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# Children's access to pre-school education in Bangladesh

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Using the *Education Watch* household survey database, this paper explores children's access to pre-school education in Bangladesh. Participation in pre-school education has been increasing in Bangladesh at the rate of 0.6% per year and the net enrolment rate was found to be 13.4% in 2005. Enrolment of over-aged children in pre-school education made the gross enrolment ratio as high as 30.5%. However, over half of the four to five year olds at school were actually enrolled in primary school and not in pre-school. Moreover, 71% of the four- to five-year group were out of school. Only a third of the four- to five-year-old children enrolled in schools had the opportunity to attend the English-medium kindergartens or NGO-run non-formal schools, both of which provide better quality pre-school education. Urban children, especially those with educated parents and from more privileged socio-economic backgrounds, were more likely to have access to pre-school education. The lack of a common pre-school curriculum seems to have created further inequity among children at this very early age. An educational policy targeting poor and socially disadvantaged children with support from both the state and current pre-school providers is urgently needed to provide four- to five-year-old children appropriate education for their needs.

## Introduction

The first years of life are particularly important because vital development occurs in all domains (Shonkoff & Phillips, 2000). Many studies suggest that early learning contributes to the brain's developing architecture (Blakemore & Frith, 2005), and the earliest interactions between child and carers provide the cultural structure that underpins the development of intellectual schemas (Bruner, 1986; Sylva, 1994). Well before entering school, the young child acquires learning dispositions as well as key cognitive skills (Sylva & Pugh, 2005).

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Unfortunately, many young children in developing countries are exposed to multiple risks, including poverty, malnutrition, poor health, and unstimulating home environments. These detrimentally affect the cognitive, motor, and social-emotional development of children (NICHD Early Child Care Research Network, 2001; Bradley & Corwyn, 2002; Mistry *et al.*, 2004). It has been estimated that over 200 million children under the age of five are not fulfilling their developmental potential, and these disadvantaged children are likely to do poorly in school and subsequently have low incomes, high fertility, and provide poor care for their children, thus contributing to the intergenerational transmission of poverty (Grantham-McGregor *et al.*, 2007).

At least four domains in the research literature have motivated the expansion of pre-school education for young children in developing countries. Firstly, there is consistent research support for the *cognitive advantage* hypothesis (Ou & Reynolds, 2004). Numerous pre-school programmes have been found to be associated with higher IQ scores, better school achievement, lower rates of grade retention and special education placement, and lower rates of delinquency (Levenstein *et al.*, 1983; Campbell & Ramey, 1994, 1995; Currie & Thomas, 1995; Barnett *et al.*, 1998; Reynolds *et al.*, 2001). For example, pre-school experience in the UK resulted in improved measures of intellectual development, independence, concentration and sociability during the first three years of primary schooling (Sylva *et al.*, 2004), and the benefits were higher the longer children participated in pre-school.

Secondly, the positive effects on cognitive development at school entry promote children's positive *social adjustment*, which facilitates improved learning in adolescence and beyond. Children's enhanced motivation (i.e. self-efficacy, perceived competence, and persistence in learning) and improved social adjustment (i.e. classroom adjustment, peer relations, self-regulating skills, etc.) have been proposed to explain the long-term effects of pre-school programmes. Few studies, however, have tested these hypotheses and the findings are inconsistent (Ou & Reynolds, 2004).

Thirdly, apart from significant cognitive and non-cognitive benefits to children, research also indicates that long-term effects of early education will occur as programme participation enhances *family functioning and parenting practices* (Ou & Reynolds, 2004). Increased parental involvement, for example, may strengthen home support for children's learning by motivating higher aspirations for children's educational performance and increasing the quality of interactions and activities that occur. Participation in pre-school programmes may also promote interaction between parents and teachers (Siraj-Blatchford *et al.*, 2007). The benefits are perhaps even greater for disadvantaged families, as demonstrated by a family support intervention study by Seitz and colleagues (1985). They found that the delivery of a coordinated set of medical and social services to impoverished mothers, including day-care for their children, had positive effects on parents that were evident a decade after the intervention ended (Seitz *et al.*, 1985). According to Bronfenbrenner (1975), long-term effects of pre-school are more likely if the home environment, which is the children's major early learning context, is strengthened. Pre-school programmes are time limited, but family experiences persist.

