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Promoting inclusive early childhood development in Kenya: Impact Evaluation Baseline Report Findings

November 2022

Supported by:

Sightsavers

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Alexandre Chailloux prepared the map included in this report.

Acknowledgements

Suggested reference

List of acronyms

CFM	UNICEF-Washington Group Child Functioning Module
DHS	Demographic and Health Survey
DID	Disability Inclusive Development
DRC	Democratic Republic of Congo
ECDE	Early Childhood Development and Education
IDELA	International Development and Early Learning Assessment
KET	Kenya Equity Tool
KICD	Kenya Institute of Curriculum Development
LMIC	Low- and middle-income countries
MoE	Ministry of Education
MoH	Ministry of Health
NCPWD	National Council for Persons with Disabilities
NACOSTI	National Commission for Science, Technology and Innovation
OPD	Organisations for People with Disabilities
PP1	Pre-primary 1 (First year of pre-primary, usually ages 3-4 years)
PP2	Pre-primary 2 (Second year of pre-primary, usually ages 4-5 years)
TSC	Teacher Service Commission
UDPK	United Disabled Persons of Kenya
UN	United Nations

Executive summary

Background

There is an urgent need to scale up early childhood development and education (ECDE) services in low- and middle-income countries, particularly for children with disabilities. To do so, countries need data on the prevalence and types of disability among young children. Tools for the measurement of early childhood development and learning in a disability-inclusive way are also crucial. In response to the challenges of disability inclusion in pre-primary education in Kenya, the Kenyan Ministry of Education and a consortium of international development organisations have worked together to develop an intervention project to promote effective disability-inclusive ECDE practices in Kenya. This report presents baseline data collected for the purpose of the impact evaluation of this intervention project. It also provides information on the prevalence of functional difficulties among young children attending preschool services in three project areas. Additionally, the report shares scores from the International Development and Early Learning Assessment (IDELA), which was applied with additional disability-inclusive adaptations.

Study design and methods

The intervention project has collaboratively developed affordable and contextually appropriate inclusive ECDE approaches to improve learning, educational and developmental outcomes for all children, and specifically for children with disabilities. These interventions are being piloted in pre-primary schools: three in rural parts of Homa Bay County, three in peri-urban Homa Bay County and three in and around the Kakuma refugee camp in Turkana County. Each pilot school has been matched with a control school in the same area.

The study population consisted of all children enrolling in the first year of preschool education (pre-primary 1 or PP1) at each of the 18 study schools (pilot and control) at the beginning of either the 2021/2022 or 2022 adjusted academic years. At most schools, a sample of 50 to 60 children were enrolled in each academic year. A total of 1,756 children were enrolled in the study: 502 (28.6%) in the peri-urban area of Homa Bay, 579 (33.0%) in the rural area of Homa Bay and 675 (38.4%) in Kakuma.

At study enrolment, each child's parent or caregiver completed an interview including key demographic and social variables, and the UNICEF-Washington Group Child Functioning Module (CFM). Each child was then individually assessed by a skilled assessor using the IDELA. This report presents findings from both the parent interview and the IDELA.

Key findings

Given the vastly different contexts of the three study sites, it is not advisable to compare findings between study areas. Each area's results should be considered separately.

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Homa Bay peri-urban

Children enrolled in the study in peri-urban Homa Bay ranged in age from three to seven, with a median age of five years. The sample was balanced by sex. The households in this area were on average relatively wealthier than the average population of Kenya. Most children had their mother (97.4%) and father (83.1%) still alive, and 63.5% of children lived with both parents. Children had a median household size of five, and a median of two siblings.

CFM results estimate overall prevalence of functional difficulties among children attending ECDE services in this area at 22.5%. Prevalence for children aged two to four was 10.3%, and the most common difficulty was in behaviour (4.9%). Prevalence for those aged five and above was 32.6%, and difficulty accepting change was the most common domain (13.8%). Overall, 7.2% of children experienced multiple functional difficulties.

The median IDELA score for children assessed in the Homa Bay peri-urban area was 52.2. Scores increased with age, starting from median 40.5 among the three-year-olds to median 57.8 among the six-year-olds and 65 among those aged seven and above. When controlling for age, there was no evidence of significant differences in scores by sex, functional difficulty or relative household wealth. Children living with both parents scored lower than others.

The overall IDELA score is calculated using scores for four different developmental domains. In peri-urban Homa Bay, the median score for socio-emotional development was 50, for emergent numeracy 43.1, for emergent literacy 41.1 and for motor development 75. In all domains, scores increased with age, although motor domain scores plateaued once children reached five years of age. Controlling for age, girls obtained significantly higher motor scores than boys, but no other significant differences were identified on the basis of sex, functional difficulty, household relative wealth and the presence of parents in the household.

Homa Bay rural

Children in the study sample in rural Homa Bay ranged in age from three to nine, with a median age of four. The sample was balanced by sex. The households in this study area were slightly poorer than the average population of Kenya. Most children had their mother (97.6%) and father (84.6%) still alive, while 66.3% lived with both parents. Children had a median household size of six, and a median of three siblings.

CFM results show a disability prevalence of 18.4% amongst children enrolled in the study. Prevalence among children aged two to four was 13.6%, with most frequently reported difficulties in communication (4.3%) and behaviour (4.0%). For children aged five and above, prevalence was 24.5%, with most frequently reported difficulties in the domains of remembering (8.7%) and accepting change (7.5%). Overall, 7.6% of the children experienced multiple functional difficulties.

The median IDELA score in rural Homa Bay was 44.7. Scores increased with age from median 29.8 among three-year-olds to 55 among six-year-olds, and 58.1 among those aged

seven and above. When controlling for age, there was no evidence of significant difference in scores by sex, functional difficulty, relative household wealth or the presence of parents in the household.

The median IDELA score for socio-emotional development was 41.3, emergent numeracy 37, emergent literacy 33.9 and motor development 65.6. Scores in all domains increased with the child's age. Controlling for age, girls performed significantly better than boys in the motor development domain, but no other significant differences in scores were identified on the basis of sex, functional difficulty, relative household wealth or the presence of parents in the household.

Kakuma

Children enrolled in the study in Kakuma ranged in age from two to eight, with a median age of four years. The sample was balanced by sex. Children's households were significantly poorer than the average population of Kenya with almost 90% of the sample coming from households in the two poorest national wealth quintiles. Most children had their mother (97.5%) and their father (84.6%) still alive, and 60.3% lived with both parents. Children lived in households with a median size of seven and had a median of three siblings.

Prevalence of functional difficulty in Kakuma was 8.8%. Prevalence for children aged two to four was 3.8%, with most frequently reported difficulties in the domains of walking (1.4%) and seeing (1.1%). For children aged five and above, prevalence was 18.2%, with the most frequently reported difficulties being anxiety (6.0%) and depression (5.6%). Overall, 3% of the children experienced multiple functional difficulties.

The median IDELA score for children assessed in Kakuma was 30.7. Scores generally increased with age from median 18.6 among three-year-olds to median 44.5 among six-year-olds. However, scores were slightly lower among those aged seven and above (median 39.5). When controlling for age, no evidence was found for significant differences in scores on the basis of sex, relative household wealth or presence of parents in the household, but children with functional difficulties did score significantly lower than those without.

In this area, the median IDELA score for socio-emotional development was 29, emergent numeracy 28.3, emergent literacy 34.9 and motor development 37.5. Scores for all domains increased with age, although emergent numeracy scores plateaued once children were five, and emergent literacy scores dropped for children aged seven and above. Controlling for age, scores for socio-emotional development and emergent numeracy were significantly lower for children with functional difficulties than without, but no significant difference was found for emergent literacy or motor development. Controlling for age, no significant differences in scores in any domain were found on the basis of sex or relative household wealth. Children living with both parents did score significantly lower in the motor development domain than other children.

Conclusion

This report provides crucial new information on the prevalence of functional difficulty among children enrolled in ECDE services in three areas of Kenya. While these three areas differ notably in various ways, and yield very different prevalence estimates, it's clear that in all cases, a substantial proportion of children enrolled in ECDE services have functional difficulties. This provides strong motivation for ensuring that a disability-inclusive approach to scaling-up ECDE is taken in Kenya.

Although children with disabilities are often missing from data on early development and learning, this report also demonstrates that it is possible to assess children with disabilities using standardised tools, when appropriate accommodations are made. This is crucial in monitoring whether ECDE services are meeting the needs of all children.

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Introduction

Inclusive early childhood education and development globally and in Kenya

Background

Early childhood is a crucial stage in a child's growth and development, influencing outcomes across their entire life. Recent estimates suggest that as many as 250 million children in low- and middle-income countries (LMICs) are at risk of not reaching their developmental potential (1). Two-thirds of these at-risk children live in sub-Saharan Africa (1). Furthermore, children from rural areas, those from poor households or displaced communities and those who have disabilities are at the highest risk of sub-optimal growth and development (2). Given the well-documented benefits of early childhood development and education (ECDE) to child development, future school performance and longer-term outcomes, there is a critical need to scale up quality ECDE services in LMICs (3-5).

Scaling-up ECDE requires an understanding of how specific approaches work in various contexts and for different groups of children. Existing evidence on the effectiveness of various early years interventions in LMICs is varied. Evidence supporting health and nutrition interventions among young children (from birth to three years) is comparatively strong (3, 5); whereas evidence for specific educational and social protection interventions in older children (three to eight years) is more patchy (6-8). Where data on interventions is available, it is also often focused on ECDE enrolment rather than attendance, participation and learning, limiting information about engagement with and progress through ECDE services.

