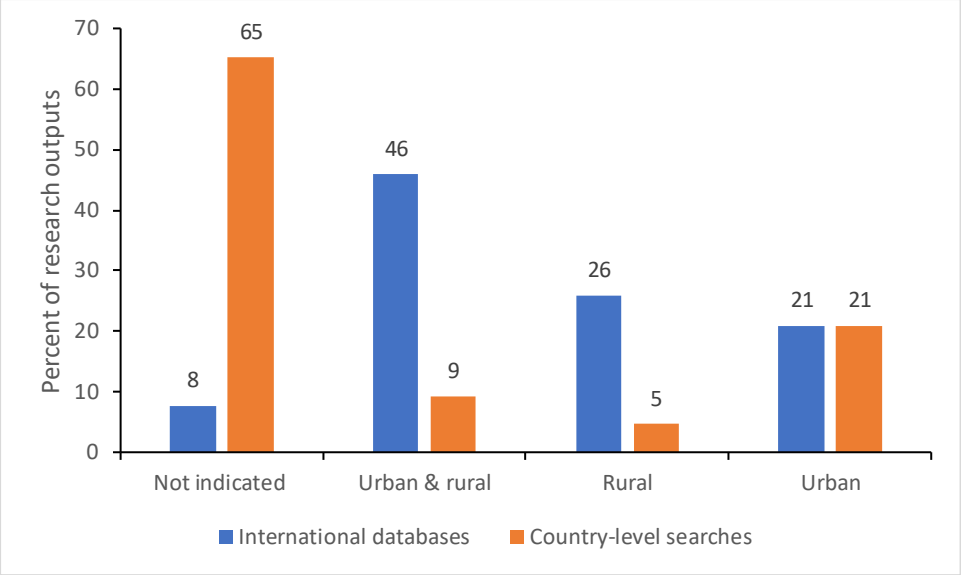


Figure 16: Research location based on country-level and international database searches (2020-2022)



Gender of ECD researchers

Overall, male authors account for 60 percent of the total authorship of research outputs (Figure 17). This pattern is similar across all ECD components. Comparing the data from the country-level searches and international databases between 2020 and 2022 a similar pattern emerged (Figure 18). For responsive caregiving research at the country-level, there were no female researchers.

