



Tikule limodzi: Let's grow together

The impact caregiver training has on children with disabilities in Malawi

Baseline report

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Report authors

Rachel Murphy, Sightsavers

Emma Jolley, Sightsavers,

Elena Schmidt, Sightsavers

Paul Lynch, University of Birmingham

Report contributors

Anita Soni, University of Birmingham

Michael McLinden, University of Birmingham

Mika Mankhwazi, Chancellor College, University of Malawi

Jennifer Mbukwa, Chancellor College, University of Malawi

Stevens Bechange, Sightsavers

Foster Kholowa, Chancellor College, University of Malawi

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Abbreviations and acronyms

AECDM Association of Early Childhood Development in Malawi

CBCC Community-based childcare centre

CBO Community-based Organisation

CG Caregiver

CGMSQ Caregiver Motivation and Satisfaction Questionnaire

CRCT Cluster-Randomised Controlled Trial

DSWO District Social Welfare Officer

HIV Human Immunodeficiency Virus

IQR Interquartile range

LMIC Low and Middle Income Countries

MDAT Malawi Developmental Assessment Tool

MoGCDSW Ministry of Gender, Children, Disability and Social Welfare

NGO Non-Governmental Organisation

SEN Special Educational Needs

SRS School Readiness Scale

UNICEF United Nations Children's Education Fund

WGCFS Washington Group Child Function Survey

Executive summary

Background

The benefits of early childhood development have been well documented, with evidence showing that programmes which encourage developmental stimulation and responsiveness in the first few years of life can not only affect children's development in the early years but can make differences to long-term economic and psycho-social outcomes in adulthood (1-3). Strategies are therefore being put in place on a global scale to provide interventions in the stimulation, communication, nutrition and health of children in the early years (4, 5). However, children with disabilities are often excluded from such programmes and there is little high-quality evidence on how and where to intervene to ensure that the needs of children with disabilities are appropriately catered for (5, 6).

Malawi was one of the first African countries to have a network of community-based childcare centres (CBCCs) for young children (aged 3-5 years old) supported by the Ministry of Gender, Children, Disability and Social Welfare (MGCDSW) and there has been a rapid expansion of early childhood development (ECD) provision, rising from 3% (2003) to 45% (2016) of estimated 3.7 million pre-school children (NSO population study, 2016) with continued commitment to expand CBCCs over the next ten years. Whilst CBCCs provide an early learning environment to children living nearby, it is reported that the quality of most of the CBCCs - measured in terms of buildings, sanitation facilities, staff numbers, capacity, materials and equipment - has fallen short of the ECD Monitoring and Evaluation Framework set out by the MGCDSW (Munthali et al. 2008).

Tikule Limodzi ('Let's Grow Together') is a three-year (2015 to 2018) multi-agency study that seeks to promote the inclusion of children with disabilities in CBCCs in a rural district of Southern Malawi. The main purpose of the project is to explore ways of developing the skills of caregivers to support children with disabilities in CBCCs through the use of inclusive strategies and resources. This mixed-method study also seeks to share evidence that will aid the Malawi government (specifically MGCDSW and the Ministry of Education, Science and Technology) and other stakeholders (e.g. UNICEF, Open Society Foundation) to better understand the complex dynamics that 'enable' or 'inhibit' quality ECD for children with disabilities using one rural district in Southern Malawi as an example.

Study design and methods

The study described here is a cluster-randomised controlled trial (CRCT) of a caregiver training intervention delivered in CBCCs in Thyolo district, Malawi. Forty-eight CBCCs were selected and randomly allocated to an intervention or a control group (24 CBCCs each). This report presents the baseline data collected at the pre-intervention stage.

The primary outcomes for the CRCT are:

- Percentage of children with developmental age equal to actual age (primary outcome)
 - Caregiver satisfaction/motivation score
-

- CBCC environmental rating scale
- Caregiver retention

The first three outcome measures were assessed at baseline and will be compared to endline results, while caregiver retention rates will be assessed at the endline by tracking caregivers working at CBCCs at the baseline.

The sample size was calculated to detect a 10% change in the proportion of children whose developmental age is equal to their biological age (expected increase from 70% to 80%). Based on the 95% confidence interval, 80% power, 10% non-response and 50% variation between the clusters (7), we aimed to recruit 960 children (480 per arm) or 20 children per CBCC.

The data was collected between December 2016 and May 2017 using six different tools: i) the CBCC questionnaire ii) the caregiver satisfaction and motivation questionnaire iii) the CBCC environmental rating scale (observation tool) iv) the Washington Group/UNICEF Child Functioning Module v) the Malawi Development Assessment tool (expressive language and social-emotional domains) and vi) the school readiness scale.

Five data collectors were recruited in Malawi and formed the survey team. Three of them had a background in teacher training and disability, and one was studying for a degree in Inclusive Education. The fifth data collector - with a background in information systems and research management - was appointed to supervise the fieldwork team.

The survey team was trained over a five-day period. For the main CRCT outcome - assessing child development using the Malawi Development Assessment tool (MDAT) - an inter-rater reliability test was carried out. All data collectors achieved 90% or above indicating excellent reliability using Gwet AC1 Kappa statistic (8). All tools were developed for KoBoCollect, a data collection platform recommended for challenging environments. Data collectors input data using keyless, touchscreen smartphone devices which were password protected. All data was uploaded daily to a centrally-managed server. The technical team backed up the files on a password-protected computer drive. All data collected was cleaned by the team supervisor.

The baseline data collected comprised 47 CBCC questionnaires (one CBCC could not complete the questionnaire due to the absence of the relevant staff), 127 caregiver satisfaction and motivation questionnaires, 47 CBCC environmental rating scales, 933 children questionnaires assessing development in social-emotional and expressive domains, 935 children questionnaires screening for functional disabilities and 932 questionnaires assessing school readiness.

Key findings

Characteristics of community-based child centres

Forty seven CBCCs completed the CBCC questionnaire; one CBCC did not have the relevant staff to provide information and could not complete the questionnaire. The majority of CBCCs (62%) were recently established in the last year, with 47% set up solely by the local community. Most CBCCs (93.5%) were registered with the Social Welfare Office in Thyolo District. The main source of funding for the majority of CBCCs was parents' fees (64%) and community donations of food

(23%) or time (17%). A total of 83% of CBCCs were open five days per week between 9am and noon following the school calendar year.

Numbers of children attending CBCCs ranged from 27 to 99 based on records that were available during visits; and between 23 and 99 children on the day of observations. The recorded age of children attending CBCCs ranged between eight months and six years three months. The majority of CBCCs (83%) reported that they had at least one child with a disability as observed by the CBCC chair or caregivers. These included physical impairments (51%), hearing impairments (28%) and other impairments (41%). The median number of children with disabilities reported by caregivers was two, ranging from one to five children per CBCC.

Many CBCCs were not within formal structures (e.g. a room for children to sit or play) or had furniture (e.g. chairs, tables, etc); 26% did not have a building, 55% had no mats or chairs for children to sit on, and none had writing tables. Only 6% of CBCCs had a table and chair for the caregiver. The main challenges reported by CBCCs were the lack of food for children, a permanent building and the lack of training for caregivers.

Children's registration records were reported to be kept but both the children registries and attendance sheets could be verified only in 30% of CBCCs. Children's progress records were verified in only four CBCCs (9%) capturing progress for individual children.

Only a quarter of CBCCs had a daily timetable for activities. Less than a quarter had observable play materials, and only in one-third of those centres had the caregiver been trained to use these materials.

CBCC Environmental Rating Scale

The survey team observed classroom interactions for a fixed 90-minute period, with specific attention given to the interactions of caregivers and children, routine and structure, numeracy, literacy and problem solving, social development, communication, supervision, managing children's behaviour, the involvement of children with disabilities with the rest of the group, and any modifications made to meet children's individual needs.

Out of all the CBCCs observed, none were rated as performing at a high level in all of the eight sub-scales. The proportion of CBCCs rated at a high level in individual sub-scales varied from 0% to 40%. The supervision sub-scale, comprising the level of attention caregivers gave children's needs, reached the highest score of 40%. One in four CBCCs achieved the highest score in Communication sub-scale and one in five in Social development sub-scale. Sub-scales where none of the CBCCs scored high in all questions included 'Routine and structure', 'Caregiver engagement', 'Numeracy, literacy and problem solving' and 'Inclusion of children with disabilities'.

Twenty-nine out of 47 CBCCs (61.7%) reported at least one child with a disability present on the day observations were conducted. Caregivers were observed making little or no attempt to address individual needs of children with disabilities in ten (34.5%), and made minor modifications in 19 CBCCs (65.5%). Children with disabilities were observed to be involved in activities with the rest of the group in one CBCC (3.5%); in the remaining 28 CBCCs (96.6%) children with disabilities had little or no involvement in the group activities.

Levels of caregiver education, training, satisfaction and motivation

127 caregivers from 48 CBCCs responded to questions about their education, training, motivations and experiences of caring for and teaching children.

A total of 91% of caregivers interviewed were female and almost all caregivers (87%) interviewed worked on a voluntary basis. The median age of caregivers interviewed was 33 years, with ages ranging from 26 to 41 years. Three-quarters had been a caregiver in the current location for more than two years.

About a third (41) of caregivers (32.3%) had completed secondary education (form 3-4, age 17-18 years); and another 37 (29.1%) had completed the first two years of secondary school (form 1-2, age 15-16 years). About a third (44) of caregivers (34.6%) had received primary education (Standard 5-8, completed at 14 years of age). Only one caregiver (0.8%) had not attended school and four (3.1%) had completed the first four years of primary school only (Standard 1-4, age 6-10 years). One caregiver (0.8%) reported a post-secondary qualification.

Thirty-three caregivers (26.0%) had received the Primary School Leaving Certificate of Education (PSLC); 47 (37.0%) had received the Junior Certificate of Education (JCE) and nine (7.1%) had received the Malawi School Certificate of Education (MSCE). Thirty-six caregivers (28.4%) had received no education certificate/qualification and six (4.7%) were currently attending school.

Only 18 (14%) of caregivers reported that they had received training to work at the CBCC. Forty-four per cent (n=8) of those with some form of training had received training of 1-5 days. Twelve of eighteen caregivers (67%) who had received training had been trained in special educational needs, mainly three or more days.

Child functioning questions on disability using the Washington Group/UNICEF Child Functioning

A total of 935 children were screened for functional disability, which is defined as having 'a lot of difficulty' or 'cannot do at all' across at least one of the assessed domains. Two sets of questions were used appropriate for the age of the child (ages 2-4 years and ages 5-17 years).

A total of 100 children out of 935 (10.7%) were identified as having a functional disability. Forty-eight (48%) were boys. Forty children were aged 2-4 years, and 60 were aged 5-17 years.

The number of children identified with a disability varied between CBCCs with as many as eight children in one CBCC and as few as no children with a disability in six of the 48 CBCCs.

The most common types of functional disability among children aged 2-4 years were understanding/being understood (1.6%) and learning difficulty (1.3%) followed by difficulties in walking (1.0%), hearing (0.8%) and controlling behaviour (0.8%).

The most common functional difficulties in children 5+ years (n=60) were anxiety (9.3%), controlling behaviour (7.3%), remembering (6.3%), accepting change (5.4%), being understood (4.9%) and depression (4.9%).

Malawi Development Assessment Tool (MDAT)

We used two out of four domains assessed by the MDAT tool: social-emotional and expressive communication domains.

933 children were individually assessed by trained researchers to identify signs of delays within social-emotional and expressive-language skills. Each child was given a score in each domain, which was compared to a standardised reference range developed for the rural Malawi setting, with developmental delay defined as present in those children with a score in a given domain lower than the 2.5th centile for a given age.

109 children (11.7%) were identified as having a suspected developmental delay in at least one domain, 41 children were identified as having an expressive language delay (4.4% prevalence), and 77 were identified as having a social-emotional delay (8.3% prevalence). Nine children had developmental delay across both domains (1%). Fifty-eight (53.1%) of those with any delay were boys.

Having a functional disability was strongly associated with having a developmental delay; children with disabilities were 4.8 times more likely to have a developmental delay than children without disabilities (Odds Ratio 4.75, Mantel-Haenszel Test p-value <0.0001).

School Readiness Scale

The School Readiness scale comprises two main learning domains (basic literacy and numeracy) that are expected to be taught by caregivers at CBCCs. The domains are extracted from the Government of Malawi's Early Learning and Development Standards (ELDS) (2015) which assess what children are taught (through the ECD curriculum) and give an indication of what young children should know and be able to do at different age levels (< 2 years, 3-4 years and 5+ years).

A total of 932 children were assessed using the school readiness scale using 18 pass/fail questions designed to evaluate each child at the minimum level expected for primary school.

One child achieved a pass in all 18 questions. When age-appropriate answers across domains were examined, only one child per age group (< 2 years, 3-4 years and 5+ years) successfully passed all questions appropriate for their age group.

Children aged two years and under performed poorly on spatial relationships with three children passing this section. This age group (two and under) performed better in the numeracy and measurement tasks with about two-thirds of children (n=8 (67%)) being able to recognise and compare large and small quantities. This group also performed well on the literacy tasks with the majority of children being able to scribble (n=10 (83%)) and recognise pictures in books (n=10 (83%)), but only half could recognise symbols from the environment such as mobile phone symbols seen on scratch cards.

Children aged 3-4 years performed poorly in the literacy scales, with less than a quarter (n=165 (24%)) being able to handle books and talk about pictures in books appropriately. Very few children could recognise letters (n=22 (4%)) or write three letters (n=13 (2%)). These children performed much better in measurement, mathematics and spatial relationship.

Children aged five years and above performed poorly on literacy skill tasks, with less than a half (n=83 (40%)) being able to tell a story from a series of pictures or drawings in books and a few recognising three letters (n=5 (2%)) or being able to write some words including their name (n=1 (1%)). These children also struggled with spatial relationships with only one in ten (n=22 (11%)) being able to draw simple objects in relation to their location. The group performed slightly better in the numeracy section, and considerably better in the measurement section.

