

# Holistic Development and School Readiness of Preschool Children in Addis Ababa

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## **Abstract**

*The holistic development and school readiness status of children attending preschools is not well researched in Addis Ababa. The present study tried to investigate the holistic development and school readiness of children attending private, government and faith-based preschools in Addis Ababa. A survey research design was employed to frame the research and a multistage random sampling technique was applied to select the study participants. Participants of the study were 166 children from 3 private, 5 government and 3 faith-based preschools from upper kindergarten level. The children's development was measured using Early Development Instrument (EDI). The developmental domains measured by EDI were Physical Health and Wellbeing, Language and Cognitive Development, Social Competence, Emotional Maturity, and Communication Skills and General Knowledge. Data were analyzed using both descriptive and inferential statistics such as percentile, percent, mean, SD, t-test, and ANOVA. Results showed that the prevalence of preschool children who were ready and not ready for school were 76.6 and 23.4%, respectively. The proportion of 'Not-on track' children ranges 12 % in communication skills and general knowledge to 35 .5% in language and cognitive development domain. Large proportion of not ready for school, at risk and vulnerable children were from male gender, government preschool and low SES background compared to children who are female, from private preschools and from medium and high SES background. The mean differences in holistic development revealed that there was a statistically significant gender, preschool type and SES differences in children. Implications of the study are discussed.*

**Key Words:** Child Development; School Readiness; Preschool Attendance; Physical Health and Wellbeing, Language and Cognitive Development, Social Competence, Emotional Maturity, and Communication Skills and General Knowledge

## **Introduction**

Children are tomorrow's leaders, workers and citizens and they need to develop holistically. A wise investment in the holistic development of children pays manifold back to the society in lifetime productivity and responsible citizenship (National Scientific Council on the Developing Child, 2007). Research successfully demonstrated that the foundation for future success in life starts during conception and is built through early childhood period. If this period is not addressed through quality development opportunities, a nation misses the opportunity to reap the strongest possible economic benefits from investing in children and families (Pritzker, Bradach & Kaufmann, 2015).

ECE has been described in many ways: a form of applied child development, purposeful and targeted early intervention, or any form of services designed to support the learning and development of children in the first 8 years of life. Generally, it refers to care and education services deliberately provided to affect developmental changes in children. Specifically, early childhood education is all about support services, addressing developmental needs (physical-motor, cognitive, language, social-emotional and creative) of children aged 0 to 8 years in a holistic, integrated, comprehensive, developmentally appropriate, culturally sensitive, and child-centered approach in a formal and non-formal ways. It is during these years that the foundation for future development and learning is set (Gordon, & Browne, 2013).

James Heckman, a Nobel Laureate in economics, has clearly and consistently confirmed that investment at early age is proved to have a high return rate compared to investments in later ages of children. Children who had quality early childhood education experience showed better educational achievement, better employment opportunity, lower crime rates, reduced achievement gaps, reduced need for special education and reduced overall social costs (Heckman, 2000, 2006, 2008, 2011, 2012). In pure economic terms, for every one dollar investment in high quality early childhood education, there is a 7 to 10 percent return on investment per year. Heckman has also demonstrated that investing in high-quality early childhood programs for disadvantaged children delivers a higher return on investment than education aimed at any other stage of life (Heckman, 2011). Quality early childhood education service provision for children is not only a choice for its rate of return but it has now become a child right issue.

The economic benefits could be realized when child development and education investments focus on holistic development than particularly emphasizing on cognitive development and academic achievement. Evidence shows that non-cognitive factors are also found to be equally important for later success (Heckman, & Rubinstein, 2001; Heckman, Stixrud, & Urzua, 2006; Kautz, Heckman, Diris, Ter Weel, & Borghans, 2014). As a result, areas such as physical development, social competence, and emotional maturity are studied along with language and cognitive development in preschools. Studies of outcomes of early childhood education in terms of holistic development rather than only the academic achievement is now prevalent elsewhere (*see* Gaynor, 2015; Janus, & Duku, 2007; Guhn, Janus, & Hertzman, 2007).

As holistic development has become the measure for school readiness, the prevalence of children who are not ready for school, at risk and vulnerable has become significant. Studies indicate that (e.g., Black, Walker, Fernald, Andersen, DiGirolamo, Lu, et al., 2017) over 43% of children in the low and middle income countries are at risk of not reaching their developmental potential. Given this challenge, ECE can be used as an intervention for the problem and children can benefit from this experience. Research revealed that (e.g Barnett, 2008; Belsky, Vandell, Burchinal, Clarke-Stewart, McCartney, Owen, & NICHD Early Child Care Research Network, 2007; Belsky, 2006) those children who attended quality preschools develop holistically, perform better academically, and are better ready to school than those who did not attend. Despite the fact that early childhood education has positive effects on children's development, there are still over 50% of children in the world, around 175 million, who could not get access to this important experience ([www.unicef.org/education/early-childhood-education](http://www.unicef.org/education/early-childhood-education)). It is alarming that these many children are not destined to get ECE services when its goals are to prepare children to the demands and challenges of life.

In Africa, three in four (75%) children do not have any form of early childhood education experience, (<https://theirworld.org>). Even among the world's 175 million children who did not have ECE opportunity, the largest share is in Africa. In Africa, early childhood education service provision was not as such getting the attention of governments and parents. In most African countries, ECE has been left to the private sector, and only recently that the governments have showed some interest to invest in it (Mwamwenda, 2014). In addition, the 2030 SDGs and Agenda 2063 have stimulated the African governments to invest in the sector. This indeed is a

new chapter in the history of Africa, in terms of giving attention to early childhood education, where most children have failed to achieve their developmental potential.

Ethiopia's early childhood education experience is no different from African experience. It is only recently that the Ethiopian government started giving attention to the sector and is directly involved in investing in early childhood care and education (ESDP V, 2015). However, about 60% of children under age 6 did not have any form of early childhood experience yet (MoE, EMIS, 2019). The Human Capital Index (HCI) report also indicated that Ethiopia has an index of 0.38 (which indicates that Ethiopian children only realized 38% of their developmental potential because it is compromised due to lack of proper health and education services) and stood 135<sup>th</sup> out of 157 countries (Radieva, & Kolomiets, 2019). It is possible to argue that Ethiopian children are at a disadvantage as they are not attending proper and quality preschool education and getting proper health and nutritional care. This argument is supported by Ethiopian Demographic Health Survey (EDHS, 2019) that, of all children under 5 years old, 37% were stunted and 21% were underweight. The holistic development and school readiness of Ethiopian children is arguably compromised as long as early childhood care and education and nutrition and health care services are not properly provided. Improvement of these services in quality and access could possibly help children develop holistically and be ready for school.

Singling out the effect of ECE on children's development might be difficult as their development is a function of several factors such as programmatic, contextual and individual. The benefit of ECE also goes beyond the individual children and affect the family, community and society and decisions as to how ECE is important needs to be evidence based (Bassok & Engel, 2019).

Measurement and evaluation of early child development and school readiness have become a common practice in high-income countries. However, low- and middle-income countries have no or little information about the status of their children's development and school readiness (Wolf, Halpin, Yoshikawa, Dowd, Pisani, & Borisova, 2017). Monitoring the development of children is now becoming a must for all countries as it is indicated on the convention of the rights of children (Brinkman, Sincovich, & Vu, 2017). Determining the status of children's development,

school readiness, prevalence of at risk and vulnerable children would help countries to act accordingly. The measurement and evaluation process also enables countries to determine whether children are making improvements after having received a certain intervention or not and they can take necessary policy to practice measures.

Studies evaluating early childhood development are becoming more important than ever before to formulate policies, provide services, evaluate practices, and determine changes. The Ethiopian government is now committed to invest in ECE and the provision has become a priority (ESDP V, 2015). However, in the Ethiopian context, empirical evidence is limited whether early childhood education experience has contributed to the holistic development of children, and school readiness of children or not. In order for children to enjoy the long term effects of early childhood care and education, they need to experience quality early childhood education. A mere preschool attendance has no or little contribution to development and school readiness. Quality is a key feature because when programs of low quality are provided, they are unlikely to generate the intended child outcomes (Britto, Yoshikawa, & Boller, 2011). Improved quality of early childhood education fosters holistic development and children who developed holistically can be ready for regular school. Focusing on quality of early childhood education, addressing the developmental areas of children and making them ready for school could influence the lives of children.

It seems that early childhood education in Ethiopia is about sending children aged 3-6 to kindergarten, O-class or child-to-child modalities to help them experience literacy and numeracy. Studies that examine the effect of preschool attendance on children's holistic development are limited or non-existent. Although research on early childhood education is not a new phenomenon in Ethiopia, the focus so far has been dominantly on access to and quality of early childhood education (e.g., Tirussew et al., 2009; Teka et al., 2016; Fantahun, 2019), and practices and challenges ( Fantahun, 2016; Belay & Belay, 2016; Teka & Belay, 2015). There are some empirical studies that have been conducted on outcomes of early childhood education such as cognitive ability (Tassew, 2011; Fantahun, 2013), and social competence (Girma, 2014, Fiseha, 2019). To the knowledge of the researcher, studies that have addressed the holistic development and school readiness of children in relation to their preschool attendance are scanty. The present study is, therefore, initiated to fill the gap in profiling the holistic development [physical health

and wellbeing, language and cognitive development, social competence, emotional maturity and communication skills and general knowledge] and school readiness of preschool children after having experienced preschool education for 3 years. In a bid to fill the gap, the present study tried to profile preschool children in terms of holistic development and school readiness. Against this backdrop, the following research questions are formulated.