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

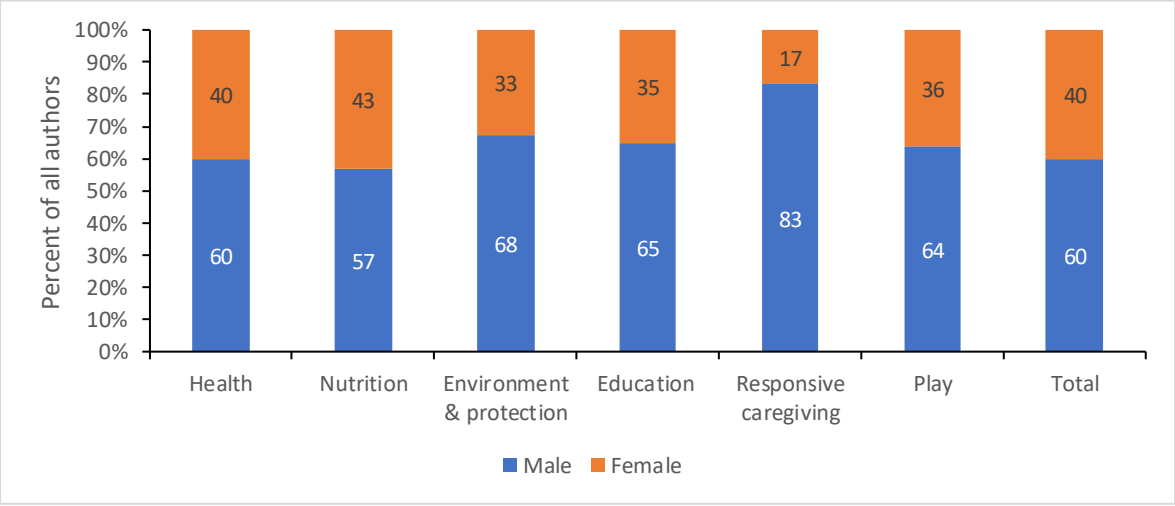
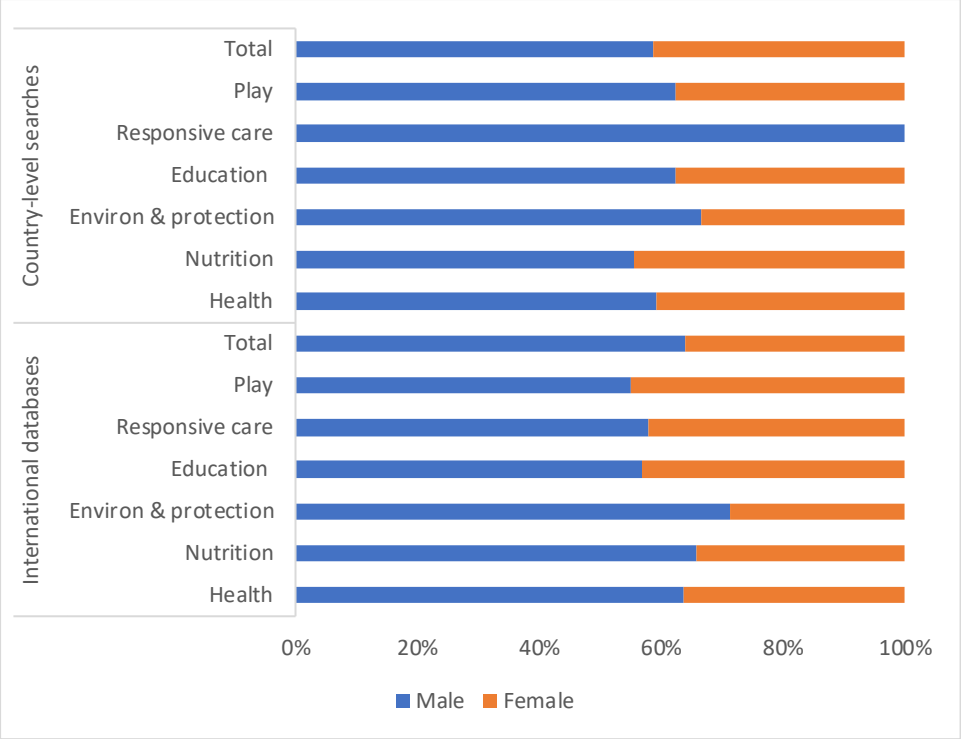


Figure 18: Researcher gender by ECD component based on country-level and international database searches (2020-2022)