Introduction

Early childhood is a critical phase of human growth, which provides a window of opportunities to lay out the foundations for the individual's entire life, while preventing potential developmental delays and disabilities (9-11). The benefits of early childhood development have been well documented with evidence showing that programmes which encourage developmental stimulation and responsiveness in the first few years of life can not only affect children's development in the early years, but can make differences to long-term economic and psycho-social outcomes in adulthood (1-3). Strategies are therefore being put in place on a global scale to provide interventions in the stimulation, communication, nutrition and health of children in the early years (4, 5).

The high levels of developmental delays as well as disabilities in children in low and middle-income countries (LMICs) have been well acknowledged by the global community (12); and yet in many development programmes these children are either excluded or their needs are not appropriately catered for (5, 6).

Disability is a complex phenomenon which reflects a multifaceted interaction between an individual's impairment and the environment in which they live (13). It is estimated that globally 93 million children aged 0-14 years live with moderate or severe disability (14). The United Nations (UN) has two conventions related to children with disabilities and/or special needs: the UN Convention on the Rights of the Child (15), and the UN Convention of the Rights of Persons with Disabilities (CRPD) (16). Both affirm that children have the right to develop to their full potential and that governments should ensure that children with disabilities/special needs receive good-quality education, including quality early childhood development and education (ECDE).

Early childhood development and education in Malawi

Over half of the 13.1 million people living in Malawi are under 18 years of age, making it one of the youngest populations in the sub-Saharan African region (17). UNICEF estimates that over one million children in the country benefit from early childhood development (ECD) services attending thousands of pre-schools, commonly known as community-based childcare centres or CBCCs (18). ECD in Malawi is the responsibility of the Ministry of Gender, Children, Disability and Social Welfare (MoGCDSW), whose role is to facilitate policy and strategy and provide oversight for national monitoring and implementation of the multisectoral ECD programme. The SABER (Systems Approach for Better Education Results) country report 2015 refers to 11,150 ECD centres (both public and private) operating across all 29 districts of Malawi. However, it also states that enrolment is not universal and government authorities estimate only 40 percent of ECD-aged children attend a CBCC (18).

CBCCs are predominantly run by volunteer caregivers and there are an estimated 32,361 caregivers in Malawi, half of whom are trained and half of whom are untrained (19). High quality training of caregivers, particularly in the area of special needs and disability, has been a major concern for the government highlighted in the National ECD Strategic plan 2009-2014 (20, 21). Motivation and retention of caregivers is a subsequent challenge attributed to the lack of government support to the caregiver training and remuneration (22). The SABER report 2015 also

notes that it is difficult to assess whether essential ECD services in Malawi are provided equitably, as the government does not track statistics on the levels of access to CBCCs by location, socio-economic status or other characteristics. Also, there is no information on access to ECD services by children with special needs; and although the National Education Sector Plan (2009-2017) set a goal of reaching 80% of special needs children by 2017, the progress towards this target is difficult to monitor in the absence of quality data.

Study aims

This report presents the baseline pre-intervention data from a cluster-randomised controlled trial (CRCT) of a caregiver training intervention targeting CBCCs in Thyolo district in the Southern Region of Malawi. The trial involves 48 CBCCs randomly allocated to the control and intervention arms (24 CBCCs each). The training (intervention) consists of a two-week training programme based on the basic National ECD Caregiver Training Programme, with additional modules on how to improve the inclusion and participation of children with disabilities in CBCCs. The baseline data was collected between December 2016 and May 2017. The follow-up data collection will start in May 2018, nine months after the training. The aim of the trial is to measure changes in child development outcomes (equal to actual age), school readiness, caregiver satisfaction and motivation, changes in CBCC environment and routine and structure, as well as caregiver retention.

The CRCT is part of a larger study that focuses on the quality of early childhood development and education including i) review work to identify and develop appropriate assessment tools as well as a feasible intervention for caregivers and ii) complimentary community-based participatory research activities to document the lived experiences of caregivers as well as the families of children with disabilities in Thyolo district. The overall objectives of the study can be found in Appendix 1. This report presents the CRCT baseline data for 935 children recruited from 48 CBCCs.

Box 1: Training programme for caregivers

The training programme was provided to caregivers from CBCCs randomised to the intervention arm of the trial following baseline data collection. Training was facilitated by national ECD caregiver trainers from AECDM, Magamero College and the Ministry of Gender, Children, Disability and Social Welfare.

An Inclusion Resource Pack was developed by the University of Birmingham in collaboration with Chancellor College, Sightsavers and National ECD trainers in Malawi during training to highlight disability and promote the inclusion of children with disabilities in the daily activities of the CBCCs. Training covered the following topics:

1. Understanding of disability
2. Inclusive games
3. Early literacy and storytelling
4. Wellbeing and involvement
5. Safety and risk management
6. Early maths
7. Inclusive environment
8. Inclusion of CBCCs
9. Identification of common types of disability
10. Working with parents of children with disabilities

Each of the 24 CBCCs who participated in the training was given a resource pack which included items to facilitate the learning and inclusion of children with different disabilities.

Methods

Study design and sampling

The 48 study CBCCs were selected from an unpublished sampling frame compiled by the survey team based on the CBCC records available to the District Social Welfare Office (DSWO). The sampling frame was reviewed and refined to include only the CBCCs, which met the following inclusion criteria:

- CBCCs that had not participated in an earlier CRCT funded by the World Bank (23)
- CBCCs located in Thyolo district
- CBCCs with a feeding programme
- CBCCs with more than 20 children registered and regularly attending
- CBCCs with a minimum of two caregivers
- CBCCs with a minimum infrastructure (e.g. permanent location, water supply)

The CBCCs which did not meet the above criteria were excluded. From the remaining CBCCs, 48 were randomly selected for the trial. Within the selected CBCCs, children were randomly selected for inclusion in the individual surveys based on the CBCC records.

The sample size was calculated to detect a 10% change in the proportion of children whose developmental age is equal to their biological age (expected increase from 70% to 80%). Based on the 95% confidence interval, 80% power, 10% non-response and 50% variation between the clusters (7), we aimed to recruit 960 children (480 per arm) or 20 children per CBCC .

Data collection

All baseline data was collected using structured face to face interviews or structured observations using smart (password protected) mobile devices. Each CBCC was visited twice. On the first visit, the survey team introduced the study, obtained consents and administered the CBCC questionnaire, the CBCC environmental rating scale and the caregivers' satisfaction and motivation questionnaire. The survey team also randomly selected children for inclusion in the study and contacted the parents/guardians of selected children asking them to be present on the second visit to the CBCC. During the second visit, all randomly selected children - whose parents/guardians gave consent - were assessed for developmental delay (expressive-language and emotional-social domains), functional disability and school readiness scale. At this stage the CBCC was randomly allocated to the intervention or control arm, i.e. the CBCC chair or lead caregiver 'blindly' selected a paper from an envelope to determine their arm.

The intervention (including an inclusion resource pack) was delivered to all 24 intervention CBCCs after the baseline data collection had been completed. All CBCCs allocated to the control arm will receive the training after the endline.

Data collection tools

Six different tools were used to collect data. The caregivers' satisfaction and motivation questions, the Washington Group Child Function Questionnaire and the Malawi Development Assessment tool were translated and asked in Chichewa. The other questionnaires were administered in English.

CBCC assessments

1. CBCC Questionnaire

The CBCC questionnaire was adopted from a set of questions drawn from the Early Childhood Environmental Scale with additional questions from other household survey questionnaires. The questionnaire had previously been used by the World Bank in collaboration with Chancellor College and MoGCDSW of Malawi (23). Local adaptations were made based on input from the government officials and education specialists at the national and district levels. The CBCC chair or lead caregiver answered the questions about the CBCC. The questionnaire included questions in the following categories:

- General information: when the CBCC was established, who established the CBCC, its registration status, its days of operation, sources of funding, reasons for providing the services and challenges faced by the CBCC.
- Parental involvement and support for the CBCC, including funding or other contributions and parents' groups.
- Child information: existing child enrolment, selection procedures, registration, attendance information, behaviour records and details of any children with special needs or disabilities.
- Staff information: age and sex breakdown of caregivers, the frequency of shifts, attractive caregiver qualities, methods of recruitment and selection.
- Health and food: procedures for looking after children who become ill while at the CBCC, assessment of children with disabilities, provision of snacks or meals, cooking facilities and utensils.
- CBCC curriculum and daily activities: use of timetables or schedules for activities, curriculum provision for children with special needs or disabilities, activities and frequency of activities, source play materials.
- CBCC Supervision: visits by child protection workers and community development assistants, feedback from visits.
- Observer notes about the structure of the CBCC: buildings composition if any, cooking facilities, staff-to-child ratio, the presence of furniture (tables and chairs).
- CBCC location: GPS coordinates of the CBCC and details of the location (urban, boma, rural).

2. CBCC Rating Scale

The CBCC Rating Scale tool was based on the ECERS-R and used to measure interactions of caregivers and children, methods of teaching and behaviour control, as well as considering any specific adaptations made for children with disabilities.

1. Routine and structure
2. Supervision (attending to children's needs and safety)
3. Caregiver engagement (quality and time-length)
4. Free play
5. Managing children's behavior and communication
6. Social development (interaction with children)
7. Provision for children with disabilities
8. Numeracy, literacy and problem-solving

Structured caregiver and child observations using the CBCC Rating Scale were carried out on the first visit to the CBCC. The observations were made by two trained researchers who observed the classes using a set of guidelines to help to determine appropriate scores. Particular attention was given to interactions between the caregivers and the children both inside and out of the CBCC. Observers were advised to sit apart and to position themselves so that they were a minimal distraction to the class but were still able to observe interactions.

Observations were carried out for 90 minutes continuously, with notes taken on a separate pad during the observation time. Observers independently rated the CBCC drawing on a set of guidelines to help them interpret the three levels for each rubric. After the period of observation, both observers compared their ratings and agreed on a consensus score for each observation area. Observers were advised to choose the single answer that gave the best representation of the observation period. In cases where there were multiple caregivers, answers relating to caregivers were generalised to be representative of the interactions as a whole. If the CBCC was split into age groups, the observers focused on observing the 3-5 year old children.

3. Caregiver Motivation and Satisfaction Questionnaire (CGMSQ)

The CGMSQ was developed to understand the role of the CBCC caregiver, their motivations for taking on the role, and any satisfaction they derived as a result. Motivations including remuneration or social approbation were considered, as well as the age and sex distribution of caregivers, the education level of caregivers, duration in the post and any training they may have received, including any special education needs training. Caregivers were asked to rank motivation for four different aspects of their role.

Child Development Assessments

Children were assessed using the following tools:

4. The Malawi Development Assessment Tool (MDAT)

Child development was assessed using the Malawi Development Assessment Tool (MDAT) (26). The MDAT (developed by Gladstone et al) uses culturally valued developmental milestones to detect neuro disabilities in children, by scoring child development age against a reference range of

scores for given ages in a rural African context. The tool is simple to use, has good inter-rater reliability, and takes approximately 30 minutes to administer. Locally available and familiar objects are used to allow children to demonstrate easily observable behaviours.

In this survey, two out of four MDAT domains - the Expressive-Language (EL) and Emotional-Social (ES) domains - were assessed. Questions administered to children included assessing the ability to follow simple commands, for example “give me the cup”, saying two words together, assessing whether the child smiles in response to a person, and sharing with others. Each domain included 34 tasks of increasing difficulty which were assessed, then scored ‘pass’, ‘fail’ or ‘did before/not sure’. For each child, the score in each modality was defined as the number of tasks that were completed until the point that the child failed six consecutive tasks. In the case that a given task could not be assessed, the weighted score was defined as the proportion of the tasks that could be completed, scaled to a total score of 34 for each modality. The calculated score was compared against a reference range for their biological age. Developmental delay in either modality was defined as a child of a given age scoring lower than the 2.5th centile of the reference group of children of the same age (a Z-score of less than -1.96).

5. Washington Group/UNICEF Child Functioning Module

The Washington Group/UNICEF Child Functioning Module on disability is a tool developed jointly by the UN Office of Statistics Washington group and UNICEF. The tool assesses functional difficulties in children in a number of domains, including hearing, vision, communication/comprehension, learning, mobility and emotions. The tool is validated for use in children aged 2-17 years, but two separate sets of questions appropriate for the child age are used with children aged 2-4 years and those aged 5+ years. The purpose of the tools is to identify the sub-population of children who are at greater risk than other children of the same age of experiencing limited participation in an unaccommodating environment. The tool was used to classify children with functional disabilities, with disability defined as a response of a lot of difficulty or cannot do at all in any one of the domains (27).

Throughout this report, the term ‘functional disabilities’ has been used to indicate children who are at a greater risk of experiencing difficulties than children of the same age or in interaction with their environment (28). This is to distinguish them from children who are considered to have disabilities based on CBCC chair/caregiver (CBCC questionnaire) or study team (CBCC rating scale) observations.

6. School Readiness Scale (SRS)

The school readiness scale (SRS) was adapted from the ELDS. It is based on the national ECD Early Learning Development Standards which the Malawi Government expects caregivers to teach children under their care (29). This was adopted from the Washington State Early Learning and Development Benchmarks: a Guide to Young Children’s Learning and Development (30).

The SRS is a curriculum-based assessment which examines how children are performing in relation to the expectations of the curriculum set in the ELDS. Children were individually assessed on eighteen tasks across five domains: literacy (reading and writing), mathematics (numerical knowledge, measurement and spatial relationships). Each outcome was considered as a ‘pass’ or

'fail' assessment, with the expectation that a child starting at primary school would be able to pass all outcomes.

Trial outcomes

The primary outcomes of interest for the CRCT are:

- Percentage of children with developmental age equal to actual age
- Caregiver satisfaction/motivation score
- CBCC inclusion index
- Caregiver retention

The first three outcome measures were assessed at baseline and will be compared to endline results. At endline, caregivers who were present at the baseline will be tracked to evaluate retention rates amongst caregivers in the intervention and control groups.

Data collectors and training

Five data collectors were recruited locally. Three of the five data collectors had a background in teacher training on disability and inclusive education and one was studying for a degree in inclusive education. The fifth data collector had a background in information systems and research management and was appointed to supervise the fieldwork team and help with troubleshooting and technical issues in the field.

