Young student, Katavi Region, Tanzania. GPE/Kelley Lynch

Mapping early childhood development research outputs in sub-Saharan Africa

Tanzania country report

REAL
Research for Equitable Access and Learning

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Authors

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

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List of abbreviations

AJOL	African Journals Online
CESA	Continental Education Strategy for Africa
COSTECH	Tanzania Commission of Science and Technology
ECD	Early Childhood Development
ECDAN	Early Childhood Development Action Network
ESSA	Education Sub-Saharan Africa
MoEST	Ministry of Education Science and Technology
NBS	National Bureau of Statistics
NGO	Non-governmental Organisation
SDGs	Sustainable Development Goals
SSA	sub-Saharan Africa
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Summary

This report summarises the bibliometric analysis of research outputs on Early Childhood Development (ECD) in Tanzania, focusing on research outputs from country-level sources, and compared to publications identified from international databases. 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 shows a total of 189 ECD research outputs identified in Tanzania between 2010-2022. There is an increasing number since 2010 overall, although with a notable reduction in 2020, potentially associated with the effects of COVID-19. Among the research output types included, national/regional journal articles are the most prevalent.

Over the 2020-2022 period for which information is available from international databases, we identified 174 publications from this source. Over the same period, there were 67 research outputs from country-level searches. This means that ECD researchers in Tanzania are much more likely to publish their research in international journal articles.

Health and nutrition components constituted more than three quarters of the total research outputs identified in country-level searches, while 33 percent and 13 percent focused on education and play, respectively. This trend is similar to the publications from international databases, where health and nutrition had the highest proportions, at 55 and 46 percent, respectively. Education accounted for 18 percent of all publications. The larger proportion of education outputs 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. For research outputs cutting across several components, education was

more likely to be combined with play, while research outputs on health were more likely to also focus on nutrition.

Around half of the identified research outputs from country-level searches report receiving funding, with international organisations being most prevalent. Approximately 56 percent of all funding sources identified were international organisations. Government funding was included in 12 percent of funding sources, mostly higher education student loans (PhD) and research grants from the Tanzania Commission of Science and Technology (COSTECH). From international databases, international organisations were also the most prevalent funders at 71 percent, while government funding was not reported in any of the publications. When funding is disaggregated by ECD component, more than 70 percent of research outputs on play and education (as identified through the country-level searches) do not receive any funding, while at least 60 percent of research in the other ECD components is funded. This funding disparity by ECD component is also observed in publications from international journals.

We assessed whether findings in the research outputs were disaggregated by gender, social-economic status (poverty), disability, ethnicity and religion of participants and respondents. Although gender was the most common among these indicators, it accounted for about two thirds (65 percent) of all inequalities reported in country-level searches. Despite recognition of poverty as an important factor affecting children's access to and experience at school, it was only reported in 21 percent of the research outputs. From international databases, poverty was the most common form of inequality assessed (46 percent), while gender was included in 33 percent. Only 17 percent of the research identified in country-level searches was conducted in rural areas, which is slightly lower than the 20 percent reported in international databases.

There was an imbalance in authorship by gender, with six male authors for every four women across all the research outputs for both country-level searches and international databases. Analysis of researchers by ECD component showed that there were more women authors in research on nutrition and responsive caregiving in country-level searches, but these differences were not observed in international databases.

We observed limited collaboration between researchers within sub-Saharan Africa (only five percent), while almost one third (30 percent) reported collaborations with researchers outside SSA. The picture in international databases shows that collaborations with researchers outside SSA was the most dominant at 67 percent, while collaborations across SSA countries was reported in 14 percent of research outputs. These differences were observed across ECD components, with research outputs on education and play being more likely not to report any collaboration in country-level searches but not in international databases.

In conclusion, this analysis shows that additional research on ECD exists that is unlikely to be visible in international spaces and may therefore be excluded from policy making. Even so, the main source of publications appears to be international journal articles.

Recommendations include:

- Encourage research outputs in those ECD components for which there is the least research, notably on play, and responsive caregiving, as well as cross-cutting research.
- Support more women to undertake and publish research on ECD.
- Increase funding, particularly for research on education and play.
- Encourage collaboration between African researchers within the continent.
- Support research to include analysis by inequality (such as gender, socio-economic status, disability, ethnicity, religion, among others).
- Develop functional online repositories within institutions to facilitate the accessibility and dissemination of evidence.

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., 2016; 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, 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. 2016, 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, Adrupio & Rose, 2024). 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 that 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]) for the period 2010 to 2022. 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] We compared the findings with publications identified by searching international databases (Iddrisu, Adrupio & Rose, 2024).This report focuses on Tanzania.

2. Tanzania ECD policy context

According to Tanzania's 2022 Population Census, about 27 percent of its population (16.7 million) are children aged 0-8 years (Ministry of Finance and Planning, et al., 2022). A recent Early Childhood Development Index showed that less than half (47 percent) of the youngest children aged 24–59 months living with their biological mother are on-track in health, learning, and psychosocial well-being (Ministry of Health et al., 2023). This index is developed from questions about the way the child behaved in certain everyday situations, and the skills and knowledge the child had acquired. It showed that many children in Tanzania are at risk of not attaining their full developmental potential, and failure to address these gaps early will perpetuate both individual and national level economic losses. In addition, among 7.5 million children of pre-primary school age (3-6 years), only 1.5 million were enrolled in pre-primary school in 2022 (Office of the President, Regional Administration and Local Government, 2022). This translates to 80 percent of children missing out on pre-primary education.

Tanzania does not have a single ECD policy document that comprehensively covers all key aspects of ECD for children aged 0-8, although there are policies that cover individual ECD components. For example, the 2014 Education and Training Policy recognises that the early years of life are critical for developing mental capacity alongside other capabilities, and that there is a need for early education both at home and in other facilities. However, only pre-primary education for children aged 5-6 years is systematised and formalised within the basic education system (Ministry of Education Science and Technology (MoEST), 2014).

The Intersectoral Early Childhood Development Policy developed in 2010 after a multi-year consultative process, remains in draft form. In 2021, the country launched the national multi-sectoral early childhood development programme to ensure all children are developmentally on track to reach their full potential (Ministry of Health, Community Development, Gender, Elderly and Children, 2021). One of the focus areas of this programme is strengthening data and evidence. Our analysis will hopefully contribute towards this programme objective by showing available research evidence in the country to inform ECD programming.

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 & 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 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 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 research output sources and access links. We also compare these outputs with publications on ECD in Tanzania 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 Tanzania.
- 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.

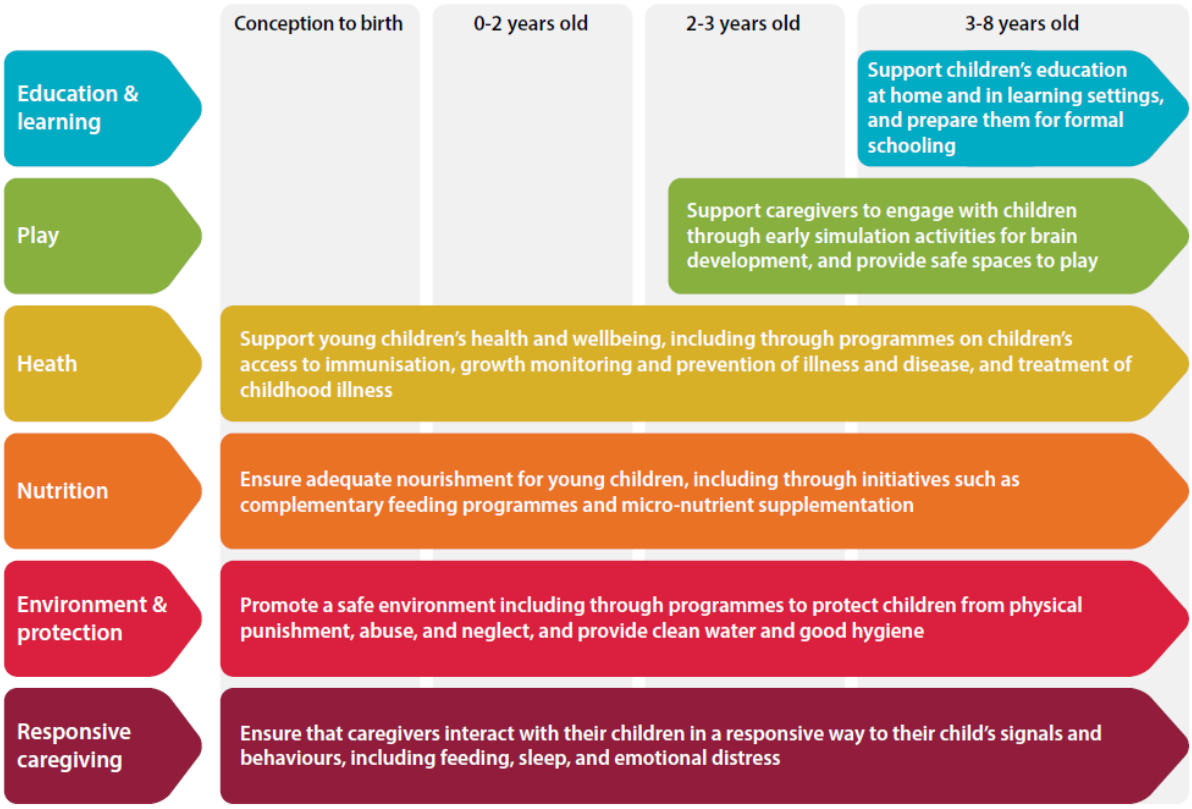
We focused on 0-3 years and extended this to include publications focusing on children up to 8 years provided they were related to early childhood development. This was to ensure we captured early childhood education along with other components of early childhood development. In most countries, the pre-primary 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 organisations as shown in Table 1.