Finally, pre-school programmes can also help *reduce social inequality* by compensating for disadvantage resulting from factors such as poverty, gender, ethnicity, caste or religion (UNESCO, 2007). Investing in disadvantaged young children is a public policy initiative that promotes fairness and social justice, and at the same time promotes productivity in the economy and in society at large (Heckman, 2006). The most robust research evidence arguably comes from the longitudinal evaluations of pre-school programmes in the USA. Three randomized studies in particular are frequently cited to show the potential benefits of early education: the High/Scope Perry Pre-school project (Schweinhart *et al.*, 1993), the Abecedarian project (Ramey & Ramey, 1998; Masse & Barnett, 2002), and the Chicago Child-Parent Center programme (Reynolds, 2003). In all cases, impressive effects have been found, including: better achievement (higher reading, maths and literacy scores), better school adjustment, less repetition and greater school completion, less use of special services, reduced welfare expenditures, greater earnings, and reduced criminal behaviour (Campbell & Ramey, 1994; Reynolds *et al.*, 1996; Ou, 2003; Melhuish, 2004; Ou & Reynolds, 2004). These studies also provide estimates of the economic benefits associated with the programmes; in two cases the return is estimated at 7 to 1 and in one at 4 to 1 (Myers, 2004).

Clearly, there is impressive research evidence that demonstrates the importance of early learning and development, which can be promoted through pre-school programmes with immediate, and short- and long-run effects. Although all children may benefit, there is evidence that disadvantaged children may profit the most (Myers, 1995, 2004; Lamb, 1998). There is, therefore, a pressing need to expand provision and increase access to pre-school programmes in developing countries, so all children will be well prepared to complete education and develop key skills for employment and for participation in society.

### **An overview of pre-school education in Bangladesh**

Although not much attention was given to pre-school education at the Jomtien conference (1990), the Dakar forum (2000) did so with great significance. One of the six goals of the Dakar Framework of Action was on early childhood care and education (ECCE); it urged the expansion and improvement of comprehensive ECCE, especially for the most vulnerable and disadvantaged children (UNESCO, 2000). However, UNESCO's Education for All (EFA) monitoring report observed that progress towards wider access remains slow, as children from disadvantaged backgrounds are more likely to be excluded from ECCE (UNESCO, 2004). Comparing the children from various regions, it stated that a child in sub-Saharan Africa can expect only 0.3 years of pre-primary schooling compared to 1.6 years in Latin America and the Caribbean, and 2.3 years in North America and Western Europe. In many developing countries, ECCE programmes suffer from teachers with low qualifications as well as low rates of enrolment.

Five-year primary education, starting from the age of six, is compulsory in Bangladesh, but pre-school education is not required. Various national documents,

however, reflect Bangladesh's commitment to pre-primary education, which is referred to as the 'School Preparedness Education Programme' before Grade 1. The national education policy in 2000 suggested that a pre-school programme of six months' duration should be introduced immediately in selected schools and in phases across all schools for one year (Government of Bangladesh, 1997, 2000). The Plan of Action for Children has suggested that ECCE for children aged four to five years should be introduced in phases by 2015 (Government of Bangladesh, 1999). The National Education Commission also suggested that pre-schooling should be provided for children aged four to five years, aiming to raise the quality of education at the primary level (Government of Bangladesh, 2003), and identified a number of sensory competencies for this stage of education. Furthermore, the Second Primary Education Development Programme (PEDP II) has now included the establishment of a 'baby class' in all primary schools through a school and community partnership (DPE, 2003).

#### *The various types of pre-school provision in Bangladesh*

Pre-school education is not on the official agenda of any of the Education Ministries<sup>1</sup> in Bangladesh, and thus, schools are not bound to provide such education. Moreover, the National Curriculum and Textbook Board (NCTB) does not provide any curriculum for this stage of schooling. However, kindergartens and English-medium schools have been providing pre-school education for a long time, and as a result of growing demand from parents and the community, some government primary schools and other formal schools have also introduced pre-school programmes in their institutions. More recently, some non-government organizations (NGOs) have likewise begun to provide pre-school education through a non-formal mode. Various types of books suitable for pre-school-aged children are now available commercially, and while most institutions use locally published textbooks, some opt for overseas publications. This reflects the lack of uniformity in curriculum content between all these pre-primary initiatives, and, as a result, there is great disparity in terms of the quality of provision. Below is a brief description of the different types of pre-school provision. There are no government statistics on the number of children receiving pre-school education overall or any breakdown according to type of institutions.

*'Baby classes' in formal primary schools.* Many formal schools now run a preparatory programme for children who are not yet ready to enrol in Grade 1 of primary school. These programmes are popularly known as 'baby class' or 'Junior I'. The 1998 *Education Watch* school survey investigated 885 schools of various kinds, and a re-analysis of the data shows that 42–45% of the government primary, non-government primary, madrasas, and high schools with attached primary sections were providing some sort of pre-school education. Note that all of these newly formed programmes were actually grassroots-level initiatives by the schools themselves, with no recognition or

permission from the ministry. The teachers do not get any extra pay, and they have no set textbooks to follow. In general, Bangla alphabets, numbers, rhymes, and stories are taught in the classrooms.

The *Education Watch* school survey data (1998) also show that on average, each baby class contained 52 children, with 48.5% girls. Jahan (2005) observed that these baby classes were often poorly organized and crowded with children aged three to five/six years. She also observed that the young infants did not understand what was being taught, and appropriate play materials were rarely found in the classrooms. According to her, the government's passive attitude to pre-school education actually made teachers lose interest in their teaching.