1. What is the status of preschool children's holistic development and school readiness in Addis Ababa?
2. What is the prevalence of ready and not ready for school (at risk and vulnerable) preschool children in Addis Ababa?
3. What is the proportion of on-track and off-track children as a function of preschool type, gender and SES?
4. Is there statistically significant difference in children's development and school readiness as a function of preschool type, SES and Gender?

## **Method**

### **Design**

This study employed a survey research design. The study surveyed the prevalence of children who are ready and not ready for school, at risk and vulnerable children in Addis Ababa. Preschools owned by government, private and faith-based organizations and children attending these preschools were surveyed in order to understand the developmental status and school readiness of the children. The development of children in the physical health and wellbeing, language and cognitive development, social competence, emotional maturity, communication skills and general knowledge, SES, gender and preschool type are variables considered in this study. Therefore, the appropriate research design for this study is survey research design.

### **Participants**

Addis Ababa, the capital of Ethiopia, has 1075 (government, private and faith-based and others combined and it was difficult to get the separate figure for each) combined kindergartens owned mainly by government, private and faith-based operators in 2011 EC (2019). In these

kindergartens, close to 180,000 (97.6%) children aged 4-6 attended the 2011 EC academic year (MoE, EMIS, 2019). Participants of this study were government, private and faith-based preschools, and children attending these preschools. Multistage random sampling technique was employed to select the preschools and children.

Governmental, private and faith-based preschools were first randomly selected and then children were selected only from the upper kindergarten level to ensure the three year experience of children in preschools. Eleven preschools and 166 (male=94, female= 72 children (5 governmental (75 children), 3 private (45 children) and 3 faith-based (46 children)) were participants of the study. Fifteen randomly selected children from each preschool were sampled for the data collection except one additional in one preschool by a happy chance.

## **Instruments**

In this study, a questionnaire that solicits the demographic characteristics of children and the Early Development Instrument (EDI) scale that measures children's holistic development were used. Demographic characteristics such as children's age, parental education, income and occupation, special needs status, and others were asked. The EDI measures children's physical health and wellbeing, social competence, emotional maturation, language and cognitive development as well as communication skills and general knowledge (Janus & Duku, 2007; Davies, Janus, Duku & Gaskin, 2016). The EDI has been adapted and used in Ethiopia by School Readiness Initiative (a non-governmental organization that researches on and supports children, and trains preschool teachers and parents) and found to be a reliable measure in the Ethiopian context.

The original developer of the scale, Offord Center at McMasters University, Toronto, Canada, has also recognized the usage and application of the scale in Ethiopia. Ethiopia has been included in the world map where EDI has been adapted, validated and administered. Researchers and governments are using EDI as a reliable measure of holistic child development. So far, over 30 countries have been using EDI among which Canada and Australia are the biggest users (Janus, Brinkman, & Duku 2011; Brinkman & Vu, 2017).

The Chronbach alpha or the internal consistency of the EDI in the present study was calculated and found to be in an accepted range for all the subscales and the full scale, ranging from .56 to



97. The five sub-scales of EDI are Physical Health and Well-being, Language and Cognitive Development, Social Competence, Emotional Maturity, and Communication Skills and General Knowledge. High scores indicate the better development and school readiness and lower scores show lack of readiness for school, being at-risk and vulnerability.

**Physical Health and Well-being:** This sub scale has 13 items which deal with absence of disease or impairment, access to adequate and appropriate nutrition, and gross and fine motor skills. Necessary gross and fine motor abilities to complete common kindergarten and first grade tasks, including items such as controlling a pencil or turning pages without tearing the pages are included. Physical independence, appropriate clothes and nutrition, fine and gross motor skills are the major concerns in this sub-scale.

**Language and Cognitive Development:** In this sub-scale, 26 items that are measuring the language skills and cognitive development of children. Language skills refer to vocabulary size and a child's ability to name letters and attend to the component sounds within words. Cognitive skills involve the ways in which children perceive, organize, and analyze information. The major areas are about interest in reading and writing, counting, recognizing numbers shapes.

**Social Competence:** This sub-scale consists of 26 items. In this scale, how children meet general standards of acceptable behavior in public places, control their behavior, cooperate with others, show respect for adult authority, and communicate feelings and needs in a socially acceptable manner is measured. Self-confidence, ability to play getting on with others and sharing are the focus of this subscale.

**Emotional Maturity:** A 30 item sub-scaled is measuring emotional maturity in the EDI. Emotional maturity is characterized by a balance between a child's curiosity about the world, an eagerness to try new experiences, and some ability to reflect before acting. A child who is fearful and reluctant to engage in new activities misses learning opportunities that are seized upon by a child with a positive approach to life. Ability to concentrate, help others, age appropriate behaviors are addressed in this sub-scale.

**Communication Skills and General Knowledge:** Communication skills and general knowledge is assessed using 8 items in the EDI. Children must be able to understand verbal communications with other adults and children and to verbally communicate experiences, ideas, wishes, and

feelings in a way that can be understood by others. Children are assessed against their ability to communicate with adults and having appropriate knowledge of the world.

Below is a table that presents the internal consistency reliability (Chronbach alpha) of the five domains and the full scale.

Table 1: *EDI scale domains, number of items, Chronbach alpha and original instrument alpha*

<b>SN</b>	<b>Scale</b>	<b>Number of Items</b>	<b>Chronbach's alpha</b>	<b>Original EDI alpha</b>
<b>1</b>	Physical Health and Well-Being (PHWB)	13	.56	.84
<b>2</b>	Language and Cognitive Development (LCD)	26	.92	.96
<b>3</b>	Social Competence (SC)	26	.96	.90
<b>4</b>	Emotional Maturity (EM)	30	.93	.93
<b>5</b>	Communication and General Knowledge (CSGK)	8	.81	.94

### **Data Collection Procedure**

The data collection procedure was done systematically. As a requirement and procedure of the instrument, the data should be collected by the teacher who has known the child for about three months or more. Therefore, preschool teachers who are teaching these children were the best fit for data collection. As a result, preschool teachers who have known the children very well were selected and rated the development of children against the items in the EDI. Teachers were oriented as to how they could rate their children. The data were also collected in May 2019 from children who attended kindergarten modality in the upper KG level (final year of kindergarten program). These children were deliberately selected to consider the contribution of three years preschool experience on the holistic development and school readiness of children.

## **Data Analysis**

First, data were coded, entered in to SPSS software and cleaned. Then, descriptive and inferential statistics were applied to analyze the data. Descriptive statistics such as percentile, percent, mean, and standard deviation were used to describe the demographic characteristics and to estimate the proportion and prevalence of ready and not ready for school, at-risk and vulnerable children in the study participants. Inferential statistics such as t-test and ANOVA were used to examine mean differences in developmental domains as a function of gender preschool type and SES.

## Results

### Demographic Characteristics

Participants of this study were private, government and faith-based preschools and children attending these preschools. Table 2 presents the demographic characteristics of participant children in terms of gender, school type, age, socioeconomic status; they are living with, working parents, and parental occupation. Although presented in the questionnaire, parental education, and parental monthly income in birr were not properly reported from more than 50% of children and are not presented here and used for analysis.

As can be seen from Table 4, the proportion of participant students from the government, private and faith-based preschools were comparable. The age of the upper kindergarten children spans from 5 to 7.5 years but the majority (over 72 %) are in the expected age that is 6-7 years. Gender wise, 43.6 percent of preschool children were females. With whom children are living matters in their development and school readiness. In this study, over 82% of participant children were living with both parents. Children from the government preschool were 45.2% while children from the faith-based and private preschool were 27.7 and 27.1 percent, respectively. This could be attributed to the willingness of preschools to participate in studies. Government preschools were more willing to participate in the study.

A fairly good number of children and preschools were represented from the government preschools but the proportion does not affect the comparison. Preschools were eleven in total and 5 preschools and 75 children from government, 3 preschools and 46 children from faith-based and 3 preschool and 45 from private preschools participated in this study.

Table 2: *Demographic characteristics of participants*

<i>Characteristics</i>	<i>N</i>	<i>%</i>	<i>Characteristics</i>	<i>n</i>	<i>%</i>
<b>Gender</b>			<b>Age in month (year)</b>		
<b>Male</b>	94	56.6	60 – 71 (5-6)	24	14.8
<b>Female</b>	72	43.4	72 – 83 (6-7)	117	72.2
<b>School type</b>			84 – 92 (7-7.5)	21	13
<b>Government</b>	75	45.2	<b>Live with</b>		
<b>Private</b>	45	27.1	Both parents	134	82.2
<b>Faith-based</b>	46	27.7	Father only	25	15.3
<b>Fathers' Occupation</b>			Mother only	2	1.2
<b>Laborer</b>	10	9.3	Other	2	1.2
<b>Government</b>	48	44.9	<b>SES</b>		
<b>Private</b>	40	37.4	Rich	36	21.7
<b>Business</b>	9	8.4	Medium	79	47.6
<b>Mothers' Occupation</b>			Poor	51	30.7
<b>Laborer</b>	14	10.9	<b>Working Parent</b>		
<b>Government</b>	40	31.3	Both	64	50.8
<b>Private</b>	35	27.3	Father only	41	32.5
<b>Business</b>	4	3.1	Mother only	21	16.7
<b>House wife</b>	35	27.3			

As regards parental occupation, over 80% of fathers and over 58% of mothers were employees either in government or private organizations. Interestingly, over 27% of mothers were housewives. From child rearing perspective, children who are taken care of by their mothers would benefit more than who are looked after by house maids. The parental SES was measured using relative terms as rich, medium and poor as compared to their neighborhood. Among the parents of the participant children, 21.7 % were reported to have been rich and the majority that are 47.6% were considered medium. Close to one third of (30.7%) of parents were poor.