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 wider ECD protocol (Williams, Iddrisu & Rose, 2024) and the general protocol for the African Education Research Databases (Iddrisu, Williams & Rose, 2024; Mitchell & Rose, 2018), we used a number of keywords for each ECD component, depending on the 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 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 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.

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. 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 Tanzania, in SSA and/or outside SSA. Where relevant and possible, we provide comparisons between the country-level searches and those in international databases.

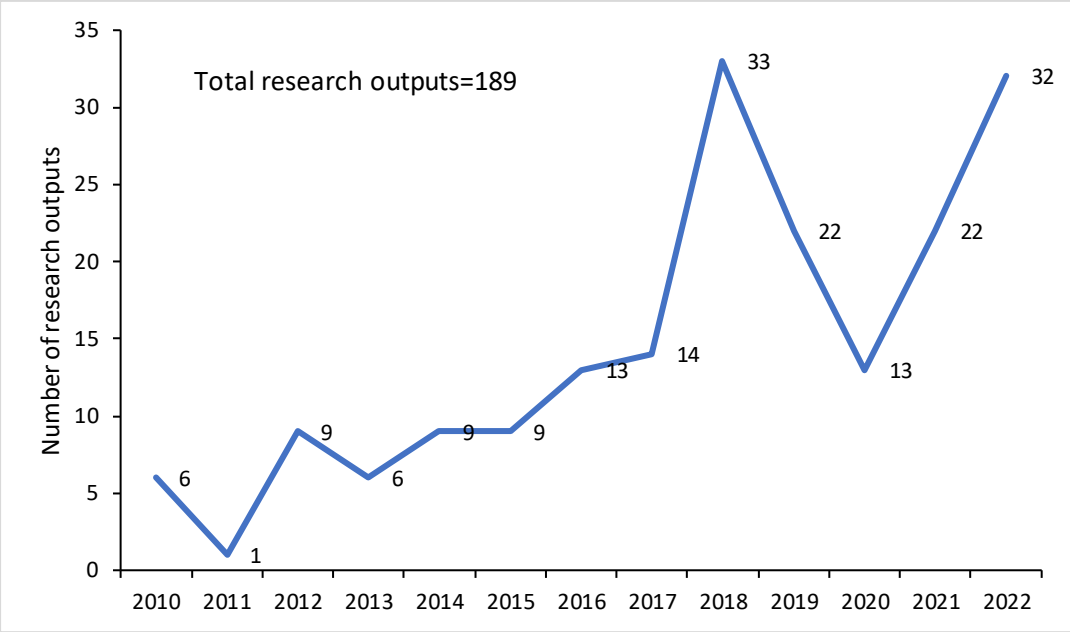
Research outputs and trends

Reporting on annual research output trends and the distribution by ECD component can help us identify areas that are under researched. It can also uncover patterns of research interests over time, and therefore inform recommendations on addressing research gaps. In addition, exploring research funding can highlight research output patterns related to funding availability, and provide evidence for policy recommendations.

In total, 189 research outputs on ECD were identified based on the inclusion criteria for the period 2010-2022. Generally, research outputs identified increased gradually from just 6 in 2010, peaking at 33 in 2018 (Figure 2). The marked decline in 2020 could be attributed to the COVID-19 pandemic.

Over the period 2020-2022, we identified 2.5 times more publications from international databases (174) than research outputs identified from country-level searches (67). The publications from international databases showed a similar but less pronounced downward trend when compared to the country-level searches. They dropped slightly from 58 in 2020 to 54 in 2021 in the peak COVID-19 period, before recovering to 62 in 2022.

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

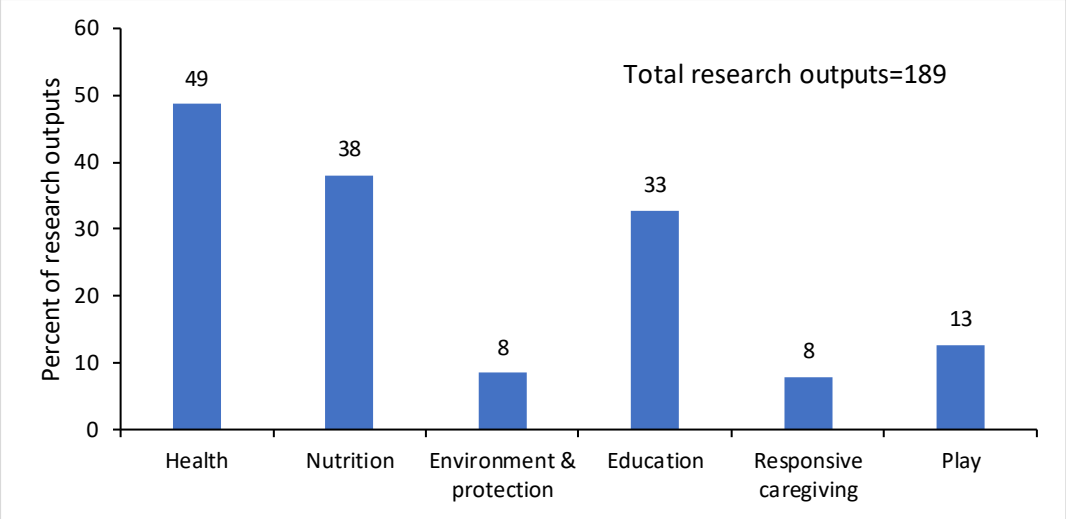


Research outputs by ECD component

The health component had the highest number of research outputs, followed by nutrition, with both components constituting more than three quarters of the total research outputs identified (Figure 3). One third of the research outputs focused on education and 13 percent on play. Environment and protection, and responsive caregiving each comprised eight percent of the total research outputs.

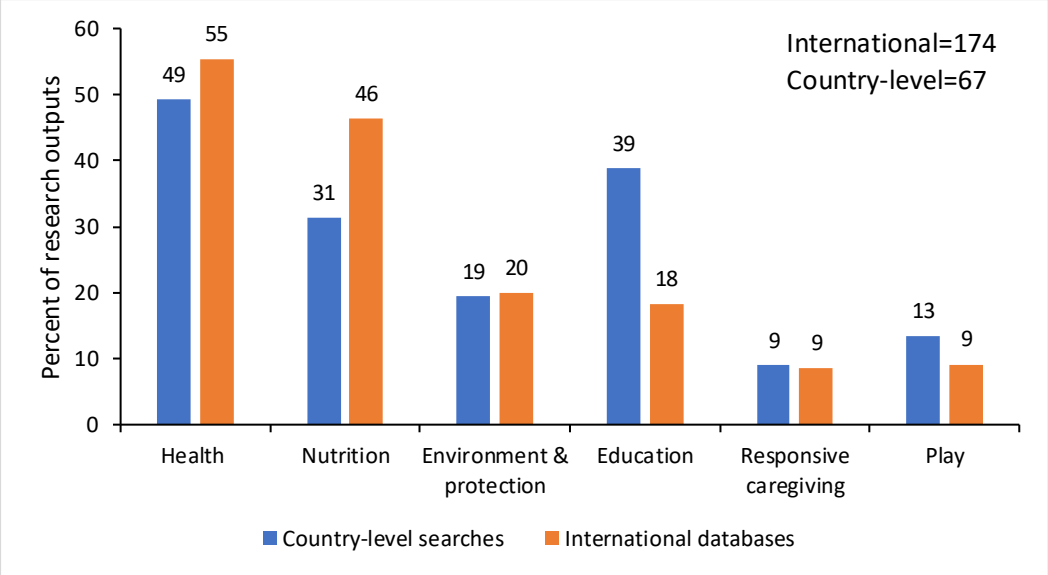
The pattern is more balanced in publications from international databases, with health (55 percent) and nutrition (46 percent) having the highest numbers of publications identified. Education however constituted only 18 percent of identified publications, compared with 39 percent in country-level research outputs (Figure 4). The relatively higher proportion of research outputs on education from our country-level searches could partly be due to ESSA networks reaching more education researchers as part of the search strategy.

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.

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.

For research outputs intersecting several components, education was more likely to be combined with play and less likely with responsive caregiving, while research outputs on health were more likely to also focus on nutrition and less likely on play. For example, out of the 52 research outputs on education, 21 intersected with play, with all but two of the 23 research outputs on play also having an education focus. Only two research outputs on education also focused on responsive caregiving. For research outputs on health, 43 percent also focused on nutrition, while none were on play, and six percent also focused on responsive caregiving. Only six research outputs focused on both education and health, or education and nutrition.

From the country-level searches in terms of research output type, articles in national journals are most prevalent, with hardly any working papers identified (Figure 5). As seen in Figure 6, this pattern is similar across all ECD components. This bias towards journal articles (despite our efforts to source other types of outputs – see Appendix 1 for repositories reviewed) could imply that African researchers prefer academic journals, possibly because they are prioritised in promotion and reward systems as a way of delivering prestige and competitiveness. Alternatively, it could mean that unpublished research is not available online, potentially meaning that these research outputs are not available for wider use. Lack of online visibility of unpublished research including research reports, evaluation reports and working papers could be for example because researchers are not incentivised to make it available, or funders are not allowing or facilitating it to be open access.

With respect to other types of research outputs, nutrition had more PhD theses identified, while education had more books published compared to other ECD components.