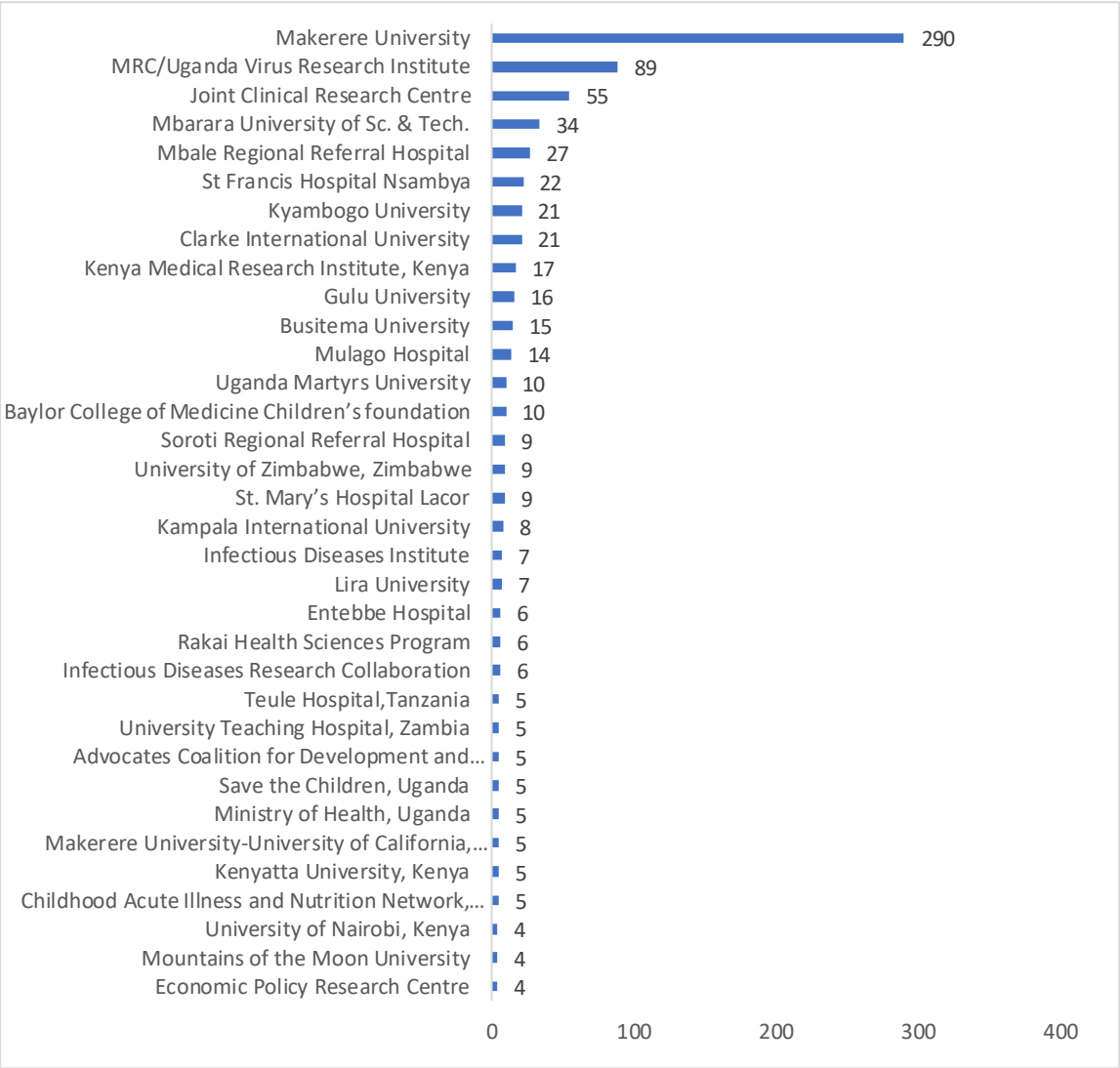
Researcher institutional affiliation

Figures 19 and 20 indicate the research institutions mentioned more than three times. Using data from the country-level searches, the top five institutions contributing to ECD research in Uganda included Makerere University, Medical Research Council/Uganda Virus Research Institute, Joint Clinical Research Centre, Mbarara University of Science and Technology, and Mbale Regional Referral Hospital.

Makerere University emerged as the foremost contributor to ECD research in the country, with 290 mentions, underscoring its significant role among other academic institutions and medical research centres. Moreover, the predominance of universities among the major contributors to ECD research explains the type of research outputs observed in Uganda, namely journal articles. Finally, through international collaboration in ECD research, the University of Zimbabwe, Kenyatta University, the University of Nairobi and the University of Ibadan were identified as SSA-based academic institutions contributing to ECD research in Uganda.

Similar results were observed from international databases where the top institutions contributing to ECD research matched those identified using country-level data. However, institutions such as the Kampala International University, the Gulu University and the Ugandan Ministry of Health appeared among the top institutions producing ECD knowledge in publications identified from international databases.