The survey team was trained over a five-day period to collect data using six survey tools. For the main CRCT outcome, assessing child development using the MDAT, an inter-rater reliability test was carried out. All data collectors achieved 90% or above indicating excellent reliability using Gwet AC1 Kappa statistic (8).

Data management and analysis

All tools were developed for KoBoCollect, a data collection platform recommended for challenging environments (<http://www.kobotoolbox.org>). The survey team input data using keyless, touch-screen smartphone devices which were password protected. All data was uploaded to a centrally managed server daily. The technical team at Sightsavers backed up the files on a password-protected computer drive. All data collected was cleaned by the team supervisor.

Descriptive statistics were used to present data on the key variables. Where possible, attempts have been made to indicate where there are missing responses and why. In several cases, response categories were collapsed for ease of presentation and comprehension. All CBCCs were included in the CBCC-level descriptive statistics. All children with complete data were included in descriptive statistics for MDAT developmental age, school readiness and child function tools. All caregivers with complete data were included in descriptive statistics for satisfaction/motivation scores. All statistical analyses were carried out using STATA 14.0.

Ethics

All data collectors completed an Introduction to Ethics in Evidence Generation course as part of their training. They were trained in introducing the study, providing information on the study and obtaining consent from participants. All CBCC chairs/representatives provided consent on behalf of the CBCC to observe activities and be interviewed as part of the study. Parents/guardians were individually asked for written consent on behalf of their children. Caregivers were individually asked for written consent to be interviewed as part of the study.

The trial was approved by the National Committee on Research in the Social Sciences and Humanities, National Commission for Science and Technology, (P.02/16/83) and the University of Birmingham Ethics Committee (ERN_15-0048).

Results

47 CBCC questionnaires and 48 CBCC rating scales were completed, 127 caregiver questionnaires were administered and returned, 933 children were assessed for developmental delay, 935 children were screened for disabilities and 932 children had the school readiness questionnaire completed.

Characteristics of CBCCs

Data on CBCCs was collected using the CBCC questionnaire and on-site observations. Forty-seven CBCCs completed the CBCC questionnaire and had observation records. One CBCC did not complete the CBCC questionnaire due to the absence of relevant staff on the day of data collection. Forty-five (95.7%) CBCC interviews were conducted in Chichewa, one (2.1%) in English, and one (2.1%) did not specify the language.

Location of CBCCs

The locations of all 47 CBCCs were defined as rural by the survey team. Only seven CBCCs (14.9%) had their own building; the majority of CBCCs (28 (59.6%)) shared the building, amongst these the building used was primarily a dwelling of one of the caregivers, trustees or village chief (18 (64%)), and 12 (25.5%) did not have a building. Only six CBCCs (12.8%) had fencing around the grounds; only seven (14.9%) had some type of a kitchen facility. Ten CBCCs (21.3%) were recorded as having dangerous materials (e.g. glass) on the ground; 11 (23.4%) had no shaded area for children to play.

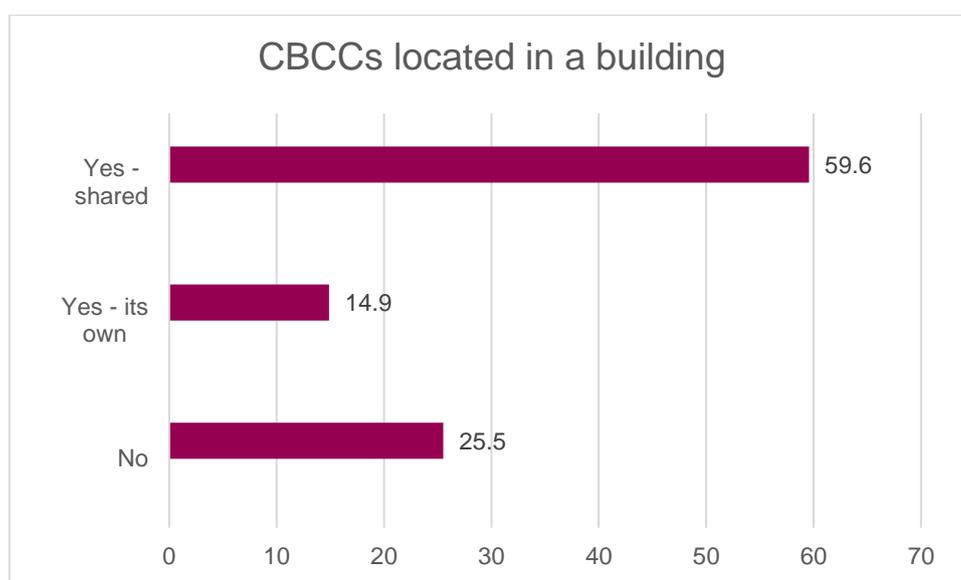


Figure 1: Proportion of CBCCs located in a building

Of the 35 CBCCs with a building, 19 (54.3%) had a cement floor, 15 (42.9%) had a mud/earth floor, and one (2.9%) had a partially cemented and partially mud floor. 32 CBCCs (91.4%) had an iron sheet roof, and three (8.6%) had a roof made of plastic sheets. 30 CBCCs (85.7%) had a totally enclosed structure.

Twenty-nine of the 35 CBCCs with a building (82.9%) had indoor play and learning areas that were recorded as “generally clean”; 28 (80.0%) had sufficient air ventilation but only two (5.7%) had working lights in the classroom. Despite this, “sufficient light” was recorded in 29 CBCC classrooms (61.7%).

Information about the CBCCs registration, governance and funding

Forty-five of 47 CBCCs had data on when they were established. Of these, 28 (62.2%) had been established for less than one year before the survey (range from less than one year to 30 years).

Twenty-two of 47 CBCCs (46.8%) were established by the local community; while six (12.8%); three (6.4%) and two (4.3%) were established by Community-Based Organisations (CBOs), Non-Governmental Organisations (NGOs) or Faith-Based Organisations (FBOs) respectively. The remaining 14 CBCCs (29.8%) were established by combinations of the CBO, FBO, the local community and the MoGCDSW. The main reasons for establishing the CBCCs were to promote learning (85.1%), to allow children to interact with other children (68.1%) and to provide childcare (19.1%).

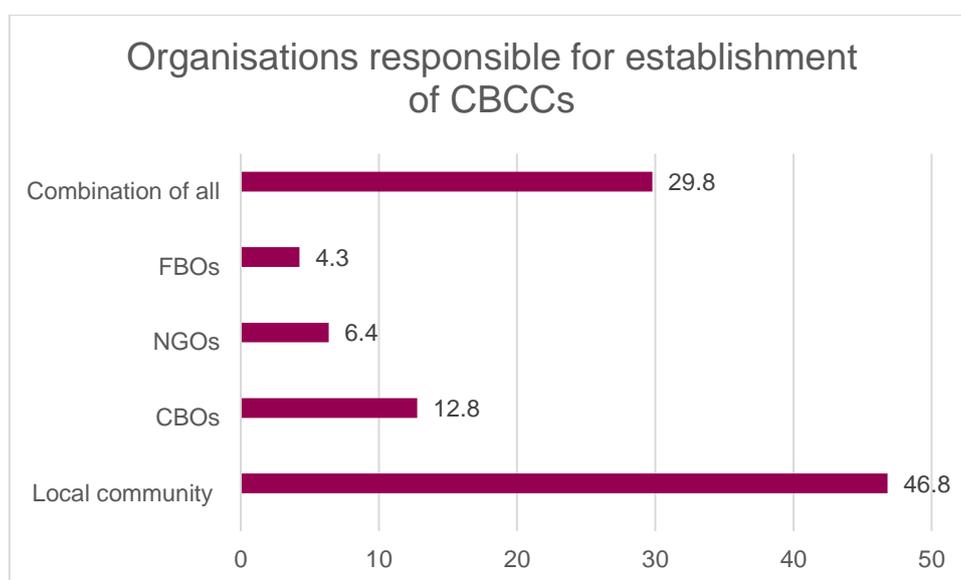


Figure 2: Proportion of CBCCs established by organisations/local communities

Forty-six (97.9%) CBCCs were registered with the majority (43 (93.5%)) registered at the District Social Welfare Office (DSWO) located in Thyolo district. Two were also registered with CBOs (4.4%) and one with the Registrar General (2.2%). The one CBCC that had not been registered anywhere was not aware of where to register. All 47 CBCCs reported that they had a management committee.

Only seven CBCCs (14.9%) received some form of formal funding from the national or local government, or an NGO. The majority (40 (85.1%)) relied on contributions from the parents and the community or local donations. Seventeen CBCCs (36.2%) reported that specific funds were allocated for children who were orphans, and 18 (38.3%) reported funds allocated for children with special needs.

Opening times

The majority of CBCCs (39 (83.0%)) were open five days per week, while five (10.6%) were open six or seven days per week; and another three (6.4%) four days per week or less. Only four (8.5%) CBCCs were open all year round reporting either 12 months (3 (6.4%)) or 11 months (1 (2.1%)) per year. The majority of CBCCs (43 (91.5%)) followed the school-year calendar and were open either nine months (35 (74.5%)) or eight months (7 (14.9%)) per year. One CBCC (2.1%) reported being open for three months per year only.

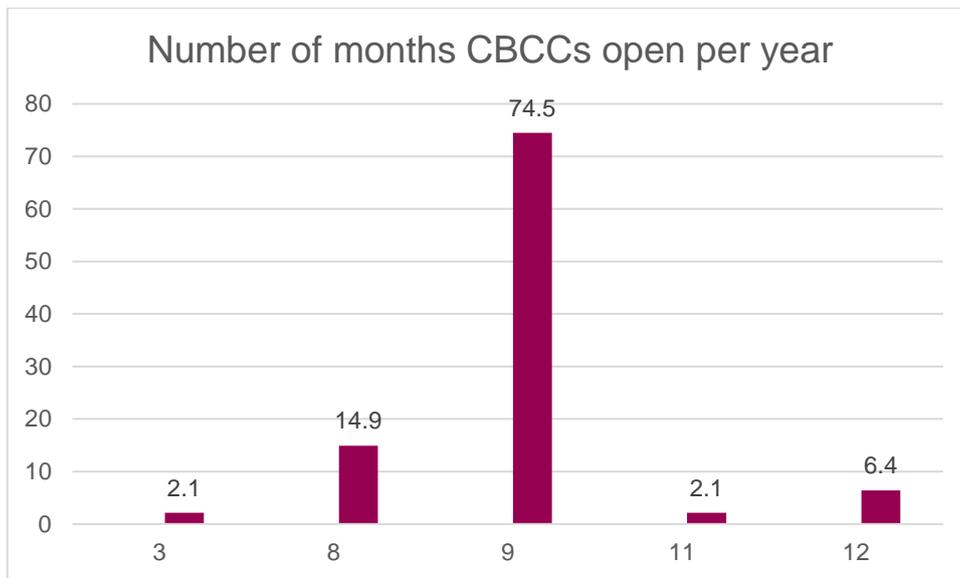


Figure 3: Number of months per year CBCC is operational

42 CBCCs (89.4%) opened between 7.30am and 8am; and four (8.5%) opened between 8.30am and 9am; one (2.1%) CBCC opened at 7am. The majority (43 (91.5%)) closed at or before midday. 30 CBCC (63.8%) buildings were used for other purposes when they were closed.

Spoken languages

The majority (45 (95.7%)) said that Chichewa was the main language spoken by children and caregivers at the CBCC; in three CBCCs (6.4%) children and caregivers spoke Lomwe; and two CBCCs (4.3%) named other languages (one being English).

Parental involvement and contributions to running of CBCCs

The most commonly cited way for parents to contribute was through a monthly fee (63.8%); followed by contributions of food (23.4%) and time (17.0%). For the 30 CBCCs reporting monthly fees, the median fee was 300 kwacha [Interquartile range 200-300 kwacha].

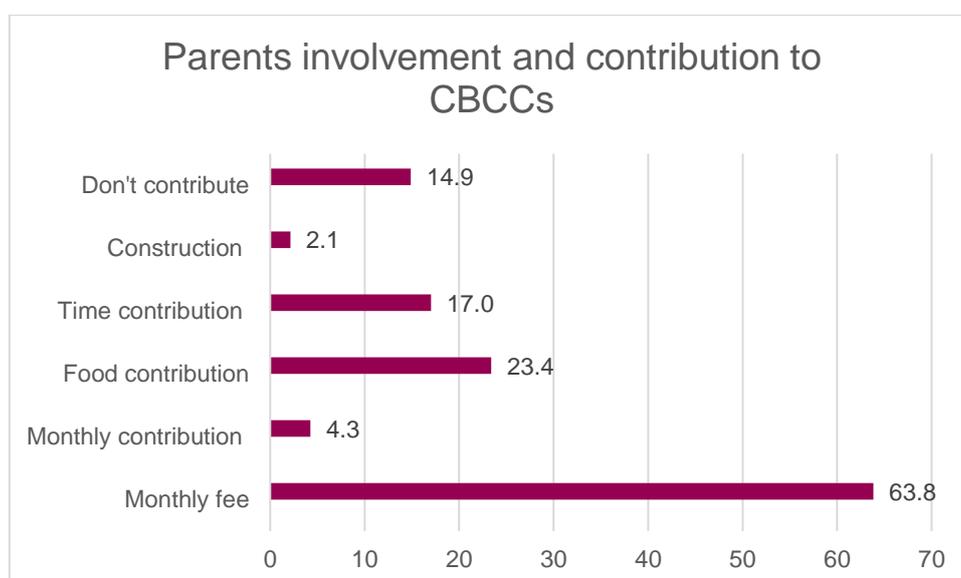


Figure 4: Parents involvement and contribution to the CBCC

When asked about parental involvement in CBCCs, the most common way was by assisting the caregivers followed by feeding the children (40.4% each). The median number of days that the parents were involved in the last month was three days [IQR 2-30].

Twelve CBCCs (25.5%) reported having a parent group. The median number of times that the parent group met each year was 3.5 [IQR 3-7.75]. Of those CBCCs that had parent group meetings, 10 (83.3%) reported that the meetings were facilitated by the CBCC chair; five (41.7%) by caregivers; and one by other CBCC committee members (respondents had the option to choose more than one facilitator).