Learning in ECDE classrooms is most effective when delivered through creative play approaches, encouraging mastery through doing and observation (9-11). However, less is known about the specific ECDE interventions that work for children in particularly vulnerable circumstances, including those with disabilities or living in extreme poverty. This is partly because these children are rarely present in mainstream ECDE settings; even when they are, their difficulties may not be recognised.

The Kenyan government has prioritised ECDE as part of its Vision 2030 Development Strategy (2008-2030) to increase equity of access and improve the quality of early childhood education services (12). However, insufficient instructional and play materials, high pupil-teacher ratios and inappropriate teaching methods remain persistent challenges (13). Good-quality evidence of the impact of ECDE provision on children's learning and developmental outcomes is also a gap (13). Inclusive approaches to ECDE are further constrained by limited training and support for teachers, and limited information on disability in general.

For this project, we use the definition laid out in the United Nations Convention on the Rights of Persons with Disabilities: "Persons with disabilities include those who have long-term physical, mental, intellectual or sensory impairments which in interaction with various

barriers may hinder their full and effective participation in society on an equal basis with others" (14). Unfortunately, reliable data on the prevalence and types of disability among children in Kenya, as well as the educational engagement of children with disabilities, remains limited (15-18). The United Nations Children's Fund (UNICEF) regional estimates released in 2021 provide a prevalence of 10% for Southern and Eastern Africa (19).

While courses on special needs education exist at diploma and undergraduate level, most teacher training remains focused on methodologies for teaching average learners, with only one unit on supporting learners with special needs, which is inadequate to build the necessary competency (18, 20). Additionally, challenges in the resourcing and quality of ECDE have a particular impact on children with disabilities, who are known to thrive in environments that nurture each child, providing them with the specific attention appropriate to their individual needs. This kind of inclusive environment, which values diversity, provides all children with additional benefits from learning alongside each other.

Promoting inclusive early childhood development and education in Kenya

Project overview

In response to the challenges of disability inclusion in pre-primary education in Kenya, a collaboration between the Kenyan Ministry of Education (MoE) and a consortium of international development organisations has developed an intervention project to promote effective disability-inclusive ECDE practices in Kenya. The consortium includes practitioners and researchers working in the areas of ECDE, special educational needs and disability, educational psychology, social anthropology and epidemiology in Kenya and Europe. The project's development has also included engagements with a wide range of stakeholders including the MoE, Ministry of Health (MoH), County Ministries of Education and Health, Teachers Service Commission (TSC), Kenya Institute of Curriculum Development (KICD), Kenya Early Childhood Development Network, Suba ECDE Teacher Training College, United Disabled Persons of Kenya (UDPK), National Council for Persons with Disability (NCPWD) and other local organisations of persons with disabilities (OPDs). The project has been funded by the UK AID as part of the Disability Inclusive Development (DID) programme.

The intervention project has collaboratively developed affordable and contextually appropriate inclusive ECDE approaches to improve learning, educational and developmental outcomes for all children, but specifically for children with disabilities. These interventions are being piloted in six selected pre-primary schools in Homa Bay County, and three schools in and around the Kakuma refugee camp. The outcomes are that (a) affordable, contextually appropriate inclusive ECDE practices result in improved participation and early educational outcomes for children with disabilities in project areas; and that (b) there is willingness from government partners to scale up inclusive ECDE.

An impact and participatory process evaluation has been designed to assess the effectiveness of the intervention project. This report presents the baseline findings from the impact evaluation component of this work.

Impact evaluation objectives

The impact evaluation will assess the impact of the intervention by comparing changes in developmental scores and educational outcomes of children in project schools with those of children in the matched schools without an intervention. It will also generate estimates for the prevalence of disability in preschool children attending project and matched control schools.

Objectives of this report

This report provides key findings from the baseline phase of data collection for the impact evaluation. It covers the demographic and socio-economic data from children enrolled in this study, prevalence of disability amongst these children and the developmental scores of these children.

Methods

Study design and population

This report presents baseline data from a non-randomised cluster control trial (21) of an intervention designed to enhance the inclusiveness of ECDE in Kenyan preschool settings. Data is presented from 12 study schools in Homa Bay County, and six near Kakuma in Turkana West sub-county. As this trial was integrated into an intervention programme, the choice of the study location was determined by the programmatic needs. Of the Homa Bay schools, six are located in urban or peri-urban settings, while the other six are in rural settings. The Kakuma schools were selected to cover refugee camp, refugee settlement and host community settings. School locations are mapped in Figure 1.

Figure 1: Location of study schools
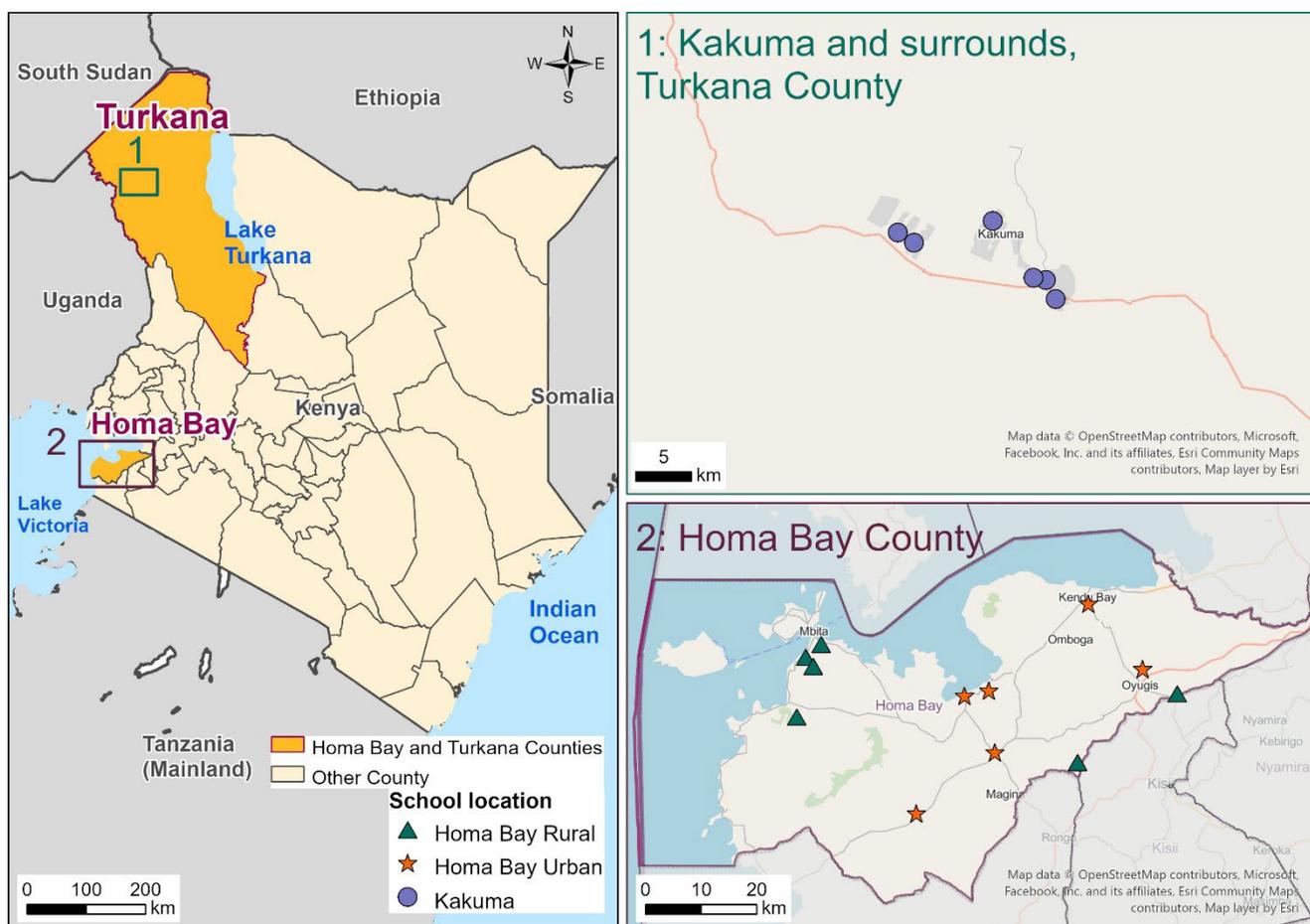
There are notable differences between the three study areas. Homa Bay is one of the more economically deprived counties in Kenya (22). Located along Lake Victoria in Western Kenya, the county's economy is based heavily on small-scale agriculture and fishing. The

dominant language in the area is Dholuo. The peri-urban area of Homa Bay, while still relatively poor, is the least poor of the three study areas. The presence of a small urban hub results in somewhat lower levels of poverty, population density is higher (23) and families tend to be smaller. Rural Homa Bay has notably higher levels of poverty, with most households dependent on small-scale farming or fishing. Population density is lower, meaning children may live further from schools, and families are slightly larger.

Turkana County differs markedly from Homa Bay. Located in the far North-West of Kenya, the area is arid, and is home to a large refugee camp (Kakuma) and settlement (Kalobeyei). Kenyan residents in the area are largely semi-nomadic pastoralists. Residents of the refugee camp and settlement come from many surrounding countries, including South Sudan, Somalia, Ethiopia, Democratic Republic of Congo (DRC) and others. As refugees, they are not entitled to work in Kenya, and rely largely on support from the United Nations (UN), remittances from family members overseas, and small-scale entrepreneurial activities. Due to these factors, the area is extremely economically deprived, with most households living in extreme poverty.