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

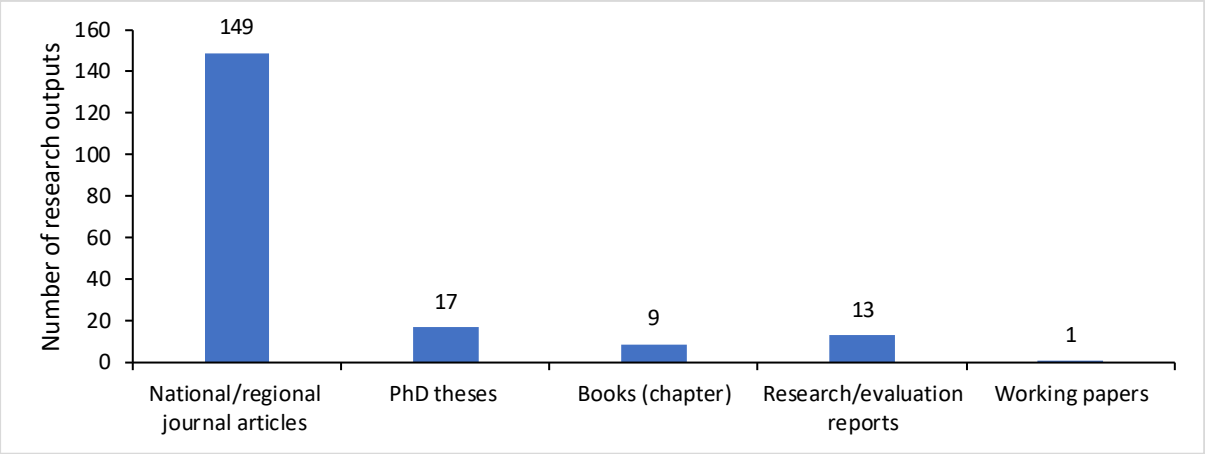
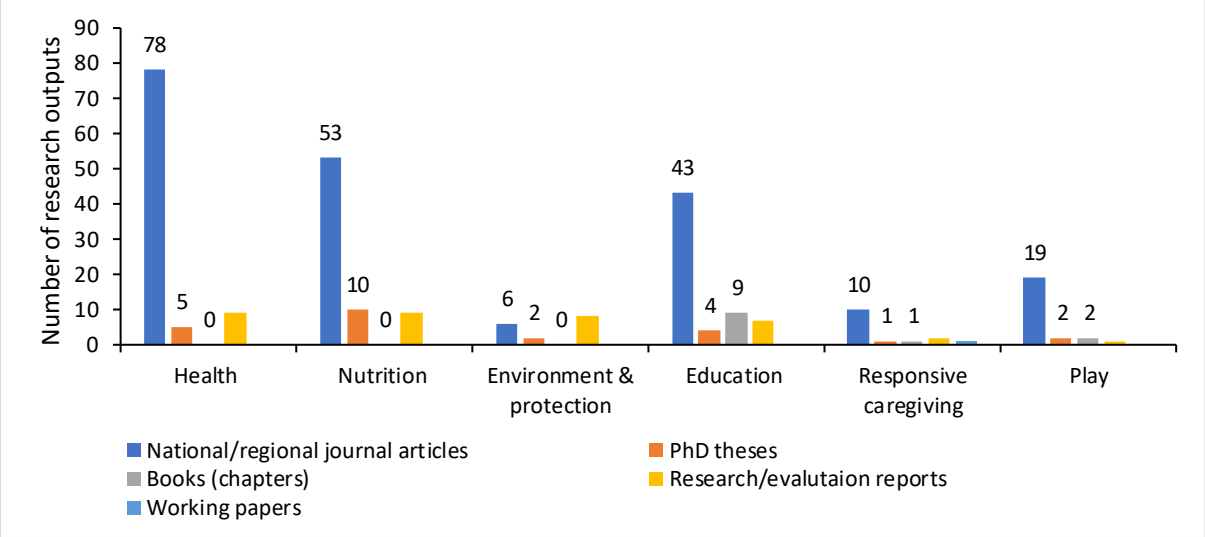


Figure 6: Type of research output by ECD component based on country-level searches (2010-2022)



For the period 2020-2022, there were 169 journal articles (with just 18 books or book chapters) identified in international databases, compared with 59 from country-level searches. This suggests that Tanzanian researchers are more likely to publish in international journals than national or regional ones.

Research funding

According to the World Bank, Tanzania allocates less than 1 percent of its GDP to research and development, of which 60 percent goes to institutions of higher education (World Bank, 2023). This allocation is half the objective stated in the 1996 Science and Technology Policy (MoEST, 1996) and could explain the limited research funded by government compared to other funders. As strengthening national data and evidence is one of the focus areas of the recently launched multi-sectoral ECD programme, increasing government funding for local research will be key to the programme's success.

Half of the ECD research identified from country-level searches is funded (Figure 7), compared with two thirds in international databases (Figure 8). More than 60 percent of research outputs in country-level searches for each ECD component is funded, except for education and play, with only 23 percent and 21 percent funded, respectively (Figure 7). This means that research on education and play is happening despite limited funding. Increased funding to these two aspects of ECD could strengthen the quantity and quality of research. Funding disparity is also observed across components in international databases, where each component is at least 50 percent funded, except education (33 percent) and responsive caregiving (27 percent) (Figure 8).

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

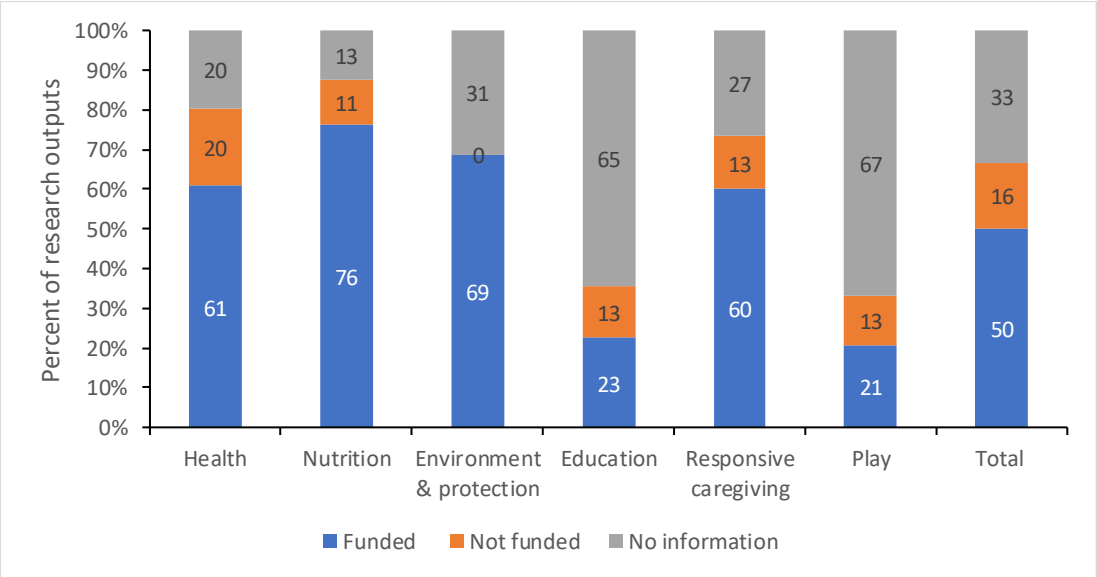
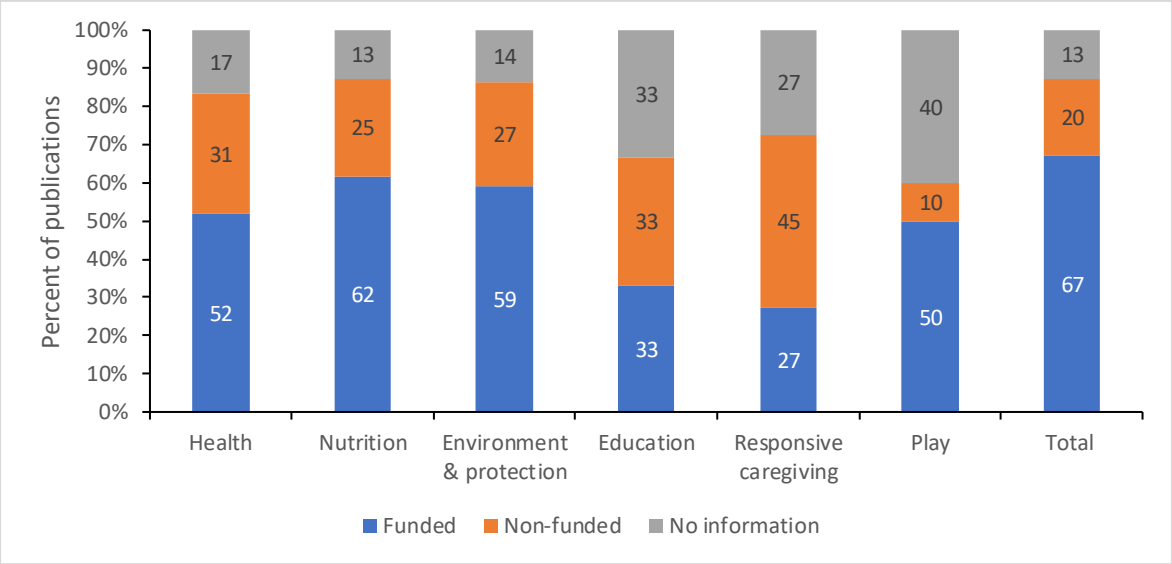
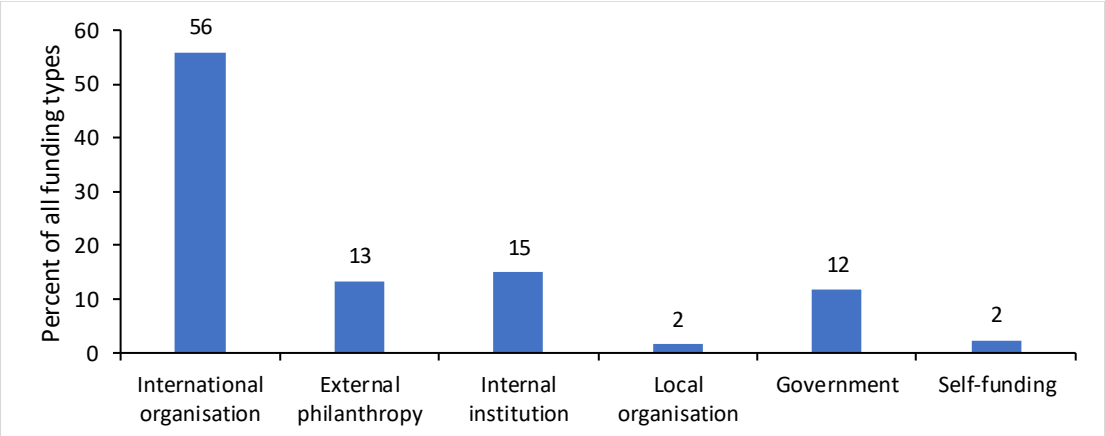


Figure 8: Funding status based on international database searches (2020-2022)



International organisations were the most prevalent source of funding, at 56 percent (Figure 9). External philanthropies accounted for 13 percent, while internal institutions, constituting mostly universities, accounted for 15 percent of all identified funders. Government and its constituent departments including the Higher Education Students Loans Board (for PhDs), ministries and COSTECH made up 12 percent of all funders.

