

*S M Shahnawaz Bin Tabib
Institute of Child and Mother Health, Bangladesh*

Introduction

Childhood disabilities are not uncommon in Bangladesh. Cerebral palsy (CP) is one of the most common causes of chronic childhood disability, with a frequency of 1.4- 2.7/ 1000 of live births^{1,2,3}. In the developed world the prevalence of cerebral palsy has remained very stable for many years at this percentage. Bangladesh is a country with a population of more than 147 million of which about half of the population (44.23%) below 18 years. 87% of the population lives in the rural area⁴. The childhood disability has been defined and measured differently over time. The prevalence of children and adolescents with disability in recent studies from scandinavia, Israel and united States demonstrated the lowest rates in the United States (5-8%) and the highest in Finland (9.8%) in spite of many differences in definition and study design, it appears that disability in childhood affects many children and adolescents in each country⁵. High prevalence of disabilities among children under 10 years were also found in rural sub district of south Africa⁶. The eighty five percent of the world's disabled children live in the developing Countries⁷; perhaps at the moment more than this live. The prevalence and risk factors of cerebral palsy has not been studied properly at the community level of Bangladesh. The purpose of this study was 1. to ascertain the prevalence of childhood disability. 2. to determine types of disability. 3. to identify prevalence and types of cerebral Palsy.

Materials and Methods

This is a descriptive type of cross sectional community based study conducted during the period from July 2006 to June 2007 in seven villages of Narayanganj, district of Bangladesh such as godnile, Jalkuri, Delpara, Bhuighar, Nondalapur, pilkuni and Mohammadpur were the study area¹⁸. These villages are rural areas of Bangladesh situated 15 km from Dhaka city. Sampling technique was purposive sampling. 12051 children from 2-9 years of age were proportionately selected from seven villages for the study. Sampling was carried out by a door to door survey in these seven villages. This study was conducted in two stages. In the first stage household having children age 2-9 years were identified. Questionnaire for socio demographic data and TQP Questionnaire for identifying disability were administered through trained community field workers.

In the second stage those children who were identified to have any disability through TQP, were evaluated by trained physicians and investigators through history and neurological examination to confirm the type and seriousness of disability and subsequently the cases of cerebral palsy were identified.

Results

TABLE -1: Socio demographic Characteristics of Children under study

Age of the children	No	%
2 - 3 years	3375	28
4 - 5 years	3364	27.9
6 - 7 years	2865	23.8
8 - 9 years	2447	20.8
Sex of the children		
Male -	6218	51.6
Female	5833	48.4
family having any child death		
Yes	1297	10.8
No -	10754	89.2
attending School (from 6-9 years)		
Yes	4405	82.9
No	907	17.1
Consanguinity of marriage		
Yes	707	5.9
No		94.1

Socio demographic characteristics (Table-1) of the children under study shows that 28% of the children were from age between 2-3 years followed by 27.9% between 4-5 years, 23.8% between 6-7 years and 20.8% between 8-9 years of age. 51.6% children were male and 48.4% female. 10.8% of the children had previous death of sibling. 5.9% of the children had history of parents consanguinity of marriage

Table- 2: Prevalence of disability identified by TQP by age and sex (N= 12051)

Number of Child age (year)	NO	No of TQP Positive case	Prevalence/ 1000 Children	95% CI
2-3	3375	73	21.6	17.0-27.1
4-5	3364	122	36.3	30.2 - 43.1
6-7	2865	82	28.6	22.8-35.4
8-9	2447	95	38.8	31.5 - 47.2
Total	12051	372	30.8	27.8 - 34.1
sex				
Male	6218	219	35.2	30.8 - 40.1
Female	5833	153	26.2	22.3 - 30.6

Table-2 shows prevalence of disability by TQP by age and sex, 372 children were positive. Among 3375 children between 2-3 years of age 73 children had disabilities assessed by TQP. Among 3364 children between 4- 5 years 122 cases were positive for disabilities, 2865 children between 6-7 years of age and 2447 children between 8-9 years had disabilities in 82 & 95 cases respectively Among 372 cases of child with disabilities 219 were male and 153 female child with a prevalence 35.2/1000 (95% CI 30.8 - 40.1) and 26.2/1000 (95% CI 22.3 - 30.6) respectively But in total disability (372) cases, the prevalence/1000 children was 30.8 (95% CI 27.8-34.1).