*Pre-school programmes in kindergartens and English-medium schools.* The kindergartens and English-medium schools provide pre-school education more seriously than the above-mentioned formal schools. Eighty-six per cent of the kindergartens and the English-medium schools have such provision. Course duration ranges from one to four years depending on the community's demand and the school authority's decision, but most schools provide one- to two-year courses using local textbooks of varying quality. English-medium schools, however, are the exception by providing three- to four-year courses using overseas textbooks, as their long-term objective is to prepare students for British O-level/A-level or Junior/Senior Cambridge Examinations etc. Table 1 shows the different types of provision on offer.

*BRAC pre-primary programmes.* BRAC, an NGO well-known for its provision of non-formal primary education, organizes pre-primary classes for young children aged five to six years. Some of these programmes are established in the campuses of the formal primary schools (both government and non-government) but many (about two-thirds) are conducted outside. It is a one-year programme where each class contains 25 children who are taught by two local schoolgirls (adolescents) with minor training, and classes take place two hours a day, six days a week. These programmes are supervised by the BRAC organizers, and currently over 16,000 classes are in operation, with around 60% of the children being girls. Jahan (2005) observed that the teaching and learning provision in these BRAC pre-primary classes is quite good. The classroom activities included teaching Bangla and English

Table 1. Various pre-school models exist in kindergartens and English-medium schools

Age (years)	Model 1 (1 year)	Model 2 (2 years)	Model 3 (2 years)	Model 4 (3 years)	Model 5 (3 years)	Model 6 (4 years)
2/3						Playgroup
3/4				Nursery	Playgroup	Nursery
4/5		KG-1	Nursery	KG-1	Nursery	KG-1
5/6	KG	KG-2	KG	KG-2	KG	KG-2



alphabets, numbers, rhymes, songs and dances. She found the children absorbed in learning activities and were cooperative with each other.

The re-analysis of the 1998 *Education Watch* school survey data on class size in various pre-primary schools is shown in Table 2. The non-formal schools had the smallest average class size with little variation between the schools, and the kindergartens also had a small average class size, but between-school variation was high, while the government schools had the largest average class size with much variation.

## Method

This paper explores children's access to pre-school education in Bangladesh by examining the trends in access and its socio-economic differentials through secondary analysis of the *Education Watch* database (1998, 2000 and 2005), which was kindly provided by the Campaign for Popular Education (CAMPE). The aim of this paper is to analyse enrolment data of pre-school-aged children to estimate enrolment rates in *age-appropriate* educational provision.

### *The database: Education Watch, Bangladesh*

Education Watch, Bangladesh was set up in 1998 by a group of individuals and organizations concerned with educational development in the country. The need for embarking on such an initiative was expressed in the 1996 National Conference on Universal Primary Education in Dhaka. Weaknesses in monitoring the EFA effort, especially the lack of valid and reliable information necessary for developing policies and plans, were identified as primary constraints to ensuring proper implementation of EFA. *Education Watch* was thus born with the broad aim of taking on the role of an independent, research-based monitoring mechanism for assessing progress in EFA.

The data analysed in this paper were obtained from a household survey that was administered to a nationally representative sample in three different years (1998, 2000 and 2005). A similar sampling strategy was followed each year: the country

Table 2. Class size in various types of pre-school (1998)

School type	No. of classrooms observed	Average class size	SD of class size	CV of class size
Government primary	154	55	34	61.8
Non-government primary	65	48	28	58.3
Non-formal school	22	25	8	32.0
Madrassa	24	41	17	41.5
Kindergarten	66	26	17	65.4
High school attached	24	52	25	48.0
Total	355	46	30	65.2

SD = standard deviation; CV = coefficient of variation.

was first divided into eight different strata—six rural and two urban—and in each stratum a four-stage cluster sampling procedure was applied to randomly select 30 clusters (both rural villages and urban *mahallas* (city neighbourhoods)). Then an equal number of households were systematically selected from each cluster, but the number of households varied year to year. Detailed descriptions of the surveys and the methodology used are available in the *Education Watch* reports (Chowdhury *et al.*, 1999, 2002; Ahmed *et al.*, 2006). Here, only the sample relevant to this paper is presented (see Table 3).

The database contains a wealth of information on children aged 4–20 years from the surveyed households: e.g. the age and gender of the children, area of residence, school enrolment status, class of enrolment, school type, reasons for non-enrolment, parental education, food security status of household, and their religion.