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

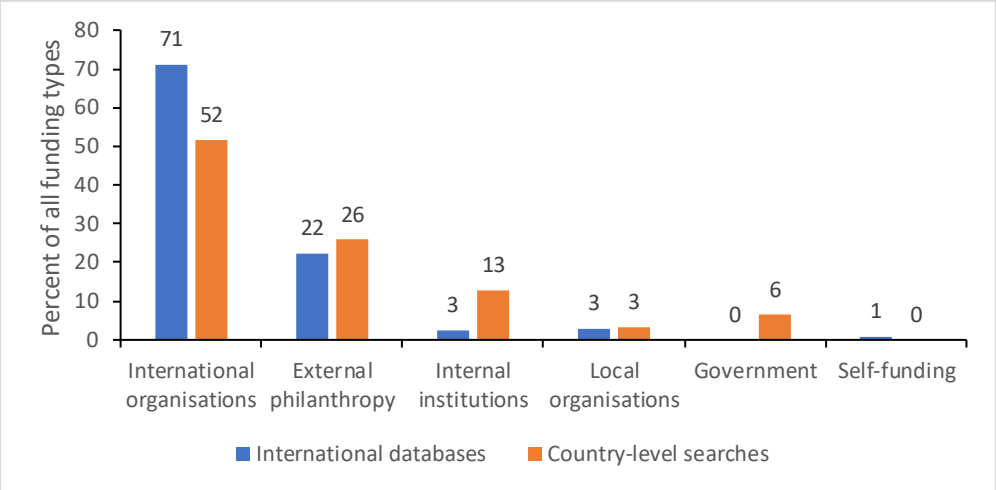


Note: Some research outputs may have more than one funding source.

Comparing funders identified for the 2020-2022 period from country searches with those in international databases, international and philanthropic organisations were the most common funders for both (Figure 10). Internal institutions and government

were identified more frequently in country-level searches than in international databases, but were still relatively low.

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.

For the period 2020-2022, the Bill & Melinda Gates Foundation was identified as the most common funder in both country-level searches and international databases (Table 2). However, only three research outputs in country-level searches identified Bill & Melinda Gates Foundation as a funder, compared to 32 in international databases. While internal institutions (University of Dodoma) and government (Higher Education Students' Loans Board) are among the most common funders in country-level searches (although the numbers are very low), the most prevalent funders in international databases are either international or philanthropic organisations.

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

Publications from international databases			**Research outputs from country-level searches**		
Funder	**No.**	**%**	**Funder**	**No.**	**%**
Bill & Melinda Gates Foundation	32	13.3	Bill & Melinda Gates Foundation	3	9.7
US National Institutes of Health	20	8.3	UK Aid/DFID	3	9.7
Fogarty International Centre	15	6.2	University of Dodoma	2	6.5
Eunice Kennedy Shriver National Institute of Child Health and Human Development	7	2.9	Grand Challenges Canada	2	6.5
National Institute of Allergy and Infectious Diseases, US	6	2.5	Higher Education Students' Loan Board	2	6.5
United States Agency for International Development	6	2.5	Porticus Foundation	1	3.2
Wellcome Trust	6	2.5	Fogarty International Centre	1	3.2

Where funding is identified for different ECD components, international organisations are the most prevalent, ranging from 40 percent for play to 64 percent for environment and protection (Figure 11). While research outputs on health identified the most diverse sources of funding including local organisations and self-funding, research outputs on responsive caregiving and play identified only three sources for their funding, including international organisations, philanthropies and government. Government funding was most common in research outputs on play (40 percent) and least common in environment and protection (9 percent).

Comparing international database and country-level searches for the period 2020-2022 shows that although international and philanthropic organisations were the most prevalent funders for both types of research outputs, the sources of funding were more diverse for the country-level research outputs, particularly for health and nutrition (Figure 12).

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

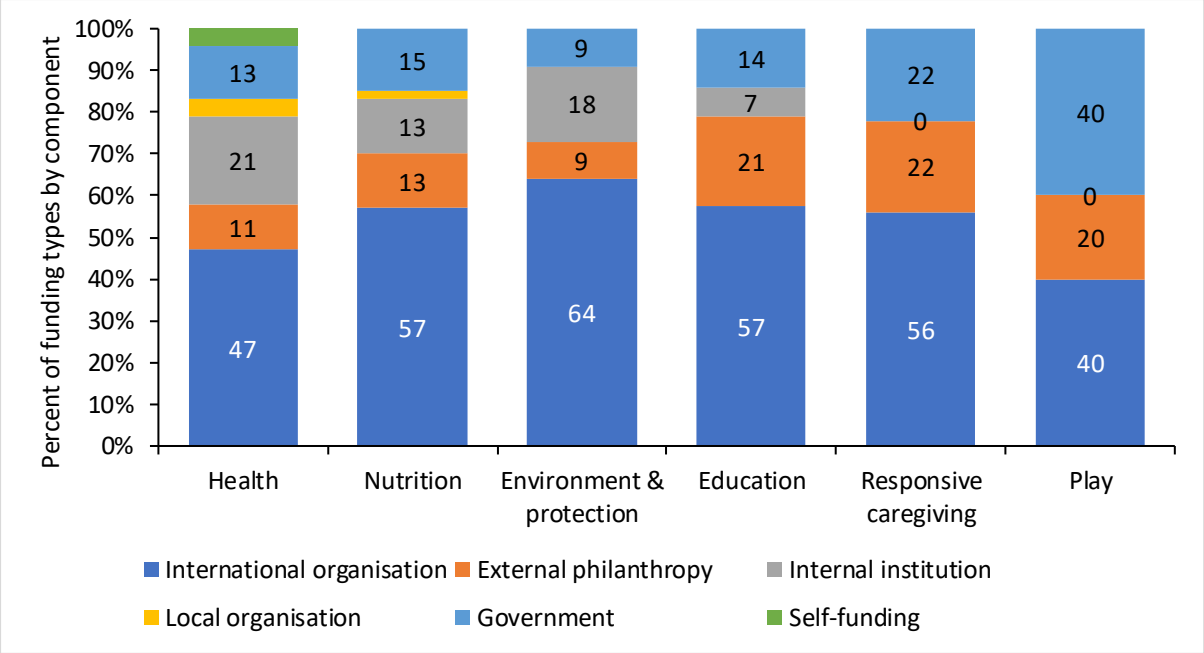
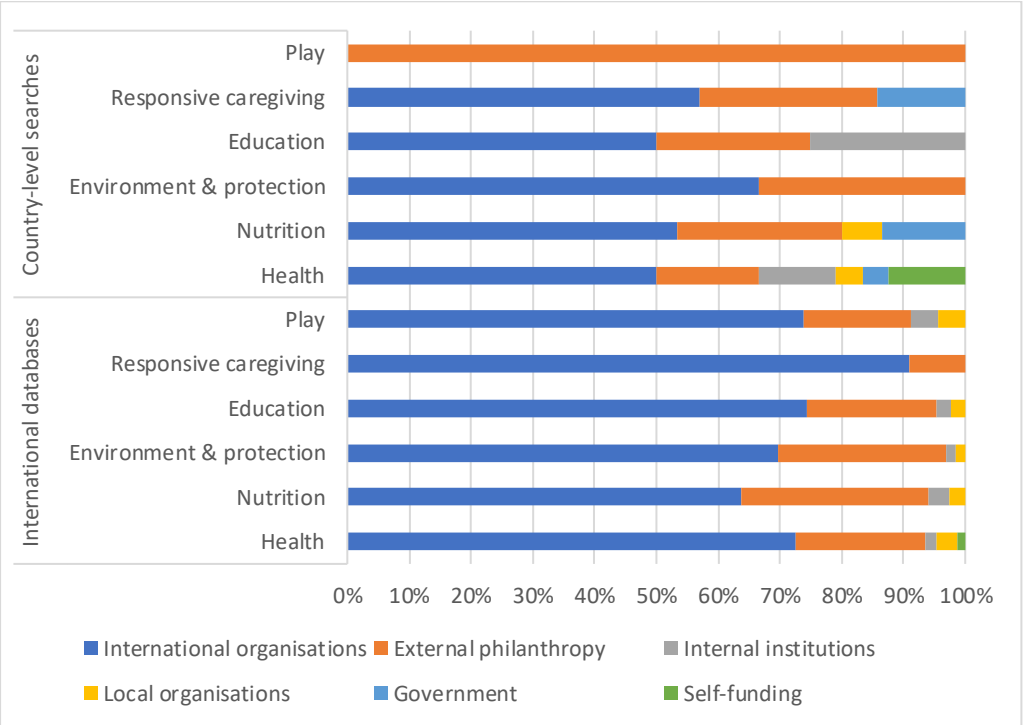