Sample size and selection process

Study schools (both intervention and control) were selected purposively by the project team in collaboration with local Ministry of Education officials. Inclusion criteria for schools were school leadership willingness to participate, existence and use of standardised registers, enrolment exceeding 50 children per academic year, and the absence of development partners or organisations implementing inclusive ECDE interventions.

Study population

The study population consisted of all children enrolling in the first year of preschool education (PP1) at each of the study schools at the beginning of either the 2021/2022 or 2022 adjusted academic years. As a result of school closures due to the COVID-19 pandemic, the Kenyan Ministry of Education adjusted term dates for the 2020, 2021 and 2022 school years to allow children to catch up. Children joining PP1 for the 2021/2022 school year started their schooling in July 2021, with the school year finishing in March 2022. The first cohort of study participants were enrolled from this group. Children joining PP1 for the 2022 school year began their schooling in April 2022, with the school year ending in November 2022. The second cohort of children enrolled in the study came from this group.

Inclusion criteria

All children entering PP1 at the beginning of either the 2021/2022 or 2022 adjusted academic year in a study school were eligible for participation. Note that school years were adjusted and compressed as a result of closure due to COVID-19. Due to resource constraints, study participation was capped at 50-70 children per school per year. In smaller schools, this meant all children starting school were enrolled in the study. In the larger Homa

Bay schools, study participation was 50-60% of children starting school. In the larger Kakuma schools, it was 20-25% of children. In larger schools, enrolment was on a first come, first served basis until the enrolment cap was reached.

Exclusion criteria

Children were excluded from the study if their parents or guardians refused to give consent, or if the child refused assent to participation. Children whose parents reported planning to relocate to another school or area within their child's PP1 year were also excluded, as were children whose parents or guardians could not be interviewed on their children's functional difficulties for various reasons.

Sample size and sampling strategy

Due to the lack of data to adequately inform calculation of a suitable sample size, the sample size was shaped by resource availability and practical considerations. With an anticipated enrolment of 50 children per school per year, the expected sample size was a total of around 100 children per school, 600 children per region and an overall total of 1,800 children.

Study instruments

The data described in this report derives from two different data collection components. The first was a baseline interview with each child's parent or guardian, and the second was the assessment of each child's development and early learning, both using standardised tools.

Caregiver interview

After a child's parent or caregiver had consented to their child's participation in the study, they were invited to complete a brief in-person individual interview. Interviewers captured responses directly onto tablets, using the CommCare data collection application (24). Interviews made use of several data collection instruments, as described below.

Demographic questionnaire

Contact information was collected to enable endline participant tracing. Respondents were also asked to provide some information regarding demographics and family composition. This included information on the respondent's relationship to the child and the parents' living arrangements. The questions included in this part of the interview are in Appendix A.

Equity tool

The second interview component was the Kenya Equity Tool (KET), a simple asset-based tool that allows the measurement of relative wealth (25). The KET used in this study was released in January 2017 and was based on the 2014 Demographic and Health Survey (DHS). This version of the KET comprises 13 questions which, when combined using specifically designed weights, generates an index value for each household or respondent. This value is used to categorise households into quintiles relative to the wealth of the

broader population, ranging from the poorest in quintile Q1 to the richest in quintile Q5. As this tool is benchmarked to 2014 data, but applied to data collected more recently, it is likely to somewhat overestimate the proportion of households in the wealthiest quintiles, and underestimate those in poorer quintiles.

It is possible to use this tool to generate quintiles based on either urban wealth distribution, or wealth distribution of the whole population. In this study, the national wealth distribution was used in calculating relative wealth for all study areas, including the peri-urban areas. This was guided by the fact that these areas were on the outskirts of a relatively small urban hub, sometimes at quite a distance. This may result in the slight overestimation of relative wealth of households in this area. The equity tool is included in Appendix B.

UNICEF/ Washington Group Child Functioning Module (CFM)

The third component of the caregiver interview was the UNICEF/Washington Group Child Functioning Module (CFM), a series of questions designed to assess whether a child is likely to have a disability (26-28). The tool assesses functional difficulties in children across several domains including vision, hearing, mobility, communication/comprehension, learning, emotions and playing in order to identify children who are at greater risk than others of experiencing limited participation in an unaccommodating environment. This module has been rigorously tested and validated for use globally, and is recognised as the gold standard for the identification of children with functional difficulties in surveys.

For children aged two to four, the tool consists of 16 questions covering eight domains, while for those aged five to 17 years, it contains 24 questions covering 13 domains. It is important to note that the CFM is more likely to identify functional difficulties in the five to 17 age range, because a broader range of domains of difficulty are assessed due to difficulties becoming more evident as children get older. For this reason, prevalence estimates are expected to be notably higher for children aged five and above than for those aged two to four.

Analysis made use of the recommended scoring and cut-offs for the identification of children with functional difficulties. Functional difficulty was defined as a response of "a lot of difficulty" or "cannot do at all" for at least one domain, a response of "a lot more" for the behaviour question among those aged two to four, a response of "more" or "a lot more" for the behaviour question among those aged five or more, or a response of "daily" to the anxiety or depression question (among the five-plus group). The CFM tool is in Appendix C.

Child development and early learning assessment

This component of data collection involved the assessment of the children's development and early learning, which was assessed using the International Development and Early Learning (IDELA) tool developed by Save the Children (29). The tool is designed for use with children aged from three and a half to six years of age, and has been rigorously tested and validated in a range of socio-cultural contexts (29-32). To date it has been used in over 65 countries, including Kenya. IDELA measures children's skills in emergent literacy, emergent numeracy, motor development and social-emotional development. The tool produces a

standardised measurement of children's skills and allows for comparison over time to understand whether or how groups of children may develop and learn differently.

In collaboration with Save the Children, the Sightsavers study team enhanced the set of accommodations already included in the study tool to facilitate the inclusion of young children with a range of functional difficulties. This involved providing comprehensive guidelines and training for the assessors, rather than changing the tool itself. A completed IDELA generates scores in four key domains (emergent literacy, emergent numeracy, motor development and socio-emotional development), in addition to providing an overall aggregated score. The IDELA tool and details on the construction of these scores are available on request from the Save the Children IDELA team (33).

Data collection

All project activities, including baseline data collection, were substantially delayed by the COVID-19 pandemic, which resulted in school closures and stringent regulations on activities in schools when they reopened.

Data collection took place over a period of four to six weeks early in each of the adjusted school years starting in July 2021 and April 2022. In Homa Bay, data was collected in September/October 2021 and May/June 2022. In Kakuma, data was collected in October/November 2021 and June/July 2022.

All study presence in schools was authorised by appropriate county and local authorities, and assessors made use of appropriate COVID-19 mitigations including the use of masks, social distancing and hand hygiene.

Data collection team and training

A total of 18 assessors were recruited: 12 in Homa Bay and six in Kakuma. All assessors were fluent in the most frequently used local languages, in addition to English and Kiswahili. Assessors were trained on data collection processes over a period of five days. This included standard training on administration of the CFM, as well as thorough theoretical and practical training on the IDELA. Assessors worked in teams of three to four, with one team per school. The team would stay at a school until study enrolment was completed, and then move to another school.

Study tools were translated into Kiswahili. The caregiver interview was additionally translated into Dholuo. Due to the range of languages used in the Kakuma area, it was not possible to formally translate study materials into additional languages – this is a limitation. Assessors were allocated to teams and study sites on the basis of language proficiency, and were supported by teachers or interpreters where absolutely essential.

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Enrolment process

At each school, the study team worked with headteachers and ECDE class teachers to inform parents and caregivers of the study, and to request each child's primary caregiver to come to the school, if interested, for further information and to enrol their child. When parents arrived at the school, each caregiver was provided with both verbal and written information on the study. Caregivers were encouraged to ask questions and take as much time as they needed to take a decision on a child's participation. If caregivers provided consent for their child's participation, an assessor would administer the caregiver interview with each parent, ensuring confidentiality of all responses. Parents were reimbursed for travel costs for their trip to the school.

Assessment process

Following the completion of a caregiver interviewer, assessors would work with ECDE teachers to schedule a time for the completion of the IDELA with the child. At the start of the assessment, assessors would secure the child's assent for completion of the assessment. Children were not placed under pressure to assent, and the assessment was only conducted if the child was keen to do it. Most children appeared to enjoy the assessment process greatly. Children were provided with milk and biscuits during or after the assessment.

Data analysis

Data collection was completed using tablets, through the CommCare data collection application (24). Data was downloaded in .csv format, and analysed using Stata V17 software (34) and R version 4.2.1 (35).

Data was analysed separately for each of the regions (Homa Bay peri-urban, Homa Bay rural and Kakuma) due to the widely different contexts of these settings. Data from both cohorts of children (those entering PP1 in July 2021 and in April 2022) was pooled for analysis.

Results were tabulated using descriptive statistics and 95% confidence intervals. Regression models were used to conduct comparisons of IDELA scores between groups, while adjusting for age. For all analyses, standard errors were adjusted for clustering within schools using the R package 'survey' (v4.1.1).

Ethical considerations

The study has been approved by the Strathmore University Science and Ethics Committee in Kenya, with reference number SU-IERC1019/21. Overall permission to conduct the study was secured from Kenya's National Commission for Science, Technology and Innovation (NACOSTI). Permission to conduct work within schools was additionally obtained from

stakeholders in the Ministry of Education, county and sub-county departments of education, and school management.