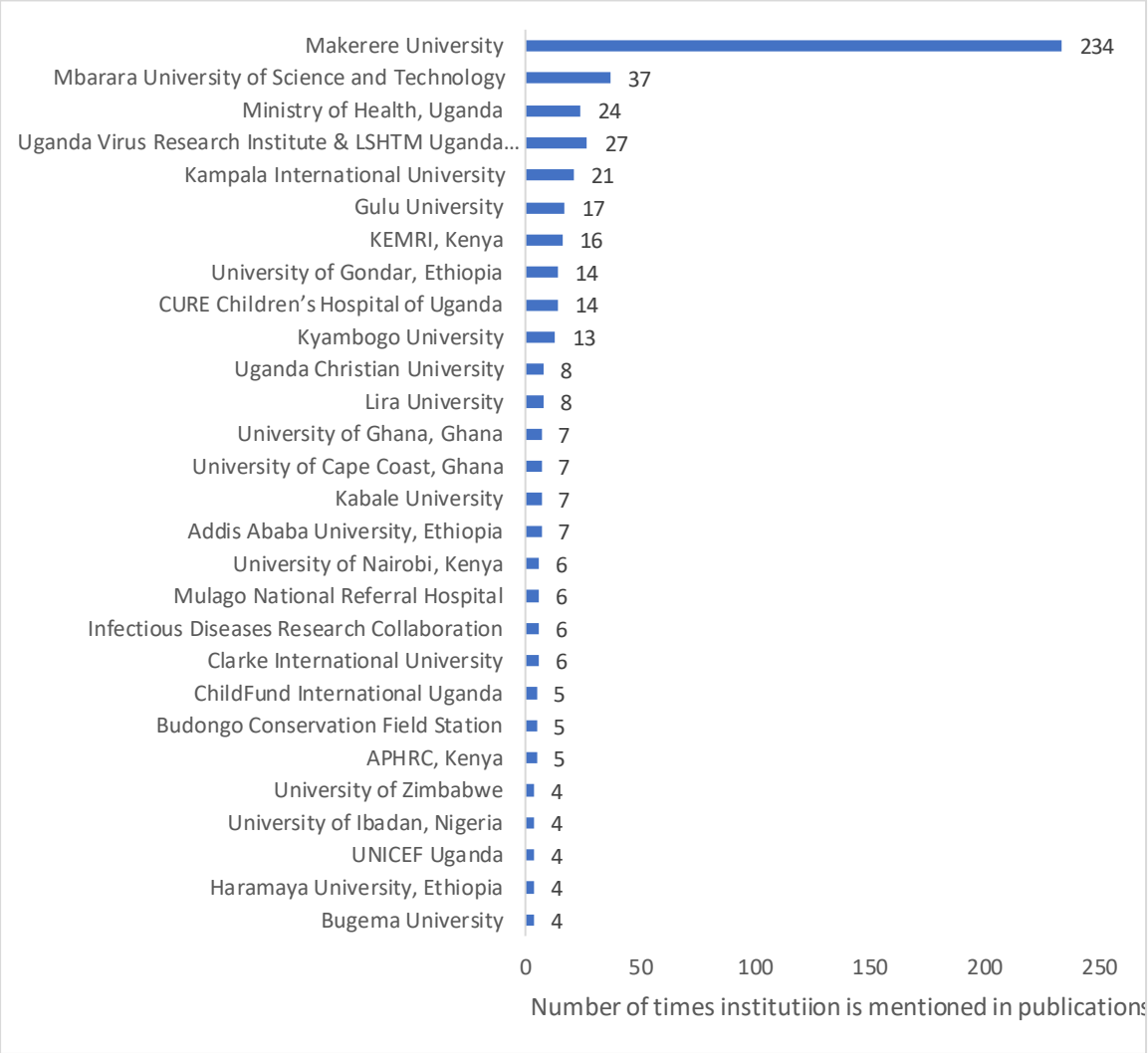
Figure 19: Institutional affiliation based on country-level searches (2010-2022)



Note: All institutions are in Uganda except where indicated.

Graph is limited to institutions mentioned more than four times.

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



Note: All institutions are in Uganda except where indicated.

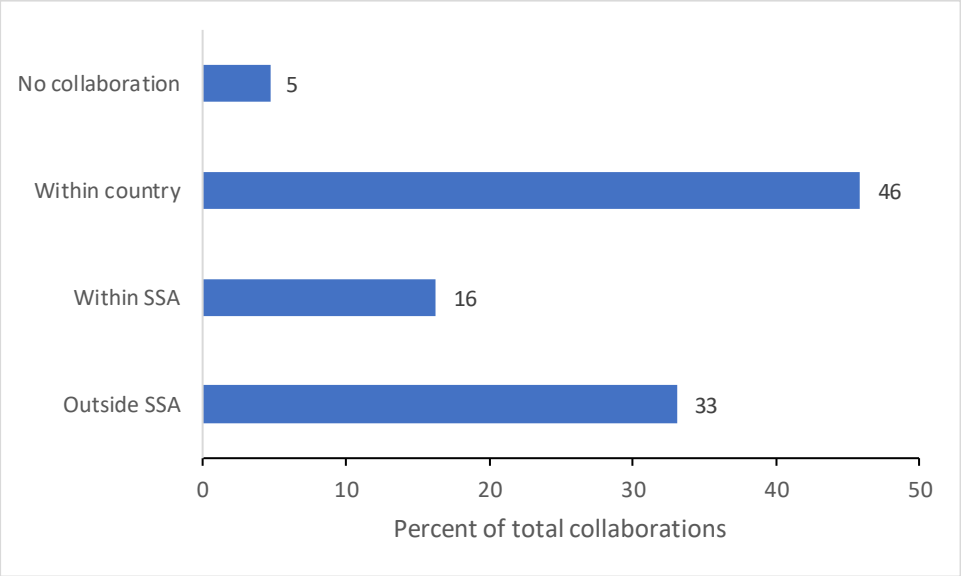
Graph is limited to institutions mentioned more than four times.