Figure 12: Funding type by ECD component based on country-level and international database searches (2020-2022)



Inequality included in the research outputs

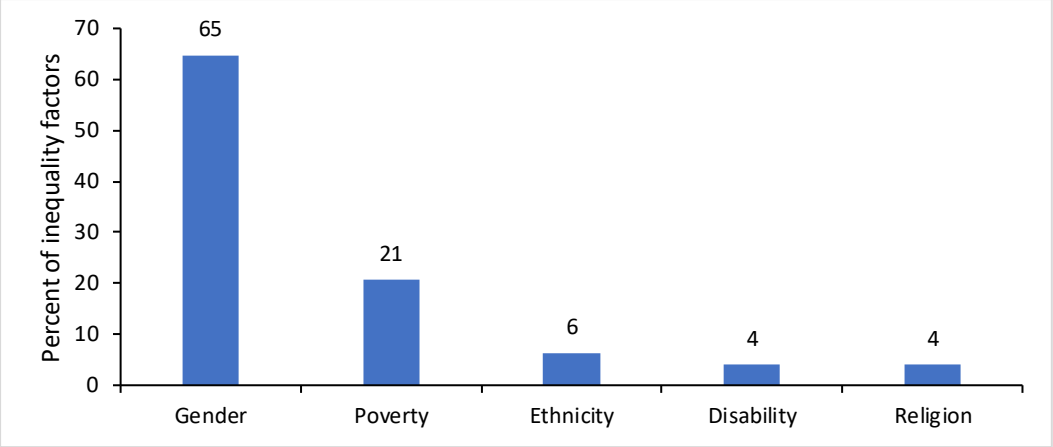
In this section, we report on whether research took account of inequality, including in relation to gender, household income, disability, religion, and ethnicity. This analysis may help identify areas that deserve more attention in research given the Tanzanian government's priorities.

There is a need for evidence on different forms of potential inequality, given the focus of the SDGs, CESA and Tanzania's Third National Five-Year Development Plan (2021/22-2025/26) to accelerate inclusive development and economic growth, that focuses on women and people with disabilities (Ministry of Finance and Planning, 2021). To explore this, we assessed whether the research results were disaggregated by gender, social-economic status (poverty), disability, ethnicity and religion of research respondents and participants. Just over half (54 percent) of all research outputs accounted for any of the inequalities.

Amongst these characteristics, gender was most commonly a focus of the research, with almost two thirds of those that included inequality addressing gender (Figure 13). Even though poverty is recognised as an important factor affecting children's access to schooling and experience at school, it represented 21 percent of the inequalities. Disability, ethnicity or religion accounted for six percent or less of the inequalities. This is despite a focus on people with disability being identified as one of the priority areas for realising an inclusive and competitive economy in the country's five-year development plan. Information for tracking progress that intersected gender with other inequality dimensions were almost non-existent. Only 6 percent of all the research outputs included both gender and poverty, and none included all inequalities.

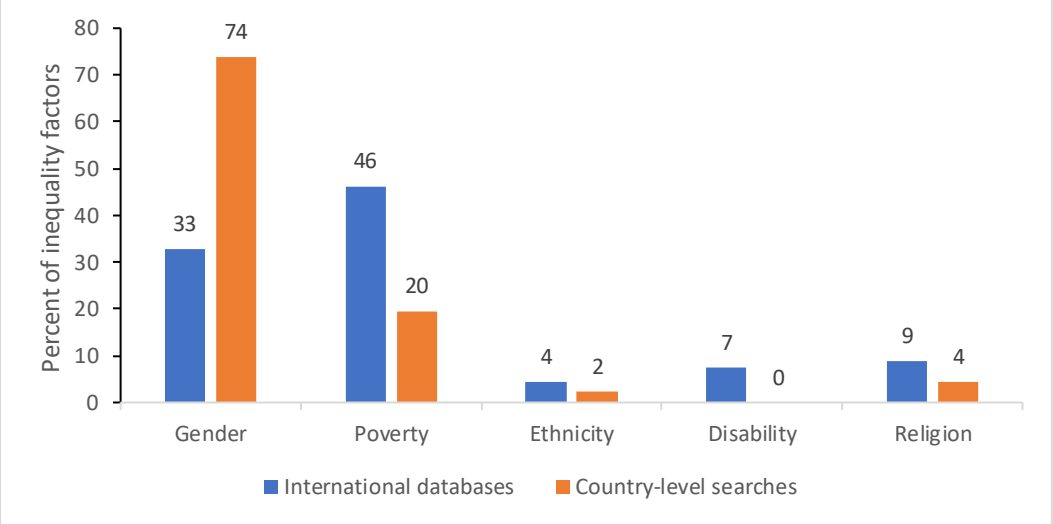
Comparing research outputs for the 2020-2022 period shows that inequality was not accounted for in approximately twice as many research outputs in country-level searches compared with international databases. Poverty was the most common form of inequality accounted for in international databases, while gender was most frequent in country-level searches (Figure 14). Ethnicity, disability and religion hardly featured in research outputs and publications from either searches.

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.

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. More than half (53 percent) of the research outputs identified did not indicate whether the research was conducted in a rural or urban setting (Figure 15). Only 17 percent of the research outputs identified in country-level searches was conducted in rural areas.

For the 2020-2022 period, the same number of research outputs from country-level searches as in international searches reported that the research was conducted in rural areas (Figure 16).

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

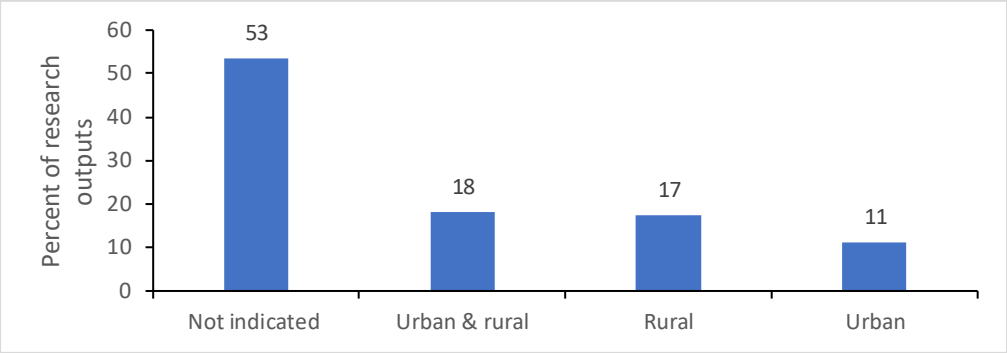
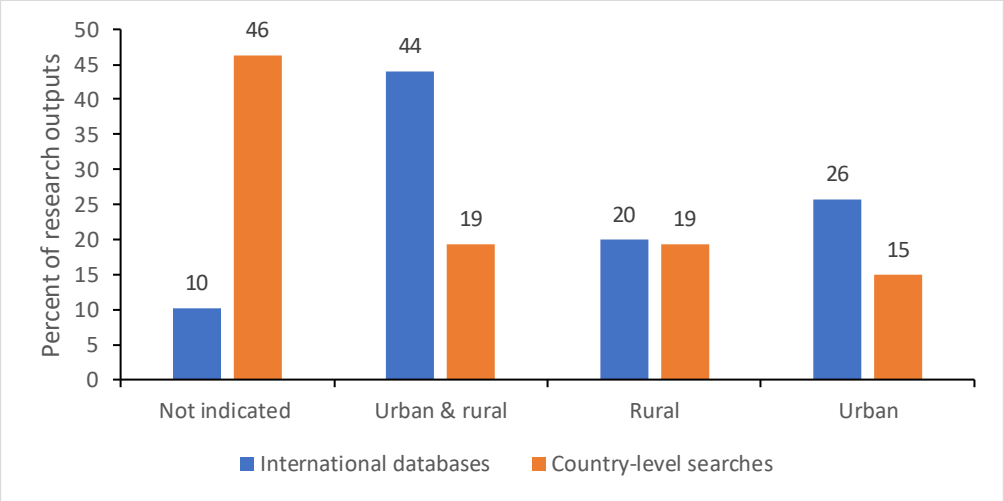


Figure 16: Research location based on country-level and international database searches (2020-2022)



Gender of ECD researchers

Across all the ECD research outputs identified, there were six male authors for every four women (Figure 17). Men are more likely to be authors for all ECD components except on nutrition and responsive caregiving, with minimal gender differences in research on play.

The picture for international databases is similar, with overall about two thirds of authors being men and minimal variation across ECD components (Figure 18).