Reported challenges

The most commonly reported problem was the lack of food (70.2%) in CBCCs, followed by the lack of play materials (59.6%) and the lack of a building (51.1%). When asked to rank the importance of problems experienced by CBCCs, the majority named the lack of food (31.9%) followed by the lack of a building (23.4%) and the lack of training for caregivers (17.0%).

Information about children

Selection process

Forty of 47 CBCCs (85.1%) did not have a limit on the number of children enrolled. Of the seven that had an enrolment limit, five (71.4%) said that the enrolment was based on a first come first serve basis; no other selection criteria were named; and only one CBCC with an enrolment limit (14.3%) had a waiting list.

CBCC records

Forty-three CBCCs (91.5%) reported maintaining a registry of children at the CBCC, but only 29 (61.7%) said that they kept attendance records.

The study team was asked to verify the records available at the CBCC. In total, 13 CBCCs (30.2%) had both types of records verified; children registries were only confirmed in 22 CBCCs (51.2%); while attendance records were confirmed in three CBCCs (7.0%). Five CBCCs (11.6%) had neither registration nor attendance sheets that could be verified.

The type of information included in the verified registration records of 38 CBCCs varied including child's sex (26 (68.4%)), village of residence (15 (39.5%)), year of birth (9 (23.7%)); child's religion (8 (21.1%)) and parent's name (9 (23.7%)). Over a half showed whether the child was present or absent (22 (57.9%)) and a reason for absenteeism (18 (47.4%)). Six (15.8%) provided space to record 'problems' with the child and four (10.5%) had other information, such as parental contributions/fees or whether the child was an orphan.

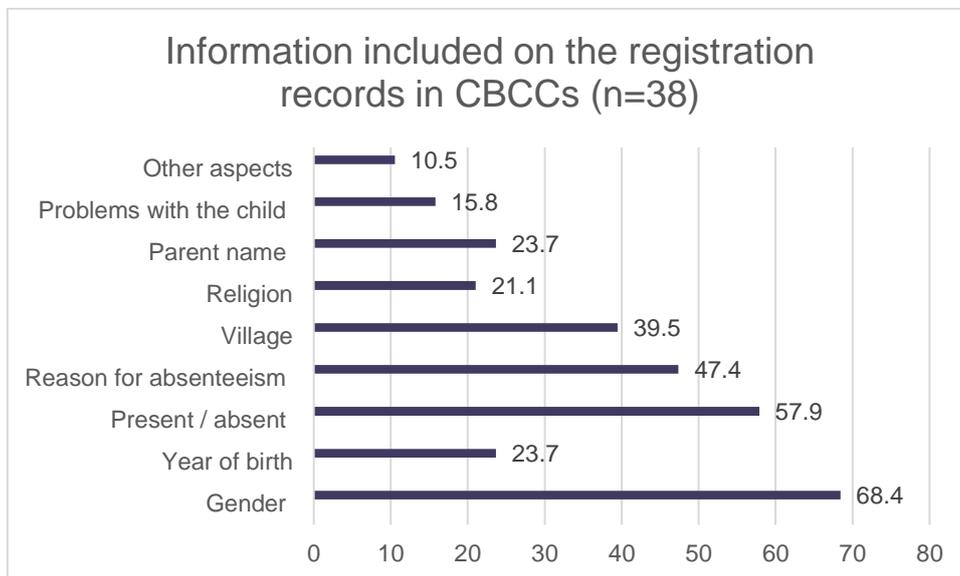


Figure 5: Information included on the registration records in CBCCs (n=38)

Gender distribution of children registered could be verified in 28 out of 47 CBCCs (59.6%). The majority of CBCCs had more girls registered with the median proportion of 54% of children being female [IQR 49-60%].

Seventeen CBCCs with the records of attendance had records for the last seven days. Of these, the median number of children attending the last day was 52.5 [IQR 27-99]. The median age of the youngest child on the attendance sheet was one year two months [IQR eight months-one year 10 months]. The median age of the oldest child was five years 11 months [IQR five years one month - six years three months]. The median number of children observed outdoors on the day of the survey was 41 [IQR 23-99] and the median number of children in the main classroom was 42 [IQR 18-99].

Reporting child progress

Of the 43 CBCCs responding to the question on child progress records, only four (9.3%) maintained a progress portfolio for each child. The survey team verified all four by checking their records. Of these, one was updated once a week; two were updated once or twice per term; and one was updated once or twice per year. All four CBCCs reported sharing these files with the parents once a week (one CBCC), once a month (one CBCC) or once or twice per term (two CBCCs). Two out of four CBCCs reported sharing children's records with the primary school after the child had transitioned. The median number of children enrolled in these four CBCCs was 71.5 [IQR 65.75-130.5].

Children with special needs

Thirty-nine CBCCs (83%) reported that they had children with special needs or disabilities as reported by the CBCC chair or caregivers. These included physical impairments (20 (51.3%)), hearing impairments (11 (28.2%)) and other impairments (16 (41.0%)), such as epilepsy, Down's Syndrome, HIV, stunted growth and behavioural problems. The median number of children with special needs in each CBCC was two [IQR 1-5].

CBCC staff

Caregivers

Thirty-six out of 47 CBCCs (76.6%) said that all caregivers working for them in the last six months were female. In 31 CBCCs (66%) caregivers worked every day; in other CBCCs they rotated throughout the week (12 (25.5%)), once a week (3 (6.4%)) or daily (1 (2.1%)). The median number of caregivers per CBCC was 2 [IQR 2-3].

The most important characteristics named for a caregiver were being good with children (89.4%), being educated (59.6%), and previous experience with young children (31.9%). The most common ways to find a caregiver was by recommendations from the community (42.6%), screening and selecting volunteers (42.6%) and putting out announcements (38.3%). The most common ways of appointing a caregiver was by a village meeting (51.1%), by the village head (44.7%) and by the CBCC committee (34.0%).

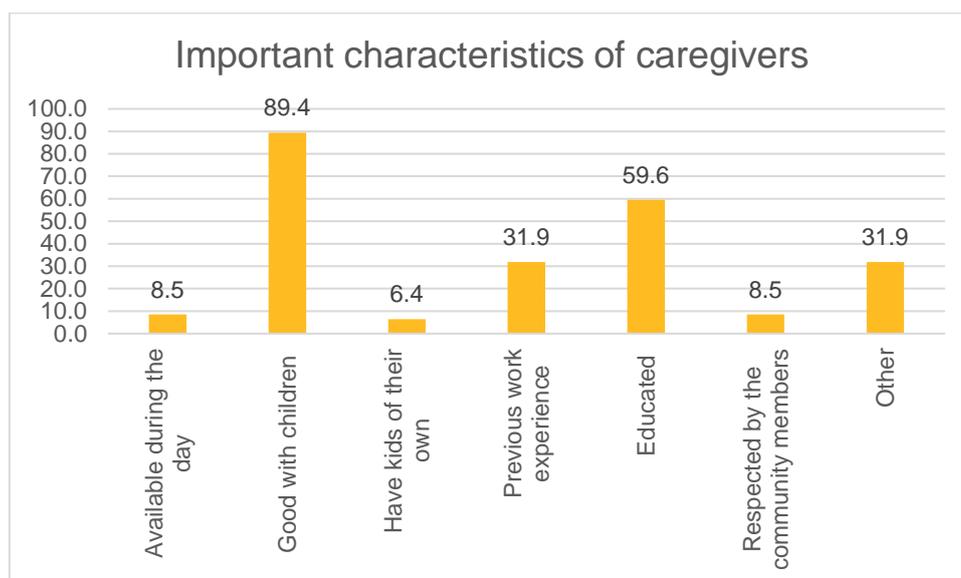


Figure 6: Important characteristics of caregivers

CBCC food and children's health

Food at CBCC

Thirty CBCCs (63.8%) reported that they provided meals for the children. The most common meals were maize porridge (56.7%), soy porridge (40%) and 'likuni phala' (fortified soy porridge (26.7%)). The most common sources of food were donations by the parents (56.7%), other supporters (26.7%) and NGOs (26.7%).

41 CBCCs (87.2%) reported that some children brought their own snacks with one (2.1%) reporting that all children brought snacks; and five (10.6%) reporting no snacks. Eleven CBCCs (23.4%) reported having a communal garden. Of these, ten (90.9%) reported growing maize; six (54.5%) grew vegetables and four (36.4%) grew other crops such as peas and potatoes.

Thirty-six CBCCs (76.6%) had no plates or cutlery to serve food. Among the 11 CBCCs with some utensils, six (54.5%) received them from the parents, three (27.3%) from the CBCC committee and another three (27.3%) from the village chief, caregivers or the DSWO.

Health of children at CBCCs

When children fell ill, 38 CBCCs (80.9%) reported taking the child to the parent/guardian, ten (21.3%) would take the child to a health centre and nine (19.1%) would buy medicine and give it to the child.

When asked about children with disabilities, 33 CBCCs (70.2%) said they would give treatment to children with disabilities in the same way as other children. Seventeen CBCCs (36.2%) said that they would ask the parent about the child's condition and needs.

CBCC curriculum, materials and supervision

Curriculum and timetable

Only 12 CBCCs (25.5%) reported that they had a daily timetable for activities. Of these, nine (75%) always followed the timetable and three (25%) followed it sometimes. Ten (83.3%) reported that their timetable had been developed by the CBCC, and one each reported the development by the DSWO and another (non-specified) source.

Eleven out of the 12 CBCCs with a timetable (91.7%) reported that children with special needs always followed the same timetable as other children. None of the CBCCs reported that there was a timetable specifically for children with special needs.

Furniture and materials

Twenty-six out of 47 CBCCs (55.3%) had no mats or chairs for children to sit on. Among the remaining CBCCs, nine (19.2%) had enough mats for all children, two (4.3%) had enough chairs for all children and ten (21.3%) had mats or chairs for some children. None of the 47 CBCCs had writing tables for the children, and only three (6.4%) had a table and a chair for the caregiver. In 31 CBCCs (66.0%), the caregiver had neither; in 13 CBCCs (27.7%), they had only a chair.

Only 11 out of 47 CBCCs (23.4%) reported having play materials; of those, only four (36.4%) had a caregiver trained to use these materials, with two of them trained by the DSWO and two by an NGO. Six of the 11 CBCCs with play materials (54.5%) said that their materials were made locally; three (27.3%) received them from NGOs and two (18.2%) received them from other supporters.

CBCC supervision

Twelve CBCCs (25.5%) reported that a child protection worker had visited them in the current academic year. The frequency of visits in these CBCCs varied with the majority having been visited once (5 (41.7%)) or twice (4 (33.3%)) and a few having been visited more frequently, three times (2 (16.7%)) or even six times (1 (8.3%)).

Seven CBCCs (14.9%) reported visits from a community development assistant in the current academic year; the majority of these CBCCs (6 (85.7%)) had been visited once, and one CBCC (14.3%) had been visited twice. Three (42.9%) of these seven CBCCs received feedback on play and learning materials, two (28.6%) on teaching materials; two (28.6%) on interactions between caregivers and two (28.6%) on encouraging caregivers to work hard.

Twenty-one CBCCs (44.7%) reported supervision from other sources. Of these, ten (47.6%) were from CBOs, and others from the DSWO, other local government organisations, UNICEF and NGOs. Seven of these 21 CBCCs (33.3%) received feedback on toilet hygiene, four (19.0%) on supervisor interactions, four (19.0%) on child attendance, three (14.3%) on monthly reports and three (14.3%) on encouraging caregivers to continue their work.

Interactions and communications at CBCCs

The CBCC Rating Scale included a total of 23 questions across eight sub-scales: Routine and structure, Supervision, Caregiver engagement, Managing children's behaviour, Communication, Social development, Inclusion of children with disabilities and Numeracy, literacy and problem solving. The Scale was applied in 47 CBCCs and the median estimate of the maximum size of the group observed was 33 children [IQR 22-49]. One CBCC could not be observed, as there were no relevant staff on the day of the observation.

The observations were made independently by two trained researchers who observed the classes using a set of guidelines to help determine appropriate scores. Observations were carried out for 90 minutes continuously, with notes taken on a separate pad during the observation time. Observers independently rated the CBCC drawing on a set of guidelines to help them interpret the three levels for each rubric. After the period of observation, both observers compared their ratings and agreed on a consensus score for each observation area. Observers choose the single answer that gave the best representation of the observation period. In cases where there were multiple caregivers, answers relating to caregivers were generalised to be representative of the interactions as a whole. If the CBCC was split into age groups, the observers focused on observing the 3-5 year old children.

The CBCCs with the lowest score for each question within the rubric were defined as 'exhibiting poor quality'. The results (table 1) show the percentage of CBCCs exhibiting both poor and high scores in each of the eight domains and each of the 23 questions (Table 1).

Overall assessment

None of the CBCCs was rated as 'high quality' in all eight domains. The proportion of CBCCs rated as scoring high in individual domains varied from 0% to 40%. Supervision was the sub-scale in which the majority of CBCCs (19 (40%)) achieved the highest score. The other two sub-scales with a relatively large number of CBCCs achieving the highest score were Communication (9 (19%)) and Social development (10 (21%)).

The sub-scales, where none of the CBCCs scored high in all questions, were Routine and structure, Caregiver engagement, Numeracy, literacy and problem solving and Inclusion of children with disabilities.

In Managing children's behaviour, the majority of CBCCs scored high in all questions with the exception of positive methods to control behaviour, which brought the overall rating in this sub-scale down.

Routine and structure

None of the CBCCs achieved the highest score within this scale. Only four (8.5%) CBCCs received high scores in the group structure (use of small groups and individual activities). In 41 out of 47 CBCCs (87.2%) the group structure was described as one collective group, where the caregiver did not facilitate smaller groups or individual activities. In addition, none of the CBCCs used activity

corners all or most of the time; thirty-five (74.5%) CBCCs did not use activity corners at all. Thirty-four (72.3%) CBCCs indicated low scores in both questions of this domain.

Supervision

Nineteen (40.4%) CBCCs demonstrated high scores in both aspects of the supervision domain, attention to children's needs and attention to safety. One (2.1%) CBCC indicated low scores in both questions of this domain.