Table-3: Prevalence of various types of disability by TQP (N=12051)

Disabilities	No of Child	Prevalance/1000	95% CI
Motor Defect	116	9.6	7.9-11.5
Speech problem	197	16.3	14.1-18.7
Hearing problem	76	6.3	4.9-7.8
Vision problem	74	6.1	4.8-7.7
Cognitive defect	134	11.1	9.7-13.1
Learning disorder	103	8.5	6.9-10.3
Seizure disorder	55	4.5	3.4-5.9

Regarding prevalence of various disabilities obtained by TQP positive, motor defect was 9.6/1000 (95%CI 7.9 -11.1) , speech defect was 16.3/1000 (95% CI 14.1 - 18.7), hearing defect has 6.3/1000 (95%CI 4.9 -7.8), vision problem 6.1/1000 (95% CI 4.4 -7.7), cognitive defect 11.1/1000 (95% CI 9.3 -13.1), learning disorder 8.5/1000 (95% CI 6.9-10.3) and seizure disorder 4.5/1000 (95% CI 3.4-5.9) (Table -3)

Table - 4: Prevalence of Cerebral Palsy by age & sex

Age group	Number of Children	Number of CP case	Prevalence/ 1000	95% CI
2-3	3375	15	4.4	2.5-7.3
4-5	3364	33	9.8	6.7-13.7
6-7	2865	12	4.2	2.2-7.3
8-9	2447	14	5.7	3.1-9.6
Total	12051	74	6.1	4.8-7.7
Sex				
Boy	6218	42	6.8	4.9-9.1
Girl	5833	32	5.5	3.8-7.7

Table- 4 shows that among the 12051 studied cases 74 cases were cerebral palsy found in children with disability. Prevalence of cerebral palsy in different age groups is seen here. Prevalence of cerebral palsy in this study was 6.1/1000 children (95% CI 4.8 - 7.7). Regarding sex distribution of cerebral palsy. 6.8 / 1000 (95% CI 4.9- 9.1) boys had cerebral palsy where as 5.5/ 1000 (95% CI 3.8 - 7.7) girls had cerebral palsy.

Figure-1: Prevalence of Cerebral Palsy by type (N= 12051)