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

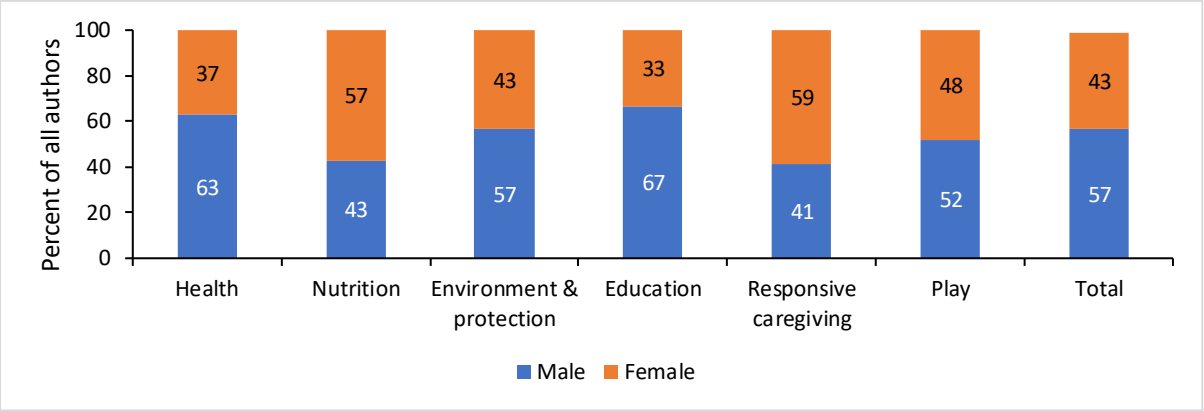
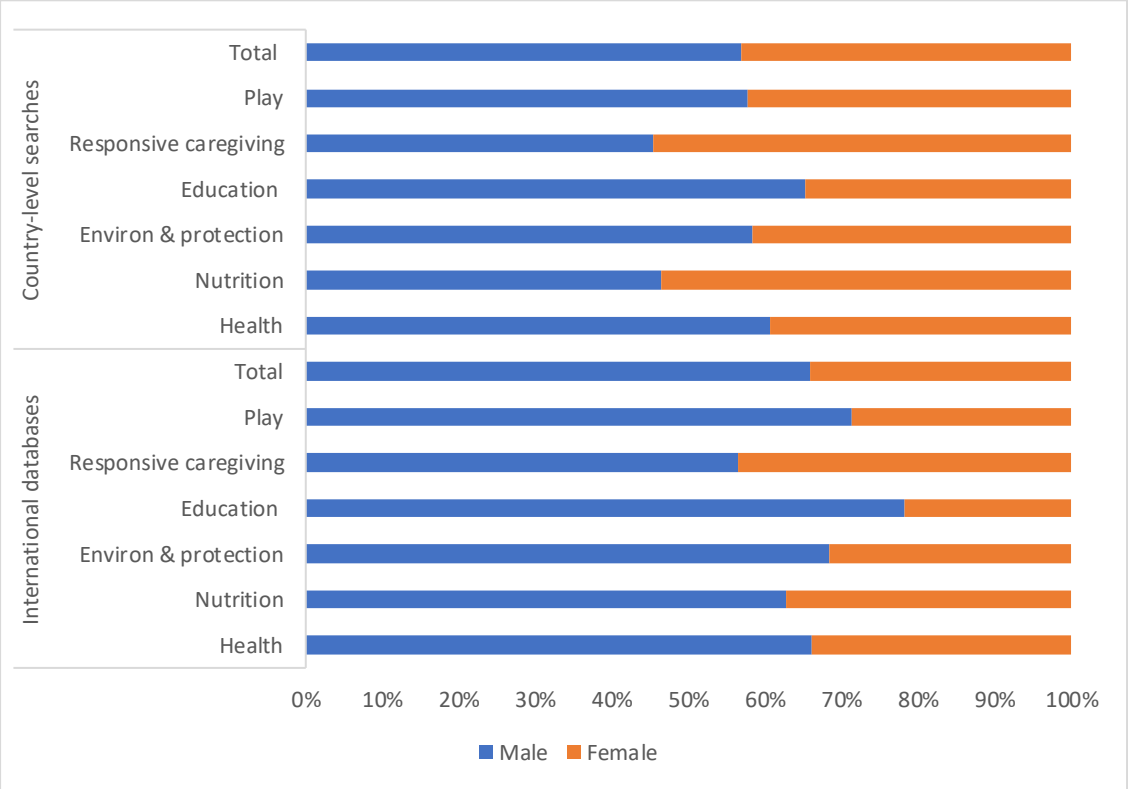


Figure 18: Researcher gender by ECD component based on country-level and international database searches (2020-2022)

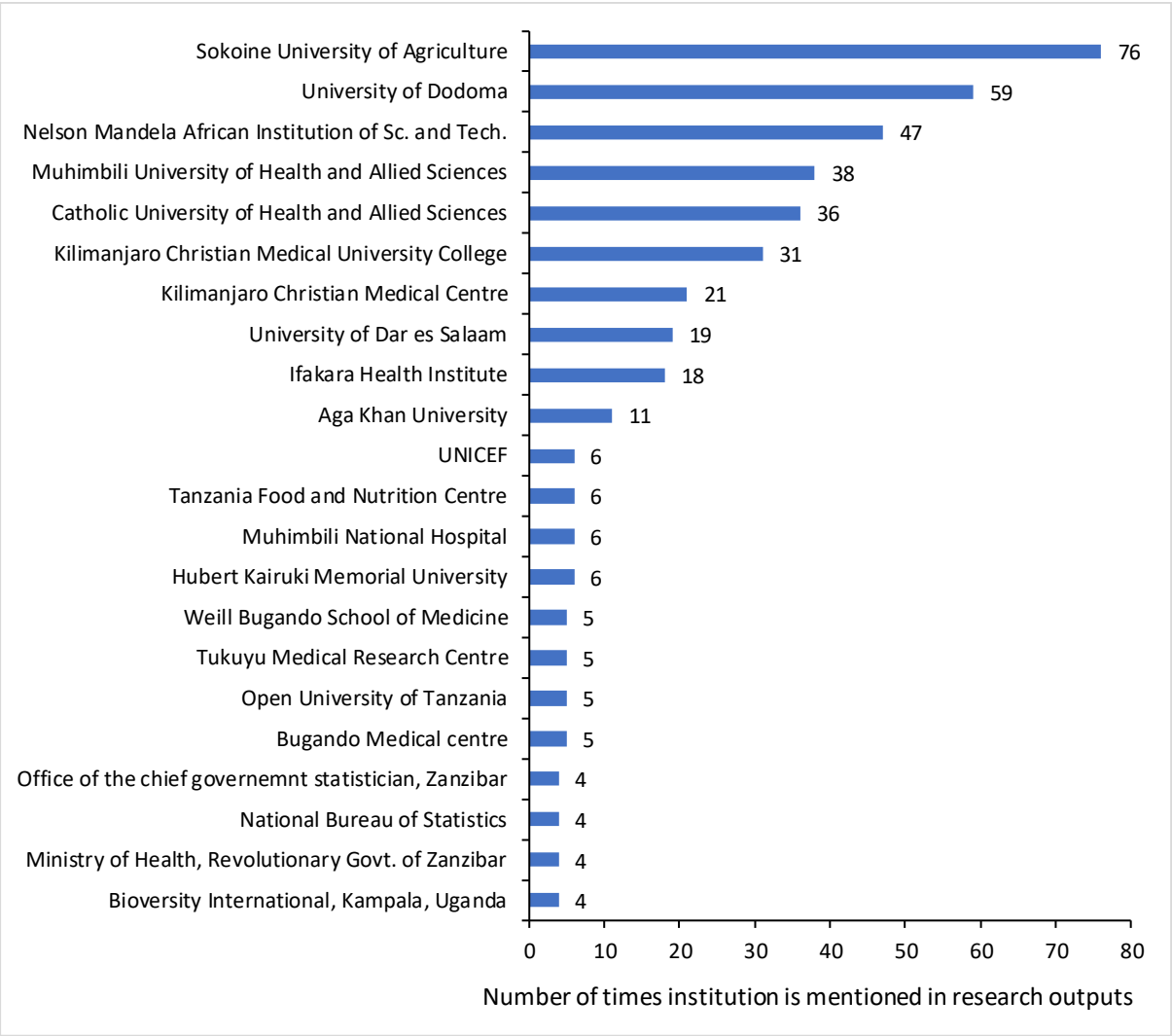


Researcher institutional affiliation

For our analysis of the institutions in which the researchers were based, we counted every time an institution was mentioned, irrespective of the number of authors based in the same institution. Figure 19 shows the institutions with more than three authors (for purposes of presentation, an additional 55 institutions with two or less authors were excluded). The majority of the researchers were based in universities, followed by research institutions and medical centres/hospitals with research departments. Most of the researchers in the top three universities focused on nutrition and health research, particularly Sokoine University of Agriculture and Nelson Mandela African Institution of Science and Technology. Although the University of Dodoma had more research outputs on education, each research output had fewer authors compared to health and nutrition research outputs, hence the high number of researchers based in the Sokoine University of Agriculture. We observed that author institutions appearing once in the list were more likely to be in multiple authored research outputs.

Universities were the most common host institution of authors in international databases, followed by hospitals with research departments (Figure 20). Comparing countries where researcher institutions are based, more institutions were based outside Tanzania in international databases than in country-level searches.

