

**EARLY CHILDHOOD CARE AND EDUCATION, AND LEVEL OF
SCHOOL READINESS: A COMPARATIVE ASSESSMENT OF
BASELINE AND ENDLINE DYNAMICS**



SAVE THE CHILDREN

Report

March 2019

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PREFACE

Since its inception in the year 1919, Save the Children has been working with a view to bringing about fundamental and lasting changes that would result in protection and promotion of rights of disempowered and marginalized children across the globe. Early Childhood Care and Education (ECCE) is one of the key domains of the organisation's action and advocacy as it is integral to survival, protection and education of children. As a knowledge rich development organization, Save the Children focuses heavily on evidence-based interventions that are by nature contextually relevant, effective, efficient and sustainable. The organisation's ECCE intervention in Bengaluru is one such initiative.

The present report titled "Early Childhood Care and Education, and Level of School Readiness: A Comparative Assessment of Baseline and Endline Dynamics" is an effort to capture the extent of school readiness of the targeted children in Bengaluru and other qualitative changes by comparatively analyzing the baseline and endline data collected with the help of an in-house assessment tool called International Development and Early Learning Assessment (IDELA). The report has been modeled keeping in view the developmental domains covered in the IDELA tool. Efforts have been made to present the baseline and endline data and the analyses in a manner that adds to the ease of reading and understanding.

It is expected that the report would, inter alia, contribute to understanding of the extent of changes that the ECCE intervention has brought about in knowledge and skills of targeted children and their consequent readiness for formal schooling.

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EXECUTIVE SUMMARY

The Early Childhood Care and Education intervention of Save the Children in Bengaluru is aimed at bringing about qualitative changes in functioning of Anganwadis in order to improve learning levels of children through integrated intervention in the domains of health, nutrition, hygiene and early childhood education. The study titled “Early Childhood Care and Education, and Level of School Readiness: A Comparative Assessment of Baseline and Endline Dynamics” is an effort to capture the extent of school readiness of targeted children by comparatively analyzing the baseline and endline data collected with the help of an in-house assessment tool called International Development and Early Learning Assessment (IDELA). However, the gains in the endline cannot be entirely attributed to ECCE intervention in view of the natural process of learning associated with grow up years of children and presence of contextual factors that influence their learning outcomes. The study covered 143 children (48% boys and 52% girls), who have been divided in terms of age into two categories for the purpose of analysis- below 4 years and 4+ years.

The findings of the study have been captured under five developmental domains viz. socio-emotional skills, emergent numeracy/problem solving, executive functioning, emergent language and literacy and motor development separately for boys, girls and both girls and boys combined across two age groups. The following are the salient findings of the study.

- ✚ Endline gains of girls and boys of the two age groups are nearly same in case of each of the five developmental domains.
- ✚ As regards positioning of the five developmental domains, gain of socio-emotional skills is the highest of the five, followed by ‘emergent language and literacy’ and ‘motor development’ (joint second) and ‘emergent numeracy/problem solving’ and ‘executive functioning’ (joint third).
- ✚ Regression of difference in IDELA scores between endline to baseline against age at baseline and gender shows that gains in IDELA score are decreasing with increase in age ($t\text{-stat} < 1.96$). Although the gain in IDELA score is more in case of girls than boys, the result is not significant. It can be said that the analysis did not find any differential gains- both younger and older children and boys and girls increased their IDELA score at similar rates.
- ✚ Notwithstanding the natural process of learning and the contextual factors that influence learning outcomes, endline gains in case of the five developmental domains are to certain extent indicative of improvement in children’s level of readiness for formal schooling.
- ✚ Children in endline demonstrated more attention to instructions, better confidence level, more concentration on given tasks, heightened interest in accuracy, greater degree of pleasure in accomplishment, more focus on completion of tasks, and increase in level curiosity than the baseline. In comparison to the baseline status, children are now better positioned for formal schooling.

I. CONTEXT OF INTERVENTION

Early Childhood Care and Education (ECCE) refers to a set of services that includes health, nutrition, hygiene and early education for children in the age group of 0 to 6 years. As a development intervention, it specifically targets children of vulnerable and disempowered communities and ensures their holistic development by addressing critical developmental gaps. The services under ECCE are essential for survival, growth and development of targeted children, as they focus on nourishing their body and mind and making them ready for primary level education that they enter on completion of 6 years of age. Since these actions shape the formative years of a human life, they assume immense significance not only for immediate needs but also for future development.

The importance of ECCE for human development can be gauged from the place it occupies in the policy documents and the actions that are being implemented in the domain. While adoption of the National Early Childhood Care and Education Policy in 2013 reaffirmed the commitment of Government of India to 'promote inclusive, equitable and contextualized' opportunities for children below six years of age, there are several other policies and legal and constitutional pronouncements like the National Policy for Children (1974), Article 45 of the Constitution of India, the Right of Children to Free and Compulsory Education, 2009, National Policy on Education (1986), National Nutrition Policy (1993), National Health Policy (2002), National Plan of Action for Children (2005) etc. that contain recommendations and guidelines for actions in the domain. At multilateral level, the United Nations Convention on the Rights of the Child (1989), World Declaration for Education for All, Jomtien (1990), Education for All, Dakar (2000), UN Millennium Declaration (2000) and the UN Sustainable Development Goals (2015) provide the directions on which the member countries need to act in order to ensure, as noted in Target 2 of SDG, 'that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education'.