## EDI Cut-off Points for Interpretation of Scores

The EDI scale is a scale that has response options ranging from 1 to 2, and 1 to 3. The interpretation of EDI scale results is based on scores on the normative sample. Comparison was made between the normative scores and study sample scores and found to be comparable.

The table below, Table 3, presents the mean, SD, the 10, 25, 50 and 75 percentiles to see whether the study participants' score can be compared with the EDI cut off. It is confirmed that there was no statistically significant mean difference between the cut off means and the sample means except the communication skills and general knowledge domain.

*Table 3: The Mean, SD, and percentile scores for the study participants and EDI cut off*

	PHW B	EDI cutoff	LCD	EDI cutoff	SC	EDI cutoff	EM	EDI cutoff	CSGK	EDI cutoff
<b>M</b>	8.89	8.79	8.23	8.45	8.09	8.32	8.11	8.04	8.20	7.65
<b>SD</b>	.95	1.29	2.07	1.77	1.97	1.78	1.63	1.49	1.87	2.55
<b>t-test</b>	1.35		1.32		1.46		.58		3.84	
<b>p-value</b>	.18		.19		.15		.55		.00*	
<b>Percentiles</b>										
10	7.69	7.31	5.00	6.51	5.01	5.57	5.41	6.00	5.62	4.37
25	8.46	8.07	7.59	8.07	6.92	7.30	7.41	7.32	6.87	5.62
50	9.23	9.23	8.84	9.20	8.84	9.00	8.44	8.33	8.75	8.75
75	9.61	10.00	9.61	9.61	9.47	9.80	9.31	9.16	10.00	10.00

\*There was no statistically significant mean difference between the EDI Cut-off mean and the Study Sample Mean except the communications and general knowledge domain.

The test works for four out of five domains and care must be taken in interpreting the communication skills and general knowledge domain.

Still, the mean difference in communications and general knowledge domain is not as such problematic since the mean of the sample is greater than the cut off mean. This is to say that children might not be categorized as vulnerable or at risk due to the usage of EDI cut off in this specific domain.

## Prevalence of Preschool Children who are Ready and Not Ready for School, and at Risk and Vulnerable

Using Early Development Instrument (EDI), it has become possible to determine the prevalence of preschool children who are on-track (ready for school) and not on track (not ready for school) or who are at risk and vulnerable. Table 6 presents the proportion of preschool children who are ready and not ready for school from all preschools irrespective of where they are from. Physical health and wellbeing, language and cognitive development, social competence, and emotional maturation are developmental domains in which over 20 percent of children were not ready for school after having three years of preschool experience. It is only in the area of communication skills and general knowledge that 88% of children are ready for school. Specific to vulnerability, over 10 percent of preschool children are vulnerable in language and cognitive development, social competence and emotional maturation.

Table 4: *Prevalence of on-track (ready), not on-track (not ready), at risk and vulnerable preschool children by domain (N= 166)*

Domain	On track	Not on track		Total
	Ready for school (%)	At risk (%)	Vulnerable (%)	
<b>Physical Health and Well-Being</b>	<b>77.1</b>	15.1	7.8	<b>22.9</b>
<b>Language and Cognitive development</b>	<b>64.5</b>	19.8	15.7	<b>35.5</b>
<b>Social Competence</b>	<b>71.1</b>	16.9	12.0	<b>28.9</b>
<b>Emotional Maturation</b>	<b>75.9</b>	10.8	13.3	<b>24.1</b>
<b>Communication skill and General Knowledge</b>	<b>88</b>	7.2	4.8	<b>12</b>
<b>Vulnerable in one or more domains</b>				<b>23.4 %</b>
<b>Vulnerable in two or more domains</b>				<b>12.6 %</b>

The total vulnerability of preschool children in this study, that is, vulnerable in one or more domains is 23.4%. In addition, the proportion of vulnerability when a single child is vulnerable in

one or more domains is 12.6%. This is the overall vulnerability in terms of holistic development. When we come to see each domain, vulnerability ranges from 4.8 % in communications and general knowledge to 15.7% in language and cognitive development. What is alarming is the proportion of children who are not on track or not ready for school. It ranges from 12% to 35.5%. Except in the communication skills and general knowledge domain, in the rest of four domains, over 20% preschool children are not ready for school after having attended preschool which was meant to prepare them for primary education. The most important domain for formal education that is language and cognitive development is the area where the proportion of children who fall under the ‘not on track’ category is high, i.e., 35.5%.

A considerable proportion of children are also at the category of at risk. This group of children is not vulnerable but they scored below what is expected of their level. At risk children will join the vulnerable group unless they receive appropriate intervention. In this study, the proportion of children who were being at risk ranges from 7.2% in the communication skills and general knowledge domain to 19.8% in the language and cognitive development.

### **Prevalence of Ready for School, Not Ready for School, at Risk and Vulnerable Children as a Function of Gender, Preschool Type and SES**

In this section, demographic variables were selected to see if the proportions of preschool children who are ready for school and not ready for school differ. Gender, preschool type and SES were considered in the analysis and presented as follows.

#### **Prevalence of vulnerability as function of Gender**

Overall vulnerability was more prevalent in male children (27.7%) compared to female children (18.1%) (see Table 7 and 8). This result is consistent in all domains that vulnerability is considerably more prevalent in boys compared to girls. For example, 20.2% male children were vulnerable while only 9.7% girls were vulnerable in language and cognitive development domain, 17.0% male children were vulnerable while only 8.3% of female children were vulnerable in emotional maturation domain, and 13.8% male children were vulnerable while only 9.7% girls were vulnerable in social competence.

Table 7 presents the prevalence of male children who were at risk and vulnerable in the five developmental domains: physical health and well-being, language and cognitive



development, social competence, emotional maturity, and communication skills and general knowledge.

Table 5: *Prevalence of Male Children who are ready for school, not ready for school, at risk and vulnerable*

<b>Domain</b>	<b>On track</b>			<b>Not on track</b>
	<b>Total</b> (%)	At risk (%)	Vulnerable (%)	<b>Total</b> (%)
<b>Physical Health and Well-Being</b>	<b>72.3</b>	19.2	8.5	<b>27.7</b>
<b>Language and Cognitive development</b>	<b>70.2</b>	9.6	20.2	<b>29.8</b>
<b>Social Competence</b>	<b>69.1</b>	17.1	13.8	<b>30.9</b>
<b>Emotional Maturation</b>	<b>69.1</b>	13.9	17.0	<b>30.9</b>
<b>Communication skills and General Knowledge</b>	<b>85.1</b>	9.6	5.3	<b>14.9</b>
<b>Vulnerable in one or more domains</b>				<b>27.7%</b>
<b>Vulnerable in two or more domains</b>				<b>16%</b>

Male children were having more vulnerability in language and cognitive development, social competence and emotional maturation. The proportion of vulnerability in these domains ranged from 13.8% to 20.2%. However, the vulnerability of female children in these domains is less than 10% with a range from 8.3% to 9.7%. The prevalence of vulnerability in physical health and wellbeing, and communication skills and general knowledge is low in both boys and girls, with a range of 4.2% to 8.5 in both cases.

Except the communication skills and general knowledge domain, over a quarter of male children showed lack of school readiness and this figure is a significant figure. Over 27% male children were vulnerable in one or more domains and 16% were vulnerable in two or more domains.

Table 6 presents the prevalence of female children who were at risk and vulnerable in the five developmental domains: physical health and well-being, language and cognitive development, social competence, emotional maturity, and communication skills and general knowledge.

*Table 6: Prevalence of Female Children who are ready for school, not ready for school, at risk and vulnerable*

<b>Domain</b>	<b>On track</b>	<b>Not on track</b>		<b>Total</b>
	<b>Total</b> (%)	At risk (%)	Vulnerable (%)	
<b>Physical Health and Well-Being</b>	<b>83.3</b>	10.8	6.9	<b>16.7</b>
<b>Language and Cognitive development</b>	<b>63.9</b>	26.4	9.7	<b>36.1</b>
<b>Social Competence</b>	<b>76.4</b>	13.9	9.7	<b>23.6</b>
<b>Emotional Maturation</b>	<b>84.7</b>	7	8.3	<b>15.3</b>
<b>Communication skill and General Knowledge</b>	<b>91.7</b>	4.1	4.2	<b>8.3</b>
<b>Vulnerable in one or more domains</b>				<b>18.1%</b>
<b>Vulnerable in two or more domains</b>				<b>8.4%</b>

The proportion of children in the at-risk category was also considerable. It ranged from 9.6% to 19.2% in male children, and from 4.1% to 26.4% in female children. A closer look on each domain gives us information that more female children were on track compared to male children except in language and cognitive development domain. Even in this domain, more boys fell in vulnerable category compared to girls.

Another category that was used to describe the prevalence of children in different categories was being ‘not on track’. Not on track refers to children who are not ready for school and is calculated by adding up both at risk and vulnerable proportion. Proportionally, more male children were ‘not on track’ compared to female except in the domain of language and cognitive development.