#### *Secondary analysis of the database*

Owing to the absence of any national policy on pre-school education and on attendance at various kinds of provision, it is difficult to set a fixed age range for pre-school education. In this study, the pre-school period is defined as the two years preceding the official age of enrolment for primary school (i.e. ages four to five), and the following are some of the calculations performed in this secondary data analysis:

- *net enrolment rate*: proportion of children aged four to five years enrolled in pre-schools, expressed as a percentage;
- *rate of enrolment in any class*: proportion of children aged four to five years enrolled in any class (pre-primary or primary), expressed as a percentage;
- *gross enrolment ratio*: number of children of any age enrolled in pre-schools in every 100 children (aged four to five years) sampled.

The accuracy of the estimates presented in this paper is mostly dependent upon the correct reporting and recording of children's age in the surveys. Like many other developing countries, the practice of birth registration is not widespread in Bangladesh, but the lack of such records has not been problematic owing to the presence of the Expanded Programme on Immunization (EPI) countrywide. In most cases, mothers carried the EPI cards with them and showed them to the interviewers, and in the few cases where these cards were not available the neighbours could accurately recall the children's age. A matching operation of the survey data with that of the re-survey showed over 99% accuracy of age data.

Table 3. Study samples at a glance (1998–2005)

Survey year	Villages or city neighbourhoods	Household	Population	Children aged 4–5	Children in pre-schools
1998	240	42,548	214,559	10,397	2402
2000	240	30,051	150,028	7444	1859
2005	960	23,971	122,006	5992	1997



## Findings

### *Descriptive statistics*

*Overall participation in pre-schools.* Of children aged four to five years, 13.4% were enrolled in pre-schools in 2005, compared to 9.3% in 1998 and 9.6% in 2000 (see Table 4). Although children's participation in pre-schools increased significantly over this seven-year period, the mean rate of increase per year was only 0.6%—less than that of primary education enrolment.

Although the official age for primary education is six, a sizeable proportion of the pre-primary-aged children were found in primary school: 18.2% in 1998, followed by 16.7% in 2000, and 15.5% in 2005. This shows that the majority of pre-primary-aged children who were registered in school were in fact enrolled in primary classes instead of pre-school classes, though the gap has been narrowing over time. On the other hand, the opposite case was also found with many primary school-aged children (i.e. aged six+ years) enrolled in pre-schools instead of primary schools: 12.6% in 1998 and 2000, increasing to 17.1% in 2005. The gross enrolment ratio in pre-school education increased from about 22% in 1998–2000 to over 30% in 2005. It is stressed here that this ratio includes over-age children in 'pre-school places'.

Despite this growing trend in pre-school enrolment, however, over 70% of the pre-school-aged children were not enrolled in any educational institution (more specifically: 85% of four year olds and 57% of five year olds), and only a minor improvement of 0.2% per year was found in this respect over the seven-year period. Furthermore, according to the latest national census in 2001, there were around 7.7 million Bangladeshi children of pre-primary age (four to five years) (BBS, 2003), and if the population growth over the last five years is taken into account, at least over 5 million children in this age group would be currently out of school.

*Pre-school participation by gender and area.* In terms of participation by gender, although more girls than boys were enrolled in pre-schools at the beginning of the reporting period, the difference between the genders later disappeared. In terms of participation by area, however, the enrolment of urban children remained consistently higher than their rural counterparts throughout the period (see Table 5), and

Table 4. Pre-school enrolment ratios (1998–2005)

Year	Children aged 4–5			Children aged 6+ enrolled in pre-primary	Children aged 4–5 enrolled in any school	Net enrolment for pre-primary	Gross enrolment for pre-primary
	Out of school	Enrolled in pre-primary	Enrolled in primary				
1998	72.5	9.3	18.2	12.6	27.5	9.3	21.9
2000	73.7	9.6	16.7	12.6	26.3	9.6	22.2
2005	71.1	13.4	15.5	17.1	28.9	13.4	30.5

Table 5. Enrolment ratios by year and area (1998–2005)

Year	Area	Rate of enrolment in any class	Net enrolment rate	Gross enrolment ratio
1998	Rural	27.8	8.9	21.3
	Urban	26.7	11.4	24.5
	Level of significance	ns	$p < 0.001$	$p < 0.001$
2000	Rural	26.1	9.3	21.2
	Urban	26.9	11.4	28.4
	Level of significance	ns	$p < 0.02$	$p < 0.001$
2005	Rural	27.7	11.8	28.6
	Urban	37.5	24.6	44.3
	Level of significance	$p < 0.001$	$p < 0.001$	$p < 0.001$

ns = not significant at  $p = 0.05$ .

the gap between the two widened. In both 1998 and 2000, about 9% of rural children and 11.4% of urban children aged four to five years were enrolled in pre-schools, and the difference between the two groups was significant ( $p < 0.01$ ). The enrolment rates then increased in both areas, reaching 11.8% and 24.6%, respectively, in 2005, leading to a wider and more significant gap ( $p < 0.001$ ). In 2005, 27.7% of the rural pre-school-aged children were enrolled in any class and the gross enrolment ratio among them was 28.6%. These figures were 37.5% and 44.3%, respectively, in the urban areas. In other words, access to pre-schools among the children aged four to five and those aged six+ years was higher in the urban areas than the rural areas. Again, the proportion of pre-school-aged children's enrolment in primary schools was higher in rural areas than in urban areas.