India made its first programmatic intervention on ECCE in 1975 when the Integrated Child Development Services (ICDS) scheme was launched by the Government of India. At the core of the scheme, which has now been renamed as Anganwadi Services, lies the Anganwadi ('courtyard shelter') Centre- a community-based institutional set up through which six different services viz. supplementary nutrition, pre-school non-formal education, nutrition and health education, immunization, health check up and referral services are delivered at the grassroots. According to the latest available data, 13.63 lakhs Anganwadi Centres were operational in the country as on 1 June 2018.¹ Data available with the Ministry of Women and Child Development, Government of India shows that 1041 lakh children were covered under supplementary nutrition and 349.82 lakh children were covered under pre-school education at the end of 2014.² Notwithstanding the achievements of the government's ECCE intervention, studies indicate multiple shortcomings in the functioning of Anganwadis in the country like inadequate space, absence of appropriate facilities for sanitation, drinking water, toilet etc., poor remuneration to staff and irregular staff training.³

¹ Available at <http://pib.nic.in/newsite/PrintRelease.aspx?relid=181218>. Retrieved on 5 January 2019

² Available at <http://wcd.nic.in/sites/default/files/AR2014-15.pdf>. Retrieved on 5 January 2019

³ A *Quick Evaluation Study of Anganwadis under ICDS*, PEO Report No. 227, NITI Aayog (June 2015). Available at https://niti.gov.in/writereaddata/files/document_publication/report-awc.pdf. Retrieved on 6 January 2019. Rao N. and Kaul V. "India's integrated child development services scheme: challenges for scaling up" (13 December 2017). Available at <https://onlinelibrary.wiley.com/doi/full/10.1111/cch.12531>. Retrieved on 5 January 2019

2. NATURE OF ECCE INTERVENTION AND EVIDENCE-BASED PROGRAMMING

The challenges faced by Anganwadi Centres are visible across the country including the State of Karnataka where Save the Children has been working for bringing about fundamental qualitative changes in the functioning of Anganwadis in order to improve learning levels of children through integrated intervention in the domains of health, nutrition, hygiene and early childhood education. Save the Children, in collaboration with a development organization namely Prajayatna, started its intervention in 52 Anganwadis in 2017 mostly located in slum areas in Bengaluru Urban across Mysore circle and Yelahanka circle. The programme targeted 3600 children in the age group of 0 to 6 years. The focus of actions has been on capacity building of Angawadi workers/ facilitators and parents on early literacy, early math, motor skills and socio-emotional development of targeted children. For children in the age group of 3.5 to under-6 years, these activities are intended to strengthen school readiness skills among them.

The intervention of Save the Children also includes an innovative component called 'Hub Centre'. This is a place of care and learning for children in which they have access to a big child-friendly space, age appropriate and need-based learning material and outdoor plays, uninterrupted power supply, drinking water, toilets with running water and other facilities. One key highlight of the Centre is that its teachers have been appointed by Save the Children, unlike the Anganwadi Centres wherein the preschool activities are performed by Anganwadi workers. The programmatic intent is to impart effective early literacy and math programme to children in Hub Centre unlike Anganwadi Centres.

While supplementing the efforts of Anganwadi Centres and contributing to ECCE, Save the Children has followed evidence-based programming with the help of a global assessment tool called International Development and Early Learning Assessment (IDELA). The tool, which has been used in over 40 countries to evaluate ECCE projects, covers five core developmental domains namely socio-emotional skills, emergent numeracy/problem solving, executive functioning, emergent language and literacy and motor development. It has two sets of instructions- one for general administration of the tool and another meant to facilitate data collection under each item or question that is asked to the children. According to the plan of evidence-based programming, Save the Children has used the IDELA tool to gather both baseline and endline data that form the mainstay of comparative assessment of the two sets of dynamics. The **purpose of the comparative assessment** is to capture the extent of school readiness of the targeted children by measuring the changes that have become evident among them as a result of the intervention.

3. METHODOLOGY

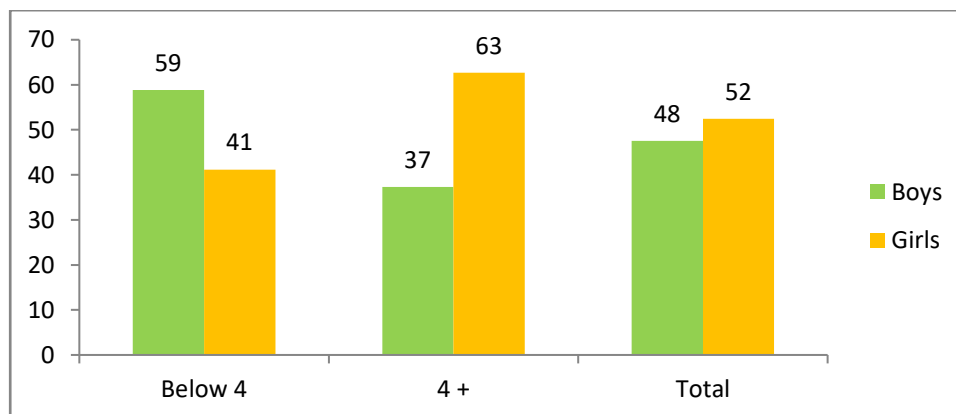
Methodology and Process of Data Collection: Administration of IDELA tool is a participatory and child-friendly exercise that accords primacy to both quality of data and the process of data collection. Each item of the tool has certain instructions followed by appropriate questions. In view of the technical components of the tool that needed to be understood, the field researchers had to undergo training prior to commencement of field work. Administration of the tool was done in a stress free environment in the community setting. The field researchers used their mobile handsets or tab to collect data. As school readiness was the principal purpose of intervention, most of the children covered in the study were in the age group of 3 to 6 years, who are targeted for early pre-school education imparted in *Anganwadis*.