Caregiver engagement

None of the CBCCs consistently exhibited high scores in interaction, quality and positioning of caregiver engagement throughout the observation period.

In one (2.1%) CBCC, caregivers interacted with the children throughout the duration of the observation period; in three CBCCs (6.4%) all children were engaged in the activities and in eight (17.0%) CBCCs caregivers interacted with the children in both standing and sitting positions, demonstrating good engagement practices. None of the CBCCs exhibited low scores in all three aspects of the caregiver engagement.

Managing children's behaviour

The majority of CBCCs managed children's behaviour with no signs of physical punishment (40 (85.1%)), use of yelling (35 (74.5%)) or other punitive methods (43 (91.5%)). However, only two (4.3%) CBCCs used positive methods of behaviour control. Physical ways of controlling 'bad' behaviour were used in two (4.3%) CBCCs with five (10.6%) CBCCs using such methods occasionally. Yelling was used to control 'bad' behaviour in one (2.1%) CBCC with 11 (23.4%) using yelling to control 'bad' behaviour occasionally. Punitive ways of controlling 'bad' behaviour were used in two (4.3%) CBCCs with another two (4.3%) CBCCs using this method occasionally. Four (8.5%) CBCCs did not use positive methods to control 'bad' behaviour at all with 41 (87.2%) CBCCs using these methods occasionally.

Communication

In 14 CBCCs (29.8%), children were observed using a lot of natural speaking with the caregiver whilst engaging in games or other activities, which encouraged communication. In 32 CBCCs (68.1%), the children were recorded to be speaking a lot, but mainly in formal or routine class interactions. Caregivers were described as being mostly respectful when communicating with the children in 26 CBCCs (55.3%) and occasionally respectfully in 18 (38.3%) CBCCs. Nine (19.2%) CBCCs had good communication practices, where caregivers created speaking opportunities for children and encouraged development of mutual respect between children and adults. Three (6.4%) CBCCs exhibited poor communication practices during the observation period.

Social development

Caregivers were observed providing frequent opportunities for children to work together in 19 CBCCs (40.4%), and sometimes in 20 CBCCs (42.5%). In eight CBCCs (17.0%), the caregivers did little to encourage children to work together.

In 11 (23.4%) CBCCs, the caregivers discouraged negative interactions and promoted positive social interactions between the children. Ten (21.3%) CBCCs met the highest scores for both questions in this domain. Three (6.4%) CBCCs demonstrated low scores for both questions in this domain.

Involvement of children with disabilities

Twenty-nine out of 47 CBCCs (61.7%) reported at least one child with a disability present on the day of observations [IQR 0-2]. The type of disability was recorded in 28 out of 29 CBCCs. Nineteen (67.9%) reported having children with physical disabilities; eight (28.6%) had children with sensory impairments; seven (25%) recorded having learning disabilities; and seven (25%) reported having delayed speech. No CBCCs recorded children with behavioural or social emotional disabilities reported by parents or caregivers.

Among CBCCs with children with disabilities, caregivers made little or no attempt to address the individual needs of those children in 10 (34.5%) CBCCs, and 19 CBCCs (65.5%) made minor modifications. Only one CBCC was recorded involving children with disabilities in activities with the rest of the group. In the remaining 28 CBCCs (96.6%), children with disabilities had little or no involvement in the group activities. There was no evidence of parental involvement in their disabled child's participation in the CBCC in 23 CBCCs (79.3%), with some evidence of involvement in six CBCCs (20.7%). Overall, CBCCs made little or no provision for children who were reported to have disabilities, or their parents.

Numeracy, literacy and problem solving

None of the CBCCs received the highest score across all areas of numeracy, literacy and problem-solving skills. In only five (10.6%) CBCCs, children actively wrote numbers or counted under ten in relation to seeing or handling the appropriate number of counters. In 29 CBCCs (61.7%), children recited and/or copied numbers without consolidating them with the appropriate number of counters. Counting was observed during a variety of activities in only one CBCC (2.1%) with no encouragement of counting objects in 36 (76.6%) CBCCs. Ten CBCCs (21.3%) counted objects only when the activity was focused on this.

Forty-six (97.9%) CBCCs never read with or to the children during the observation period, with one (2.1%) rarely involving or encouraging children to participate in reading.

Twenty-six CBCCs (55.3%) did not promote role play or 'make-believe'; 16 (34.0%) did promote role play or 'make-believe' without much connection with learning and only five CBCCs (10.6%) often used role play or 'make-believe' as an opportunity to expand the children's experience or knowledge in some way.

Table 1: CBCCs exhibiting high quality and low quality in each of the eight domains and each of the 23 questions

Domain	CBCC exhibited high scores	CBCC exhibited high scores across all sub-categories in domain	CBCC exhibiting low scores	CBCC exhibited low scores across all sub-categories in domain
Routine and structure				
Group structure	4 (8.5%)	0 (0.0%)	41 (87.2%)	34 (72.3%)
Use of activity corners	0 (0.0%)		35 (74.5%)	
Supervision				
Attending to children's needs	31 (66.0%)	19 (40.4%)	6 (12.8%)	1 (2.1%)
Attention to child safety in their surroundings	31 (66.0%)		6 (12.8%)	
Caregiver engagement				
Length of time caregiver interacts with the children	1 (2.1%)	0 (0.0%)	5 (10.6%)	0 (0.0%)
Quality of engagement	3 (6.4%)		4 (8.5%)	
Caregiver position during engagement	8 (17.0%)		20 (42.6%)	
Managing children's behaviour				
Use of physical methods to control behaviour	40 (85.1%)	2 (4.3%)	2 (4.3%)	0 (0.0%)
Use of yelling to control behaviour	35 (74.5%)		1 (2.1%)	
Use of other punitive methods to control bad behaviour	43 (91.5%)		2 (4.3%)	
Use of positive methods to control behaviour	2 (4.3%)		4 (8.5%)	
Communication				
Caregivers create speaking opportunities for children	14 (29.8%)	9 (19.2%)	32 (68.1%)	3 (6.4%)
Caregivers encourage development of mutual respect between children and adults	26 (55.3%)		3 (6.4%)	

Domain	CBCC exhibited high scores	CBCC exhibited high scores across all sub-categories in domain	CBCC exhibiting low scores	CBCC exhibited low scores across all sub-categories in domain
Social development				
Social interaction	11 (23.4%)	10 (21.3%)	5 (10.6%)	3 (6.4%)
Caregivers provide opportunities for children to work together to complete tasks	19 (40.4%)		8 (17.0%)	
Inclusion of children with disabilities (n=29)*				
Responding to children's disabilities and needs	0 (0.0%)	0 (0.0%)	10 (34.5%)	3 (10.3%)
Involvement of children with disabilities with the rest of the group	1 (3.5%)		7 (24.1%)	
Evidence of involvement of parents with children with disabilities	0 (0.0%)		23 (79.3%)	
Numeracy, literacy and problem solving				
Style of teaching numbers	5 (10.6%)	0 (0.0%)	13 (27.7%)	6 (12.8%)
Frequency of counting across all activities	1 (2.1%)		36 (76.6%)	
Style of teaching alphabet	3 (6.4%)		9 (19.2%)	
Reading with children	0 (0.0%)		46 (97.9%)	
Role playing and make believe	5 (10.6%)		26 (55.3%)	

*Based on number of CBCCs reporting children with disabilities present

Caregiver education, training, motivation and satisfaction

Caregiver characteristics (education and experience)

This data was collected using a caregiver questionnaire. 127 caregivers from 48 CBCCs responded. Face-to-face interviews were conducted with 106 (83.5%) caregivers; information from the remaining 21 caregivers was received through other caregivers.

The majority of caregivers (116 (91.3%)) were female. The median age was 33 years [IQR 26-41]. Ninety-six (75.6%) responded that they had been caregivers in the same geographic area for over two years; 16 (12.6%) for one to two years; two (1.6%) for 7-12 months, and 13 (10.2%) for less than six months. The median number of days that the caregivers had worked in the two weeks preceding the interview was nine [IQR 7-10].

About a third of caregivers (41 (32.3%)) had completed secondary education (form 3-4, age 17-18 years); and another 37 (29.1%) had completed the first two years of secondary school (form 1-2, age 15-16 years). About a third of caregivers (44, (34.6%)) had primary education only (Standard 5-8, completed at 14 years of age). Only one caregiver (0.8%) never attended school and four (3.1%) had completed the first four years of primary school only (Standard 1-4, age 6-10 years). One caregiver (0.8%) reported a post-secondary qualification.

Thirty-three caregivers (26.0%) had received the Primary School Leaving Certificate of Education (PSLC); 47 (37.0%) had received the Junior Certificate of Education (JCE) and nine (7.1%) had received the Malawi School Certificate of Education (MSCE). Thirty-six caregivers (28.4%) had received no education certificate/qualification and six (4.7%) were currently attending school.

Seventy-five of the 127 caregivers (59.0%) said that their main activity was agriculture; while another 23 (18.1%) were involved in other (non-agricultural) activities. Five (3.9%) said their main activity was domestic. Being a CBCC caregiver was the main activity for 24 (18.9%) participants. Sixty caregivers (47.2%) received no pay for their main activity, while 55 (43.3%) received pay as self-employed. Ten participants (7.9%) received a salary for their main activity and two (1.6%) were paid per day or per work completed.

111 participants (87.4%) said that they worked as caregivers on a voluntary basis. Twelve (9.5%) were paid money, and four (3.1%) were given food for their service.

Only 18 out of 127 caregivers (14.2%) responded that they had received some form of caregiver training. Of those 18, 11 (61.1%) had been trained more than one year ago; four (22.2%) 1-6 months ago, and three (16.7%) less than one month ago. Eight (44.4%) said that their training was 1-5 days duration; three (16.7%) reported a one-week training; six (33.3%) were trained for two weeks, and one (5.6%) was trained for longer than two weeks.

Twelve out of the 18 caregivers with training (or only 9.4% of those interviewed) had received training in special needs. Among those 12 who had received training, eight (66.7%) had been trained in special needs for more than three days; one (8.3%) for two days; two (16.7%) for one day, and one (8.3%) for half a day. Ten of those who had special needs training (55.6%) received it

from an NGO; six (33.3%) from the DSWO; one (5.6%) from an FBO, and one (5.6%) from the Association of Early Childhood Development in Malawi (AECDM).

Caregivers satisfaction

The 106 caregivers who answered the questionnaire in person were asked about their job satisfaction and motivation as a caregiver. Of these, 101 (95.3%) agreed that they were satisfied with their work; three (2.8%) disagreed with the statement and two (1.9%) neither agreed nor disagreed.

Ninety-five caregivers (89.6%) agreed that they were appropriately recognised for their work; while eight (7.6%) were dissatisfied with the recognition and three (2.8%) were neither satisfied nor dissatisfied.

Ninety-nine (93.4%) agreed that their job conditions allowed them to perform well as a caregiver; five (4.7%) disagreed and two (1.9%) neither agreed nor disagreed with this.

Only eleven caregivers (10.4%) were satisfied with the training they received; 94 (88.7%) expressed strong dissatisfaction or dissatisfaction and one caregiver (0.9%) was neither satisfied nor dissatisfied (Table 2).

Table 2: Caregivers' satisfaction and motivation for their role within the CBCC

	Strongly disagree	Disagree	Neither disagree/ agree	Agree	Strongly agree
Satisfied with the work (job)/working in a CBCC as a caregiver	3 (2.8%)	-	2 (1.9%)	48 (45.3%)	53 (50.0%)
Satisfied with the recognition for the work	4 (3.8%)	4 (3.8%)	3 (2.8%)	53 (50.0%)	42 (39.6%)
Feel job/work conditions allow caregiver to perform well	2 (1.9%)	3 (2.8%)	2 (1.9%)	54 (50.9%)	45 (42.5%)
Satisfied with the educational/training opportunities	78 (73.6%)	16 (15.1%)	1 (0.9%)	7 (6.6%)	4 (3.8%)