As regards the prevalence of ‘on track’ children, the highest and lowest proportions were observed in female children. Over 90% in communication skills and general knowledge and less than 64%

in language and cognitive development was recorded in girls. However, more proportion of girls was in ‘on track category’ than boys except in the language and cognitive development proportion. Still, more male children are at a disadvantage that they are over represented in both ‘vulnerable in one or more domains’ and ‘vulnerable in two or more domains’ group. That is, 27.7% and 16% in male children and 18.1% and 8.4% in female children were in one and more and two and more domains group, respectively.

### **Prevalence of On-track, Not on-track, At risk and Vulnerable Children by School Type**

Prevalence of children who were on-track, not on-track, at risk and vulnerable differed as a function of the preschool type they attended. Being on track refers to meeting the minimum requirements the five domains (physical health and well-being, language and cognitive development, social competence, emotional maturation, and communication skills and general knowledge) to begin a regular school. Preschools significantly differed in the proportion of children who are ready and not ready for school, and in proportion of children who are at risk and vulnerable in favor of faith-based and private preschools.

The proportion of vulnerable and at risk children is high in government preschools than in faith-based and private preschools. Tables 9 to 11 present the proportion of children ready for school, not ready for school, at risk and vulnerable children. In addition, the proportion of children who were vulnerable in one or more domain and vulnerable in two or more domains is presented for government, faith-based and private preschools.

Table 7 below presents the prevalence of ready for school, not ready for school, at risk and vulnerable children from the government preschool type.

Table 7: Prevalence ready and not ready for school, and at risk and vulnerable children in Government preschool

Domain	On track	Not on track		Total
	Ready (%)	At risk (%)	Vulnerable (%)	
<b>Physical Health and Well-Being</b>	<b>68</b>	16	16	<b>32</b>
<b>Language and Cognitive development</b>	<b>54.7</b>	17.3	28	<b>45.3</b>
<b>Social Competence</b>	<b>62.7</b>	1.3	24	<b>37.3</b>
<b>Emotional Maturation</b>	<b>73.3</b>	10.7	16	<b>26.7</b>
<b>Communication skill and General Knowledge</b>	<b>77.3</b>	12	10.7	<b>22.7</b>
<b>Vulnerable in one or more domains</b>				<b>38.7%</b>
<b>Vulnerable in two or more domains</b>				<b>25.4%</b>

The proportion of vulnerability was well above 10% in all the five domains in children from government preschools. Twenty eight percent of children were vulnerable in the government preschool category. The proportion of children in the *not on-track* (not ready for school) category ranges from 22.7% to 45.3% in communication skills and general knowledge and in language and cognitive development domains, respectively. The prevalence of vulnerability in all domains in government preschools was well above 20%.

Physical health and wellbeing, language and cognitive development, and social competence were domains where over 30% of children were not ready for school. Communication and general knowledge, and emotional maturation were domains in which the prevalence of children with government preschool background was well over 70%.

What is pressing here is that the proportion of vulnerability in one or more domain and in two or more domain was high compared to the proportion in faith-based and private preschools. A significant number of children, that is close to 40% and over 25% children were vulnerable in one or more domain and two or more domain areas, respectively.

Table 8 below presents the prevalence of ready for school, not ready for school, at risk and vulnerable children from the faith-based preschool type.

*Table 8: Prevalence of ready and not ready for school, and at risk and vulnerable children in faith-based preschool*

<b>Domain</b>	<b>On track</b>	<b>Not on track</b>		<b>Total</b>
	Ready (%)	At risk (%)	Vulnerable (%)	
<b>Physical Health and Well-Being</b>	<b>84.8</b>	15.2	0	<b>15.2</b>
<b>Language and Cognitive development</b>	<b>87</b>	13	0	<b>13</b>
<b>Social Competence</b>	<b>78.3</b>	21.7	0	<b>21.7</b>
<b>Emotional Maturation</b>	<b>71.7</b>	10.9	17.4	<b>28.3</b>
<b>Communication skill and General Knowledge</b>	<b>95.7</b>	4.3	0	<b>4.3</b>
<b>Vulnerable in one or more domains</b>				<b>13%</b>
<b>Vulnerable in two or more domains</b>				<b>0%</b>

The proportion of children who were ready for school was high in faith-based preschools. The proportion of on track children ranged from 71.7% to 95.7%. There was no child who fell in vulnerability category in four domains: physical health and wellbeing, language and cognitive development, and communication skills and general knowledge. It was only in emotional maturation domain that 17.4 % of children were vulnerable. However, there were children who were not ready for school in this preschool type. This proportion ranged from 4.3% to 28.3% in communication and general knowledge and emotional maturation, respectively. Social competence and emotional maturation are the domains where children in faith-based preschool type were being at risk and not ready for school. The overall vulnerability was 13% and there was no child who was vulnerable in two or more domains in this preschool type.

Table 9 below presents the prevalence of ready for school, not ready for school, at risk and vulnerable children from the private preschool type.

*Table 9: Prevalence of ready and not ready for school, at risk and vulnerable children from Private preschools*

<b>Domain</b>	<b>On track</b>	<b>Not on track</b>		<b>Total</b>
	Ready (%)	At risk (%)	Vulnerable (%)	
<b>Physical Health and Well-Being</b>	<b>84.4</b>	13.4	2.2	<b>15.6</b>
<b>Language and Cognitive development</b>	<b>57.8</b>	31.1	11.1	<b>42.2</b>
<b>Social Competence</b>	<b>77.8</b>	17.8	4.4	<b>22.2</b>
<b>Emotional Maturation</b>	<b>84.4</b>	11.2	4.4	<b>15.6</b>
<b>Communication skill and General Knowledge</b>	<b>97.8</b>	2.2	0	<b>2.2</b>
<b>Vulnerable in one or more domains</b>				<b>8.8%</b>
<b>Vulnerable in two or more domains</b>				<b>4.4%</b>

The prevalence of children who were ready for school in private preschools ranged from 57.8% in language and cognitive development domain to 97.8% in the communication skills and general knowledge domain. The prevalence of not ready for school children also ranged from 2.2% in communication skills and general knowledge domain to 42.2% in language and cognitive development domain. A huge variation was observed in this preschool type when a domain by domain analysis was done. There were also children in the ‘at risk’ and ‘vulnerable’ category but the prevalence was minimal. The highest vulnerability was recorded in the language and cognitive development domain, which was 11.1% and there was not child rated vulnerable in the communication and general knowledge domain.

However, a considerable proportion of children fell in the at risk category. In the language and cognitive development domain, over 30% of children were at risk. The proportion of children who were not ready for school ranges from 2.2% to 42.2%. Language and cognitive development was a domain where a large proportion of children, 42.2%, were not ready for school. The proportion vulnerability in one or more domain and two or more domain was 8.8% and 4.4%, respectively.

Comparison of government, faith-based and private preschools revealed that the proportion of children who were not ready for school, at risk and vulnerable was higher in government preschools than in faith-based and private preschools. Low proportion of children vulnerable in one or more domains and two or more domains was also low in private and faith-based preschools.

### **Prevalence of Ready for School, Not Ready for School, At Risk and Vulnerability Children as a Function of SES**

Across SES (rich, medium, and poor), the prevalence of children's vulnerability was considerably high in the low SES and low in high SES. As shown in Table 12, overall vulnerability was 8.4%, 13% and 49% in high, medium and low SES children, respectively. There is a sharp increase in overall vulnerability in low SES group. Almost half of children from poor background were vulnerable. In specific domain areas, the vulnerability was having the same pattern that more children were vulnerable in the low SES group compared to high and medium SES group. Vulnerability in children from low SES ranges from 13.7% in communication skills and general knowledge domain to 33.3% in language and cognitive development domain. The prevalence of vulnerability in children from high and medium SES ranged 0% in communication skills and general knowledge to 8.3% in language and cognitive development domains, and 1.3% in communication skills and general knowledge to 12.7% in emotional maturation domains, respectively.

The other area of concern is prevalence of children who were not ready for school. The prevalence of children who were not ready for school had the same pattern like the vulnerability. High proportion of not ready for school children was found in the low SES group than the medium and high SES group. The proportion of not ready for school children in low SES group ranged from 29.4% to 56.9%. This is a huge proportion as compared to the prevalence in high and medium SES. The range in high SES was from 2.8% in communication skills and general knowledge to 22.2% in language and cognitive development. The highest proportion in high SES is less than the lowest proportion in the low SES. In the medium SES, the proportion of children who were not ready for school ranged from 5.1% to 27.8% in the five domains. Still, the highest proportion in the medium SES is less than the lowest in low SES.

The proportion of children from low SES and government preschools were more vulnerable, at risk and not ready for school in all five domains compared to children from high and medium SES, private and faith-based preschools. The highest proportion of children who were not ready for school is registered in the language and cognitive development domain in all groups except faith-based preschool children.

Separate analyses for high, medium and low SES are presented in the Tables 10 - 12 to indicate the prevalence of ready and not ready for school and at risk and vulnerable children.