Analysis of Data: Since the purpose of study is to measure the change in endline over baseline, analysis of data focused on calculation of IDELA gain score in endline and regression analysis. Calculation of gain score in endline involved two steps: first, calculation of combined baseline and endline scores of all the items under each developmental domain, separately for the two age categories; second, subtraction of baseline score from endline score in order to arrive at gain in endline, which has been noted in terms of percentage points. Besides showing endline gains in each developmental domain, comparative performances of children in the five domains together have also been shown separately. Regression analysis, on the other hand, has been made to highlight difference in IDELA score between endline and baseline against 'age at baseline' and 'gender'.

Limitations: While IDELA gain scores in endline indicate the change over baseline performance, these changes cannot entirely be attributed to the ECCE intervention. Children learn naturally overtime as they grow old. There may also be other contextual factors that complement the process of learning. Out of the five developmental domains covered for analysis, executive functioning is a less validated domain.

Coverage: The study covered 143 children (48% boys and 52% girls) in both baseline and endline. The children have been divided into two age groups- below 4 and 4+ for the purpose of analysis of data. While age group of below 4 years has 59% boys and 41% girls, age group of 4+ years has more girls (63%) than boys (37%). Distribution of age has been done on the basis of age of children at baseline.

Chart 3.1: Distribution of sample in terms of age and gender (percentage)



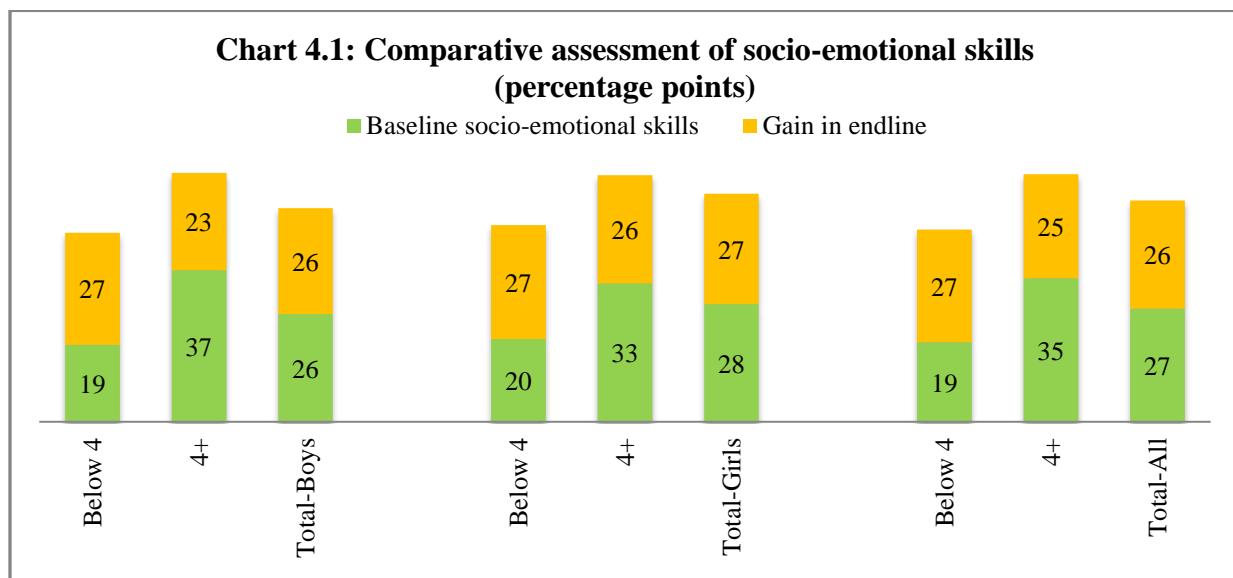
4. DEVELOPMENTAL DOMAINS: COMPARATIVE FINDINGS

This section presents comparative performance of children in five developmental domains which have been the focus of intervention of Save the Children in Karnataka. The purpose of the analysis is to understand the extent to which the intervention has been able to change baseline positions and enhance the potential of children for formal schooling. The chart given for each of the five domains presents baseline and gain scores (percentage points) separately for boys and girls of two age groups, and for total sample (boys and girls combined).

4.1. Socio-Emotional Skills

The social and emotional skills of children have been captured with the help of two separate sets of questions- one for social skills (awareness of personal particulars and sharing names of friends) and another for emotional skills (emotional awareness/regulation and empathy/ perspective taking). The following is the trend of comparative assessment.