Collaboration among researchers within and outside SSA

Collaborations can create an atmosphere where researchers combine efforts and expertise to address intricate challenges (e.g. Newman, 2022). The majority (92 percent) of identified research outputs involved some form of collaboration. Within-country collaborations represented the highest share (46 percent) (Figure 21). Approximately 16 percent of research collaborations involved partners within SSA, while collaborations with researchers outside SSA were twice as high, at 33 percent. A possible explanation for this distribution in international collaboration is research

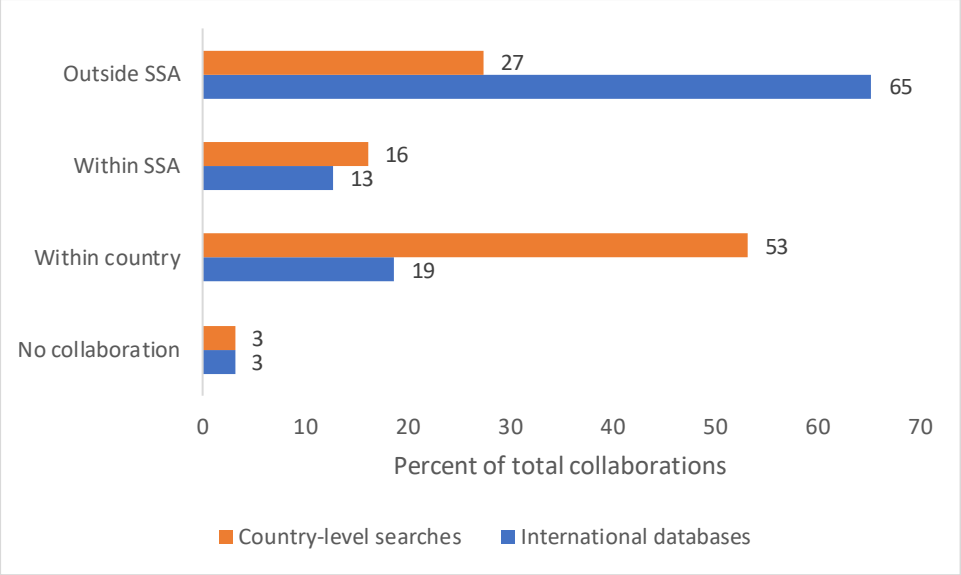
funding, as most of the research funding was provided by partners located outside SSA. Comparison between collaboration from country-level searches and international databases for the period 2020-2022 showed differing patterns (Figure 22). Within-country collaborations were more prevalent in research outputs identified through country-level searches (53 percent) compared to international databases (19 percent). By contrast, collaborations outside SSA accounted for 27 percent and 65 percent, respectively, of research outputs identified through country-level searches and international databases.

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



Note: Some research outputs report multiple collaboration categories.
PhD theses were excluded from this analysis as they would be single authored.

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



Note: Some research outputs report multiple collaboration categories.
PhD theses were excluded from this analysis as they would be single authored.

Figure 23 shows that within-country research collaborations were most prevalent for all the ECD components, except for education, where education-related research outputs indicated equal numbers of within-country and outside SSA collaborations.

The comparative analysis using research collaboration data from country-level searches and searches in international databases over the period 2020-2022 revealed contrasting patterns. Across all ECD components reported in Figure 24, collaborations with partners from outside SSA were more prevalent in research outputs identified through international databases. However, collaborations identified from within-country were observed most heavily in the results from country-level searches. For example, for ECD components such as nutrition, play and education, at least 61 percent of research outputs from international databases reported collaborations outside SSA. Within the same components and again based on outputs from international databases, the highest share of within-country collaborations was approximately 22 percent. However, focusing on data from country-level searches and the same ECD components, the opposite picture emerges.