Table 10: *Prevalence of ready for school, nor ready for school, at risk and vulnerable children in preschool children from High SES category*

<b>Domain</b>	<b>On track</b>		<b>Not on track</b>	
	Ready (%)	At risk (%)	Vulnerable (%)	<b>Total (%)</b>
<b>Physical Health and Well-Being</b>	<b>94.4</b>	2.8	2.8	<b>5.6</b>
<b>Language and Cognitive development</b>	<b>77.8</b>	13.9	8.3	<b>22.2</b>
<b>Social Competence</b>	<b>86.1</b>	8.3	5.6	<b>13.9</b>
<b>Emotional Maturation</b>	<b>80.6</b>	13.8	5.6	<b>19.4</b>
<b>Communication skill and General Knowledge</b>	<b>97.2</b>	2.8	0	<b>2.8</b>
<b>Vulnerable in one or more domains</b>				<b>8.4%</b>
<b>Vulnerable in two or more domains</b>				<b>5.6%</b>

In the high SES group, the proportion of children who were ready for school ranged from 77.8% in language and cognitive development to 97.2% in communication skills and general knowledge domains. The highest proportion of children who were ready for school was registered in this category. Children in this group were more ready compared to medium and low SES background children. However, 22.2% in the language and cognitive development domain and 19.4% in emotional maturation domain were not ready for school. The prevalence of children who were



vulnerable and at risk in one or more domains was small and it was only 8.4% and 5.6%, respectively.

Whereas the prevalence ready for school children who came from the medium SES ranged from 72.2% in the language and cognitive development domain to 94.9% in the communication skills and general knowledge domains. In this group, the proportion of at risk and vulnerable children increased compared to the high SES group. Except in the communication skills and general knowledge domain, the proportion of children who were not ready was over 20% in the four domains. The prevalence of children who were vulnerable in one or more domain and in two or more domains were 13.9% and 5%, respectively. The proportion of children who were in the vulnerability category in medium SES group was comparable to the proportion of children who were vulnerable in the high SES group.

Table 11: *Prevalence of ready for school, nor ready for school, at risk and vulnerable children in preschool children from Medium SES category*

<b>Domain</b>	<b>On track</b>	<b>Not on track</b>		<b>Total</b>
	Ready (%)	At risk (%)	Vulnerable (%)	
<b>Physical Health and Well-Being</b>	<b>78.5</b>	19	2.5	<b>21.5</b>
<b>Language and Cognitive development</b>	<b>72.2</b>	20.2	7.6	<b>27.8</b>
<b>Social Competence</b>	<b>73.4</b>	22.8	3.8	<b>26.6</b>
<b>Emotional Maturation</b>	<b>77.2</b>	10.1	12.7	<b>22.8</b>
<b>Communication skill and General Knowledge</b>	<b>94.9</b>	3.8	1.3	<b>5.1</b>
<b>Vulnerable in one or more domains</b>				<b>13.9%</b>
<b>Vulnerable in two or more domains</b>				<b>5%</b>

In the medium SES group, among children who were not ready for school, the great majority were at risk children. Over 20% in language and cognitive development domain and over 22% in the social competence were at risk children.

In the low SES group, the proportion of children who were ready for school ranged from 43.7% in the language and cognitive development domain to 70.6% in the communication skills and general knowledge domain. In this group of children, less than half of the children who were attending preschools were not ready for school in domains like language and cognitive development which is important domain to succeed in Ethiopian school system. Even, the proportion of vulnerability in all domains was high in this group. Vulnerability ranged from 13.7% to 33.3% in all domain areas. In this group of children over 56% of children were not ready for school in language and cognitive development domain. The prevalence of not ready for school was well above 29% in all domains in this particular group of children. Likewise, the proportion of children who were at risk was also high compared children from high and medium SES.

Table 12: *Prevalence of ready for school, nor ready for school, at risk and vulnerable children in preschool children from Low SES category*

Domain	On track	Not on track		Total (%)
	Ready (%)	At risk (%)	Vulnerable (%)	
Physical Health and Well-Being	<b>62.7</b>	17.7	19.6	<b>37.3</b>
Language and Cognitive development	<b>43.7</b>	23.6	33.3	<b>56.9</b>
Social Competence	<b>56.9</b>	13.7	29.4	<b>43.1</b>
Emotional Maturation	<b>70.6</b>	9.8	19.6	<b>29.4</b>
Communication skill and General Knowledge	<b>70.6</b>	15.7	13.7	<b>29.4</b>
Vulnerable in one or more domains				<b>49%</b>
Vulnerable in two or more domains				<b>29.4%</b>

A huge difference was observed in the overall vulnerability in one or more and in two or more domains. There was almost 50% prevalence of children who were vulnerable in one or more

domains in children from low SES background. Even more, close to 30% children were having vulnerability in two or more domains in this group. The highest proportion of children who were vulnerable in one or more domains was recorded in this group of children. The highest proportion of children in the vulnerability, being at risk and not ready for school was recorded in the low SES group compared to any classification as gender, preschool type, and high and medium SES.

Below is a summary table, Table 13, that brings gender, preschool type and SES together in order to easily compare the prevalence of children who were not ready for school.

Table 13. *Summary of the major factors for vulnerability, at risk and school readiness*

Domain	Proportion Children not Ready for School							
	SES			Preschool Type			Gender	
	High (%)	Medium (%)	Low (%)	Private (%)	Faith-based (%)	Government (%)	Male (%)	Female (%)
<b>PHWB</b>	5.6	21.5	37.3	15.6	15.2	32	27.7	16.7
<b>LCD</b>	22.2	27.8	56.9	42.2	13	45.3	29.8	36.1
<b>SC</b>	13.9	26.6	43.1	22.2	21.7	37.3	30.9	23.6
<b>EM</b>	19.4	22.8	29.4	15.6	15.2	26.7	30.9	15.3
<b>CSGK</b>	2.8	5.1	29.4	2.2	13	22.7	14.9	8.3
<b>Vulnerable in <math>\geq 1</math> domains</b>	8.4	13.9	49	8.8	13	38.7	27.7	18.1
<b>Vulnerable in <math>\geq 2</math> domains</b>	5.6	5	29.4	4.4	0	25.4	16	8.4

Among the demographic characteristics such as gender, preschool type and SES, the children's SES clearly indicated that children from low SES were more at risk and vulnerable than children from other backgrounds. Although more males and children from the government preschools were more vulnerable, at risk and not ready for school compared to their female and from private and faith-based preschool counter parts, the proportion of children who were vulnerable, at risk and not ready for school as a function of socioeconomic status was much higher.

The prevalence of children who were not ready for school in language and cognitive development domain was as high as 56.9% in children from low SES background. There were also a considerable number of children who were not ready for school. High proportion of not ready for school was observed in male children, children from low SES, and children attended government preschools.

### **Group Difference in the Development of Five Developmental Domains**

Children were compared in physical health and well-being, language and cognitive Development, social competence, emotional maturation, and communication skills and general knowledge by gender, preschool type and SES using ANOVA. ANOVA results show that there statistically significant difference in almost all development developmental areas as a function of gender, preschool type and socioeconomic status except in some areas.

Table 16 presents ANOVA results of the comparison of children's development. A statistically significant mean difference was observed in physical health and wellbeing, language and cognitive development, social competence, emotional maturation, and communication skills and general knowledge as a function of preschool type and socioeconomic status. Gender difference in physical health and wellbeing was not observed in three of the five domains. Statistically significant gender difference between male and female children was observed in social competence and emotional maturation in favor of female children.

Table 14: ANOVA Analysis for Physical Health and Wellbeing, Language and Cognitive Development, Social Competence, Emotional Maturation, and Communication Skills and General Knowledge

Variables	PHW			LCD			SC			EM			CSGK		
	M (SD)	F	Tukey	M (SD)	F	Tukey	M (SD)	F	Tukey	M (SD)	F	Tukey	M (SD)	F-value	Tukey
<b>Gender</b>															
Male	8.8(1.1)	0.55		8.1(2.2)	0.52		7.8 (2.1)	2.70*		7.8(1.7)	2.70*		8.0(1.9)	2.23	
Female	8.9(0.7)			8.3(1.9)			8.4(1.7)			8.4(1.4)			8.4(1.7)		
<b>Preschool</b>															
Government(1)	8.6(1.1)	4.20*		7.6(2.6)	8.7***		7.8(2.3)	10.8**		7.8(1.8)	2.8*		7.4(2.1)	13.5***	
Faith-based (2)	8.9(0.7)			9.0(.8)		2 > 1*	8.8(1.3)		2 > 1*	8.0(1.5)			8.9(1.3)		2 > 1*
Private (3)	9.2(.8)		3 > 1*	8.5(1.4)		3 > 1*	8.5(1.4)		3 > 1*	8.6(1.3)		3 > 1*	8.7(1.3)		3 > 1*
<b>SES</b>															
High (1)	9.3(0.7)	8.6**	1 > (2,3)*	8.9(1.3)	13.4**	1 > ,3*	8.9(1.4)	12.7**	1 > 3*	8.6(1.4)	2.9*	1 > 3*	9.1(1.3)	16.0***	1 > ,3*
Medium (2)	8.9(0.8)			8.6(1.58)			8.4(1.4)			8.07(1.5)			8.5(1.4)		
Low(3)	8.5(1.2)			7.1(2.64)			7.05(2.5)			7.8(1.8)			7.1(2.2)		

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .0001$ ;  $df = \text{Gender (1,164), Preschool Type (2, 163), SES (2, 163)}$

**Gender:** Male= 94, Female = 72, **Preschool Type:** Government= 75, Faith-based = 46, Private= 45, **SES:** High= 36, Medium =79, Low = 31

**PHW= Physical Health and Wellbeing, LCD = Language and Cognitive Development, SC= Social Competence, EM= Emotional Maturity, CSGK= Communication skills and General Knowledge**

As can be seen from the Table 14, there was no statistically significant mean difference between male and female children in the physical health and wellbeing,  $F(1, 164) = 0.55, p > .05$ , language and cognitive development,  $F(1, 164) = 0.52, p > .05$ , and communication skills and general knowledge,  $F(1, 164) = 2.23, p > .05$  domains. However, there were statistically significant mean differences between male ( $M = 7.83, SD = 1.76$ ) and female ( $M = 8.84, SD = 1.38$ ) children in social competence,  $F(1, 164) = 2.70, p < .05$ , and in emotional maturation,  $F(1, 164) = 2.70, p < .05$ , domains where girls were better in emotional maturation than boys.