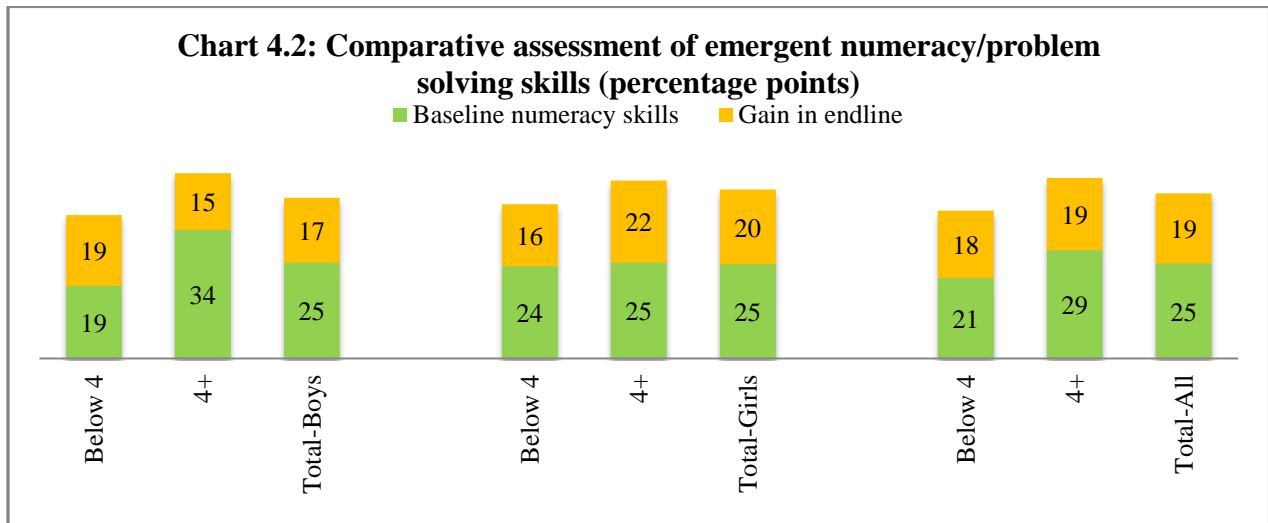
- ✚ While boys gained 26 percentage points as against 27 percentage points by girls, the children as a whole gained 26 percentage points in the endline. In other words, gains in endline are nearly same across gender and age categories.



4.2. Emergent Numeracy/ Problem Solving

The focus of this developmental domain is to capture the ability of children in emergent (early) math or numeracy and problem solving, which not only equips them for formal schooling but also future employment and life as an adult. According to the IDELA tool, children were asked to perform seven different sets of activities in order to test their emergent numeracy or problem solving skill. The seven sets of activities include comparison of objects by length and size, sorting and classification of picture cards, identification of shapes like triangle, circle etc., identification of numbers, number sense- one to one correspondence (identification of accurate number of objects), addition and subtraction, and puzzle completion. The following trend emerge in endline in comparison to baseline.

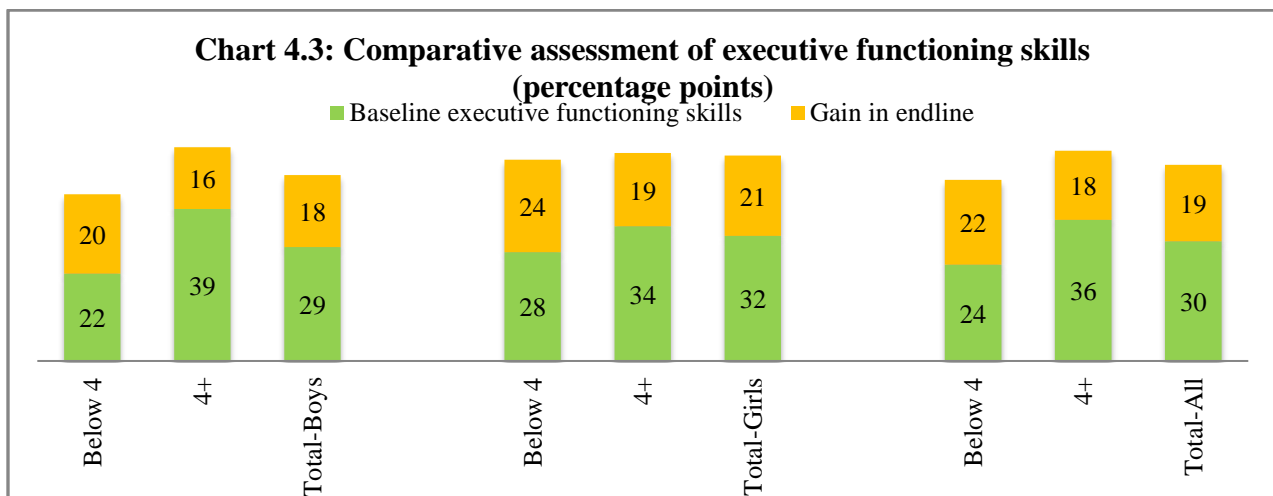
- ✚ The endline gain of all girls is 3 percentage points higher than that of all boys. While endline gain of all children is 19 percentage points, differences in gain scores across age and gender categories are not high as the chart below shows.