Chart 1: Caregivers' satisfaction and motivation for their role within the CBCC

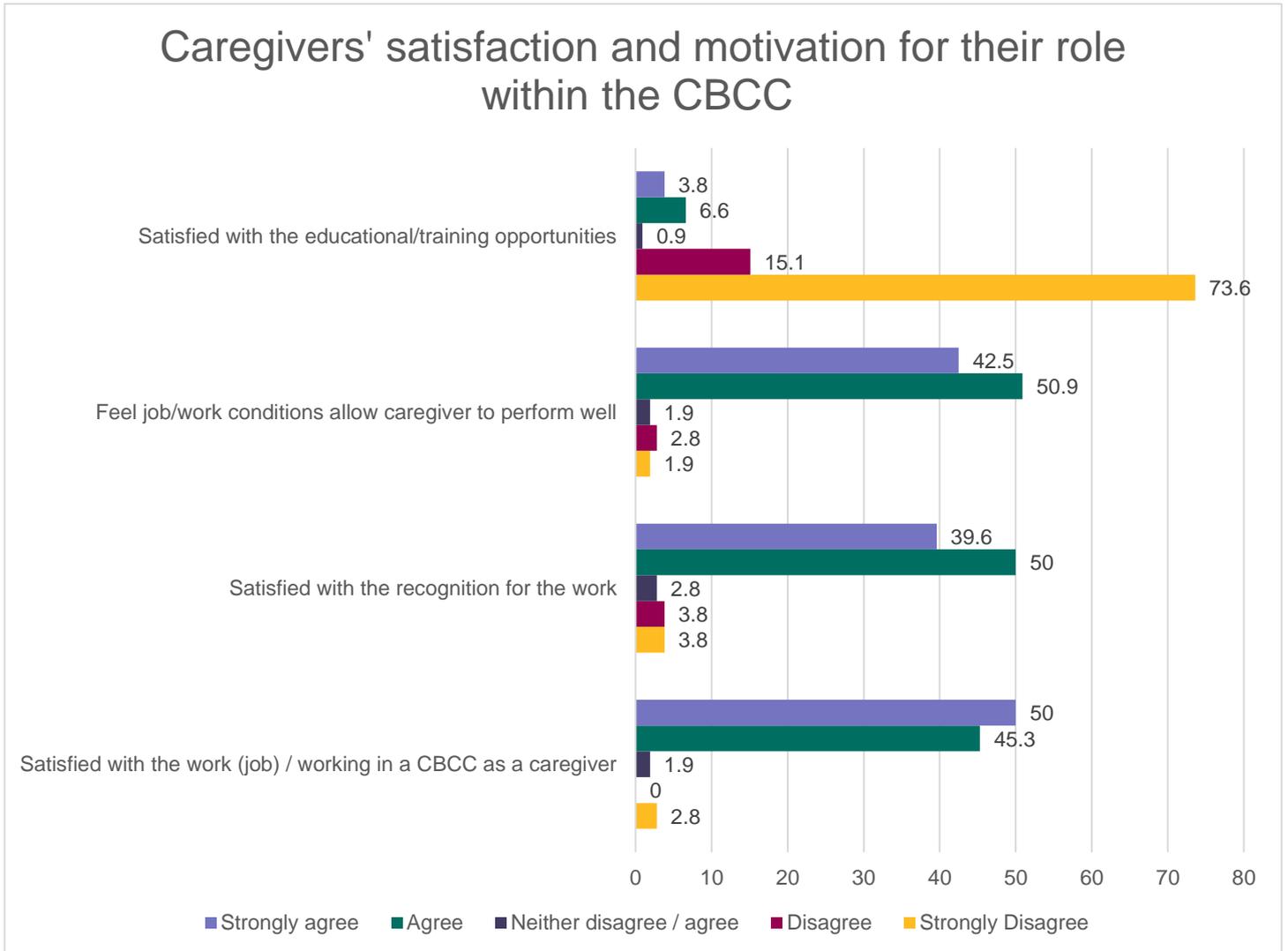


Figure 7: Caregivers' satisfaction and motivation for their role within the CBCC

Measurement of disability

For individual child assessments, 20 children per CBCC were randomly selected and assessed. Disability was measured using the Washington Group Child Function Survey (WGCFS), which assesses functional difficulties in children in hearing, vision, communication/comprehension, learning, mobility and emotions. Two separate sets of questions were used with children aged 2-4 years and those aged 5+ years. In total, 935 children from 48 CBCCs were assessed using the WGCFS. 730 children (78.1%) were aged 2-4 years; 205 (21.9%) were five years or above.

Prevalence of disability

A total of 100 (10.7%) children were identified as having a disability when using the WGCFS recommended cut-off. Amongst these, 52 (10.1%) were girls and 48 (11.5%) were boys. Sixty (60.0%) were five years or above; 40 (40.0%) were aged 2-4 years, resulting in much higher

prevalence of disability among children 5+ years (29.3%) compared to those age 2-4 years (5.5%). The number of children with functional difficulties (as defined by WGCFS) varied between the CBCCs. The maximum number of children with functional disabilities in a CBCC was eight; in six of the 48 CBCCs, no children with functional disabilities were identified.

Table 3: Prevalence of disability by gender and age

		Prevalence of disability ('a lot of difficulty' and 'cannot do at all')
Total (n=935)		100 (10.7%)
Gender	Male (n=418)	48 (11.5%)
	Female (n=517)	52 (10.1%)
Age	2-4 years (n=730)	40 (5.5%)
	5+ years (n=205)	60 (29.3%)

Types of functional difficulty

Children age 2-4 years

The most common types of functional difficulty among children aged 2-4 years were understanding/being understood (12 children in total; two of these children experienced difficulty in both understanding and being understood) and learning difficulty (ten children) followed by difficulties in walking (seven children), hearing (six children) and behaviour (six children) (see table 4).

Six children aged 2-4 years wore glasses, six children had a hearing aid and 12 children required equipment to help with walking. One of these children reported a functional difficulty when using their assistive device for walking. Other children experienced no functional difficulty when using their assistive devices.

Nine out of the 40 children aged 2-4 years with functional disabilities had difficulties across multiple domains, seven experienced difficulties in two of the eight domains and two experienced difficulties across three of the eight domains.

Table 4: Category of functional difficulty for children aged 2-4 years

Category of disability for children aged 2-4 years (n=33)	Number of children
Seeing	3
Hearing	6
Walking	7
Fine motor	2
Understanding and being understood	12
Learning	10
Playing	5
Behavioural difficulties	6

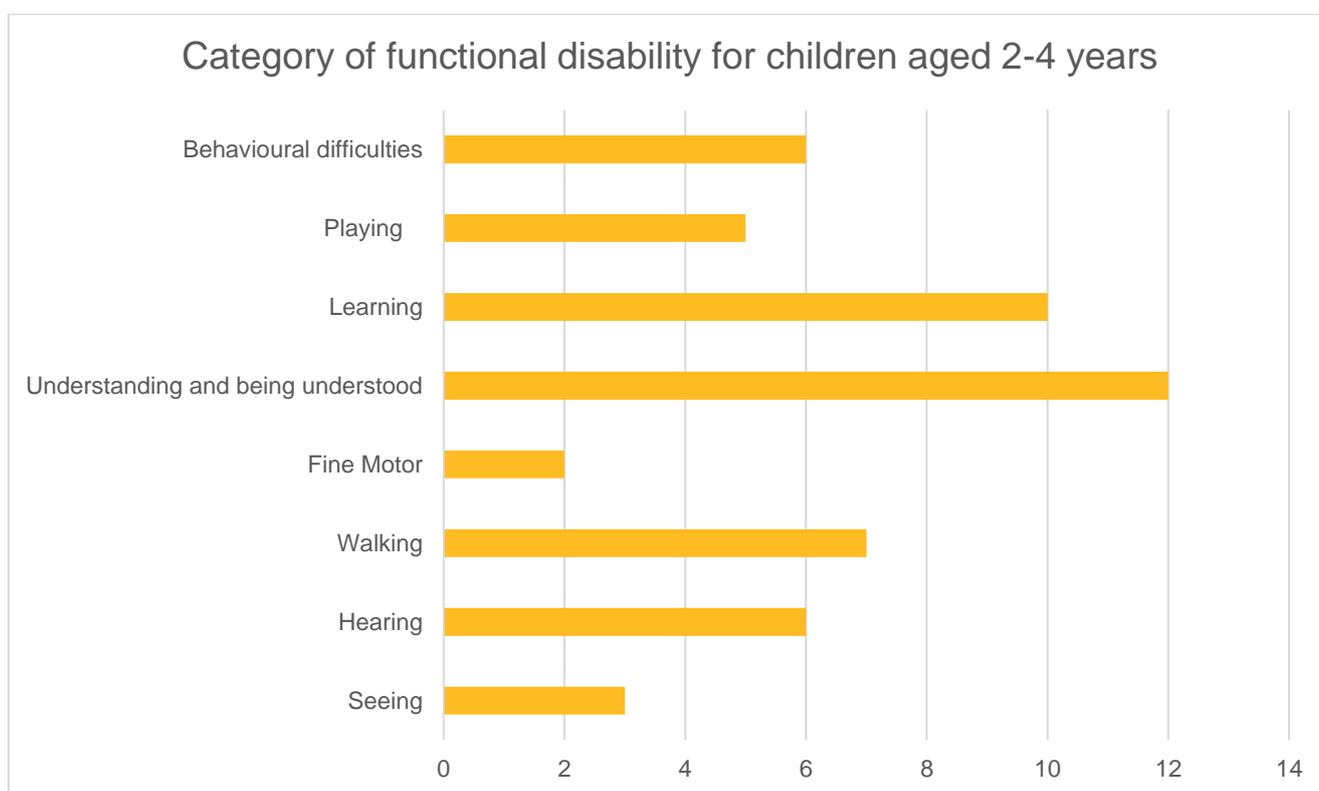


Figure 8: Category of functional disability for children aged 2-4 years

Children age 5+ years

The most common functional difficulties in children 5+ years were anxiety (19 children), controlling behaviour (15 children), remembering (13 children), accepting change (11 children), being understood (10) and depression (10 children).

One child age five and above wore glasses, three had a hearing aid and four used equipment to help them walk. One of these children reported that they were unable to walk without this equipment, and three experienced some difficulty when walking without their equipment.

Twenty-three (38.3%) of the 60 children aged 5+ years with functional disabilities experienced difficulties across multiple domains. 15 children had difficulties in two domains, two children in three domains, one child in four domains, one child in five domains, two children in seven domains and two children in nine of the 13 domains.

Table 5: Type of functional difficulties in children aged 5+ years

Type of functional difficulty in children aged 5+ years (n=52)	Number of children
Seeing	5
Hearing	3
Walking	6
Self-care	7
Being understood	10
Learning	6
Remembering	13
Concentration	4
Accepting change	11
Controlling behaviour	15
Making friends	5
Anxiety	19
Depression	10

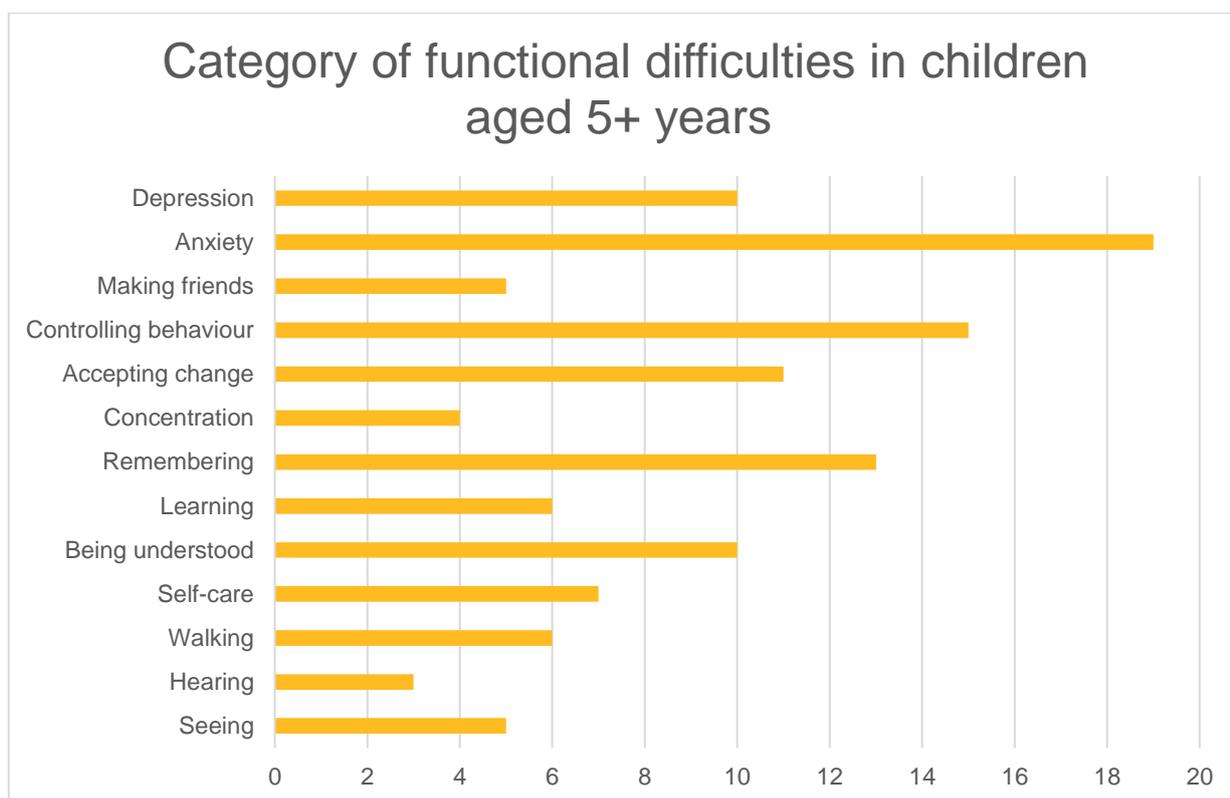


Figure 9: Category of functional difficulties in children aged 5+ years

Assessment of developmental delay

A total of 933 children had MDAT assessments completed and scored. 77.8% were below the age of five years and 22.2% age five and above. This included 508 (54.5%) girls and 425 (45.6%) boys with a median age of four years (IQR 3-4). 109 (11.7%) were classified as having developmental delay. Prevalence of developmental delay was higher among boys than girls (13.6% compared to 10%) and amongst children aged 5+ years (17.0%) compared to 2-4 year olds (10.2%).

Forty-one children had developmental delay in the expressive language domain, resulting in the overall prevalence of 4.4% with slightly higher prevalence among boys (4.5%) than girls (4.3%). The prevalence was slightly higher among children aged 2-4 years (4.5%) compared to children aged five years and above (3.9%).

Seventy-seven children were classified as having developmental delay in the emotional-social domain resulting in the overall prevalence of 8.3%. The prevalence was higher among boys (10.6%) compared to girls (6.3%). The prevalence was also much higher among children five years and above (15.2%) compared to those aged 2-4 years (6.3%).

Nine (1.0%) children were classified as having developmental delay in both expressive language and emotional-social domains.

MDAT centile sensitivity

The definition of developmental delay was drawn on standardised reference scores developed for rural Malawi as part of the validation of the MDAT tool. However, the choice of a cut-off point, i.e. how far a child's score should be below the mean before they are classified as having a developmental delay, can be set arbitrarily. In the results presented above, the cut-off point was below the 2.5th centile of the standardised reference range. This resulted in 109 children classified as having developmental delay or 11.7% overall prevalence (41 (4.4%) in the expressive language domain, and 77 (8.3%) in the emotional social domain). Choosing a cut-off point below the fifth centile of the standardised reference range would result in 139 children classified as having developmental delay or 14.9% prevalence (46 (4.9%) in the expressive language domain and 105 (11.3%) in the emotional social domain). Choosing a 10th centile cut-off would identify 172 children (18.4%) with developmental delay (59 (6.3%) with an expressive language delay and 132 (14.2%) with emotional social delays).

Analysis of disability and suspected developmental delay

The results of the MDAT and WGCFS surveys were linked using individual child identification numbers. Of the 933 MDAT results and 935 WGCFS results, a total of 930 could be linked to produce a complete dataset (three records from the MDAT and 5 from the WGCFS could not be linked).