Analysis of variance was computed to see whether there were differences in developmental domains due to preschool type. ANOVA result yielded that there was statistically significant difference among children who attended government, private and faith-based preschools in their physical health and wellbeing,  $F(2, 163) = 4.20, p < .05$ . To further understand the difference, a Tukey HSD *post hoc* analysis was performed and the result revealed that there was statistically significant difference between children who attended private preschools ( $M = 9.17, SD = 0.87$ ) and children who attended government preschools in favor of private preschool attending children.

Similar analysis was made to investigate to whether children differ in their language and cognitive development due to the preschool they attended. A significant difference was observed in language and cognitive development as a function of preschool type,  $F(2, 163) = 8.73, p < .001$ . The post hoc analysis revealed that children attended private preschools ( $M = 8.53, SD = 1.48$ ) and faith-based preschools ( $M = 9.04, SD = .85$ ) scored better than children attended government preschools. There was no statistically significant difference in language and cognitive development between children who attended private and faith-based preschools.

In social competence domain, analysis of variance revealed that there was statistically significant difference in social competence as a function of preschool type,  $F(2, 163) = 10.78, p < .001$ . Further, Tukey HSD *post hoc* analysis was computed to see the group differences. The results revealed that there was statistically significant mean difference in social competence between children who attended government preschool ( $M = 7.83, SD = 2.35$ ) and children who attended faith-based preschools ( $M = 8.85, SD = 1.32$ ) in favor of children in faith-based preschools. There was also a statistically significant mean difference in social competence between children who attended government preschools ( $M = 7.83, SD = 2.35$ ) and children who

attended private preschools ( $M = 8.51$ ,  $SD = 1.38$ ) in favor of children attending private preschools. There was no statistically significant difference in social competence between children who attended faith-based and private preschools. There was no statistically significant mean difference among children in emotional maturation as a function of preschool type,  $F(2, 163) = 2.78$ ,  $p > .05$ .

Using the same procedure, ANOVA was computed for mean differences in communication and general knowledge for children who attended three different preschool types. The ANOVA result showed that there was a statistically significant mean difference in communication skills and general knowledge as a function of preschool type,  $F(2, 163) = 13.57$ ,  $p < .001$ . The post hoc analysis using Tukey HSD procedure revealed that there was a statistically significant mean difference between children who attended government preschools ( $M = 7.43$ ,  $SD = 2.12$ ) and children who attended faith-based preschools ( $M = 8.91$ ,  $SD = 1.31$ ) in favor of children attending faith-based preschools. There was also a statistically significant mean difference in communication and general knowledge between children attending government preschools ( $M = 7.43$ ,  $SD = 2.12$ ) and children attending private preschools ( $M = 8.77$ ,  $SD = 1.36$ ) in favor of children attending private preschools. There was no mean difference between children from faith-based and private preschool attending preschools.

Another area of interest explored as a grouping variable was socioeconomic status (SES). In this variable, children from low, medium and high SES showed significant difference in four out of five developmental domains treated. ANOVA results revealed that there were statistically significant differences among children who came from low, medium and high SES in physical health and wellbeing,  $F(2, 163)$ ,  $8.6 = p < .001$ , language and cognitive development,  $F(2, 163)$ ,  $13.4 = p < .001$ , social competence,  $F(2, 163)$ ,  $12.7 = p < .001$ , and communication skills and general knowledge,  $F(2, 163)$ ,  $8.6 = p < .001$ . Significant difference was not observed in the emotional maturation domain only.

Further, post hoc analyses were computed for the four domains where significant differences were observed. In the physical health and wellbeing domain, there was a statistically significant difference between children from high SES ( $M = 9.3$ ,  $SD = 0.7$ ) and medium SES ( $M = 8.9$ ,  $SD = 0.8$ ), and between high SES and low SES ( $M = 8.5$ ,  $SD = 1.2$ ) in favor of children from high SES. Likewise, children from medium SES had better score in physical health and wellbeing than children from low SES.

By the same token, there was statistically significant difference in language and cognitive development domain between children from high SES ( $M = 8.9$ ,  $SD = 1.3$ ) and children from low SES ( $M = 7.1$ ,  $SD = 2.6$ ) in favor of children from high SES. There was also significant difference between children from medium SES ( $M = 8.6$ ,  $SD = 1.6$ ) and children from low SES in favor of children from medium SES. Children from high and medium SES did not differ in this variable.

In the same pattern, children from high SES ( $M = 8.9$ ,  $SD = 1.4$ ) and children from medium SES ( $M = 8.4$ ,  $SD = 1.4$ ) outperform children from low SES ( $M = 7.1$ ,  $SD = 2.5$ ) in social competence domain scores. There was no significant difference between children from high and medium SES.

In the emotional maturation domain, high SES children ( $M = 8.6$ ,  $SD = 1.4$ ) had significantly better mean score than children from low SES ( $M = 7.8$ ,  $SD = 1.8$ ). There was no significant difference between children from high and medium, and between children from medium and low SES.

In the communication skills and general knowledge domain, children from high SES ( $M = 9.1$ ,  $SD = 1.3$ ), and children from medium SES ( $M = 8.5$ ,  $SD = 1.5$ ) significantly differ from children who came from low SES ( $M = 7.1$ ,  $SD = 2.2$ ) in favor of both high and medium SES children. There was no significant difference between high and medium SES children in this domain.



## **Discussion**

### **Introduction**

The present study investigated the prevalence of children who are ready and not ready for school in general, and on-track and off-track children as a function of preschool type, gender and SES in particular. The proportion of children who were vulnerable in one or more and in two or more domains was also determined in this study. The study also explored the difference in readiness and vulnerability of children in developmental domains due to their demographic backgrounds. Furthermore, the prevalence of children who were vulnerable and at risk was determined in total, by gender, preschool type and SES.

The analyses were made in such a way that the prevalence of children who were ready and not ready for school, the prevalence of vulnerable and at risk children, the prevalence of ready and not ready for school in government, faith-based, and private preschools, the prevalence of vulnerable and at risk children in government, faith-based, and private preschools, and prevalence of ready and not ready for school children as a function of gender, preschool type and SES. In addition, development differences as a function of gender, preschool type and SES was treated.

There have been a considerable number of children who were not ready for school, at risk and vulnerable in all domains. Children from government preschools, low SES and male gender were the most prevalent in the not ready for school, at risk and vulnerable group. This calls for an action such as intervention to reduce the prevalence of children in this category. The proportion children who were not ready were higher in the language and cognitive development domain followed by social competence and emotional maturity domains. Children showed better development in the physical health and wellbeing and communication skills and general knowledge domains.

### **Prevalence of Ready and Not Ready for School, and at Risk and Vulnerable Children**

The present study tried to investigate the proportion of children who were ready for school after having preschool education for three years in Addis Ababa. The prevalence of ready and not

ready for school, and vulnerable and at risk children were determined using Early Development Instrument, a scale in use to measure holistic development and school readiness by assessing physical health and wellbeing, language and cognitive development, social competence, emotional maturity, and communication skills and general knowledge.

Results revealed that a significant number of children were not ready for school after having preschool education which was meant to help children develop holistically and ready for school. In total, among the study participants, over 23% and 12% children were vulnerable in one or more developmental domains, respectively. This prevalence is a significant one that calls for some form of action. This finding is in agreement with the prevalence studied in in Canada (Wall-Wieler, Roos, Lee, Urquia, Roos, Bruce, & Brownell, 2019), and Australia (Brinkman, Gregory, Goldfeld, Lynch, & Hardy, 2014). However, the Canadian and Australian prevalence studies were national ones in children who were advantaged and disadvantaged. The present study only addressed children in Addis Ababa and they were more advantaged in getting access to preschool education than the other Ethiopian children living out of Addis Ababa. This is corroborated by the 97.6% preschool access in Ababa (MoE, EMIS, 2019).

Lack of school readiness could be attributed to the nature of preschool system we have in Addis Ababa. Preschools do not focus on holistic development of children. Much attention is given to academic activities over the other areas of development. In addition, the quality of preschools in Addis Ababa is questionable (Fantahun, 2019). As a consequence, being not ready for school would interfere with the academic performance of children in this category. One can extrapolate from the results that preschool attendance only does not make children ready for school.

A domain by domain analysis of prevalence also revealed that a considerable portion of children were not ready for school, at risk and vulnerable. In the language and cognitive development domain, over 35% preschool children were not ready for school. This prevalence is the largest prevalence compared to the prevalence in the other domains. This domain is important domain to succeed in the Ethiopian school system. However, over one-third of preschool children were not ready in the eve of their primary education. This could be attributed to the lack of quality in preschools that could address the children's language and cognitive development. The quality of preschools in Ethiopia in general and in Addis Ababa in particular is of low quality

(Tirussew et al., 2009, Fantahun, 2013, 2019). This prevalence can be interpreted in two ways as long as teachers rated the children's development. On the one hand, teachers might have expected more in the language and cognitive development domain from children and felt that many children were not up to. On the other hand, preschools are academic oriented in Ethiopia and do not have quality to improve the language and cognitive development of children attending the preschools. Preoccupation with cognitive ability and academic achievement could create bias in the evaluation of children and only academic smarts could be favored (Heckman, 2004).