4.3. Executive Functioning

IDELA tool covers two aspects namely ‘working memory’ and ‘inhibitory control’ in order to examine the executive functioning skills of children. While working memory is a test of short-term memory, inhibitory control refers to a cognitive process that manifests in the shape of inhibition that a person displays while responding to certain action. In other words, it is an ability to control impulsive responses and apply logic to decision making that contributes to planning, goal setting and other executive functions that a person performs. For testing working memory, each child was told to repeat certain numbers as noted in a table on hearing from the researcher. For testing inhibitory control, the children were required to perform the opposite of what was told to them. For example, the correct step for ‘touch your head’ is ‘touch your toes’, and for ‘touch your toes’, it is ‘touch your head’.

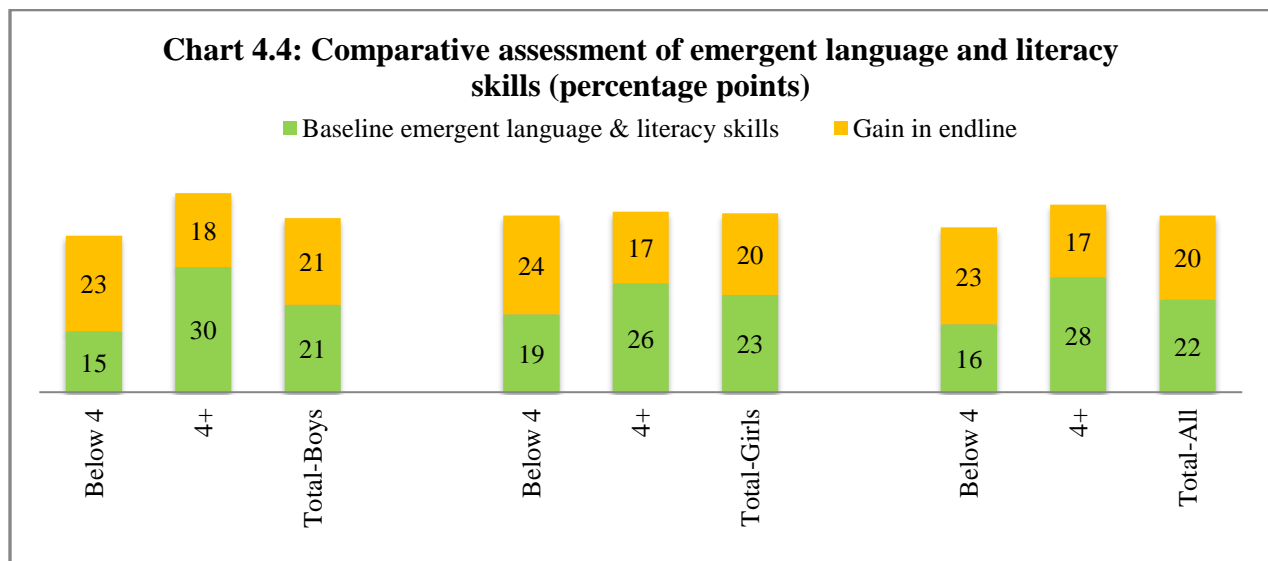
- ✚ Comparative analysis of baseline and endline data shows that girls gained only 3 percentage points more than boys and the differences in gains across age groups are not high either. The children as a whole gained 19 percentage points in endline.



4.4. Emergent Language and Literacy

Emergent language and literacy refers to the process of learning during early years prior to commencement of formal reading and writing. This learning is linked to the things children play with and observe at home and in places they visit, including the surrounding they live in. IDELA tool has used six parameters to test emergent language and literacy skills namely oral vocabulary (children asked to name 10 market items and 10 animals), print awareness (correct opening of a book, identification of page in which reading should start and showing the direction in which reading should proceed), letter identification, first letter sounds (identification of word whose first letter sounds similar to the given word), emergent writing, and oral comprehension. The trend that emerges out of comparative analysis is noted below.

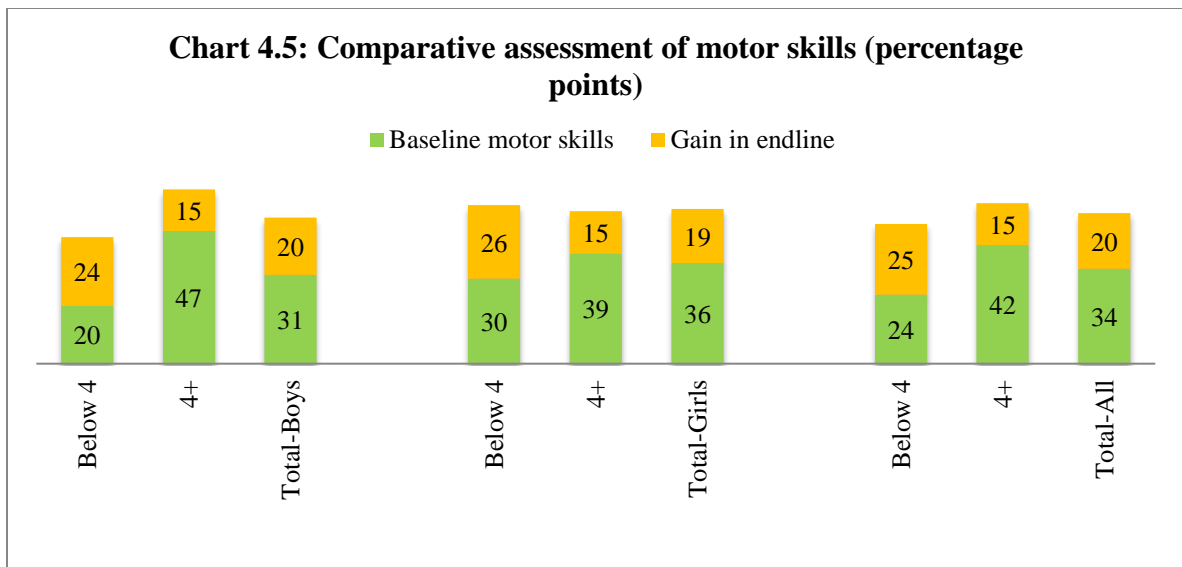
- While endline gain of all children is 20 percentage points, gains across gender and age categories are almost same as the chart below shows.