Figure 23: Collaboration by ECD component based on country-level searches (2020-2022)

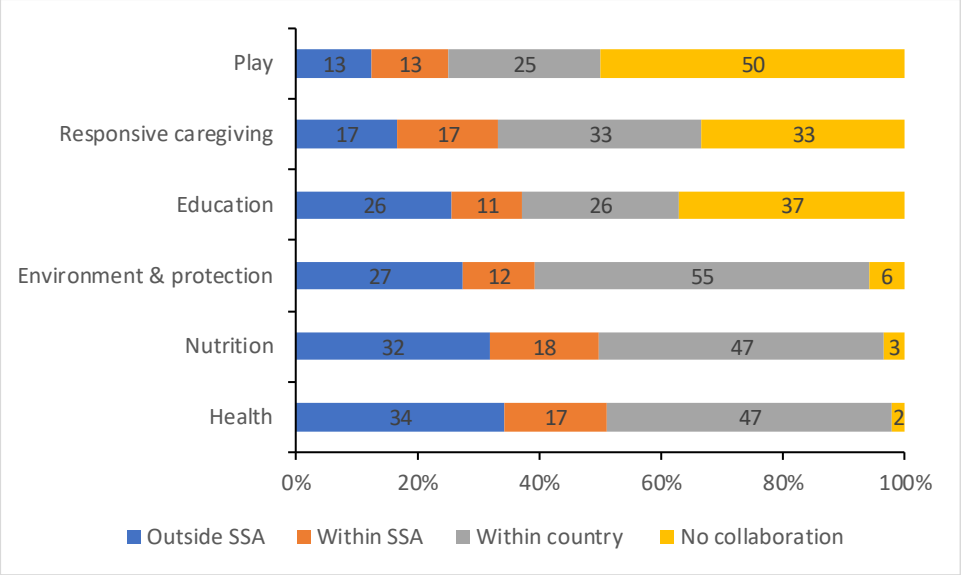
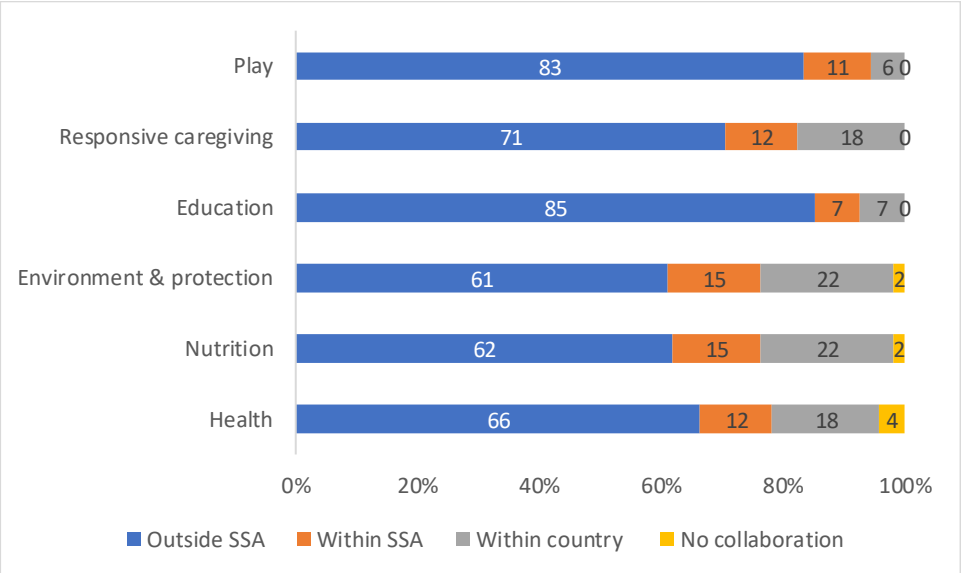


Figure 24: Collaboration by ECD component based on international database searches (2020-2022)



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.

Mapping ECD research in Uganda involved robust searching and screening processes involving sifting through an extensive array of documents to ascertain their alignment with the predetermined criteria. The mapping was limited to online searches. This led to manual data extraction for each research output, thereby intensifying the resource and time investment required to download and add qualified papers. Additionally, the progress of mapping/identifying the authors of the identified research was impeded by their limited online presence, including on platforms like Google Scholar and LinkedIn. Further, challenges arose in identifying contacts (e-mail address) or social media handles for most of the researchers, slowing down the mapping process.

While the search yielded a substantial volume of research outputs from relevant sources, there is a chance that some important ones which were not accessible through institutional repositories or online portals were left out. In some of the institutions, for example, Makerere University, only PhD these are uploaded on their institutional repositories. These could have led to research outputs not captured from the other sources to be excluded from this analysis, as we only accessed research outputs via online sources, and so research available solely as physical research outputs is not included in this report.