Prior to baseline data collection, parents and guardians were informed of the study both verbally and with written information sheets, and were encouraged to take the necessary time to make a decision about their child's participation. If participation was agreed, written informed consent was obtained. A disability-inclusive approach to recruitment ensured that potential participants with disabilities were not disadvantaged by a lack of appropriate adaptation or support. Throughout baseline data collection and analysis, particular care was taken to manage potential risks related to child protection and safeguarding, protection of confidentiality, voluntary participation, minimising demands on participant time and potential emotional upset.

Results

Study sample and demographic characteristics

As previously described, the three study areas have marked contextual and socio-economic differences. For these reasons, results for the CFM and IDELA should be considered separately for each area, rather than in comparison. In the following sections, we describe each set of results separately for each of the three areas.

Response rate and attained sample size

A total of 1,756 children were enrolled in the study: 502 (28.6%) in the peri-urban area of Homa Bay, 579 (33.0%) in the rural area of Homa Bay and 675 (38.4%) in Kakuma. The attained sample size is slightly lower than the targeted sample size of 1,800, but not problematically low.

Table 1 shows the overall number of PP1 children eligible for the study across both enrolment periods, the number and proportion of these children that were enrolled in the study, and the number of these children who completed the IDELA. School and class sizes in Homa Bay were notably smaller than in Kakuma, meaning that a higher proportion of eligible children could be enrolled in Homa Bay. Across all regions, most children enrolled in the study completed the IDELA. However, completion rates were lower in Kakuma than other regions due to large class sizes and harsh conditions, making it challenging at times to locate the appropriate child.

Table 1: Response rate and overall enrolment by region

	Homa Bay peri-urban	Homa Bay rural	Kakuma
PP1 children in study schools (both recruitment periods)	695	766	2641
Cohort size (% of eligible children enrolled in study)	502 (72%)	579 (76%)	675 (26%)
IDELA completed N (% of cohort)	480 (96%)	554 (96%)	587 (87%)

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Key sample characteristics

Key sample characteristics are presented in Table 2 below. In peri-urban Homa Bay, children ranged in age from three to seven years (median age of five), and the sample includes a slightly higher proportion of boys (52.4%) than girls (47.6%). The median age of boys was five, while the median age of girls was four. Children were more likely to live in families in the upper three Kenyan wealth quintiles (71.3%) than in the lower two (28.7%), suggesting that this population was slightly wealthier than the average population of Kenya – although as previously indicated, the tool is likely to be overestimating the proportion of households in higher wealth quintiles due to its age. (If this population was similar to the average Kenya population, one would expect around 40% of children coming from the households to fall into the two poorest quintiles.)

In rural Homa Bay, children ranged in age from three to nine, with a median age of four for both boys and girls. The sample was balanced by sex, comprising 50.9% boys and 49.1% girls. The relative wealth assessment suggests that this population is poorer than the average Kenya population. Just over half of children came from homes in the two lowest wealth quintiles (50.9%), while the remaining 49.1% lived in homes in the upper three.

The ages of children in Kakuma ranged from two to eight years, with a median age of four for both boys and girls. The sample was roughly even in terms of sex, with 50.4% boys and 49.6% girls. This population was much poorer than the average population of Kenya. Most children (87.7%) came from homes falling in the two lowest wealth quintiles; and only 12.3% came from homes in the three other wealth quintiles.

Table 2: Participant demographics by region. Data is N (%) or median (IQR) unless otherwise specified

		Homa Bay peri-urban	Homa Bay rural	Kakuma
Sex	Boys	263 (52.4%)	295 (50.9%)	340 (50.4%)
	Girls	239 (47.6%)	284 (49.1%)	335 (49.6%)
Age (years)	Overall	5 (4-5)	4 (4-5)	4 (4-5)
	Range	3-7	3-9	2-8
	Boys	5 (4, 5)	4 (4, 5)	4 (4, 5)
	Girls	4 (4, 5)	4 (4, 5)	4 (4, 5)
Relative wealth quintile	Poorest (Q1-Q2)	144 (28.7%)	295 (50.9%)	592 (87.7%)
	Wealthier (Q3-Q5)	358 (71.3%)	283 (49.1%)	83 (12.3%)

Table 3 presents key information on household composition. In peri-urban Homa Bay, caregiver interviews were most frequently completed with the child's mother (67.5%), followed by the father at 16.7% and a guardian in 12.4% of cases. Most children (97.4%) had a mother who was alive, while slightly fewer (83.1%) had a father who was still alive. While most children lived with both parents (63.5%), a further 23.7% lived with their mother only, and 11.4% lived with neither parent. Children lived in households with a median of five members and had a median of two siblings.

In rural Homa Bay, mothers most frequently completed the caregiver interview (66.7%), followed by fathers (16.4%) and guardians (11.9%). Most children had a mother who was alive (97.6%), while 84.6% had a father who was still alive. Most children (66.3%) lived with both parents, although 20.2% lived with only their mother, and a further 10.2% lived with neither parent. Children lived in households with a median size of six, and had a median of three siblings.

In Kakuma, almost a three-quarters of caregiver interviews (73.6%) were completed with the child's mother, while 15.4% were completed with the father. A small proportion of interviews were conducted with another family member (5.8%) or a guardian (5.2%). Most children had their mother still alive (97.5%), while 84.6% had their father still alive. Well over half of children (60.3%) lived with both parents, while a third lived with only their mother (33.3%)

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and 4.6% lived with neither parent. Children lived in households with a median of seven members, and had a median of three siblings.

Table 3: Participants' family information by region. Data is N (%) or median (IQR)

		Homa Bay peri-urban	Homa Bay rural	Kakuma
Respondent's relationship to child	Mother	339 (67.5%)	386 (66.7%)	497 (73.6%)
	Father	84 (16.7%)	95 (16.4%)	104 (15.4%)
	Family member/other	17 (3.4%)	29 (5.0%)	39 (5.8%)
	Guardian	62 (12.4%)	69 (11.9%)	35 (5.2%)
Mother alive		489 (97.4%)	564 (97%)	658 (97.5%)
Father alive		417 (83.1%)	489 (84.6%)	571 (84.6%)
Number of people in household		5 (4-7)	6 (5-7)	7 (6-9)
Number of siblings		2 (1-4)	3 (2-4)	3 (2-5)
Presence of parents in child's household[1]	Mother and father	314 (62.5%)	384 (66.3%)	407 (60.3%)
	Mother only	119 (23.7%)	117 (20.2%)	225 (33.3%)
	Father only	12 (2.4%)	18 (3.1%)	12 (1.8%)
	Neither mother nor father	57 (11.4%)	59 (10.2%)	31 (4.6%)

Proportion of children with functional difficulties

Functional difficulty results are based on the analysis of all children enrolled in the study in each area and are shown in Table 4. In the Homa Bay peri-urban area, 10.3% of those aged two to four had functional difficulties. This proportion was significantly higher among the children aged five and above (32.6%). Overall, 22.5% of children enrolled in the study in this

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[1] When mothers or fathers were reported to live with the child 'sometimes only', they were categorised as not living with the child.

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area had functional difficulties. This proportion was lower among girls than boys, but the difference was not statistically significant. As expected, children with functional difficulty were slightly older (median age five) than those without functional difficulty (median age four). As shown in Figure 2, the most frequently reported type of difficulty among those aged two to four was behavioural (4.9%), and as shown in Figure 3, among those aged five and above it was accepting change (13.8%). Overall, 7.2% of children experienced multiple (more than one domain) functional difficulties: 2.2% of two to four year olds and 11.2% of those aged five and above.

In the Homa Bay rural area, 13.6% of those aged two to four had functional difficulties, and this proportion was higher among the older children (24.5%). Confidence intervals around the estimates were, however, very wide and the difference was not statistically significant. The overall proportion of children with functional difficulties was 18.4%. This proportion was lower among girls than boys, but the difference was not statistically significant. Children with functional difficulty were slightly older (median age five) than those without functional difficulty (median age four). The most frequently reported types of difficulties among those aged two to four was communication (4.3%) and behaviour (4.0%). Among those aged five and above, it was remembering (8.7%) and accepting change (7.5%). Overall, 7.6% of the children experienced multiple functional difficulties, 3.7% among the two to four year olds and 12.6% among those aged five and above.

In the Kakuma area, 3.8% of those aged two to four had functional difficulties, and this proportion was significantly higher among older children (18.2%). The overall proportion of children with functional difficulties was 8.8%. This proportion was lower among girls than boys but the difference was not statistically significant. Children with functional difficulty were slightly older (median age five) than those without functional difficulty (median age four). The most frequently reported types of difficulties among those aged two to four were mobility (1.4%) and vision (1.1%). Among those aged five and above, these were anxiety (6.0%) and depression (5.6%). Overall, 3% of the children experienced multiple functional difficulties: 0.2% among the two to four year olds and 8.2% among those aged five and above.