*Pre-school participation by age.* A wide age range was found among the children who were enrolled in pre-schools, namely from four to eleven years of age. For example, in 2005 the proportion of children of different ages enrolled in pre-school was as follows: 13.7% were aged four, 30.1% aged five, 24.4% aged six, 20.3% aged seven, and 11.3% aged 8–11 years. This means that only 43.8% of all pre-school children in 2005 were of pre-school age (i.e. four to five years old), compared to 42.5% in 1998 and 43.3% in 2000. This enrolment rate was higher among girls than boys in 2000, and also higher among urban than rural children in 1998 and 2005. In 2005, 43.2% of boys and 44.5% of girls in pre-school were of the appropriate age range, and 41.3% of rural pupils and 55.6% of urban pupils were in this age group (see Table 6). However, the average age of pre-school children showed a slow decline from 6.1 years in 1998 to 6 years in 2000 and 5.9 years in 2005. Note that these differences are statistically insignificant.

*Pre-school participation by institution type.* Children receive pre-school education in various types of institutions: e.g. government primary schools, registered and

Table 6. Percentage of pre-school children aged four to five by year, gender and area (1998–2005)

Gender/area	Year			Level of significance
	1998	2000	2005	
Boys	41.1	40.8	43.2	ns
Girls	43.9	45.6	44.5	ns
Level of significance	ns	$p < 0.05$	ns	
Rural	41.8	43.9	41.3	ns
Urban	46.5	40.1	55.6	$p < 0.001$
Level of significance	$p < 0.05$	ns	$p < 0.001$	
All	42.5	43.3	43.8	ns

ns = not significant at  $p = 0.05$ .

non-registered primary schools, NGO-run non-formal schools, madrasas, kindergartens, and the primary section of high schools (see Table 7). At the national level in 2005 the majority of children received pre-schooling in government primary schools (43.5%), followed by kindergartens and English-medium schools (17.3%), and non-government (both registered and non-registered together) and NGO-run non-formal schools (around 16% each).

Analysis by year shows that the dominance of government primary schools in providing pre-school education has weakened over the years, from comprising almost 62% of the provision in 1998 to 43.5% in 2005, which represents a reduction of 18.5% points (see Table 7). On the other hand, NGO non-formal schools, kindergartens and English-medium schools have experienced considerable growth over time, with NGO provision growing nearly six-fold (2.8% in 1998 to 15.9% in 2005), and the kindergartens doubling their share (9.9% in 1998 to 17.3% in 2005). It was also observed that only 40% of the pre-school children in government schools, 45–46% of those in non-government and non-formal schools, 37.6% in madrasas, 52% in kindergartens, and 47.8% in pre-school sections attached to high schools were four to five years old, and the rest were over-aged.

Table 7. Percentage distribution of all children in different pre-primary institutions (1998–2005)

Type of school	Year		
	1998	2000	2005
Government primary	62.0	37.7	43.5
Non-government primary	21.1	36.1	15.6
Non-formal school	2.8	5.4	15.9
Madrasa	3.2	7.9	6.6
Kindergarten	9.9	11.6	17.3
High-school attached	1.1	1.4	1.1

In terms of the provision of pre-school education by different institutions in rural and urban areas, again there was much variation. In rural areas, government primary schools played the major role in pre-school provision, whereas in urban areas it was the kindergartens and the English-medium schools that dominated the scene (see Table 8). Despite significant differences in the early years, by 2005 NGO schools and non-government schools had an almost equal share in rural pre-school provision (17.2% and 16.5%, respectively), while high schools with attached pre-schools never played a significant role in rural settings (0.1%).

### *Bivariate analyses*

Children's participation in pre-schools increases with the level of parental education. For instance, in 2005 the net enrolment rate of children in pre-school with uneducated mothers was 8.7%, compared to 13.9% with primary school educated mothers, and 20.3% with secondary or above educated mothers ( $p < 0.001$ ). Likewise, the same relationship exists between father's education level and children's pre-school enrolment ( $p < 0.001$ ).

More improvement in enrolment rates was found in the children of educated parents compared to those of uneducated parents. It was observed that the percentage of parents without schooling was 46% in 1998, 44% in 2000 and 31% in 2005, and the percentage of first-generation learners in the pre-primary classes for the corresponding years was 33.5%, 29% and 20%—indicating a lower incidence of first-generation learners in pre-school education.

As the percentage of uneducated parents decreases in the country over time, it is obvious that this would be reflected in the classrooms through a reduction in the percentage of first-generation learners. Table 9 shows this occurring in government and non-government primary schools, and in the madrasas. By 2005, there was little difference between the various institutions in terms of admitting children from disadvantaged households (i.e. 30–34% of total enrolment), except for kindergartens and pre-schools attached to high schools, which seem to have denied access to children of uneducated parents.