Amongst the 98 children classified as having functional difficulty that were linked, 32 (32.7% prevalence) had a development delay, with the majority of them (28 children) having developmental delays in the emotional-social domain, while 11 children had a developmental delay in the expressive-language domain.

Having a functional disability was strongly associated with having a developmental delay; children with disabilities were 4.8 times more likely to have a developmental delay than children without disabilities (Odds Ratio 4.75, Mantel-Haenszel Test p-value <0.0001).

School readiness scale

932 children had school readiness data available for the analysis. Twelve children (1.3%) were two years of age, 712 (76.4%) were 3-4 years and 208 (22.3%) were five years and above.

The test asked children to perform up to 18 questions in six curriculum areas. If the child did not pass a particular question, then no other questions for the area were administered, as further questions were assumed to be more challenging than the earlier ones. Therefore, a high number of questions were marked as “Not assessed”.

Only one child scored a pass in all 18 questions. The mean pass score across the group was 9.0 (out of 18) ranging from 0 (14 children) to 18 (one child), and the mean percentage of questions passed out of those that could be assessed was 62.7%. The results were not markedly different between children aged 2-3 years (mean score 7.4; 54.9% questions passed), and those aged 4+ years (mean score 9.9; questions 67.1% of questions passed).

Table 6: Results from school readiness questionnaire 48 CBCCs, December 2016-May 2017.

		Age appropriate responses			All (N=932)		
		Pass (%)	Fail (%)	Not assessed / N/A (%)	Pass (%)	Fail (%)	Not assessed / N/A (%)
<u>Literacy: reading</u> Children should be able to develop an interest in a broad range of reading materials in print, Braille, raised or enlarged diagrams as well as electronic forms	1. Recognises pictures in books (0- 2 years)	10 (83.3%)	2 (16.7%)	-	901 (96.7)	31 (3.3)	-
	2. Talks about pictures in books and handle books correctly (3- 4 years)	165 (23.2%)	520 (73.0%)	27 (3.8%)	257 (27.6)	644 (69.1)	31 (3.3)
	3. Tells a story from a series of pictures or diagrams or objects in a book (5+ years)	83 (39.9%)	8 (3.9%)	117 (56.3%)	224 (24.0)	33 (3.5)	675 (72.4)

		Age appropriate responses			All (N=932)		
		Pass (%)	Fail (%)	Not assessed / N/A (%)	Pass (%)	Fail (%)	Not assessed / N/A (%)
Children should be able to recognise written symbols and letters	4. Recognises familiar symbols from the environment (0-2 years)	6 (50.0%)	6 (50.0%)	-	740 (79.4)	192 (20.6)	-
	5. Can recognise some letters as opposed to non-letter symbols, including first letter of name (3-4 years)	22 (3.1%)	524 (73.6%)	166 (23.3%)	31 (3.3)	709 (76.1)	192 (20.6)
	6. Can recognise three letters (5+ years)	5 (2.4%)	4 (1.9%)	199 (95.7%)	12 (1.3)	19 (2.0)	901 (96.7)
<u>Literacy: writing:</u> Children should be able to write symbols and letters	7. Can scribble (0-2 years)	10 (83.3%)	2 (16.7%)	-	819 (87.9)	113 (12.1)	-
	8. Can write three letters (3-4 years)	13 (1.8%)	604 (84.8%)	95 (13.3%)	25 (2.7)	794 (85.2)	113 (12.1)
	9. Can write some words including their name (5+ years)	1 (0.5%)	11 (5.3%)	196 (94.2%)	2 (0.2)	23 (2.5)	907 (97.3)

		Age appropriate responses			All (N=932)		
		Pass (%)	Fail (%)	Not assessed / N/A (%)	Pass (%)	Fail (%)	Not assessed / N/A (%)
<u>Mathematical and numerical knowledge: numerical operations</u> Children should be able to use numbers and their relationships to solve practical problems	10. Can indicate more when comparing quantities (0-2 years)	8 (66.7%)	4 (33.3%)	-	858 (92.0)	74 (7.9)	-
	11. Can identifies quantities – 1 and 2 objects (3-4 years)	468 (65.7%)	178 (25.0%)	66 (9.3%)	642 (68.9)	216 (23.2)	74 (7.9)
	12. Can count and conserve up to five (5+ years)	96 (46.2%)	77 (37.0%)	35 (16.8%)	234 (25.1)	408 (43.8)	290 (31.1)
<u>Measurement</u> Children should be able to use appropriate measurement concept and skills in real life	13. Can recognise some quantities - big and small (0-2 years)	8 (66.7%)	4 (33.3%)	-	870 (93.4)	62 (6.7)	-
	14. Can sort objects according to more than one feature (3-4 years)	509 (71.5%)	149 (20.9%)	54 (7.6%)	698 (74.9)	172 (18.5)	62 (6.7)
	15. Can order different lengths (5+ years)	171 (82.2%)	13 (6.3%)	24 (11.5%)	607 (65.1)	91 (9.8)	234 (25.1)

		Age appropriate responses			All (N=932)		
		Pass (%)	Fail (%)	Not assessed / N/A (%)	Pass (%)	Fail (%)	Not assessed / N/A (%)
<u>Spatial relationships</u> Children should be able to demonstrate awareness of location and spatial relationships	16. Can understand 'in' and 'on' (0-2 years)	3 (25.0%)	9 (75.0%)	-	749 (80.4)	183 (19.6)	-
	17. Can understand positional language such as in front, behind and far away (3-4 years)	450 (63.2%)	106 (14.9%)	156 (21.9%)	625 (67.0)	124 (13.3)	183 (19.6)
	18. Can draw simple objects in relation to their location (5+ years)	22 (10.6%)	150 (72.1%)	36 (17.3%)	63 (6.8)	562 (60.3)	307 (32.9)

When the results appropriate for specific age groups were assessed, only one out of 12 children aged two years or less successfully passed all questions appropriate to their age. Two children were unable to pass any of the areas using age-specific questions. Children aged less than two years performed well on the age-appropriate questions in the literacy sections with 83.3% being able to scribble and recognise pictures in books, although only 50% could recognise symbols from the environment. The group performed reasonably well in the number and measurement sections, with about two-thirds of children being able to recognise and compare quantities. The group performed poorly on spatial relationships with only three children out of 12 passing age-appropriate questions in this section.

Amongst children aged 3-4 years, only 429 (60.3%) were administered all age-appropriate questions from each of the domains with around 40% of children failing questions appropriate for younger age groups and therefore not proceeding with the test. One out of 712 children in the age group (0.1%) passed all age-appropriate questions in each domain.

Children aged 3-4 years performed poorly in the literacy domains, as only 165 (23.2%) children were able to talk about pictures in books and handle books correctly. Only 3.1% were able to recognise letters and 1.8% could write three letters. These children performed much better in other

domains with around 60%-70% of children passing questions on measurement, number and spatial relationship.

Among children aged five years and above, only one out of 208 children (0.5%) successfully passed all age-appropriate questions across all domains. A large number of children in this age group were not administered the age-appropriate tasks as they were unable to pass the previous questions considered to be easier, for example; 55.3% of children failed the literacy reading question appropriate for children aged 3-4 years. Twelve children (6.0%) did not pass any age-appropriate questions administered to them.

Children aged five years and above performed poorly on literacy skills with only 39.9% being able to tell a story from a series of diagrams or objects in books. 2.4% could recognise three letters and 0.5% could write some words including their name. These children also struggled with spatial relationships, with only 10.6% being able to draw simple objects in relation to their location. The group performed slightly better in the number section with 46.2% being able to count and conserve up to five; and considerably better in the measurement section with 82.2% being able to order different lengths.

Discussion/summary

CBCC characteristics and assessments

The study was conducted in rural pre-school centres set up predominantly by local communities to provide childcare, support children's learning and promote their social interactions. The overwhelming majority of CBCCs were registered with the local government; however, two-thirds were recent and established within a year preceding the survey.

The centres varied in size ranging from 27 to 99 children on records and between 23 and 99 children on the day of observations. The recorded age of children attending CBCCs ranged between eight months and six years three months. The majority of CBCCs (83%) reported that they had at least one child with a disability, primarily physical or hearing impairments. The median number of children with special needs/disabilities reported was two ranging from 1-5 children per CBCC.

The locations of all 47 CBCCs were defined as rural by the survey team. Only seven CBCCs (14.9%) had their own building. The majority of CBCCs (28 (59.6%)) shared the building and 12 (25.5%) did not have a building.

All centres (with the exception of one) were registered with the government; the majority operated throughout the academic year following the school calendar and were open five days a week, mainly between 9am and noon. The centres are funded primarily by parents' fees with only one in six reporting some form of formal funding from the government or an NGO, but a third said that they had specific funds for vulnerable children, such as orphans or children with disabilities. About a quarter of CBCCs had parents' groups, which met on average 3-4 times a year.

CBCCs had very limited infrastructure. Only six CBCCs (12.8%) had fencing around the grounds, one in five had dangerous materials (e.g. glass) on the ground and nearly a quarter had no shaded area for children to play. Although the majority of CBCCs provided meals for children, only one in six had some type of kitchen facility. Over half of CBCCs had no mats or chairs for children to sit on, with only one in five having enough mats for all children. Only three (6.4%) CBCCs had a table and a chair for the caregiver. In two-thirds of the CBCCs surveyed, the caregiver had neither.

Although the overwhelming majority of CBCCs reported maintaining a registry of children, the records could be verified in only half of the CBCCs. Over 60% of CBCCs said that they kept attendance sheets, but the presence of both children registries and attendance sheets could be verified in less than a third CBCCs (n=13). Child progress portfolio was maintained in only four CBCCs (9.3%).

Only a quarter of CBCCs had a daily timetable for activities. Less than a quarter had play materials and only in one third of those had the caregiver been trained to use these materials.

Supervision visits were not common in the CBCCs surveyed. Only a quarter reported supervision by a child protection worker, who visited them once or twice in the year preceding the study. One in six CBCCs reported supervision from a community development assistant, with the majority of

them being visited once a year. One in five CBCCs reported visits from CBOs, NGOs, UNICEF and the local authority.

The main challenges reported by CBCCs were the lack of food for children, the lack of a permanent building and the lack of training for caregivers.

Each CBCC had 2-3 caregivers, who were predominantly appointed by the local community or village chiefs with the majority of them (over 76%) being female. Two-thirds of caregivers worked daily. The median age of caregivers was 33 years, ranging from 26-41 years. Three-quarters had been caregivers for over two years.

Two-thirds of the caregivers reported some form of secondary education, but only nine caregivers (7.1%) had received the Malawi School Certificate of Education, the examination taken at the end of the secondary school (Form 4). The majority of caregivers (37%) had either the Junior Certificate of Education taken at the end of Form 2 of the secondary school or the Primary School Leaving Certificate only (26%). About a third had primary education only.

The overwhelming majority of caregivers (over 87%) worked on a voluntary basis, while one in ten were paid money and 3% were given food for their service.

Only 18 out of 127 caregivers (14.2%) had received some form of caregiver training with over 44% reporting training of less than five days, and about a third reporting two week of training. Among the 18 caregivers with training, two-thirds had received training in special needs, and for two-thirds of those this training was three days or longer.

The majority of caregivers (90% or more) were satisfied with their job - they believed that their service was recognised and their job conditions allowed them to perform well. However, only one in ten caregivers was satisfied with the training they had received as a caregiver; the majority (over 88%) were dissatisfied with their training. The finding is not surprising, as the majority of caregivers have never been trained for their job.

Based on CBCC observations, none of the CBCCs was rated as 'high quality' in all observation domains. The proportion of CBCCs rated as high quality in individual domains varied from 0% to 40%. Supervision was the domain in which 40% of CBCCs achieved the highest score. One in four CBCCs achieved the highest score in Communication and one in five in Social development. In the domain Managing children's behaviour, the majority of CBCCs scored high in all questions with the exception of 'positive methods to control behaviour', which brought the overall rating in this domain down.

The domains in which none of the CBCCs scored high in all questions were Routine and structure, Caregiver engagement, Numeracy, literacy and problem solving and Inclusion of children with disabilities.

Children's assessment

Out of 935 children screened for disability using the WGCFS, 100 children were categorised as having a disability resulting in the estimated prevalence of 10.7%. 52 (52.0%) of these children were girls. Sixty children (60.0%) were aged five years or above and 40 (40.0%) were aged 2-4

years. The number of children with disability varied between the CBCCs with the maximum number of eight children per CBCC; in six of the 48 CBCCs, no children with disabilities were identified.

The most common types of functional difficulty among children aged 2-4 years were understanding/being understood and learning difficulty, followed by difficulties in walking, hearing and behaviour.

The most common functional difficulties in children aged five years or more were anxiety, controlling behaviour, remembering, accepting change, being understood and depression.

Out of 933 children assessed with MDAT, 109 (11.7%) were classified as having developmental delay. Prevalence of developmental delay was higher among boys than girls (13.6% vs 10%) and amongst children aged 5+ years (17.0%) compared to 2-4 year olds (10.2%). Among these children, 41 had developmental delay in the expressive language domain resulting in the overall prevalence of 4.4% with slightly higher prevalence among boys (4.5%) than girls (4.3%). Seventy-seven children were classified as having developmental delay in the emotional-social domain resulting in the overall prevalence of 8.3% with higher prevalence among boys (10.6%) than girls (6.3%) and much higher prevalence among children aged 5+ (15.2%) compared to those aged 2-4 years (6.3%). Nine (1.0%) children were classified as having developmental delay in both expressive language and emotional-social domains.

Having a functional disability was strongly associated with having a developmental delay. Children with disabilities were 4.8 times more likely to have a developmental delay than children without disabilities (Odds Ratio 4.75, Mantel-Haenszel Test p-value <0.0001).

A total of 932 children had assessments for primary school readiness using 18 pass/fail questions designed to evaluate each child at the minimum level expected for primary school. One child achieved a pass in all 18 questions. When age-appropriate answers across domains were examined, only one child per age group (0-2 years, 3-4 years and 5+ years) successfully passed all questions appropriate for their age.