Table 4: Proportion of children with functional difficulties

		Homa Bay peri-urban	Homa Bay rural	Kakuma
Ages 2-4	N (%)	23 (10.3%)	44 (13.6%)	17 (3.8%)
	95% CI	[4.6, 21.0]	[7.4, 24.0]	[2.3, 6.0]
Ages 5+	N (%)	89 (32.6%)	62 (24.5%)	42 (18.2%)
	95% CI	[23.5, 43.0]	[16.9, 34.0]	[10.2, 30.0]
Overall (all ages)	N (%)	112 (22.5%)	106 (18.4%)	59 (8.8%)
	95% CI	[14.7, 33.0]	[12.0, 27.0]	[5.1,15.0]
Boys	N (%)	65 (25.1%)	62 (21.1%)	37 (10.9%)
	95% CI	[15.5, 38.0]	[15.8, 28.0]	[8.20, 14.0]
Girls	N (%)	47 (19.7%)	44 (15.5%)	22 (6.6%)
	95% CI	[13.6, 28.0]	[7.9, 28.0]	[2.3, 17.0]
Age with functional difficulty	Median (IQR)	5 (5, 6)	5 (4, 5)	5 (4, 6)
Age without functional difficulty	Median (IQR)	4 (4, 5)	4 (4, 5)	4 (3, 5)

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Figure 2: Proportion of children with functional difficulties by domain of difficulty among those aged two to four[2]

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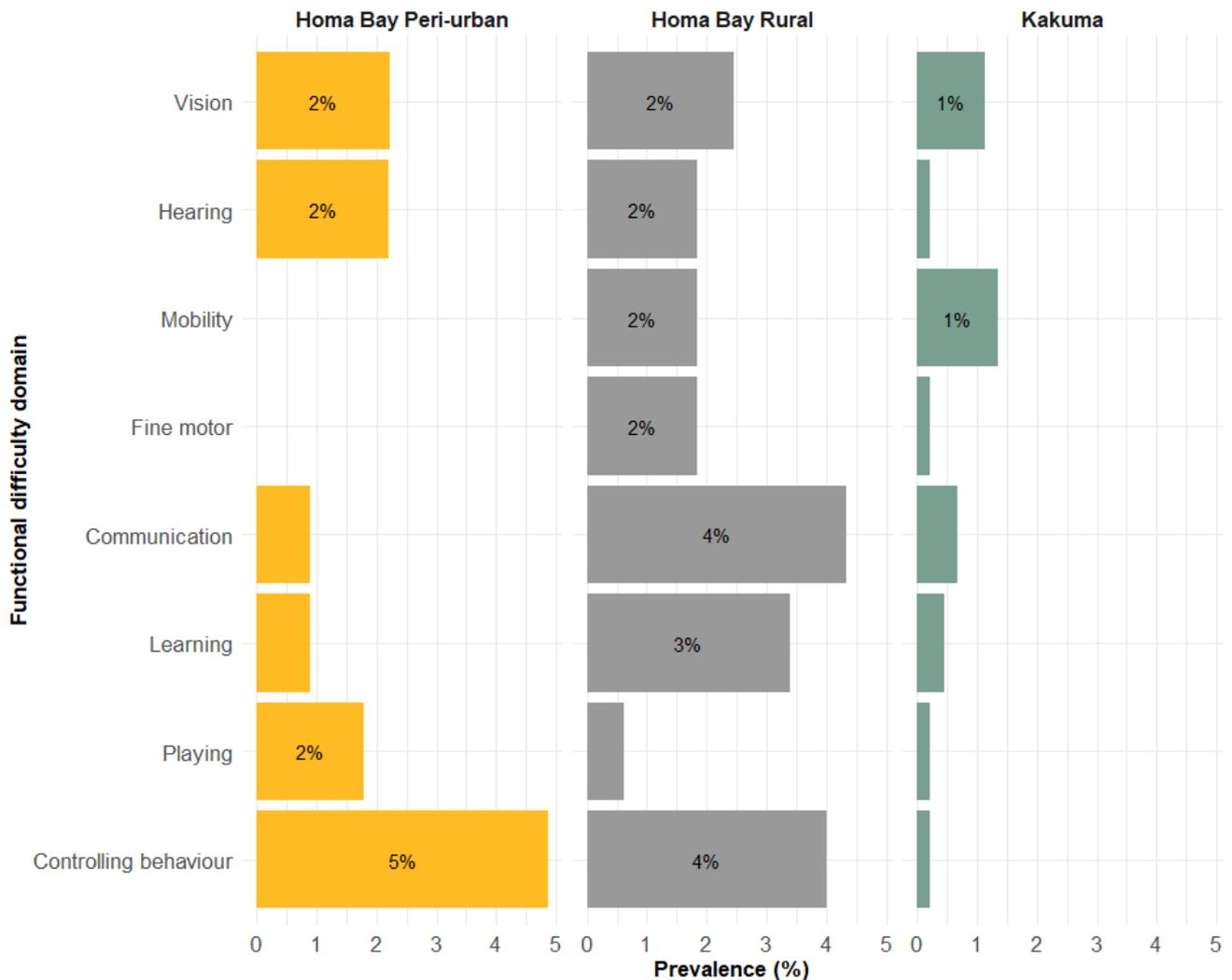
[2] The domains of functional difficulties are not mutually exclusive, a child will be counted in each of the domains in which they experience functional difficulties.

Figure 3: Proportion of children with functional difficulties by domain of difficulty among those aged five and above
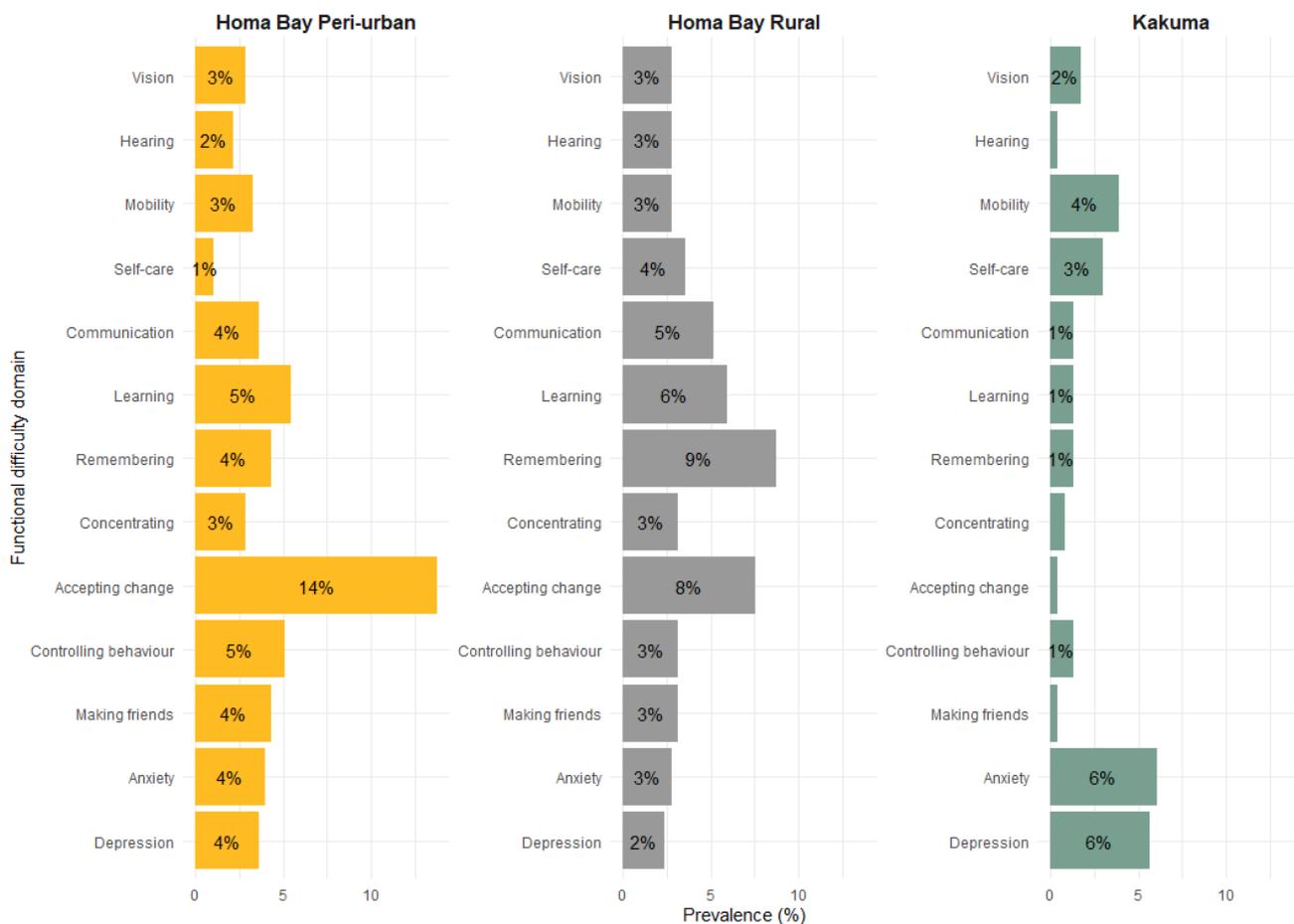
Early childhood learning and development

The IDELA was administered to 1,621 children. This included 253 (91%) of the 271 children with disabilities in the study sample. For analysis, assessments of children under three (N=9) have been excluded as they were too young for adequate use of the tool. Older children aged seven to nine (N=52) were included in the analysis; these were pooled as the numbers in each age group were too small to assess separately. Please note that these children were older than the age range for which IDELA was designed (three and a half to six years) and older than the typical ECDE age in Kenya. In all three areas, children aged seven or above were more likely to have functional difficulties than children aged five or six. This suggests that some of these older children may be in ECDE due to disability or learning difficulties.

For each region, we described IDELA scores overall and by age. To compare IDELA scores between boys and girls, and between children with and without functional difficulties, we conducted univariate linear regression models with IDELA scores as the outcome and sex or functional difficulty as a covariate, adjusting for age due to the strong correlation between age and IDELA (29). Standard error estimation was adjusted for clustering within schools. In

the model results presented in Tables 5 and 6, positive estimates indicate that scores are on average higher, while negative estimates indicate that scores are on average lower. A confidence interval that does not span zero indicates that the difference is statistically significant. We first present the total IDELA scores and then examine the different domains of IDELA: socio-emotional development, emergent numeracy, emergent literacy and motor development.