4.5. Motor Development

Motor skill refers to specific movement of body muscles for the purpose of performing certain action. It is generally a purposeful act as movement of muscles makes the person feel and sense that an intended task is being performed. Motor skills are of two types namely fine motor skills and gross motor skills. While **fine motor skills** refer to small movements or activities like holding an object that are done with the help of small muscles like fingers, toes, wrists etc., **gross motor skills** are big movements or activities like sitting, running, hiding, jumping, crawling etc. that require use of arms, legs, torso and feet. IDELA tool contains three items to test fine motor skills namely copying a shape (triangle), drawing a person and folding paper, and one item for gross motor skills viz. hopping. The comparative trend that emerges out of analysis of gains in endline over baseline shares is the following.

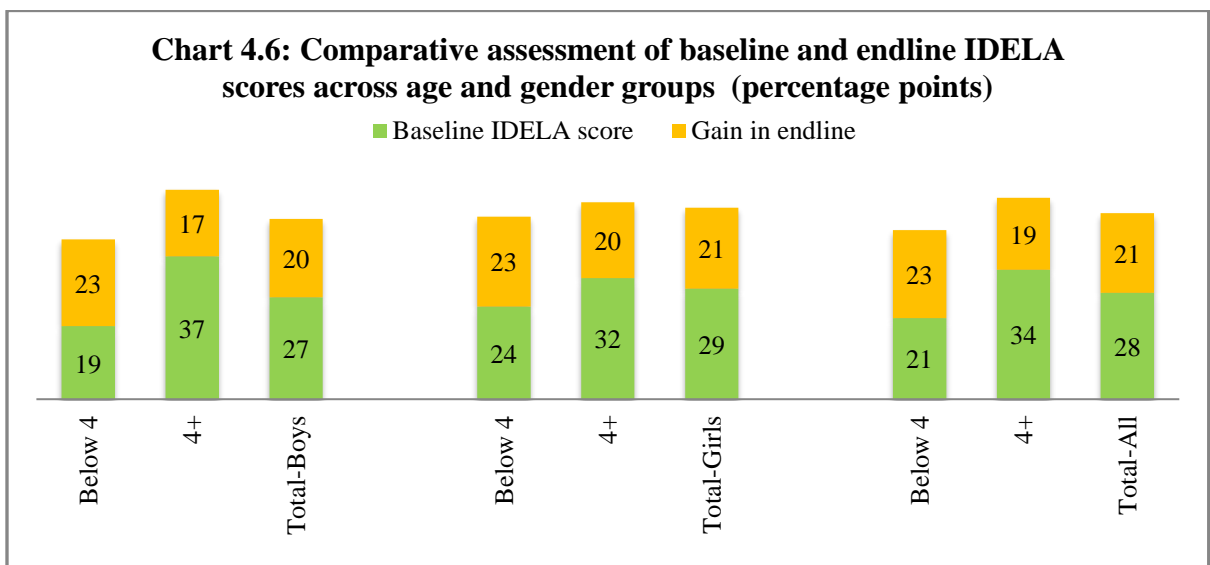
- Endline gains across age and gender categories are either same as in case of gains of 4+ years girls and boys (15 percentage points each) or almost same as the chart below shows. Gain of all children in endline is 20 percentage points.