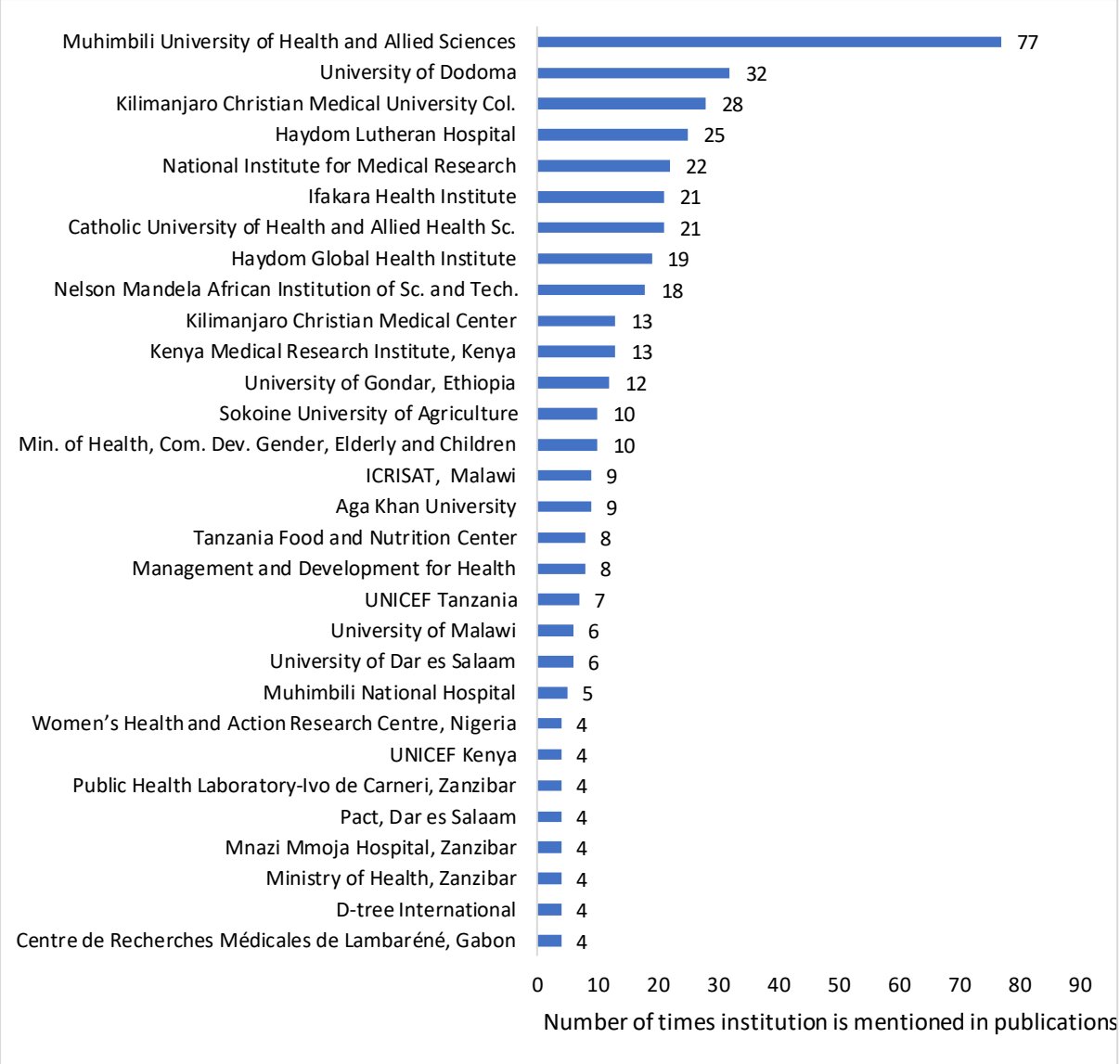
Figure 19: Institutional affiliation based on country-level searches (2010-2022)



Note: All institutions are in Tanzania 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 Tanzania except where indicated.

Graph is limited to institutions mentioned more than four times.

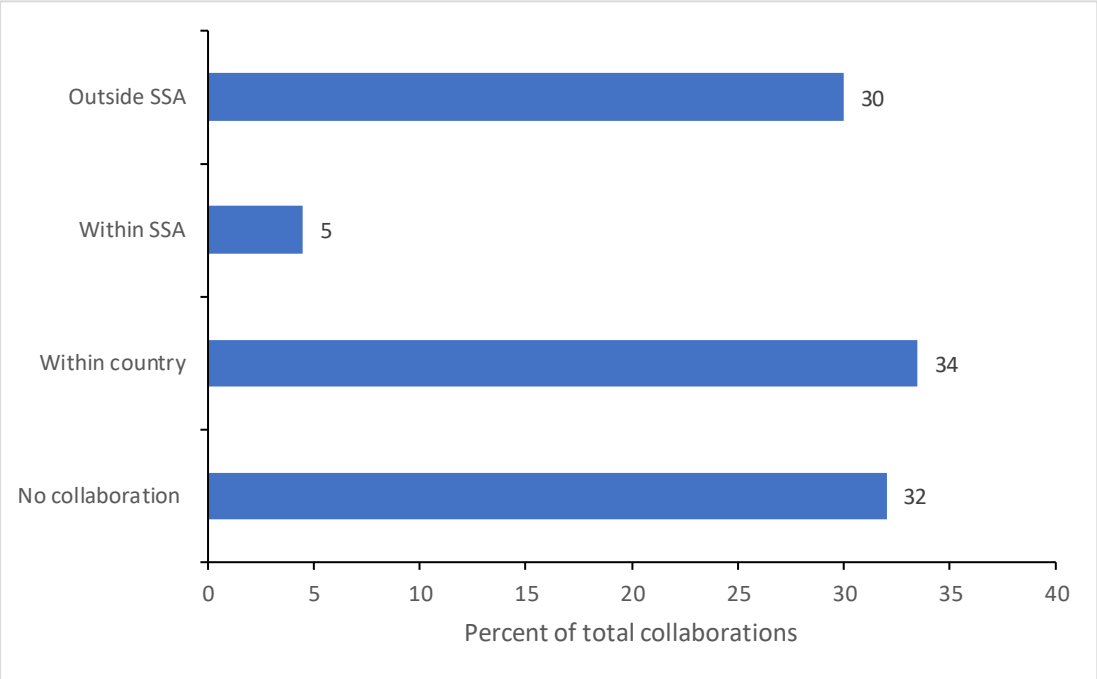
Collaboration among researchers within and outside SSA

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 Tanzania, as well as within and outside SSA. Limited collaboration was identified between researchers within the sub-continent (only 5 percent), while collaborations outside the SSA represented about one third of all reported collaborations (Figure 21).

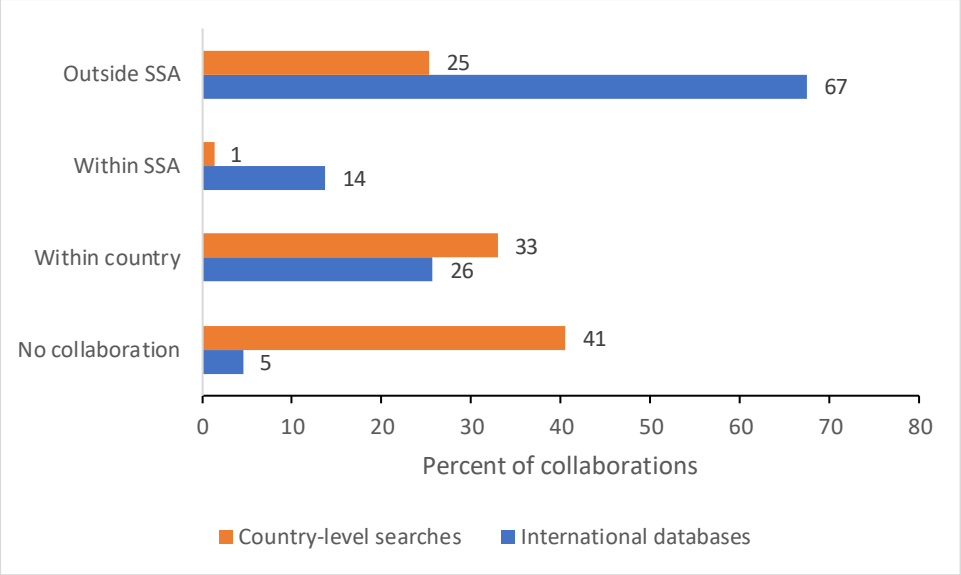
For the 2020-2022 period, collaboration outside SSA was the most prevalent type for publications in international databases, while within-country collaborations were the most common in country-level searches (Figure 22).

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 publications report multiple collaboration categories.

When reviewing collaboration by ECD component for the 2020-2022 period, there were variations in collaboration type across components from research outputs from country-level searches (Figure 23). However, collaborations outside SSA were visible across all ECD components for publications from international databases (Figure 24). Research outputs from the country-level searches were more likely to report lack of collaboration with more than 60 percent of research outputs on play and education reporting none.