Overall IDELA scores

In the Homa Bay peri-urban area, the median IDELA score was 52.2. As expected, scores increased with age, starting from median 40.5 among three year olds to median 57.8 among six year olds and 65 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between girls and boys, nor between children with and without functional difficulties. Scores were on average higher for the children living with one or neither parent compared to those living with both parents. No statistically significant differences were observed in terms of relative wealth.

In the Homa Bay rural area, the median IDELA score was 44.7. Scores increased with age from median 29.8 among three year olds to 55 among six year olds and 58.1 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between girls and boys, nor between children with and without functional difficulties. No significant differences were observed in terms of relative wealth nor residence with parents.

In the Kakuma area, the median IDELA score was 30.7. Scores generally increased with age: from median 18.6 among three year olds to median 44.5 among six year olds. However, scores were slightly lower among those aged seven and above (median 39.5). Regression models adjusting for age showed that scores were on average significantly lower for children with functional difficulties than those without functional difficulties. No significant differences were observed in terms of sex, relative wealth or living with parents.

Table 5: Total IDELA scores by age and region

		Homa Bay peri-urban	Homa Bay rural	Kakuma
Overall	N	480	554	578
	Median (IQR)	52.2 (41.4, 61.3)	44.7 (32.2, 56.7)	30.7 (19.6, 41.6)
3-year-old	N	50	92	133
	Median (IQR)	40.5 (28.4, 50.7)	29.8 (19.8, 43.8)	18.6 (10, 30.7)
4-year-old	N	165	221	255
	Median (IQR)	48.9 (38.5, 57.8)	41 (28.7, 51.6)	29.1 (20.8, 39.6)
5-year-old	N	178	162	123
	Median (IQR)	56.3 (46.3, 63.9)	51.3 (41.3, 60.2)	37.8 (28.7, 47.6)
6-year-old	N	73	58	50
	Median (IQR)	57.8 (48, 66.5)	55 (44, 64.8)	44.5 (34.8, 50.8)
7 and older[3]	N	14	21	17
	Median (IQR)	65 (53.9, 67.8)	58.1 (53.4, 81.1)	39.5 (32.8, 53.6)

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[3] Among those aged seven and above, 29% have functional difficulties in Homa-Bay peri-urban, 33% in Homa-Bay rural and 29% in Kakuma

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Table 6: Total IDELA scores – univariate regression models adjusting for age. Data is estimates and 95%CI.

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Girl (vs Boy)	1.48 [-0.98, 3.94]	4.04 [-0.31, 8.38]	-1.8 [-4.90, 1.31]
With vs without functional difficulty	-2.44 [-6.30, 1.42]	-0.03 [6.03, 5.97]	**-4.91 [-8.23, -1.59]**
Wealth quintile: Wealthier Q3-Q5 (vs poorest Q1-Q2)	0.35 [-3.84, 4.54]	1.15 [-1.93, 4.23]	-1.46 [-4.97, 2.05]
Residence with parents: (Only one/neither) vs both present	**2.37 [0.23, 4.51]**	-0.47 [-5.37, 4.35]	3.07 [-0.97, 7.12]

Socio-emotional development

In the Homa Bay peri-urban area, the median IDELA score for socio-emotional development was 50 (Table 7). As expected, scores increased with age, starting from median 37 among three year olds to median 55.3 among six year olds and 54.8 among those aged seven and above. Regression models (Table 8) adjusting for age showed no statistically significant differences between girls and boys, nor between children with and without functional difficulties. No significant differences were observed in terms of relative wealth nor residence with parents.

In the Homa Bay rural area, the median IDELA score for socio-emotional development was 41.3. Scores increased with age from median 29.2 among three year olds to 43.5 among six year olds and 62 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between girls and boys, nor between children with and without functional difficulties. No significant differences were observed in terms of relative wealth nor residence with or without both parents.

In the Kakuma area, the median IDELA score for socio-emotional development was 29. Scores increased with age from median 22.3 among three year olds to median 37.7 among six year olds and 39 among those aged seven and above. Regression models adjusting for age showed that scores were on average significantly lower for those with functional difficulties than for those without. No significant differences were observed in terms of sex, relative wealth or residence with parents.

Table 7: IDELA socio-emotional scores by age and region. Data is median (IQR)

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Overall	50 (33.3, 66.7)	41.3 (26.4, 60)	29 (18, 42.7)
3-year-olds	37 (27.3, 53.6)	29.2 (18.3, 46)	22.3 (12.7, 30.7)
4-year-olds	48.3 (30, 63.3)	38.3 (24, 57.3)	28.7 (17.3, 42.3)
5-year-olds	53.3 (36, 69.9)	46.3 (32.4, 65.5)	32.7 (22, 47.3)
6-year-olds	55.3 (43.7, 66.3)	43.5 (31.2, 64.8)	37.7 (28.2, 50.9)
7 and older	54.8 (40.6, 64.3)	62 (45.3, 80)	39 (28.7, 48.3)

Table 8: IDELA socio-emotional scores by sex and functional difficulty status – univariate regression models adjusting for age. Data is estimates and 95%CI.

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Girl (vs Boy)	-1.92 [-6.03, 2.19]	2.40 [-5.67, 10.46]	-3.17 [-6.83, 0.49]
With vs without functional difficulty	-0.87 [-10.28, 8.53]	2.16 [-6.78, 11.10]	-6.60 [-12.72, -0.49]
Wealth quintile: Wealthier Q3-Q5 (vs poorest Q1-Q2)	1.21 [-5.11, 7.53]	3.33 [-2.25, 8.91]	0.18 [-1.55, 1.90]
Residence with parents: (Only one/neither) vs both present	2.15 [-1.97, 6.27]	-1.82 [-6.87, 3.24]	1.60 [-3.19, 6.40]

Emergent numeracy

In the Homa Bay peri-urban area, the median IDELA score for emergent numeracy was 43.1. As expected, scores increased with age starting from median 31.9 among three year olds to median 46.9 among six year olds and 67.4 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between

girls and boys, nor between children with and without functional difficulties. No significant differences were observed in terms of relative wealth nor presence of parents.

In the Homa Bay rural area, the median IDELA score for emergent numeracy was 37. Scores increased with age from median 27.1 among three year olds to 48.3 among six year olds and 53.3 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between girls and boys, nor between children with and without functional difficulties. No significant differences were observed in terms of relative wealth nor presence of biological parents.

In the Kakuma area, the median IDELA score for emergent numeracy was 28.3. Scores increased with age from three to five: median 19.8 among three year olds to median 33.6 among five year olds. However, scores seem to plateau afterwards, with median 33.1 among six year olds and 32.9 among those aged seven and older. Regression models adjusting for age showed that scores were on average significantly lower for those with functional difficulties than for those without. No significant differences were observed in terms of sex, relative wealth or residence with parents.

Table 9: IDELA emergent numeracy scores by age and region. Data is median (IQR)

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Overall	43.1 (31.4, 54.1)	37 (25.1, 49.2)	28.3 (17.1, 39)
3-year-olds	31.9 (23.4, 42.7)	27.1 (17.7, 38.9)	19.8 (10, 30.5)
4-year-olds	38.6 (27.1, 50.5)	32.6 (21.9, 42.9)	26.9 (17.1, 38.9)
5-year-olds	45.8 (36, 57.3)	40.8 (32.4, 52.8)	33.6 (22.6, 46.4)
6-year-olds	46.9 (37.4, 65.2)	48.3 (38.3, 63.3)	33.1 (25.1, 44.2)
7 and older	67.4 (53.5, 73.6)	53.3 (40.7, 72.1)	32.9 (26, 47.1)

Table 10: IDELA emergent numeracy scores by sex and functional difficulty status – univariate regression models adjusting for age. Data is estimates and 95%CI.

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Girl (vs Boy)	0.19 [-3.16, 3.54]	2.53 [-0.83, 5.89]	-2.73 [-6.08, 0.61]
With vs without functional difficulty	-3.56 [-7.99, 0.86]	-0.01 [-5.97, 5.96]	-3.89 [-6.44, -1.34]
Wealth quintile: Wealthier Q3-Q5 (vs poorest Q1-Q2)	-0.19 [-5.28, 4.90]	-0.27 [-4.55, 4.02]	-4.12 [-8.92, 0.67]
Residence with parents: (Only one/neither) vs both present	1.20 [-1.93, 4.33]	0.78 [-4.73, 6.29]	1.20 [-4.92, 7.32]

Emergent literacy

In the Homa Bay peri-urban area, the median IDELA score for emergent literacy was 41.1. As expected, scores increased with age, starting from median 33.1 among three year olds to median 46.4 among six year olds and 47.2 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between girls and boys, children with and without functional difficulties, children from different relative wealth quintiles nor those living with parents in the household.

In the Homa Bay rural area, the median IDELA score for emergent literacy was 33.9. Scores increased with age from median 25.8 among three year olds to 43.3 among six year olds and 52.5 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between girls and boys, children with and without functional difficulties, children from different relative wealth quintiles nor those living with their parents.

In the Kakuma area, the median IDELA score for emergent literacy was 23.3. Scores increased with age from three to six: median 11.7 among three year olds to median 34.9 among six year olds. However, the median score was lower among those aged seven or above (24.2). Regression models adjusting for age showed no statistically significant differences between girls and boys, children with and without functional difficulties, children from different relative wealth quintiles nor for residence with parents in the household.