Table 8. Percentage distribution of pre-primary children by school type and area (1998–2005)

Type of school	1998		2000		2005	
	Rural	Urban	Rural	Urban	Rural	Urban
Government primary	68.1	27.5	40.6	23.3	47.9	23.3
Non-government primary	23.2	9.2	40.1	16.1	16.5	12.0
Non-formal school	1.9	8.2	5.9	3.0	17.2	9.9
Madrasa	3.1	3.4	8.3	5.8	7.2	3.7
Kindergarten	3.5	45.8	5.3	43.1	11.1	45.5
High-school attached	0.2	6.0	0.0	8.8	0.1	5.6

Table 9. Percentage of first-generation learners in pre-schools by school type (1998–2005)

School type	Year		
	1998	2000	2005
Government primary	42.4	37.6	34.1
Non-government primary	52.0	47.2	33.8
Non-formal school	35.5	70.1	32.9
Madrasa	52.9	51.2	30.5
Kindergarten	5.5	7.5	6.4
High-school attached	–	–	5.3

Similar findings were found by examining pre-school enrolment in ‘deficit’ households. The respondents were asked to rate the socio-economic status of their households on a four-point scale, which required them to consider their total income and expenditure in the past year—this rating is known as their ‘food security status’. The four points on the rating scale were as follows: ‘*always in deficit*’; ‘*sometimes in deficit*’; ‘*breakeven*’; and ‘*surplus*’. Like the positive relationship between pre-school enrolment and parental education level, the same disparities exist between pre-school enrolment and household food security status. The rate of increase in pre-school enrolment over time was greater in the ‘breakeven’ or ‘surplus’ households than the ‘deficit’ households.

In terms of religion, although more children from Muslim households than non-Muslims were enrolled in pre-school in 1998, the reverse occurred in 2000, and no such difference was observed in 2005.

### Regression analyses

In order to study the simultaneous contribution of different demographic factors to pre-school enrolment, multiple regression analysis was conducted to move beyond the simpler analyses already presented. This is important because it would help to ascertain the influence of a particular predictor variable on pre-school enrolment while controlling for the influence of other variables. Considering the dichotomous nature of the outcome variable (children being enrolled in pre-school or not), logistic regression was suitable for this analysis (Menard, 1995; Hosmer & Lemeshow, 1989), and the model is as follows:

$$\ln [p / (1 - p)] = a + \sum b_i x_i,$$

where  $p$  is the probability of a child being enrolled in pre-school;  $a$  is a constant;  $b_i$  values are estimated regression coefficients; and  $x_i$  are the background characteristics of the children.

Two models were built for the four- to five-year-old children. One considered the sampled children contained in the database across the three surveyed years

(‘Model 1’), and the other examined only the surveyed children in 2005 (‘Model 2’). The explanatory variables in both models were gender, area of residence, mother’s education, father’s education, food security status of household, and religion. An additional variable named ‘year’ was included in the first model. A stepwise approach was used and the models were constructed using a combination of forward selection and backward elimination of predictors. In addition to the regression coefficients, odds ratios of the coefficients and their range within a 95% confidence interval were also computed (see Table 10 and Appendix Table A1).

Religion did not appear to be a significant predictor in any of the models, and gender was not a significant predictor in the second model. Thus, the first model (see Appendix Table A1) included six predictors, and the second model (see Table 10) included four. No significant variation was observed in the pre-school enrolment rate between 1998 and 2000; however, the rate increased significantly in 2005 (see Appendix Table A1). On average, girls were more likely to be enrolled in pre-schools than boys, and urban children were more likely to be enrolled compared

Table 10. Model 2: logistic regression predicting net enrolment in pre-schools in 2005

Predicting variables	Regression coefficient	Odds ratio	95% CI	
			Lower	Upper
<b>Area</b>				
Rural	0	1.00		
Urban	0.63	1.88*	1.53	2.29
<b>Mother’s education</b>				
Nil	0	1.00		
Primary	0.44	1.55*	1.26	1.91
Secondary+	0.53	1.70*	1.33	2.18
<b>Father’s education</b>				
Nil	0	1.00		
Primary	-0.10	0.91	0.73	1.13
Secondary	0.13	1.13	0.90	1.42
Tertiary	0.50	1.65*	1.21	2.24
<b>Food security status</b>				
Always in deficit	0	1.00		
Sometimes in deficit	0.52	1.67*	1.25	2.25
Breakeven	0.55	1.74*	1.31	2.31
Surplus	0.64	1.90*	1.40	2.58
Constant	-2.84			
-2 log-likelihood	4384.80			
Cox & Snell $R^2$	0.03			
Nagelkerke $R^2$	0.06			

\* $p < 0.001$ .



to their rural counterparts. Likewise, the 2005 model found the same difference between the rural and urban areas, controlling for the influence of the other variables (see Table 10). Parental education and household food security status were also significant predictors.