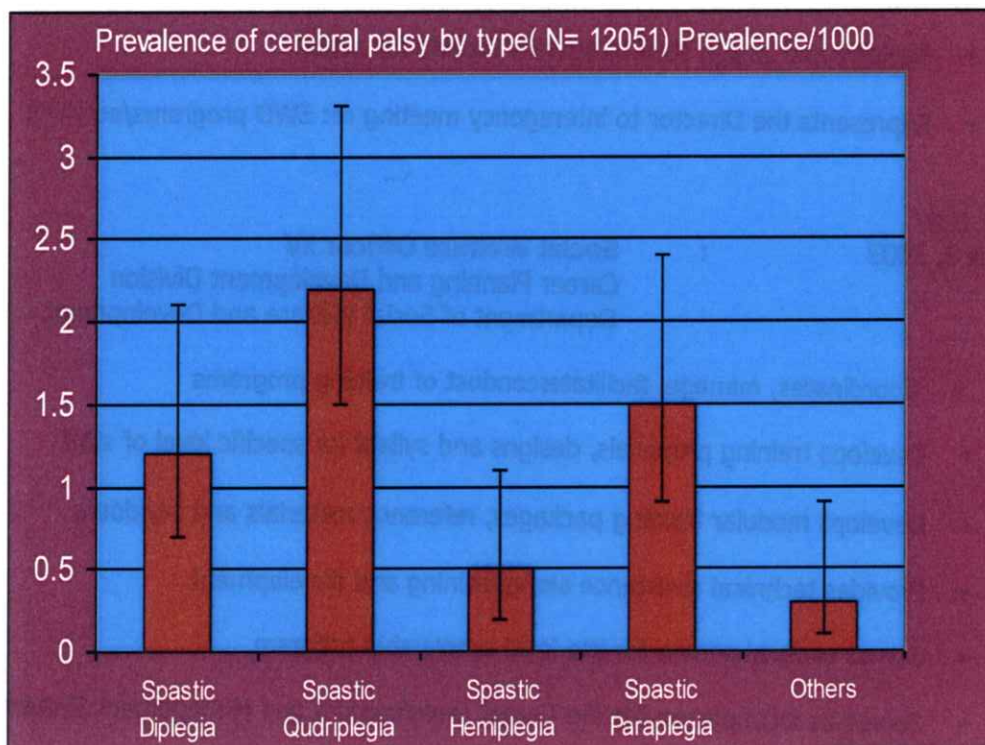


Fig -2 show prevalence of cerebral Palsy by type. Prevalence of spastic diplegia type of cerebral palsy was 1.2/1000 (95% CI .7 - 2.1). spastic quadriplegia was 2.2/1000 (95% CI 1.5 - 3.3), spastic hemiplegia was .5/1000 (95% CI .2 -1.1) , spastic paraplegia 1.5/1000 (95% CI .9-2.5) , spastic Triplegia was 0.3 /1000 (95% CI .1-.9) and prevalence of other type of cerebral palsy was 0.3/1000 (95% CI.1 - .9)

Figure-2: Severity of different types of disabilities with Cerebral palsy (N=74)

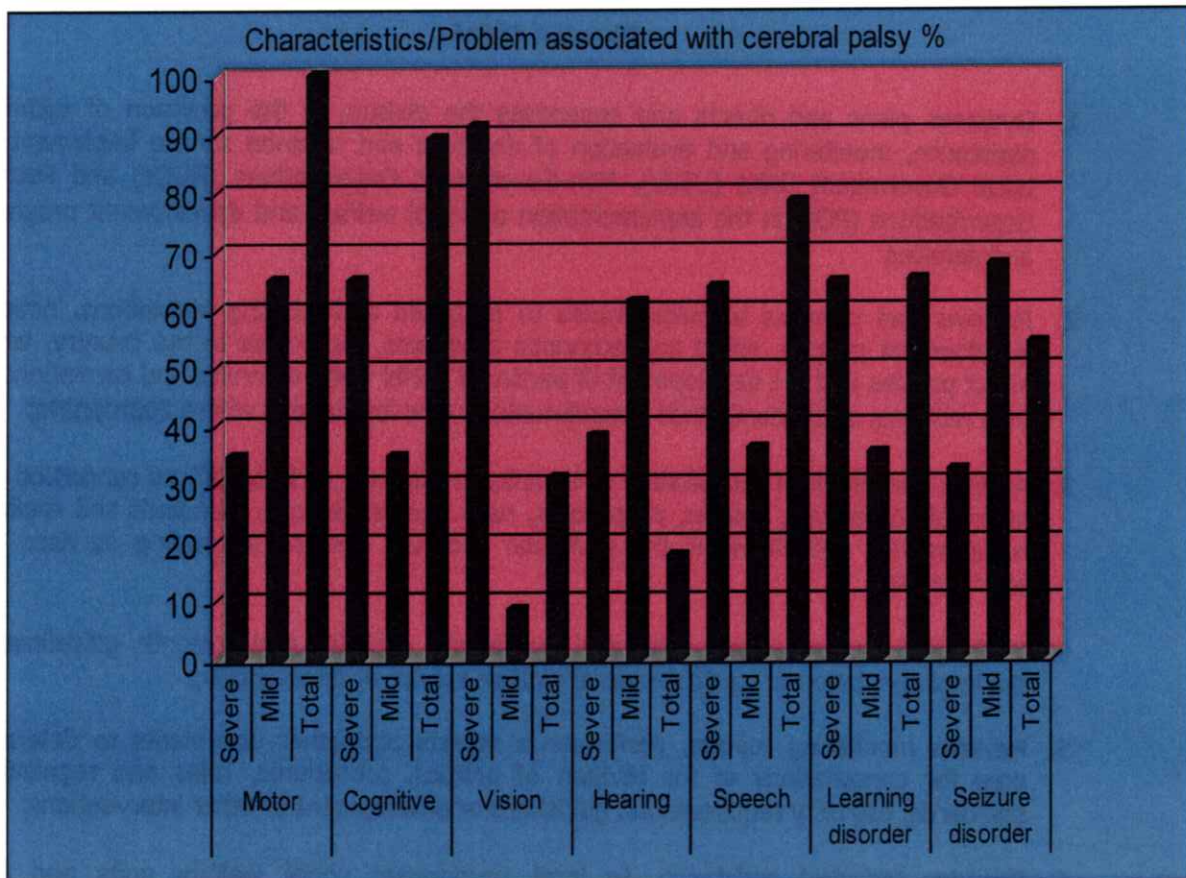


Fig - 2 shows number & percentage of children with Cerebral palsy by different types of disabilities. 48 (64.9%) cases had severe motor defect. 89.2% (66) of the children had cognitive defect of which 65.2% (43) cases were severe