Table 11: IDELA emergent literacy scores by age and region. Data is median (IQR)

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Overall	41.1 (30.8, 50)	33.9 (24.2, 47.1)	23.3 (10.8, 36.4)
3-year-olds	33.1 (21.9, 42.6)	25.8 (11, 33.3)	11.7 (0.8, 24.4)
4-year-olds	40 (29.2, 46.7)	31.1 (22.8, 42.2)	23.6 (12.1, 32.5)
5-year-olds	42.9 (32.5, 52.2)	39.9 (29.4, 51.4	31.9 (17.8, 43.1)
6-year-olds	46.4 (35.6, 54.7)	43.3 (31.5, 56.5)	34.9 (20.6, 45.1)
7 and older	47.2 (41.5, 62.7)	52.5 (37.5, 59.4)	24.2 (22.5, 46.1)

Table 12: IDELA emergent literacy scores by sex and functional difficulty status – univariate regression models adjusting for age. Data is estimates and 95%CI.

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Girl (vs Boy)	1.00 [-2.71, 4.71]	3.28 [-0.64, 7.21]	-0.78 [-5.73, 4.16]
With vs without functional difficulty	-3.48 [-7.21, 0.25]	-1.34 [-6.99, 4.32]	-3.52 [-10.85, 3.82]
Wealth quintile: Wealthier Q3-Q5 (vs poorest Q1-Q2)	3.13 [-2.88, 9.13]	1.22 [-2.31, 4.75]	-0.76 [-6.84, 5.32]
Presence of parents: (Only one/neither) vs both present	2.23 [-1.44, 5.91]	0.36 [-5.79, 6.51]	2.45 [-1.38, 6.29]

Motor development

In the Homa Bay peri-urban area, the median IDELA score for motor development was 75. As expected, scores increased with age, starting from median 56.2 among three year olds to median 81.2 among five year olds. However, they seemed to plateau afterwards with median 78.1 among six year olds and 81.6 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between children with and without functional difficulties, whereas girls had significantly higher motor development

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scores than boys. No statistically significant differences were observed in terms of relative wealth nor residence with parents in the household.

In the Homa Bay rural area, the median IDELA score for motor development was 65.6. Scores increased with age: from median 35.6 among three year olds to 75 among six year olds and 84.4 among those aged seven and above. Regression models adjusting for age showed no statistically significant differences between children with and without functional difficulties, whereas girls had significantly higher motor development scores than boys. No statistically significant differences were observed in terms of relative wealth nor living with parents.

In the Kakuma area, the median IDELA score for motor development was 37.5. Scores increased with age from median 20 among three year olds to median 63.4 among six year olds and 66.2 among those aged seven or above. Regression models adjusting for age showed no statistically significant differences between girls and boys, nor between children with and without functional difficulties or children from relative wealth quintiles. However, those with only one parent in the household or neither parents present had significantly higher scores than those with both parents in the household.

Table 13: IDELA motor scores by age and region. Data is median (IQR)

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Overall	75 (56.2, 87.5)	65.6 (38.8, 81.2)	37.5 (24.1, 58)
3-year-olds	56.2 (37.5, 77.3)	35.6 (16.9, 62.5)	20 (2.5, 35)
4-year-olds	70.6 (50, 81.2)	56.9 (34.4, 75)	37.5 (25, 50)
5-year-olds	81.2 (65.6, 90.6)	75 (57, 87.2)	50 (37.5, 69.1)
6-year-olds	78.1 (68.1, 90.6)	75 (62.7, 89.4)	63.4 (51.7, 79.5)
7 and older	81.6 (70.6, 93)	84.4 (65.6, 96.9)	66.2 (41.9, 84.4)

Table 14: IDELA motor scores – univariate regression models adjusting for age. Data is estimates and 95%CI.

	Homa Bay peri-urban	Homa Bay rural	Kakuma
Girl (vs Boy)	6.64 [2.37, 10.90]	7.94 [1.98, 13.90]	-0.50 [-5.61, 4.62]
With vs without functional difficulty	-1.84 [-4.89, 1.20]	-0.94 [-8.21, 6.33]	-5.64 [-14.31, 3.03]
Wealth quintile: Wealthier Q3-Q5 (vs poorest Q1-Q2)	-2.73 [-9.26, 3.79]	0.32 [-3.87, 4.51]	-1.13 [-11.98, 9.72]
Presence of biological parents: (Only one/neither) vs both present	3.90 [-2.36, 10.15]	-1.21 [-6.76, 4.33]	7.03 [0.75, 13.32]

Discussion

This report provides crucial new information on the prevalence of disability among children enrolled in ECDE services in three areas of Kenya. While the three study areas differ notably in various ways, and yield very different prevalence estimates, in all cases the proportion of children enrolled in ECDE services who have functional difficulties is not small. This provides strong motivation for ensuring that a disability-inclusive approach to scaling-up ECDE is taken in Kenya.

Our results show a substantially higher prevalence of reported functional difficulties among children attending ECDE in Homa Bay (22.5% in semi-urban and 18.4% in rural areas) than in Kakuma (8.8%).

Data on prevalence of functional difficulties among children of preschool age in sub-Saharan Africa are very limited. A study conducted by Sightsavers in rural Malawi in 2016-2017 estimated prevalence of functional difficulty among preschool children attending ECDE services at 10.7% and at 6.6% in 2017-2018. Similarly to this study, the study in Malawi found the prevalence of functional difficulties among older children (aged five years and above) significantly higher than among two to four year olds. This is commonly agreed in the academic literature, as parents are more likely to observe difficulties in functioning in older children, and the larger range of domains in the version of the CFM used for children aged five and above.

According to our knowledge, this is the first study to measure prevalence of functional difficulty in a preschool sample living in refugee settlements; and so we find it difficult to place our prevalence estimates in Kakuma in the context of other studies. There may be numerous factors contributing to the differences in prevalence we observed between Kakuma and Homa Bay. For example, our assessors reported that during data collection, parents and caregivers in Kakuma were more reluctant to share information about difficulties experienced by children due to concerns about stigma and discrimination. If this is the case, exploring and working to address this problem is crucial, as unless parents feel that it is safe to share information about difficulties their child may be experiencing, it will be challenging to ensure that ECDE provision meets the needs of these children. Differences may also relate to challenges in translating tools into all appropriate languages in Kakuma, meaning that in some cases parents were not interviewed in their home language, or that assistance from an interpreter was required.

Although not presented here, our data shows a fair amount of variation between schools within each study area. Again, there are many potential contributing factors, but this would be an area for further exploration during the qualitative components of this study, as it may be that certain school-level practices or policies are particularly supportive of either the enrolment of children with functional difficulties, or the identification of functional difficulties themselves.

We also note variations across study areas in the domains in which difficulties are most frequently reported. There are particularly striking differences between Kakuma and either of the Homa Bay sites for both age groups. For two to four year olds, mobility and vision are the most frequent areas of difficulty in Kakuma; while in both Homa Bay sites, behavioural and cognitive difficulties are more frequently reported. For children aged five and above, the pattern in Kakuma shifts, such that functional difficulties in the domains of anxiety and depression are most frequently identified. These variations merit further exploration.

Although children with disabilities are often missing from data on early development and learning, this report also demonstrates that it is possible to assess children with functional difficulties using standardised tools when appropriate accommodations are made. This is crucial in monitoring whether ECDE services are meeting the needs of all children.

Using an enhanced set of adaptations with the IDELA enabled study assessors to complete the IDELA with 253 (91%) of the 271 children with disabilities in the study sample. Endline IDELA assessments, along with a nested qualitative study, will provide further information on the effectiveness of various adaptations, as well as insight into how to further enhance the inclusivity of the tool.

Administration of the IDELA was more challenging in Kakuma than elsewhere, due to large numbers of children, the extremely harsh environment and the large number of languages used by children in the area. While it would have been ideal to translate the IDELA into all the relevant languages used by the children, this was not possible due to the large number of languages and difficulty in finding qualified translators. As a result, wording was not completely standardised across assessments, and some assessments required the assistance of an interpreter, typically from within the school. This will likely have reduced the quality of data collected to some extent.

We found no evidence of significant differences between scores of children with and without functional difficulties in either Homa Bay region. However, in Kakuma the overall IDELA scores of children with functional difficulties were lower than for children without, driven by lower scores in the domains of socio-emotional development and emergent numeracy. This may relate in part to lower rates of disclosure of difficulties by parents in the area, resulting in the group of children with difficulties identified in Kakuma having more severe impairments. Future work to understand in more detail the use of adaptations in assessing children with functional difficulties may shed additional light on these patterns.

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Appendices

Appendix A: Demographic content from the caregiver interview

<u>Background Information</u>

Parent/guardian's name/ Jina la mzazi/mlezi: _____

Relationship to the child/ Uhusiano na mtoto: _____

Marital status/ Hali ya kindoa: _____

Parent/guardian's highest level of education/ Kiwango cha juu cha elimu ya mzazi/mlezi: _____

Phone number/ Nambari ya simu: _____

Child's name/ Jina la mtoto: _____

Date of birth/ Tarehe ya kuzaliwa: _____

Gender/ Jinsia: _____

1. How many people usually live with you in your household?/ Mnaishi na watu wangapi katika boma hili?_____
2. How many siblings does the child have/ Mtoto huyu ana ndugu wangapi?
3. Is the child's natural mother alive/ Mama mzazi wa mtoto huyu angali hai?
4. Does the child's natural mother live with him/her in the same household/ Mtoto huyu anaishi na mama yake mzazi?
5. Is the child's natural father alive/ Baba mzazi wa mtoto huyu angali hai?
6. Does the child's natural father live with him/her in the same household/ Mtoto huyu anaishi na mama yake mzazi katika boma hili?