Children aged two years and below performed particularly poorly on spatial relationships but better in the mathematics and measurement and literacy sections. Children aged 3-4 years performed poorly in the literacy domains but better in measurement, number and spatial relationship. Children aged 5+ years performed poorly on literacy skills and struggled with spatial relationships. The group performed slightly better in the number section and considerably better in the measurement section.

References

1. Dale N, Salt A. Early support developmental journal for children with visual impairment: the case for a new developmental framework for early intervention. *Child: care, health and development*. 2007;33(6):684-90.
2. Grantham-McGregor S, Cheung YB, Cueto S, Glewwe P, Richter L, Strupp B. Developmental potential in the first five years for children in developing countries. *Lancet (London, England)*. 2007;369(9555):60-70.
3. Doherty G. *Zero to Six The Basis for School Readiness* 2018.
4. W.H.O, UNICEF. *Care for child development: improving the care for young children*. Geneva: World Health Organization/New York: United Nations Children's Fund 2012.
5. Engle PL, Black MM, Behrman JR, Cabral de Mello M, Gertler PJ, Kapiriri L, et al. Strategies to avoid the loss of developmental potential in more than 200 million children in the developing world. *The Lancet*. 2007;369:229-42.
6. Gallimore R, Bernheimer, L., MacMillan, D., Speece, D., Vaughn, S. . *Developmental Perspectives on Children With High-incidence Disabilities*. . New York: Routledge. 1999.
7. Hayes RJ, Bennett S. Simple sample size calculation for cluster-randomised trials. *International journal of epidemiology*. 1999;28(2):319-26.
8. Gwet KL. Computing inter-rater reliability and its variance in the presence of high agreement. *The British journal of mathematical and statistical psychology*. 2008;61(Pt 1):29-48.
9. WHO. *Early childhood development and disability: a discussion paper*. 2012
10. Blatchford IS WM. *Effective Early Childhood Programmes*. The Open University. 2009.
11. Bank W. *World Development Report: Learning to Realize Education's Promise*. 2018
12. Walker SP, Wachs TD, Gardner JM, Lozoff B, Wasserman GA, Pollitt E, et al. Child development: risk factors for adverse outcomes in developing countries. *Lancet (London, England)*. 2007;369(9556):145-57.
13. Goodley D. *Disability studies: an interdisciplinary introduction*. Sage. 2016:16-7.
14. WHO. *World Report on Disability*. 2011.
15. UN. *The United Nations Convention on the Rights of the Child* 1989.
16. UN. *CONVENTION ON THE RIGHTS OF PERSONS WITH DISABILITIES*. 2007.
17. Malawi Go. *Population and Housing Census*. 2008.
18. SABER. *Malawi Early Childhood Development*. 2015.

19. Neuman MJ, McConnell C, Kholowa F. From Early Childhood Development Policy to Sustainability: The Fragility of Community-Based Childcare Services in Malawi. *International Journal of Early Childhood*. 2014;46(1):81-99.
20. Development MoGCaC. NATIONAL SYLLABUS FOR INTEGRATED EARLY CHILDHOOD DEVELOPMENT 2003.
21. UNICEF. NATIONAL STRATEGIC PLAN FOR EARLY CHILDHOOD DEVELOPMENT. 2009-2014.
22. Munthali AC, Mvula PM, Silo L. Early childhood development: the role of community based childcare centres in Malawi. *SpringerPlus*. 2014;3:305.
23. Bank TW. Protecting Early Childhood Development in Malawi: Baseline Report. 2015.
24. Harms T, Clifford, R. M. & Cryer, D. Early childhood environment rating scale, revised edition. Teachers College Press New York. 2005.
25. Rao N, Sun J, Pearson V, Pearson E, Liu H, Conostas MA, et al. Is something better than nothing? An evaluation of early childhood programs in Cambodia. *Child development*. 2012;83(3):864-76.
26. Gladstone M, Lancaster GA, Umar E, Nyirenda M, Kayira E, van den Broek NR, et al. The Malawi Developmental Assessment Tool (MDAT): the creation, validation, and reliability of a tool to assess child development in rural African settings. *PLoS medicine*. 2010;7(5):e1000273.
27. Loeb M, Cappa C, Crialesi R, de Palma E. Measuring child functioning: the Unicef/ Washington Group Module. *Salud publica de Mexico*. 2017;59(4):485-7.
28. Statistics WGoD. Understanding and interpreting disabilities as measured using the Washington group short set of questions. 2009.
29. Ministry of Gender C, Disability and Social Welfare Malawi Early Learning and Development Standards. 2015.
30. Kagan SL BP, Kauerz K, Tarrant K. Washington State Early Learning and Development Benchmarks. A Guide to Young Children's Learning and Development: From Birth to Kindergarten Entry. Washington State's Early Learning and Development Benchmarks Advisory Panel. 2005.

Appendices

Appendix 1: Overall objectives of the study

The over-arching objectives are to:

1. Help to optimise the role of educational systems in promoting the culturally inclusive socio-economic transformation of early childhood development and education (ECDE) for children with disabilities (CWDs) between the ages of three and eight. This will be achieved in collaboration with the Malawi government, and with academic and non-governmental institutions working in the ECDE and disability sector.
2. Investigate ways of developing and utilising existing structures to ensure children with severe disabilities who cannot attend an educational setting also receive quality interventions within their communities.
3. Advance the ECDE field and the participation of CWDs by developing and applying a culturally-inclusive conceptual framework. This framework will aid the development of a set of assessment and training tools to be adopted by carers and policymakers in the field of education in Malawi and the South-Eastern region.

Study specific objectives are to:

1. Identify and test effective strategies to promote and secure the inclusion of children with disabilities in ECDE services.
 2. Identify and test strategies to improve curriculum and teaching methods for caregivers providing ECDE services.
 3. Make evidence-based recommendations to policymakers to allow them to improve the delivery of quality ECDE services in Malawi.
 4. Appraise current institutional, policy and programmatic provision of ECDE services for pre-school children in Malawi.
 5. Address the strong inequalities and inequities that exist in different settings in Malawi and within different groups (including nature of impairment, age, gender and ethnic group) to describe the main barriers to the uptake of ECDE services for children with disabilities at pre-school level.
 6. Develop tools to address these barriers, drawing on a broad range of disciplines in social sciences.
 7. Measure the progress of a child's development and learning outcomes of CWDs attending child-based community centres or at home as a result of a feasibility study.
 8. Measure and understand the impact of new ECDE interventions on the successful educational (both formal and nonformal) inclusion of children with disabilities.
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Appendix 2: Guidelines for child-based community centre rating scale

Rubric	Rating
<u>Routine and structure</u>	
1. Group structure	<ol style="list-style-type: none"> 1. The class is never divided into small groups 2. The majority of time is spent in one collective group, splitting children into smaller groups on occasion 3. The class is often intentionally split into smaller groups
2. Use of activity corners	<ol style="list-style-type: none"> 1. Never or rarely use activity corners 2. Occasionally use activity corners 3. Always/often use activity corners
<u>Supervision</u>	
3. Attending to children's needs	<ol style="list-style-type: none"> 1. Immediate needs of children are not responded to or addressed 2. The caregiver responds to children's needs occasionally or appears to be angry/annoyed when doing so 3. The caregiver responds to children's needs in a friendly/helpful/caring manner
4. Attention to child safety in their surroundings	<ol style="list-style-type: none"> 1. No actions or comments by the caregiver about safety 2. The caregiver is overly or unnecessarily concerned about safety therefore limiting children's development, exploration, etc. 3. The caregiver provides a good amount of time on children's safety; the children are not in any unsafe situation or the caregiver appropriately addresses any unsafe situations
<u>Caregiver engagement</u>	
5. Length of time caregiver interacts with the children	<ol style="list-style-type: none"> 1. The caregiver supervises but spends little time engaging with the children. 2. The caregiver spends some time/occasionally engages with the children. 3. The caregiver is actively engaged with the children most of the time.

Rubric	Rating
6. Quality of engagement	<ol style="list-style-type: none"> 1. Children are not engaged in the activities and seem bored, distracted, uninterested, non-responsive etc. 2. Some children are engaged in the activities and some are not 3. All children are engaged in the activities
7. Caregiver position during engagement	<ol style="list-style-type: none"> 1. The caregiver is standing the entire time of the engagement 2. The caregiver is standing and sitting during the engagement 3. The caregiver is sitting the entire time of the engagement
<u>Managing children's behaviour</u>	
8. Use of physical methods to control behaviour	<ol style="list-style-type: none"> 1. The caregiver often uses physical methods (hitting with a stick, slapping, pulling by the ear, etc.) to control children's bad behaviour 2. The caregiver occasionally uses physical methods (hitting with a stick, slapping, pulling by the ear, etc.) to control children's bad behaviour 3. The caregiver never uses physical methods (hitting with a stick, slapping, pulling by the ear, etc.) to control children's bad behaviour
9. Use of yelling to control behaviour	<ol style="list-style-type: none"> 1. The caregiver often uses shouting and yelling, and the tone of voice is negative most of the time 2. The caregiver sometimes uses shouting and yelling, and the tone of voice is negative some of the time 3. The caregiver never uses shouting and yelling, and the tone of voice is positive most of the time
10. Use of other punitive methods to control bad behaviour	<ol style="list-style-type: none"> 1. The caregiver often/most of the time uses long isolation, restricting food, threatening, etc. in response to bad behaviour 2. The caregiver sometimes uses long isolation, restricting food, threatening, etc. in response to bad behaviour 3. The caregiver never uses long isolation, restricting food, threatening, etc. in response to bad behaviour
11. Use of positive methods to control behaviour	<ol style="list-style-type: none"> 1. The caregiver never uses positive methods to control bad behaviour 2. The caregiver occasionally uses positive methods to control bad behaviour 3. The caregiver mostly/always uses positive methods to control bad behaviour

Rubric	Rating
Communication (verbal communication across ALL activities)	
12. Caregivers create speaking opportunities for children	<ol style="list-style-type: none"> 1. Children speak to the caregiver in a formal or routine manner 2. The caregiver creates natural speaking abilities, but the children are largely silent or unengaged 3. The caregiver creates natural speaking opportunities; the classroom is organised as an open discussion or dialogue, where the caregiver may not be looking for one specific answer
13. Caregivers encourage development of mutual respect between children and adults	<ol style="list-style-type: none"> 1. The children are not given positive individual attention, (e.g. the caregiver does not encourage children to share their stories or respond to a question) 2. The children are occasionally given positive individual attention 3. The children are always/mostly given positive individual attention
<u>Social development</u>	
14. Social interaction	<ol style="list-style-type: none"> 1. The caregiver does not discourage negative interactions and does not promote positive interactions between the children 2. The caregiver discourages negative interactions between children but does not promote positive interactions between the children 3. The caregiver discourages negative interactions and promotes positive interactions between the children
15. Caregivers provide opportunities for children to work together to complete tasks	<ol style="list-style-type: none"> 1. The caregiver does not set up tasks or activities that encourage children to work together to complete a task 2. The caregiver occasionally sets up tasks or activities that encourage children to work together to complete a task 3. The caregiver always/mostly sets up tasks or activities that encourage children to work together to complete a task
<u>Provision for children with disabilities</u>	
16. Responding to children's disabilities and needs	<ol style="list-style-type: none"> 1. The CBCC environment (both inside and outside of the classroom) has not been modified or adapted to meet the individual needs of children with disabilities to enable free movement and participation in activities; there is little interaction between the caregiver and children with disabilities;

Rubric	Rating
	<p>the caregiver does not respond to the needs of children with disabilities</p> <ol style="list-style-type: none"> 2. The CBCC environment had some but limited modifications or adaptations to meet the individual needs of children with disabilities; there are occasional interactions between the caregiver and children with disabilities; the caregiver occasionally responds to the needs of children with disabilities 3. The CBCC environment had appropriate modifications or adaptations to meet the individual needs of children with disabilities; there are frequent interactions between the caregiver and children with disabilities; the caregiver always/mostly responds to the needs of children with disabilities
<p>17. Involvement of children with disabilities with the rest of the group</p>	<ol style="list-style-type: none"> 1. The caregiver does not encourage children with disabilities to be part of a group activity at any time 2. The caregiver is aware of the abilities and needs of the children with disabilities and can involve them in some activities 3. The caregiver is aware of the abilities and needs of the children with disabilities and can involve them in most/all activities
<p>18. Evidence of involvement of parents with children with disabilities</p>	<ol style="list-style-type: none"> 1. Parents of children with disabilities are discouraged from entering into the classroom with their children or sitting outside and are not engaging in any activities 2. Parents of children with disabilities are present in the CBCC but are not allowed to be involved in their child's participation 3. Parents of children with disabilities are present and are encouraged to be involved in their child's participation
<p><u>Numeracy, literacy and problem solving</u></p>	
<p>19. Style of teaching numbers</p>	<ol style="list-style-type: none"> 1. No numbers are taught during the observation 2. Numbers are taught but children are simply reciting the names of numbers "1... 2... 3" 3. Children are writing/counting numbers in relation to seeing or handling a number of objects
<p>20. Frequency of counting across all activities</p>	<ol style="list-style-type: none"> 1. No counting is recorded during the observation period 2. Counting is present but only when numbers/counting was the focus of the activity 3. Counting is done across a variety of activities
<p>21. Style of teaching alphabet</p>	<ol style="list-style-type: none"> 1. No letters are taught during the observation

Rubric	Rating
	<ol style="list-style-type: none"> 2. Letters are taught but children are simply reciting and/ or copying the alphabet in relation to initial sounds 3. Children are taught letters in relation to common objects named
<p>22. Reading with children</p>	<ol style="list-style-type: none"> 1. Reading does not occur during the observation period 2. The caregiver is reading to children but the children are not participating/discussing 3. The caregiver is reading to children and the children are actively participating/discussing
<p>23. Role playing and make believe</p>	<ol style="list-style-type: none"> 1. No role-playing activities recorded during the observation 2. The caregiver sets up a structured role-play activity but does not connect it to other learning 3. The caregiver sets up a structured role play and participates in the role play or the role play is advanced with many diverse materials or the caregiver connects the role play to other learning activities

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Bumpers Way
Bumpers Farm
Chippenham
SN14 6NG
UK

+44 (0)1444 446 600

info@sightsavers.org

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