In addition, close to 29, 24 and 23 percent of preschool children were not ready in social competence, emotional maturity, and physical health and wellbeing domains. This indicates that one-fourth of preschool children in Addis Ababa did not achieve school readiness after having attended preschool for three years in these important domains to succeed academically. The most favored child in our preschool system is the one who is cognitively competent. If a child performs badly in non-cognitive skills such as physical, social and emotional skills and performs well at cognitive skills, the former domains could be overshadowed by the later domain. Even, the child would be praised for not giving attention to the physical (e.g., not playing football), social (e.g., not talking to adults), and emotional (e.g., not arguing for rights) and only focusing on cognitive activities such as reading. However, non-cognitive skills such as physical, social, and emotional skills are equally important to academic success (Heckman, Stixrud, & Urzua, 2006),

In addition to the proportion of children who are not ready for school, a closer look to the analysis tells us that the proportion of at risk and vulnerable children are also considerable. It was found that close to 20% and 16% of children were at risk and vulnerable in the language and cognitive development domain. Being at risk and vulnerable in language and cognitive development area would exacerbate repetition and school dropout rate in students. At risk children are children who did not achieved what is expected of their age and might experience challenges in later grades if they are left unsupported.

Vulnerable children are children who need additional support to develop holistically to and to meet academic expectations in a school system as they are not ready to start school for they showed vulnerability in one or more developmental domains. In this study, it was only in the domain of communication skills and general knowledge that children showed better readiness for school in this study. Even in this domain, 12% of children were not on track. Over 10% percent

not ready for school prevalence is always a concern (Janus, Brinkman, Duku, Hertzman, Santos, Sayers, M., ... & Walsh, 2007) but compared to other developmental domains, this domain is the domain where less percentage of children is not ready for school. Still, this domain seemed to be overrated by the teachers as the mean score was a little above the normative mean. So, it might be difficult to interpret this domain as a domain where preschool children showed better readiness for school.

The above discussion is made on domain by domain but if we see the total vulnerability in terms of vulnerable in one or more domains and in two or more domains, it was found that close to a quarter of children were vulnerable in one or more domain and close to 13% children were vulnerable in two or more domains. Vulnerability indicates that children are not on-track or not ready for school, and who would experience future challenges in school and society unless intervention is provided. This group represents children for whom cost-effective, universal preventive programs are likely to make a difference (Santos et al., 2012; Janus 0000). Over 23% vulnerability calls for action or intervention in order to minimize the effect of vulnerability in the future of today's children. There are also 12.6% children vulnerable in two or more domains. This indicates that being vulnerable in two or more domain increases the effect of vulnerability on children in the future.

## **Prevalence of Ready and Not Ready for School Children as a Function of Demographic Characteristics**

The overall prevalence of children who were ready and not ready for school, at risk and vulnerable among the study participants were discussed above. In this section, the proportion of ready and not ready for school, at risk and vulnerable children as a function of selected demographic characteristics is discussed here. Determining the prevalence of not ready for school, at risk and vulnerable children as a function of gender, preschool type and socioeconomic status is important information to understand preschool children where they are in terms of school readiness and provide directed support.

The results of this study revealed that more boys (27.7%) were vulnerable than girls (18.1%) in one or more domains. In the same manner, the proportion of boys who were vulnerable in two or more domains was twice (16%) as the proportion of girls (8.4%) who were

vulnerable in two or more domains. This finding is consistent with studies conducted in different countries (Curtin, Madden, Staines, & Perry, 2013; McCoy et al., 2017; Thomson, Guhn, Richardson, Ark, & Shoveller, 2017; Brinkman, & Vu, 2017). Like the present study, in studies conducted by Gereen et al. (2018) and Santos et al., (2012) boys were over two times more developmentally vulnerable than girls. One of the reasons that the proportion of vulnerable boys is higher than vulnerable girls might be that boys behave differently in preschools compared to girls and raters might be in favor of girls. Girls behave properly, follow directions of teachers, better perform in communication skills and might be favored by their teachers. Another possible explanation is biological difference between male and female children. Boys are more physically active and disruptive than girls, and girls are more effective in communication skills than boys that both cases could help female children outperform male children.

A domain by domain analysis also revealed that except the language and cognitive development domain where boys performed better, the proportion of boys who were not on track was greater than the proportion girls who were not ready for school in four domains. In language and cognitive development domain, 36.1% of girls were not on track compared to 27.7% boys who were not on track. In this specific domain, the proportion of girls who were not on track is higher than the proportion of boys who were not on track. The reason for this difference might be related to the attitude of teachers towards male and female children. In the Ethiopian culture, male children are supposedly academically competent than female children and teachers might have perceived male children are cognitively better than female children.

The proportion of boys who were vulnerable in physical health and wellbeing, social competence, emotional maturity and communication skills and general knowledge domains is relatively higher than the proportion of girls. These findings are in agreement with the study conducted by Webb, Duku, Brownell, Enns, Forer, Guhn, et al. (2020) that, on average; girls have higher developmental scores than boys in Kindergarten. These findings could be attributed to the reasons that female children are more healthy (Gissler, Jarvelin, Louhiala, & Hemminki, 1999), socially competent (Thomson, Guhn, Richardson, Ark, & Shoveller, 2017), have positive emotion (Chaplin, & Aldao, 2013) and skillful in communication and understanding their environment than their male counterparts.

Another area of comparison was by the type of preschools children were attending. The prevalence of ready and not ready for school, at risk and vulnerable children from government, faith-based and private preschools were compared in this study. Results revealed that the proportion of not ready for school, at risk and vulnerable children was higher government preschools than faith-based and private preschools. The total vulnerability of children attending government preschools was as high as 38.7% while it was 13% and 8.8% in the faith-based and private preschools, respectively. The proportion of children who were vulnerable in two or more domains was over a quarter (25.4%) in government preschools but it was less than 5% in both faith-based and private preschools.

These findings could be attributed to several reasons. Some of the reasons for the difference could be the quality of preschools, the background of children, the quality of teachers, the education level and occupation of parents etc. In relative terms, it has been confirmed that the quality of private preschools is better than the quality of government preschools (Fantahun, 2019) and the quality service might serve as an intervention to reduce the proportion of vulnerable children in private and faith-based preschools. As this study is not meant to establish causal relationship, it does not warrant the reason why the proportion is this much higher in government preschools. What we can learn from this is that children attending government preschools need to be addressed in order to narrow the gap that could be widened in their future life compared to their counterparts attending private and faith-based preschools.

The same pattern was also observed in the specific developmental domains: physical health and wellbeing, language and cognitive development, social competence, emotional maturity and communication skills and general knowledge. In all domains, the proportion of not on track children was higher in children who were attending government preschools than children attending faith-based and private preschools. The proportion of not on track children was comparable in faith-based and private preschools.

The prevalence of not ready for school children in language and cognitive development was 45.3% in government preschools. Almost half of the children did not reach to the level they are expected to start regular schools. This domain is a domain where the largest proportion of children was not ready for school in private preschools as well (42.2%). In faith-based preschools, the largest proportion of children who were not ready for school was registered in the

emotional maturity domain (28.3%). This could be attributed to the emphasis given in the preschool types. The government and private preschools might focus on academic characteristics and might be stringent in measuring this domain whereas the faith-based preschools might give emphasis to religious, moral and spiritual values and evaluated children as if they were less mature in their emotions.

Socioeconomic status was also considered in the analysis by categorizing the participant children's parents in the low, medium and high SES. Compared to gender and preschool type, SES clearly shows the difference in prevalence of ready and not ready for school children and at risk and vulnerable children. The proportion of vulnerable children in one or more domains in the low income category was much higher than the medium and high SES background children. Almost half of the participant children (49%) in the low income category were having vulnerability in one or more domains and close to 30% children from the same group were vulnerable in two or more domains. However, only 8.4% and 4.4%, and 13.9% and 5% children were vulnerable in one and more and in two or more domains in the high and medium SES category, respectively. These findings are in line with the studies conducted by Ip et al. (2016), Goldfeld, et al., (2016), and Santos et al., (2012) that children from high SES background are ready for school on more domains than those from low SES.

The findings indicate that SES is a determining factor to clearly see the proportion of vulnerability in children where children with poor background are more vulnerable than children rich background. Vulnerability of the poor background children could be attributed to attendance of poor quality preschool; lack of adequate nutrition, care, stimulation and medication that are determinant to the holistic development of children and high proportion of vulnerability is expected in this group. The difference in vulnerability persists after preschool unless they receive appropriate intervention.

Domain by domain, the prevalence of children who were not ready for school remained high in low SES background children compared to the medium and high SES. For example, in the language and cognitive development domain, close 57% children were not ready for school from low SES background children. In all domains, children from high SES were better ready than children from medium SES, and children from medium SES were better ready for school than children from low SES. This tells us that significant number of children who had low SES

background joined schools without being ready for school although they had experienced preschool education which was meant to contribute for readying children for primary education.

Physical health and wellbeing matters a lot in school activities but significant proportion of children did not meet the requirements to be ready for school in this domain, especially those who had medium and low SES. The plausible reason for the significant number of children who were not ready for school from medium and low SES background might be resource poor home environment. Children from this background might have limited opportunity to get proper care at home and this would be manifested in their performance in the domains used to measure school readiness.