It is confirmed from both models that mother's primary versus secondary level of education played equal roles in the pre-school enrolment of their children. Overall, uneducated mothers were significantly less likely to send their children to pre-schools compared to educated mothers. Again, father's education level also had a similar influence on children's pre-school enrolment. On the other hand, there was no significant difference among the households of second, third and fourth categories of food security status. However, they were more likely to send their children to pre-schools compared to those who were always in deficit.

The probabilities of children's access to pre-primary education were calculated from the above regression analyses. The calculated probabilities ranged from 0.05 to 0.30 for the first model, and from 0.05 to 0.39 for the second model (see Table 11 and Appendix Table A2). These findings clearly show that parental education and household food security status were the most powerful predictors of children's participation in pre-school education. The probability of enrolment in pre-schools was greater where parental education levels and household food security status were higher. The increase in enrolment over time was also greater among the children from more privileged households compared to the rest.

#### *Reasons for non-enrolment in pre-schools*

The parents of the out-of-school children (aged four to five years) were asked to give the major reason for non-enrolment of their children in schools. Twelve different reasons were obtained in total, and the majority of parents mentioned that their children were too young to enrol in school (89% in 1998, 89.7% in 1999, and 92.7% in 2005). About 7% of the parents in 1998 cited three other reasons, namely that the school was too far away from home, money was scarce, and that the school did not

Table 11. Estimated probabilities of children's participation in pre-schools, Model 2

Characteristics	Probability
Rural children, parents with no education, and household food security status is always in deficit	0.05
Urban children, parents with no education, and household food security status is always in deficit	0.10
Rural children, mother with secondary and father with tertiary education, and household food security status is surplus	0.24
Urban children, mother with secondary and father with tertiary education, and household food security status is surplus	0.39

Probabilities are calculated from the coefficients of the respective regression model in Table 10 by using the following equation:  $p = \exp(a + \sum b_i x_i) / [1 + \exp(a + \sum b_i x_i)]$ .

admit their children for enrolment. This figure was 5.3% in 2000 and 5% in 2005. No variation was observed between boys and girls, and between urban and rural children; however, educated parents and those from more privileged households tended to cite age-related concerns, compared to uneducated parents and those from disadvantaged households.

### Discussion and conclusion

This paper has examined, for the first time, issues related to access to pre-school education in Bangladesh. Although no data collection was conducted specifically for this study, the broad coverage of the *Education Watch* database created the opportunity to undertake this secondary analysis. It is recognized that only very simple data analyses were performed, but the preliminary results obtained do demonstrate the issue of access at this early stage of education. While the country is very much engaged in achieving the goals and targets of the Millennium Development Goals, especially those related to primary and secondary education, very few donor programmes or research initiatives are actually focusing on pre-school education. The issues related to this early period of schooling were never examined on a national scale, and thus there is no government database on pre-school education.

Many authors have pointed to the need for quality pre-school education in Bangladesh, where the quality of primary education is in a fragile condition (Nath & Chowdhury, 2001; Nath *et al.*, 2003; Ahmed *et al.*, 2005). However, this study clearly shows that Bangladesh has not made much progress in providing and promoting pre-school education for its children aged four to five years. First of all, the uneducated and the poor have lower rates of access to pre-school education. More importantly, there is no clear-cut national policy on pre-school education. Although some recent documents have expressed the nation's desire for pre-school education (Government of Bangladesh, 2000, 2003; DPE, 2003), the reports were never seriously considered by any department or ministry (note that there are two ministries for education in the country), and it is felt that the responsibility of overseeing pre-school education should be assigned to the Primary and Mass Education Ministry. This paper demonstrates limited progress in the provision of appropriate pre-school education.

Whatever the case may be at the policy level, some parents and school authorities have decided to take their own initiative in addressing the problem of a lack of pre-school provision. Some have demanded pre-school education for their children from their local primary school authorities, and some formal primary schools (less than half of them) have indeed responded positively to the demand. New kindergartens have opened in rural areas, and, more recently, NGOs have also started to provide pre-school education through a non-formal mode. The findings show that the share of pre-school provision has been increasing consistently in kindergartens and NGO-run non-formal schools, but reducing in formal schools (both government and non-government).

Another major problem is the absence of a national pre-school curriculum, which has led to great variation between different pre-school education providers who are

designing their own curriculum and textbooks. The majority of them are using locally published textbooks of varying quality, and some are using NCTB-prepared Grade 1 language textbooks for pre-primary classes. Few institutions, especially the national NGOs, have sought assistance from foreign consultants (e.g. BRAC, Plan Bangladesh, and Save the Children—USA) in designing their curriculum and textbooks.

The third problem lies with the indeterminate duration of pre-school education, as a wide range exists among the providers in this respect. While the majority provide a one-year course, others such as the English-medium schools provide longer courses.