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

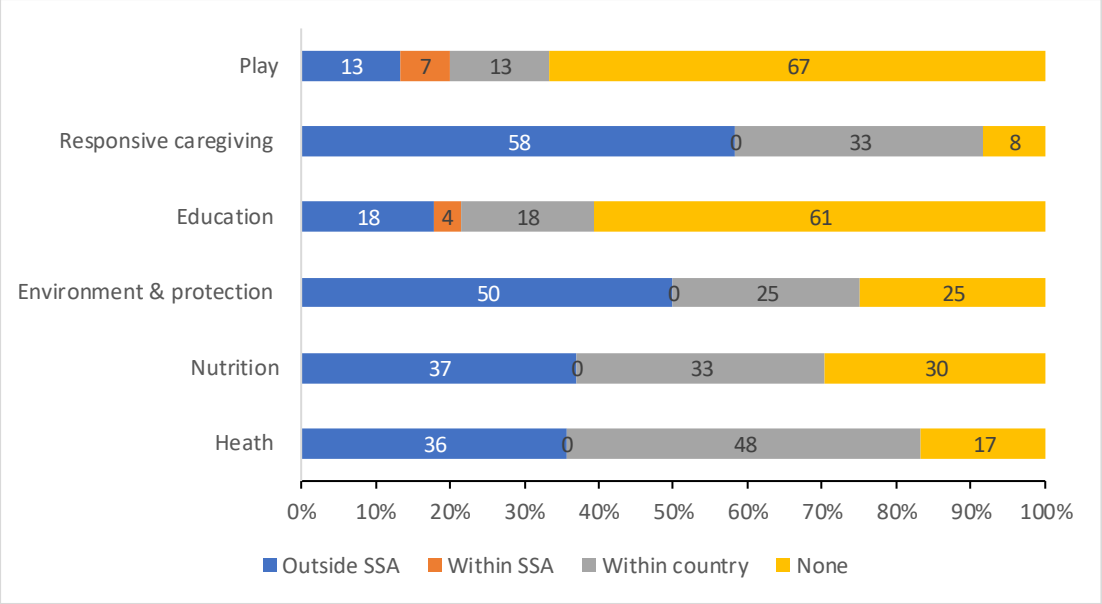
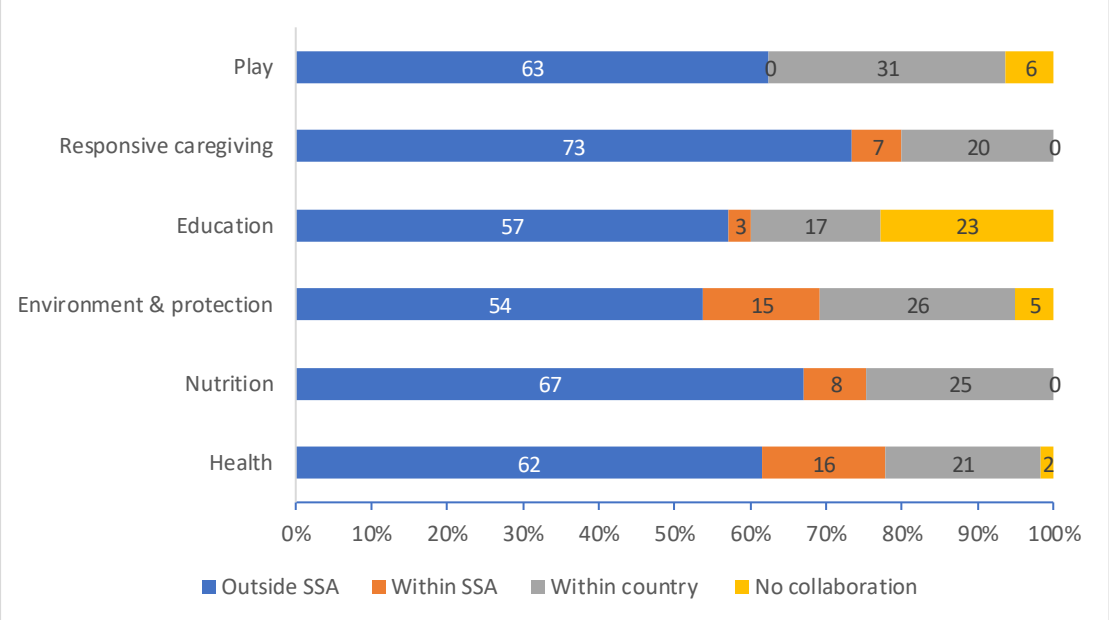


Figure 24: Collaboration by ECD component based on international database searches (2020-2022)



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.

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

From this mapping exercise, we identified 189 research outputs on ECD between 2010 and 2022. Although this indicates limited research has been conducted on a critical development age for children in Tanzania, it also shows existence of additional research on ECD that is unlikely to be visible in international spaces and thus may be excluded when developing international and local policies and development agendas. However, more research is identified from international databases, suggesting that there is prominence of international journal articles amongst Tanzanian researchers.

The availability of research is, however, not even across all the ECD components. We report four main findings from this mapping exercise:

- There were far more outputs on health and nutrition than the other components in the country-level searches.
- Almost half of research on ECD identified from country-level searches is not funded, and where it is funded, international and philanthropic organisations are the most common funder. This funding varies across components, with research outputs on play and education being less likely to be funded. From international databases, this variation across components is not observed.
- Collaboration among researchers across SSA countries is low, but about one third collaborate with researchers outside SSA. Again, research outputs on play and education are the least likely to report on any type of collaboration, although this is limited to country-level searches, with minimal differences across ECD components in international databases.
- There are far more men publishing in international databases compared to women, and this could imply that women face challenges in publishing in international journals.

Recommendations

Based on the gaps and challenges identified in this report, we present broad recommendations for all stakeholders including ECD researchers, government, NGOs and bilateral/multilateral funders. These include the following:

- **Encourage research outputs in those ECD components for which there is the least research, notably on play, responsive caregiving and education.** 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 siloed approach to ECD research.
- **Support more women to undertake and publish research on ECD.** This should include a focus on areas that are male dominated, including education and health components. Other stakeholders including the government, NGOs, and funding bodies can help close the gender gap in research through targeted grants, scholarships, and fellowships, and by organising networking events, conferences and workshops specifically designed to showcase the achievements of female researchers in ECD.
- **Increase funding, particularly for research on education and play.** The Tanzanian government should increase the budgetary allocation for research and development in general, not only through universities but also the Tanzanian Commission for Science and Technology. This would enable greater access to research funding. Other funding bodies should fund cross-cutting research to promote a holistic understanding of the child rather than specific aspects of ECD.
- **Encourage collaboration between African researchers within the continent.** This would support a strong collaborative research community, particularly across countries in sub-Saharan Africa. It would enable the sharing of lessons and knowledge, and provide opportunities for mentorship for early career researchers.
- **Support research to include analysis by inequality (such as gender, socio-economic status, disability, ethnicity, religion, among others)**. This provides data and evidence that could inform policy to address disparities for different groups of children.
- **Develop functional online repositories.** These should be developed within national and regional institutions. This will help to facilitate the accessibility and dissemination of evidence.

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Appendices

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

1. Abdulrahman Al-Sumait University (SUMAIT University): http://sumait.ac.tz/
2. Agha Khan development network: https://the.akdn/en/who-we-are
3. AJOL: https://www.ajol.info/index.php/ajol
4. Ardhi University: https://www.aru.ac.tz/pages/e-resources-1
5. Catholic University of Health and Allied Sciences (CUHAS): http://www.bugando.ac.tz/
6. Council for the Development of Social Science Research in Africa (CODESRIA): https://codesria.org/
7. Early Childhood Development Research in sub-Saharan Africa (ECDR-SSA) compendium project: http://www.ecdafricaresources.org/search.php?all_fields=&author=&country=tanzania&year=2011&language=&x=59&y=41
8. ECDAN: https://ecdan.org/
9. Eckernforde Tanga University (ETU)
10. Economic and Social Research Foundation (ESRF): https://esrf.or.tz/
11. Haki Elimu: https://hakielimu.or.tz/
12. Hubert Kairuki Memorial University (HKMU): http://www.hkmu.ac.tz/
13. Ifakara Health Institute: https://www.ihi.or.tz/
14. International Medical and Technological University: http://www.imtu.edu/
15. Kampala International University in Tanzania (KIUT): https://www.kiut.ac.tz/
16. Kilimanjaro Christian Medical University College (KCMUCo): http://kcmuco.ac.tz/
17. Mbeya University of Science and Technology: https://must.ac.tz/
18. Ministry of Education, Science and Technology: https://www.moe.go.tz/en/publications
19. Ministry of Health: https://www.moh.go.tz/
20. Mkwawa University College of Education (MUCE): https://muce.udsm.ac.tz/
21. Moshi Co-operative University (MoCU): http://www.mocu.ac.tz/

22. Mount Meru University (MMU)
23. Muhimbili University of Health and Allied Health Sciences (MUHAS)
24. Mwalimu Nyerere Memorial Academy (MNMA): https://www.mnma.ac.tz/
25. Mwenge Catholic University (MWECAU): http://mwecau.ac.tz/
26. Mzumbe University: http://scholar.mzumbe.ac.tz/
27. National Bureau of Statistics: https://www.nbs.go.tz /
28. Nelson Mandela-African Institution of Science and Technology (NM-AIST): http://dspace.nm-aist.ac.tz/
29. Open University of Tanzania: http://repository.out.ac.tz/
30. PAL Network: https://palnetwork.org/
31. REPOA: https://www.repoa.or.tz/
32. Ruaha Catholic University (RUCU): http://rucu.ac.tz/
33. Sebastian Kolowa Memorial University (SEKOMU)
34. Sokoine University of Agriculture: https://www.lib.sua.ac.tz/index.php/suair
35. St. John's University of Tanzania (SJUT): http://www.sjut.ac.tz/
36. St. Augustine University of Tanzania (SAUT): http://www.saut.ac.tz/
37. St. Francis University College of Health and Allied Sciences (SFUCHAS): http://sfuchas.ac.tz/
38. St. Joseph University in Tanzania (SJUIT): http://sjuit.ac.tz/
39. Stefano Moshi Memorial University College (SMMUCo): http://smmuco.ac.tz/
40. Stella Maris Mtwara University College (STEMMUCO): http://stemmuco.ac.tz/
41. Tanzania Commission for Aids (TACAIDS): https://www.tacaids.go.tz/documents/research
42. Tanzania ECD Network: https://www.tecden.or.tz/
43. Teofilo Kisanji University (TEKU): http://www.teku.ac.tz/
44. The State University of Zanzibar: https://suza.ac.tz/
45. The United African University of Tanzania (UAUT): http://uaut.ac.tz/
46. The World Bank: https://openknowledge.worldbank.org/home
47. The Dar es Salaam University College of Education (DUCE): http://www.duce.ac.tz/
48. The Muslim University of Morogoro (MUM): http://mum.ac.tz/
49. Tumaini University Dar es Salaam College (TUMADARCo): https://tudarco.ac.tz/
50. Tumaini University Makumira (TUMA): http://www.makumira.ac.tz/

51. Tusome Pamoja project (USAID): https://www.planusa.org/projects/tusome-pamoja-lets-read-together/
52. UNICEF: https://www.unicef.org/tanzania/
53. University of Arusha (UoA): http://www.uoa.ac.tz/
54. University of Bagamoyo (UB)
55. University of Dar es Salaam: https://www.udsm.ac.tz/
56. University of Dodoma: https://www.udom.ac.tz/
57. University of Iringa: http://uoi.ac.tz/
58. USAID: https://www.usaid.gov/tanzania
59. UWEZO: https://uwezotanzania.or.tz/
60. Zanzibar University: http://www.zanvarsity.ac.tz/

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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