Moreover, a few research outputs did not indicate key information needed, including research settings, institutional affiliations, and funding information. There were also instances where only the surname followed by the abbreviations of other names of authors were indicated. This made it sometimes very difficult to identify the gender of such authors, even after using Google search engine to trace such authors' identities. Consequently, these aspects were designated as 'unknown' in our recording spreadsheet.

Lastly, we recognise that some of the research outputs identified from AJOL or institutional repositories may also be indexed in international databases such as Scopus and Web of Science, among others. Hence, the research outputs presented in this report as sourced from local journals and databases may not be entirely excluded from international databases. However, we expect this to be a relatively small number, and so do not anticipate it would affect the results significantly.

Additionally, we acknowledge that this report may have a greater representation of education research because the researchers we contacted were primarily those in ESSA's database and network, who are more likely to be involved in education research. However, as indicated in our methodology (see Figure 1), searches of journal databases and repositories were not restricted to education alone but included those across various 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

We identified 221 research outputs focusing on ECD between 2010 to 2022, with an increasing trend. For the period 2020-2022, there were 43 research outputs identified from country-level searches, compared to 220 in international databases. This suggests that there is predominance of international journal articles amongst Ugandan researchers. ECD research in Uganda predominantly covered three ECD components; health, nutrition and environment and protection, underscoring the need for more research on education, play and responsive care giving. This finding also depicts ECD research in Uganda as siloed, lacking a holistic approach of a child to understand their emotional, social, physical and cognitive needs. Although more than 60 percent of ECD research in Uganda is funded, international and philanthropic institutions dominate, with minimal funding from the government or local institutions. In addition, this funding is directed primarily to three main ECD components: health, nutrition and environment and protection. Research collaborations outside SSA are also aligned to these three ECD components, highlighting the need for more focused research and funding in education, play and responsive caregiving. The results also

show that more men than women are involved in ECD research, and this cuts across all the ECD components.

Recommendations

Based on the findings in this report, we present recommendations targeted to all stakeholders in this area including ECD researchers, government, NGOs and bilateral/multilateral funders. These include the following:

- **ECD researchers should conduct more research on education, play and responsive caregiving.** This will provide a holistic picture of ECD in the country. Cross-cutting research that focuses on the totality of early childhood development can help reduce the current siloed approach to ECD research.
- **Increase funding for ECD research**. The government should aim to reach the one percent target for budgetary allocation to research and development to encourage more ECD research in general, with greater emphasis on components with the highest funding gaps including education, play and responsive caregiving. Other funding organisations should fund cross-cutting research to promote a holistic understanding of the child.
- **Support women to undertake and publish research on ECD through targeted grants, scholarships, and fellowships**. This involves organising networking events, conferences, and workshops specifically designed to showcase the achievements of female researchers in ECD.
- **Advocate for aspects of inequality (gender, socio-economic status, disability, ethnicity, religion, among others) to be included in ECD research.** This provides data and evidence that could inform policy to address disparities for different groups of children.
- **Develop a strong collaborative research community**. This should be encouraged particularly across countries, to share lessons and knowledge, and provide opportunities for mentorship for women researchers.
- **Develop functional online repositories.** This would increase the visibility of available research and enable institutions to facilitate the dissemination of evidence.

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Appendices

Appendix 1: List of organisations/institutions where searches were made

1	Africa Renewal University	https://afru.ac.ug/
2	African Bible University	https://www.africanbiblecolleges.com/uganda
3	African Rural University	https://aru.ac.ug/
4	Aga khan University	https://ecommons.aku.edu/
5	Aga khan Foundation	https://the.akdn/en/where-we-work/eastern-africa/uganda/early-childhood-development-uganda
6	AJOL	https://www.ajol.info/index.php/ajol
7	All Saints University	https://www.asul.ac.ug/
8	Ankole western University	https://www.awu.ac.ug/
9	Bishop Stuart University	https://www.bsu.ac.ug/
10	BRAC	https://bracinternational.org/uganda/
11	Bugema University	https://www.bugemauniv.ac.ug/
12	Busitema University	https://busitema.ac.ug/
13	Busoga University	http://www.busogauniversity.ac.ug/
14	Cavendish University	https://www.cavendish.ac.ug/
15	Centre for Basic Research	https://cbr.ug/
16	Clarke International University	https://ciu.ac.ug/
17	Early Childhood Development Research in sub-Saharan Africa (ECDR-SSA) Compendium Project	http://www.ecdafricaresources.org/detail.php?id=817&all_fields=early+childhood+development&author=&country=uganda&year=2011&language=&submit=Search
18	Economic Policy Research Centre	https://eprcug.org/publication/
19	ELMA Foundation	https://www.elmaphilanthropies.org/elma/strengthening-ecd-in-uganda
20	Google/google scholar search	https://scholar.google.com/