Despite the observed growth in pre-school provision and enrolment, over 70% of pre-school aged children (aged four to five years) are still out of school. This means that there are insufficient appropriate school places for pre-school children in the country. The coverage is increasing very slowly—only 0.6% per year, which is less than the rate of the primary education increase, so there is an urgent need to increase the speed. Although no gender gap was found in pre-school enrolment, urban children significantly surpassed their rural counterparts, and children with educated parents and from well-off families were more likely to enrol than those from needy families. This means that pre-school education, in the way that it is currently operating in Bangladesh, is actually creating greater disparity between children at a very early age. This paper began with a strong argument for establishing pre-school education in developing countries, namely to enable children from disadvantaged and at-risk families to compete equally in primary school (Myers, 1995). However, the data show that this objective of equality has not been reached in Bangladesh, and in fact the opposite effect—i.e. of widening the gap—has occurred.

Now the question is how Bangladesh can best provide needs-based pre-school education. We close with specific recommendations based on the review of the literature, the data reported here, and the current actions of some schools and parents in Bangladesh:

1. Pre-school education should be considered as part of compulsory education. This can be achieved through an amendment of the existing Compulsory Primary Education Act by incorporating pre-school education.
2. The duration of pre-school education can initially be fixed at one year; however, it should be extended to two years as soon as possible.
3. The NCTB can lead the way in designing the curriculum and textbooks for pre-school education, with input from experienced NGOs, English-medium schools and other existing pre-school providers. The Primary and Mass Education Ministry, through its Directorate of Primary Education, should take the responsibility of its implementation along with its current duties, and again with assistance from experts in the field. Current teacher training provision should also be revised by incorporating pre-school-related issues.
4. Like any other social initiative, the poorer subgroups of the population are being excluded from enjoying the benefits of pre-school education, so there needs to be a way of incorporating pre-school education within targeted poverty-alleviation programmes.

5. The presence of over-aged children in pre-schools may hamper the education of younger children, so this practice should be avoided.
6. Pre-school education should not be considered optional or trivial, so appropriate state funding must be ensured.

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### Note

1. Bangladesh has two ministries responsible for education. The Primary and Mass Education Ministry looks after primary and basic education, whereas the Ministry for Education looks after secondary, higher secondary and tertiary education.

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**Appendix**

Table A1. Model 1: logistic regression predicting net enrolment in pre-schools (1998–2005)

Predicting variables	Regression coefficient	Odds ratio	95% CI	
			Lower	Upper
<b>Year</b>				
1998	0	1.00		
2000	-0.07	0.94	0.84	1.04
2005	0.24	1.28***	1.15	1.42
<b>Sex</b>				
Boys	0	1.00		
Girls	0.11	1.12**	1.03	1.22
<b>Area</b>				
Rural	0	1.00		
Urban	0.23	1.25***	1.11	1.41
<b>Mother's education</b>				
Nil	0	1.00		
Primary	0.37	1.44***	1.29	1.61
Secondary+	0.41	1.50***	1.30	1.73
<b>Father's education</b>				
Nil	0	1.00		
Primary	0.12	1.13*	1.00	1.27
Secondary	0.19	1.21**	1.06	1.38
Tertiary	0.59	1.80***	1.50	2.17
<b>Food security status</b>				
Always in deficit	0	1.00		
Sometimes in deficit	0.21	1.24**	1.08	1.42
Breakeven	0.30	1.35***	1.18	1.55
Surplus	0.44	1.55***	1.33	1.82
Constant	-2.85			
-2 log-likelihood	14,972.16			
Cox & Snell $R^2$	0.02			
Nagelkerke $R^2$	0.04			

\*\*\*  $p < 0.001$ ; \*\* $p < 0.01$ ; \* $p < 0.05$ .

Table A2. Estimated probabilities of children's participation in pre-schools, Model 1

Characteristics	Probability	
	1998	2005
Rural, boys, parents with no education, and household food security status is always in deficit	0.05	0.07
Urban, boys, parents with no education, and household food security status is always in deficit	0.07	0.08
Rural, girls, parents with no education, and household food security status is always in deficit	0.06	0.08
Urban, girls, parents with no education, and household food security status is always in deficit	0.08	0.09
Rural, boys, mother with secondary and father with tertiary education, and household food security status is surplus	0.22	0.24
Urban, boys, mother with secondary and father with tertiary education, and household food security status is surplus	0.24	0.28
Rural, girls, mother with secondary and father with tertiary education, and household food security status is surplus	0.21	0.26
Urban, girls, mother with secondary and father with tertiary education, and household food security status is surplus	0.26	0.30

Probabilities are calculated from the coefficients of the respective regression model in Appendix Table A1 by using the following equation:  $p = \exp(a + \sum b_i x_i) / [1 + \exp(a + \sum b_i x_i)]$ .