Appendix B – Kenya Equity Tool

Questions	Option 1	Option 2	Option 3
Q1 Does your household have: electricity?	Yes	No	
Q2 a television?	Yes	No	
Q3 a sofa?	Yes	No	
Q4 a cupboard?	Yes	No	
Q5 a DVD player?	Yes	No	
Q6 a radio?	Yes	No	
Q7 a table?	Yes	No	
Q8 a clock?	Yes	No	
Q9 What is the main material of the floor of your dwelling?	Cement	Earth, sand	Other
Q10 What is the main material of the external walls of your dwelling?	Dung/mud/soil	Other	
Q11 What is the main material of the roof of your dwelling?	Thatch/grass/makuti	Other	
Q12 What type of fuel does your household mainly use for cooking?	Wood	LPG/natural gas	Other
Q13 What kind of toilet facility do members of your household usually use?	No facility/bush/field	Other	

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Appendix C: UNICEF/Washington group CFM

Appendix C.1: For 2 to 4 year olds

CHILD FUNCTIONING (AGE 2-4)		CF
CF1. I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT DIFFICULTIES YOUR CHILD MAY HAVE. DOES (*NAME*) WEAR GLASSES?	Yes .... 1 No 2	2↝CF3
CF2. WHEN WEARING HIS/HER GLASSES, DOES (*name*) HAVE DIFFICULTY SEEING? WOULD YOU SAY (*NAME*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	1↝CF4 2↝CF4 3↝CF4 4↝CF4
CF3. DOES (*name*) HAVE DIFFICULTY SEEING? WOULD YOU SAY (*NAME*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	
CF4. DOES (*name*) USE A HEARING AID?	Yes .... 1 No 2	2↝CF6
CF5. WHEN USING HIS/HER HEARING AID, DOES (*name*) HAVE DIFFICULTY HEARING SOUNDS LIKE PEOPLE'S VOICES OR MUSIC? WOULD YOU SAY (*NAME*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	1↝CF7 2↝CF7 3↝CF7 4↝CF7
CF6. DOES (*name*) HAVE DIFFICULTY HEARING SOUNDS LIKE PEOPLE'S VOICES OR MUSIC? WOULD YOU SAY (*NAME*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	
CF7. DOES (*NAME*) USE ANY EQUIPMENT OR RECEIVE ASSISTANCE FOR WALKING?	Yes .... 1 No 2	2↝CF10

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CF8. WITHOUT HIS/HER EQUIPMENT OR ASSISTANCE, DOES (*name*) HAVE DIFFICULTY WALKING? WOULD YOU SAY (*NAME*) HAS: SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF9. WITH HIS/HER EQUIPMENT OR ASSISTANCE, DOES (*name*) HAVE DIFFICULTY WALKING? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	1⇘CF11 2⇘CF11 3⇘CF11 4⇘CF11
CF10. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY WALKING? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF11. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY PICKING UP SMALL OBJECTS WITH HIS/HER HAND? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF12. DOES (*name*) HAVE DIFFICULTY UNDERSTANDING YOU? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF13. WHEN (*name*) SPEAKS, DO YOU HAVE DIFFICULTY UNDERSTANDING HIM/HER? WOULD YOU SAY YOU HAVE: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF14. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY LEARNING THINGS?		

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WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF15. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY PLAYING? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF16. COMPARED WITH CHILDREN OF THE SAME AGE, HOW MUCH DOES (*name*) KICK, BITE OR HIT OTHER CHILDREN OR ADULTS? WOULD YOU SAY: NOT AT ALL, THE SAME OR LESS, MORE OR A LOT MORE?	Not at all ....1 The same or less ....2 More ....3 A lot more 4	

Appendix C.2: For children aged 5 years and above

CHILD FUNCTIONING (AGE 5-17)		CF
CF1. I WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT DIFFICULTIES YOUR CHILD MAY HAVE. DOES (*name*) WEAR GLASSES OR CONTACT LENSES?	Yes ....1 No.......................................2	2⇘CF3
CF2. WHEN WEARING HIS/HER GLASSES OR CONTACT LENSES, DOES (*name*) HAVE DIFFICULTY SEEING? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	1⇘CF4 2⇘CF4 3⇘CF4 4⇘CF4
CF3. DOES (*name*) HAVE DIFFICULTY SEEING? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF4. DOES (*name*) USE A HEARING AID?	Yes ....1 No.......................................2	2⇘CF6

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CF5. WHEN USING HIS/HER HEARING AID, DOES (*name*) HAVE DIFFICULTY HEARING SOUNDS LIKE PEOPLE'S VOICES OR MUSIC? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	1⇗CF7 2⇗CF7 3⇗CF7 4⇗CF7
CF6. DOES (*name*) HAVE DIFFICULTY HEARING SOUNDS LIKE PEOPLE'S VOICES OR MUSIC? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	
CF7. DOES (*name*) USE ANY EQUIPMENT OR RECEIVE ASSISTANCE FOR WALKING?	Yes .... 1 No 2	2⇗CF12
CF8. WITHOUT HIS/HER EQUIPMENT OR ASSISTANCE, DOES (*name*) HAVE DIFFICULTY WALKING 100 YARDS/METERS ON LEVEL GROUND? THAT WOULD BE ABOUT THE LENGTH OF 1 FOOTBALL FIELD. [OR INSERT COUNTRY SPECIFIC EXAMPLE]. WOULD YOU SAY (*name*) HAS: SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	3⇗CF10 4⇗CF10
CF9. WITHOUT HIS/HER EQUIPMENT OR ASSISTANCE, DOES (*name*) HAVE DIFFICULTY WALKING 500 YARDS/METERS ON LEVEL GROUND? THAT WOULD BE ABOUT THE LENGTH OF 5 FOOTBALL FIELDS. [OR INSERT COUNTRY SPECIFIC EXAMPLE]. WOULD YOU SAY (*name*) HAS: SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	
CF10. WITH HIS/HER EQUIPMENT OR ASSISTANCE, DOES (*name*) HAVE DIFFICULTY WALKING 100 YARDS/METERS ON LEVEL GROUND? THAT WOULD BE ABOUT THE LENGTH OF 1 FOOTBALL FIELD. [OR INSERT COUNTRY SPECIFIC EXAMPLE].	No difficulty 1	

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WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	3↴CF14 4↴CF14
CF11. WITH HIS/HER EQUIPMENT OR ASSISTANCE, DOES (*name*) HAVE DIFFICULTY WALKING 500 YARDS/METERS ON LEVEL GROUND? THAT WOULD BE ABOUT THE LENGTH OF 5 FOOTBALL FIELDS. [OR INSERT COUNTRY SPECIFIC EXAMPLE]. WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	1↴CF14 2↴CF14 3↴CF14 4↴CF14
CF12. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY WALKING 100 YARDS/METERS ON LEVEL GROUND? THAT WOULD BE ABOUT THE LENGTH OF 1 FOOTBALL FIELD. [OR INSERT COUNTRY SPECIFIC EXAMPLE]. WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	3↴CF14 4↴CF14
CF13. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY WALKING 500 YARDS/METERS ON LEVEL GROUND? THAT WOULD BE ABOUT THE LENGTH OF 5 FOOTBALL FIELDS. [OR INSERT COUNTRY SPECIFIC EXAMPLE]. WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	
CF14. DOES (*name*) HAVE DIFFICULTY WITH SELF-CARE SUCH AS FEEDING OR DRESSING HIM/HERSELF? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty ....1 Some difficulty ....2 A lot of difficulty ....3 Cannot do at all 4	

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CF15. WHEN (*name*) SPEAKS, DOES HE/SHE HAVE DIFFICULTY BEING UNDERSTOOD BY PEOPLE INSIDE OF THIS HOUSEHOLD? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4
CF16. WHEN (*name*) SPEAKS, DOES HE/SHE HAVE DIFFICULTY BEING UNDERSTOOD BY PEOPLE OUTSIDE OF THIS HOUSEHOLD? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4
CF17. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY LEARNING THINGS? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4
CF18. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE DIFFICULTY REMEMBERING THINGS? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4
CF19. DOES (*name*) HAVE DIFFICULTY CONCENTRATING ON AN ACTIVITY THAT HE/SHE ENJOYS DOING? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4
CF20. DOES (*name*) HAVE DIFFICULTY ACCEPTING CHANGES IN HIS/HER ROUTINE? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4
CF21. COMPARED WITH CHILDREN OF THE SAME AGE, DOES (*name*) HAVE	

DIFFICULTY CONTROLLING HIS/HER BEHAVIOUR? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	
CF22. DOES (*name*) HAVE DIFFICULTY MAKING FRIENDS? WOULD YOU SAY (*name*) HAS: NO DIFFICULTY, SOME DIFFICULTY, A LOT OF DIFFICULTY OR CANNOT DO AT ALL?	No difficulty .... 1 Some difficulty .... 2 A lot of difficulty .... 3 Cannot do at all 4	
CF23. HOW OFTEN DOES (*name*) SEEM VERY ANXIOUS, NERVOUS OR WORRIED? WOULD YOU SAY: DAILY, WEEKLY, MONTHLY, A FEW TIMES A YEAR OR NEVER?	Daily.................................... 1 Weekly............................... 2 Monthly .... 3 A few times a year .... 4 Never 5	
CF24. HOW OFTEN DOES (*name*) SEEM VERY SAD OR DEPRESSED? WOULD YOU SAY: DAILY, WEEKLY, MONTHLY, A FEW TIMES A YEAR OR NEVER?	Daily.................................... 1 Weekly............................... 2 Monthly .... 3 A few times a year .... 4 Never 5	

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