4.6. Combined Comparative Performances of Children

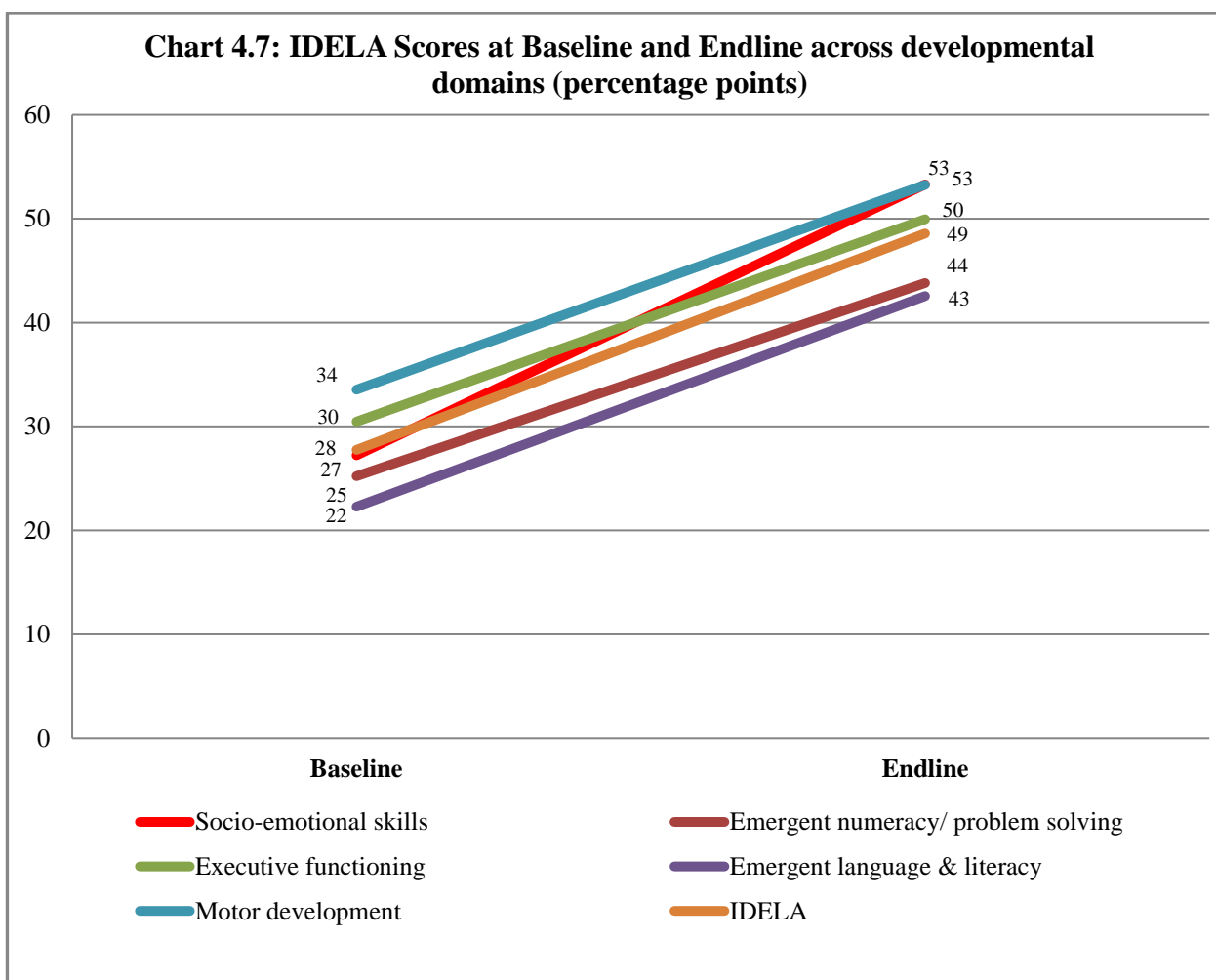
While the above sections deal with performances of children in the five domains covered in the IDELA tool, this section analyses the combined comparative performances of children. The purpose of analysis is to present a holistic understanding of the extent of effectiveness of ECCE intervention. Comparative analysis of gains in endline over baseline presents the following trends.

- While endline gains of girls and boys of below 4 years age are same (23 percentage points each), gains of girls and boys of 4 + years age are almost similar- 20 percentage points by girls and 17 percentage points by boys. Endline gain by all the children is 21 percentage points.



Further analysis of baseline and endline score reveals higher scores of the endline in comparison to baseline for all the five developmental domains which the IDELA tool covers, as presented in chart 4.7. The gain of each developmental domain shows the extent of effectiveness of ECCE intervention and the level of school readiness of children. The gains in IDELA scores across five developmental domains, as presented in chart 4.8, show the following trends.

- ✚ Gain in the domain of socio-emotional skills is the highest (26 percentage points) of all domains.
- ✚ The share of gain is 20 percentage points each in case of emergent language and literacy and motor development.
- ✚ The shares of gains in the remaining two domains namely emergent numeracy/ problem solving and executive functioning are 19 percentage points each.
- ✚ The total IDELA gain (combination of all five domains) in the endline is 21 percentage points.
- ✚ Gains in endline are substantial in case of total IDELA and each of the five developmental domains that the baseline and endline studies covered. This shows improvement in the level of school readiness of children as a result of ECCE intervention, notwithstanding the contribution of other factors as noted in section on limitations of the study.



4.7. Regression Analysis

Regression of difference in IDELA scores between endline to baseline against age at baseline and gender shows the following results. As the outputs of regression analysis indicate, coefficient against child age is negative, i.e. with increase in age the gain in IDELA score is decreasing. The coefficient is not significant, as t-stat is < 1.96 . In comparison to boys, the gain in IDELA score is more in case of girls. But the result is not significant. As the result is not significant, we can say that the analysis did not find any differential gains by gender or age i.e. younger and older children and boys and girls increased their IDELA scores at similar rates.