21	Great Lakes Regional University	https://greatlakesuni.ac.ug/
22	Gulu University	https://ir.gu.ac.ug/
23	Ibanda University	https://elibrary.ibandauniversity.ac.ug/
24	IDRC	https://idl-bnc-idrc.dspacedirect.org/home
25	Infectious Diseases Institute	https://idi.mak.ac.ug/resources/publications/
26	International Rescue Committee	https://www.rescue.org/uk/country/uganda
27	International University of East Africa	https://iuea.ac.ug/
28	ISBAT University	https://isbatuniversity.ac.ug/
29	Islamic University in Uganda	https://www.iuiu.ac.ug/
30	Joint Clinical Research Centre	https://jcrc.org.ug/peer-reviewed-publications/
31	Kabale University	https://idr.kab.ac.ug/home
32	Kampala International University	https://ir.kiu.ac.ug/
33	Kampala University	https://www.ku.ac.ug/
34	King Caesar University	https://kcu.ac.ug/library/
35	Kumi University	https://www.kumiuniversity.ac.ug/
36	Kyambogo University	https://kyuspace.kyu.ac.ug/
37	Limkokwing University of Creative Technology	https://www.limkokwing.net/uganda-join
38	Lira University	https://ir.lirauni.ac.ug/xmlui/
39	LivingStone International University	https://livingstone.ac.ug/
40	Makerere University Walter Reed project	https://www.muwrp.org/research/
41	Makerere University	https://www.mak.ac.ug/
42	Management sciences for health	https://msh.org/resources/
43	Mbarara University of Science and Technology	http://ir.must.ac.ug/
44	Metropolitan International University	https://research.miu.ac.ug/publications/

45	Mountains of the Moon University	https://elearning.mmu.ac.ug/
46	Muni University	http://dir.muni.ac.ug/
47	Muteesa I Royal University	https://mru.ac.ug/
48	Ndejje University	https://www.ndejjeuniversity.ac.ug/
49	Nexus International University	https://niu.ac.ug/
50	Nkumba University	https://pub.nkumbauniversity.ac.ug/
51	Nsaka University	No direct website available
52	One Acre Fund	https://oneacrefund.org/what-we-do/countries-we-serve/uganda
53	Regional Universities Forum for Capacity Building in Agriculture	http://repository.ruforum.org/
54	Royal Open University	https://royalopenuniversity.ac.ug/
55	Rwenzori International University	https://www.riu.ac.ug/
56	Sanyu Africa Research Institute	https://www.safri.ac.ug/publications/
57	Save the children international	https://www.savethechildren.net/research-reports
58	Soroti University	https://ir.sun.ac.ug/
59	St. Lawrence University	https://slau.ac.ug/
60	Stafford University Uganda	No direct website available
61	Uganda Christian University	https://ucudir.ucu.ac.ug/home
62	Uganda Management Institute	https://umi.ac.ug/
63	Uganda Martyrs University	https://umu.ac.ug/new/
64	Uganda Ministry of Education and Sports	https://www.education.go.ug/
65	Uganda National Council for Science and Technology	https://www.uncst.go.ug/
66	Uganda National Health Research Organisation	https://www.unhro.org.ug/reports/
67	Uganda Pentecostal University	https://upu.ac.ug
68	Uganda Technology and Management University	https://utamu.ac.ug/research/research-publications

69	Uganda Virus Research Centre	https://www.uvri.go.ug/publications
70	UNESCO	https://www.unesco.org/en/publications
71	UNICEF, Uganda	https://www.unicef.org/uganda/research-and-reports
72	University of Kisubi	https://dspace.unik.ac.ug/jspui/
73	University of the Sacred Heart Gulu	https://ush.ac.ug/publications.php
74	United States Agency for International Development	https://www.usaid.gov/uganda
75	Victoria University Uganda	https://vu.ac.ug/
76	World Bank	https://openknowledge.worldbank.org/
77	World Vision International	https://www.wvi.org/publications

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 and 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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