

# Pattern of Cerebral Palsy: An Epidemiological Survey Study

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**Received Date: 07 July 2025; Accepted Date: 22 July 2025; Published Date: 20 August, 2025**

**Citation:** Hai Russeel MZ, (2025), Pattern of Cerebral Palsy: An Epidemiological Survey Study, *Clinical Trials and Clinical Research*,4(4);

**DOI:**10.31579/2834-5126/111

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## Abstract

Cerebral palsy is a developmental disorder. This study was designed to assess cerebral palsy and its associated factors in a crippled hospital. It was a cross-sectional study. Total 132 cerebral palsy children were conveniently selected for study. Mean age of the children was  $4.30 \pm 2.72$  years. About 61% were boys and 40% were girls. Mean age of the mother was  $25.28 \pm 5.16$  years. Spastic, athetoid and mixed type of cerebral palsy were 83.3%, 6.8% and 9.8%. Type of cerebral palsy did not find association with gender distribution. Further depth study is needed to get precise information.

**Keywords:** cerebral palsy; survey

## Introduction

Cerebral palsy (CP) is the most common cause of motor disability in childhood. Most previous population-based studies reported the prevalence of CP to range from 1.5 to 3.0 cases per 1000 live births or 1000 children.<sup>1-3</sup> The estimated lifetime cost of CP in the United States is nearly \$1 million per person (2003 dollars).<sup>4</sup> Although recent improvements in rehabilitation and surgical care can improve functional outcomes and quality of life for individuals with CP, researchers have made relatively little progress in understanding the pattern of CP and in developing strategies for primary prevention. There is some evidence of an association between improved rates of survival of infants born prematurely and/or at very low birth weight and increasing prevalence of CP<sup>5-7</sup> but this finding has not been consistent<sup>8-10</sup> and recent data from Europe indicated a decline between the birth years 1980 and 1996 in the prevalence of CP among survivors of preterm birth.<sup>11</sup> A study showed that the average prevalence of cerebral palsy across the 3 sites was 3.6 cases per 1000, with notably similar site-specific prevalence estimates (3.3 cases per 1000 in Wisconsin, 3.7 cases per 1000 in Alabama, and 3.8 cases per 1000 in Georgia). At all sites, prevalence was higher in boys than girls (overall boy/girl ratio: 1.4:1). Also, at all sites, the prevalence of cerebral palsy was highest in black non-Hispanic children and lowest in Hispanic children. At all sites, the prevalence among children living in low- and middle-income neighborhoods was higher than that among children living in high-income neighborhoods. Spastic cerebral palsy was the most common subtype (77% of all cases), with bilateral spastic cerebral palsy dominating the spastic group (70%).<sup>12</sup> But this type of study in our country is rare. The present study will contribute new knowledge to the epidemiology of cerebral palsy in Bangladesh. Numerous studies have analyzed the relationship between income and children's health. They have examined a variety of health measures, ranging from health status broadly defined to

very specific health conditions experienced by children of different ages. A general conclusion is that lower-income children are more likely to be in poor health than are children from higher income groups. The National Health Interview Survey (NHIS), a nationally representative annual survey of U.S. families, asks respondents (or, for children, their adult caregivers) whether they are in excellent, very good, good, fair, or poor health. The resulting summary measure of health, called global health status, although crude, is highly correlated with specific types of illnesses and health conditions in childhood. Adults who report poorer global health status are more likely than others to become ill and to die sooner rather than later.<sup>13</sup> Using the NHIS surveys conducted from 1997 to 2003, we estimate how parents' reports of their children's health vary with family income.<sup>14</sup> This finding inspires me to conduct research on pattern of cerebral palsy among different income groups.

## Methodology

This was a cross sectional observational study. Data were collected from Children Crippled Hospital. Study was conducted among cerebral palsy patients attending for treatment purpose. All cerebral palsy patients and willing to participate and also signed the informed consent were included in the study. Sample size was 132. Non probability convenient sampling method was used to select sample population. Data were collected from the respondents through face-to-face interview. The questionnaire was used after verbal consent of the respondents. Socio-demographic characteristics were obtained from caregivers or mothers. Pattern of cerebral palsy was diagnosed by physical examination, medical records.

## Results

Mean age of the children was  $4.30 \pm 2.72$  years. Two-third of the children represented from <5 years. About 61% were boys and 40% were girls. Half of the mother came from 20-24 years age group. Mean age of the mother was  $25.28 \pm 5.16$  years. More than half of the mother completed primary level

education. About 88% of the mother were housewife. Mean monthly family income was  $21625.00 \pm 19225.55$  BDT. (Table 1) Spastic, athetoid and mixed type of cerebral palsy were 83.3%, 6.8% and 9.8%. (Table 2) Association between mode of delivery and type of cerebral palsy was statistically insignificant ( $p=0.532 < 0.05$ ). (Table 3) Type of cerebral palsy did not find association with gender distribution ( $p=0.324 < 0.05$ ). (Table 4)

Variables	Number	Percentage
Age group in years		
<5	92	69.7
>5	42	30.3
Sex		
Boys	80	60.6
Girls	52	39.4
Education of mother		
Primary	76	57.6
Secondary	20	15.2
Higher secondary	20	15.2
Graduation	16	12.1
Occupation of mother		
Housewife	116	87.9
Service	4	3.0
Business	8	6.1
Others	4	3.0

**Table 1: Distribution of children by socioeconomic condition.**

Type of cerebral palsy	Frequency	Percentage
Spastic	110	83.3
Athetoid	9	6.8
Mixed	13	9.8

**Table 2: Distribution of type of cerebral palsy.**

Mode of delivery	Type of cerebral palsy			Total	$\chi^2$	p value
	Spastic	Athetoid	Mixed			
Normal	87(65.9%)	6(4.5%)	9(6.8%)	102(77.3%)	1.26	0.532
Caesarean	23(17.4%)	3(2.3%)	4(3.0%)	30(22.7%)		
Total	110(83.3%)	9(6.8%)	13(9.8%)	132(100.0%)		

**Table 3: Association between mode of delivery and type of cerebral palsy.**

## Discussion

Cerebral palsy is one of the most common causes of childhood disability. Factors associated with cerebral palsy in hospital/facility level did not study properly. The present study found mean age of the children  $4.30 \pm 2.72$  years. About 61% were boys and 40% were girls. Half of the mother came from 20-24 years age group. More than half of the mother completed primary level education and most of them were housewife. In several studies it has been seen that a strong association was observed between socioeconomic status and risk of disabilities.16-17 CP is found across all socioeconomic classes. There was a clear association between CP and socioeconomic status. There was a linear association between the incidence of CP, major perinatal indicators and the socio-economic status of the household of the mother. But there is a controversy regarding the existence of a socio-economic gradient for cerebral palsy according to literature.18 Spastic, athetoid and mixed type of cerebral palsy were 83.3%, 6.8% and 9.8%. Association between mode of delivery and type of cerebral palsy was statistically insignificant. Type of cerebral palsy did not find association with gender distribution. Cerebral palsy is more common in males than in females, but the reasons for this

disparity are uncertain.19 A study conducted by N Sathiakumar and A M Yakubu shows that CP was more common in boys.20

## Conclusion

Spastic cerebral palsy was more among children. Mode of delivery was not associated with type of cerebral palsy.

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