Table 4.1: Regression analysis

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>
Intercept	36.09638	11.35407	3.179157	0.001818	13.64877	58.54399
Girls_base	1.438115	3.984457	0.360931	0.718695	-6.43937	9.3156
Child age_base	-3.83821	2.698209	-1.4225	0.157104	-9.17272	1.49629

5. OBSERVATIONS

While interacting with children during the course of administering the IDELA tool, the members of research team observed the status of seven outward human qualities that people generally display during inter-personal communication. These are attention (to instructions and demonstrations), confidence, concentration, diligence or carefulness, pleasure in accomplishment, focus on completion, and curiosity or interest. The observations were recorded under four main categories, keeping in view the extent to which the qualities could be observed, viz. almost never, sometimes, often and almost always.

As the table below shows, the children in the total sample who displayed these qualities only 'sometimes' had the highest share in the baseline study in case of each of the seven qualities. This position, however, changed in the endline, as the shares of children who 'almost always' displayed the qualities had the highest share in case of each of the seven qualities. While the shares of 'often' marginally increased (in the range of 0.5 to 14 percentage points) in case of all the qualities except one namely 'attention to instructions and demonstrations', the shares of 'almost never' substantially decreased in endline in regard to all the qualities. The trend is similar in case of children of the two age groups. It is evident in these findings that children in the endline showed more attention to instructions and demonstrations made by researchers, better confidence level, more concentration on given tasks, heightened interest in accuracy and carefulness, greater degree of pleasure in accomplishment, more focus on completion of tasks, and increase in level of curiosity throughout the assessment in comparison to the baseline.

Table 5.1: Observation of human qualities (percentage)

Observable human qualities	Age-group	Baseline				Endline			
		Almo st never	So me tim es	Oft en	Almo st alway s	Almo st never	Som e time s	Oft en	Almo st alway s
Did the child pay attention to the instructions and demonstrations throughout assessment?	Below 4	16.7	42.4	24.2	16.7	6.0	22.4	28.4	43.3
	4+	5.3	33.3	30.7	30.7	2.9	24.3	15.7	57.1
	Total	10.6	37.6	27.7	24.1	4.4	23.4	21.9	50.4
Did child show confidence when completing activities; did not show hesitation.	Below 4	12.1	48.5	24.2	15.2	6.0	29.9	29.9	34.3
	4+	8.0	34.7	20.0	37.3	5.7	28.6	20.0	45.7
	Total	9.9	41.1	22.0	27.0	5.8	29.2	24.8	40.2
Did the child stay concentrated and on task during the activities and was not easily distracted?	Below 4	10.6	51.5	19.7	18.2	4.5	32.8	32.8	29.9
	4+	10.7	33.3	22.7	33.3	2.9	30.0	20.0	47.1
	Total	10.6	41.8	21.3	26.2	3.7	31.4	26.3	38.7
Was child careful and diligent on tasks? Was child interested in accuracy?	Below 4	21.2	47.0	16.7	15.2	6.0	25.4	41.8	26.9
	4+	9.3	34.7	20.0	36.0	5.8	24.6	23.2	46.4
	Total	14.9	40.4	18.4	26.2	5.9	25.0	32.4	36.8

Did child show pleasure in accomplishing specific tasks?	Below 4	15.2	48.5	19.7	16.7	6.0	29.9	28.4	35.8
	4+	12.0	34.7	22.7	30.7	7.1	21.4	20.0	51.4
	Total	13.5	41.1	21.3	24.1	6.6	25.6	24.1	43.8
Was child motivated to complete tasks? Did not give up quickly and did not want to stop the task?	Below 4	15.6	45.3	26.6	12.5	6.0	31.3	40.3	22.4
	4+	10.7	46.7	18.7	24.0	10.0	27.1	12.9	50.0
	Total	13.0	46.0	22.3	18.7	8.0	29.2	26.3	36.5
Was the child interested and curious about the tasks throughout the assessment?	Below 4	12.3	52.3	18.5	16.9	7.5	29.9	31.3	31.3
	4+	10.7	40.0	24.0	25.3	8.6	27.1	12.9	51.4
	Total	11.4	45.7	21.4	21.4	8.0	28.5	21.9	41.6

6. CONCLUSIONS

The following conclusions have been arrived at in regard to the five developmental domains and the extent of school readiness of children.

6.1. Developmental Domains

- ✚ Endline gains of girls and boys of the two age groups are nearly same in case of each of the five developmental domains that the study looked into.
- ✚ Among the five developmental domains, gain of socio-emotional skills is the highest, followed by ‘emergent language and literacy’ and ‘motor development’ (joint second) and ‘emergent numeracy/problem solving’ and ‘executive functioning’ (joint third).
- ✚ Regression analysis shows that gain in IDELA score is decreasing with increase in age. Gain in IDELA score is more in case of girls than the boys, but the result is not significant. The analysis did not find any differential gains by gender and age- both younger and older children and boys and girls increased their IDELA score at similar rates.

6.2. Level of Children’s Readiness for Formal Schooling

- ✚ Notwithstanding the natural process of learning and the contextual factors that influence learning outcomes, endline gains in regard to the five developmental domains are to certain extent indicative of improvement in level of readiness of children for formal schooling.
- ✚ Children in endline demonstrated more attention to instructions, better confidence level, more concentration on given tasks, heightened interest in accuracy, greater degree of pleasure in accomplishment, more focus on completion of tasks, and increase in level curiosity than the baseline. In comparison to their level at baseline, children are now better positioned for formal schooling.