For example, if children are not ready for school in physical health and wellbeing domain, they might not be physically ready to tackle physical demands at school, not independent and have inadequate fine and gross motor development, might be hungry and tired in school days. If children have problems in the language and cognitive development domain, they might not be able to read and write simple words, interested in academics, attach sounds to letters; easily remember things, counting numbers, and recognize and compare numbers; interested in numbers. If children have limitations in social competence, they might have poor overall social skills; regular serious problems in more than one area of getting along with other children, accepting responsibility for his or her own actions, following rules and class routines, and being respectful. They might also have lack of self-confidence and self-control, and adjustment to change; and are unable to work independently. In the same vein, if children are not ready for school in emotional maturity domain, they might exhibit aggressive behavior; disobedience, inattentive, and impulsive. They are usually unable to show helping behavior toward other children; and are sometimes upset when left by the caregiver. If children are not ready for school in the communication skills and general knowledge domain, they might have poor communication skills and articulation; limited command of language, difficulties in talking to others, understanding and being understood; and poor general knowledge of their environment and the world.

Further analyses were made to see the mean differences the holistic development of children in addition to the proportion of children who were ready and not ready for school, at risk



and vulnerable. The analyses were made to see gender difference, preschool type difference and SES difference in the children's mean of the developmental domains. Results revealed that there was no statistically significant mean difference between boys and girls in physical health and wellbeing, language and cognitive development, and communication and general knowledge. Although not significant, means of female children are slightly higher than means of male children. However, significant differences were observed in emotional maturity and social competence domains in favor of females. These differences were in the expected direction. These mean differences could be attributed to the competence of female children in these domains. Female children are more sociable and emotionally mature compared to their male counterparts.

Preschool type was also considered in the analysis. Statistically significant differences were observed in physical health and wellbeing, language and cognitive development, social competence, emotional maturity, and communication skills and general knowledge among children as a function of preschool type. The follow up tests revealed that significant mean differences were observed in children's development who attended government and private preschool in all five developmental domains. Significant mean difference was not observed between children who attended private and government preschools. Children from faith-based preschools showed better development in language and cognitive development, social competence, and communication skills and general knowledge than children from government preschools. This difference could be attributed to the quality of preschools and services provided in these preschools.

As observed in the prevalence analysis, SES emerged as a better variable to reveal mean differences in children's development. Development mean differences were observed in all five domain areas as a function of SES. Further follow up tests also showed that children from high SES were on top in the mean results of development in all five domains. Children from medium SES stood next to high SES and children from the low SES were the last. Children who had high SES background have better physical health and wellbeing compared to children coming from medium and low SES background and children from medium SES background were better than children from low SES background. This study is in agreement with findings of Gonçalves, Duku, and Janus, (2019), Goldfeld, et al., (2016) and Santos et al. (2012) that low SES is associated with developmental vulnerability. This difference could be attributed to children's opportunity to get food, medication, play materials, and physical movement opportunities that

could help children develop physically, and the opportunity to have better services as parents afford due to better SES.

## **Summary, Conclusions and Recommendations**

### **Summary and Key Findings**

The present study was conducted to determine the prevalence of ready and not ready for school (on-track and not on-track), at risk and vulnerable children in preschools of government, private and faith-based preschools in Addis Ababa. It also addressed the school readiness and developmental differences as a function of demographic variables. In this study, then, randomly selected 166 children participated from eleven preschools and three types of preschools. Physical Health and Wellbeing, Language and Cognitive Development, Social Competence, Emotional Maturation, and Communication Skills and General Knowledge of children were assessed using Early Development Instrument. This instrument measures the holistic development and school readiness of preschool children. Teachers who had taught and cared for children over one year assessed these children during the data collection. Data were analyzed using percentile, percentage and ANOVA. The study revealed that the proportion of preschool children who are ready for school (on-track), not ready for school (not on-track), at risk and vulnerable from the total sample, domain by domain, and by demographic characteristics. In addition, the mean developmental status of children was also calculated. The following major findings, then, are obtained from the study.

- It was found that overall vulnerability of the participant children was 23.4% and they are not ready for school. Domain wise, the proportion of children who were not ready for school ranged from 12% for communication skills and general knowledge domain to 35.5% for language and cognitive development domain. Over 76% children are holistically well developed as measured by EDI.
- The proportion of male vulnerable children (27.7%) is higher than the proportion of female vulnerable children (18.1%). Domain wise, except the language and cognitive development domain, male children are more represented in the not ready for school category than female children.

- Children who attended government preschools are at a disadvantage that over 38% of them are vulnerable while only 13% and 8.8% are vulnerable in children from faith-based and private preschools, respectively.
- Using SES as a classification of children, 49% children from low SES background are vulnerable whereas only 13.9% and 8.4% children are vulnerable from medium and high SES backgrounds, respectively.
- The developmental status mean differences were examined as a function of demographic characteristics. Results indicated that, on average, female children are better than male children in two out of five domains. There are no statistically significant differences between male and female children in three domains although mean scores of female children are a little higher than mean scores of male children.
- Preschool wise, children from private preschool have better developmental domain mean scores than children from government preschools. There is no statistically significant mean difference in developmental domains between children from private and governmental preschools.
- Socioeconomic status revealed a statistically significant mean difference among children from high, medium and low SES. Children who have high and medium SES background outperformed children from low SES background.

## **Conclusions**

The following conclusions are drawn from the present study.

- The prevalence of children who are not ready for school is considerably large. There are several children who did not meet requirements to start school although they attended preschools for three years.
- In all five domains, there are significant numbers of children who are not ready for school. However, language and cognitive development domain is a domain in which more children are not ready for school.
- Gender, preschool type and SES are variables which clearly show how children differ in school readiness, being at risk and vulnerability. SES inequities appear to be a major factor for vulnerability early in life of children. Larger proportions of vulnerable children are found in lower levels of SES than in medium and higher levels of SES. Preschool type was also a factor for the increment of the proportion of not ready for school children.

Larger proportion of children who were not ready for school was from government preschools.

- Children who attended government preschools and who came from low level of SES were more vulnerable in all domains compared to children either coming from high and medium level of SES or private and faith-based preschools.
- Holistic development of children is not fully achieved in preschools of Addis Ababa be it private, faith-bather or government preschool.

### **6.3 Recommendations and Policy Implications**

- Early childhood care and education is more beneficial to children who are at a disadvantage. It is supposed to offset the effect of poor background and help children develop optimally. However, in this study, the prevalence of vulnerability and at risk children is much higher in children who attended government preschool, who are male, and low in SES background. Therefore, attention shall be given to children who are attending government preschools and coming from poor background. They shall receive stimulation, care and education in order to improve their social competence, emotional maturation and language and cognitive development.
- Government preschools shall provide appropriate services to children attending these preschools. Preschool teachers shall also apply assessment of children in their respective preschools in order to identify children who are vulnerable and at risk and provide appropriate intervention as early as possible.
- More male children are vulnerable and at risk compared to females, and males shall be provided services that could promote their holistic development. Most often, male children are considered capable of doing things alone compared to females and they might not receive a service they deserve simply because they are male children. Therefore, preschool teachers shall focus on capability and development while supporting children than stereotypically thinking that male children can cope up the requirements of preschool education. For example, in language and cognitive development, 20.2% of male children were vulnerable while only 9.7% of female children were vulnerable. Male children are two times vulnerable in this specific domain than female children and male children shall receive the attention of their teachers and parents.

- Children from poor background are more vulnerable than children from medium or high SES background. The prevalence of children who are vulnerable ranges from 13.7 to 33.3 per cent in all developmental domains. Whereas the prevalence of vulnerability ranges from 0 to 8.3% in high SES children and 10.1 to 11.4 % in medium SES children. This difference is visible and attention should be provided to children from low SES and they should be provided intervene the effect of poor background on the holistic development of children. Preschool teachers, parents, the government and NGOs working in the sector shall act to reduce or eliminate the effect of poverty on children's development and lifelong learning.
- It appears that children attending government preschools were more vulnerable. The quality of government preschools should be enhanced, trained teachers should be deployed and early intervention should be provided as early as possible.
- It is pervasive that considerable numbers of children across a range of preschool type and socioeconomic status that children were not ready for school and the government should revisit its policy towards the purpose of preschool education and the quality, developmental and cultural appropriateness so that children can develop optimally.
- Research findings indicate that, on average, kindergarten vulnerability predicts ongoing vulnerability in the school system. Numerous studies have shown that early vulnerability predicts a child's lifelong health, learning, and behavior. So, intervention policy provisions should be formulated in order to address the needs of vulnerable and at risk children in preschool systems.
- Vulnerability is disproportionately affecting children from socioeconomically disadvantaged children. This indicates the need to coordinate resources to support the early physical health and wellbeing, language and cognitive development, social competence, emotional maturation and communication and general knowledge development of these disadvantage children. Attention should be given to children in low-SES families and communities to break the poverty cycle.
- The findings indicate that early vulnerability is overrepresented in language and cognitive development domain. This domain is more important in the Ethiopian school system and trainings should be provided to teachers to enhance the language and cognitive development of preschool children.

- The major implication of this research is that significant attention and investment in early childhood education is needed, particularly to the government owned preschools and to those who came from low SES background.
- Policy options should be provided for preventing children’s early developmental vulnerability and promoting their healthy and optimal development, particularly for most disadvantaged children.

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