Table-5: Risk Factors Precipitating Cerebral Palsy (N=74)

Risk Factors	No	%
Difficulty in delivery	41	55.4
History of stillbirth/abortion	11	14.9
Prolong labour	20	27
Delayed Cry after birth (after 5 minutes)	49	66.2
Prematurity	14	18.9
Low birth weight	30	40.5
Seizure in the first week	17	23.0
Breathing difficulty in first week	11	14.9
Difficulty in feeding in first week	8	10.8
Meningitis	2	2.7
Major Head injury	2	2.8
Not known	7	9.46

Table -5 shows presumptive risk factors of cerebral palsy found in history. 55.4% (41) cases had history of difficulty during delivery. 66.2% (49) cases did not cry within 5 minutes after delivery. Mother of 14.9% (11) cases had history of still birth/abortion, 27% (20) mothers had history of prolong labour.

Discussion

The results of this study showed a substantial, statistically significant gradient in the prevalence of childhood disabilities and cerebral palsy. An epidemiological survey in 1988 showed 6.8% prevalence of childhood neurodisabilities in Bangladesh^{8,9}. Another study in 2001 showed 17.65% prevalence of childhood disability assessed by TQP¹⁰. Ten Questions is a effective handy instruments for screening children with disability at the field level and revealed high positive predictive values in many studies^{11,12}. Prevalence rates for disabilities and cerebral palsy vary somewhat in different countries largely reflecting economic and nutritional factors and access to good obstetric care.

In this study prevalence of disability was 30.8/1000 children which is lower than previous studies in Bangladesh. It is observed that prevalence vary from time to time and also in different regions^{3,5,6,7,13}. In this study prevalence of disability was more among boys with prevalence 35.2/1000 children. It has been seen in many studies that prevalence of disabilities are more among boys^{10, 13, and 14}.

It is significant that 5.9% of the mother has history of consanguinity of marriage. Where there is consanguinity of marriage there is risk or disability in the offspring.

In several studies it has been seen that a strong association was observed between socioeconomic status and risk of disabilities^{14, 15, 16}

In this study prevalence of disability was more in the children between age group 4-5 years though statistically it is not significant. Regarding various types of disabilities, motor defect, cognitive defect, speech and hearing defect were significant. Similar picture was also seen in study by shamim Ferdous et al where they found that cognitive disabilities, impairment in speech, language and communication as well as behavioral problem are coming to the fore front of the prevalence¹⁰. In this study the prevalence of cerebral palsy is 6/1000 children (95% CI 4.8- 7.7).. Prevalence rate for cerebral palsy vary some what in different countries and regions largely reflecting economic and nutritional factor and access to good obstetric care^{13,15,16}. Regarding prevalence of various types of cerebral palsy, prevalence of spastic quadriplegia were more (2.2/1000, 95%cl 1.5-3.3).In this study other types were spastic diplegia, spastic paraplegia and spastic hemiplegia. It is well known that children with cerebral palsy present with various problems affecting neuro developmental status¹. In this study among 74 cases of cerebral palsy all the cases (100%) had motor defect followed by cognitive defect (89.2%), speech defect (78.4%), learning disorder (64.9%), and seizure disorder (54.1%). A good number of these children had vision and hearing problem.

Various risk factors for cerebral palsy were also assessed in this study. 55.4% of the cases with cerebral palsy had history of difficult delivery of mother, 66.2% children had history of delayed cry after birth, and 27% of mother had history of prolong labour more than 24 hours.. Given optimal obstetric and perinatal care perinatal asphyxias is associated with (causally or coincidentally) with about 25% of cases of cerebral palsy. Cerebral palsy as a consequence of birth asphyxia is usually associated with the presence of birth defects or high risk pregnancy^{1,13}. In many studies it has been seen that on univariate analysis which assumes a direct relationship between cerebral palsy and a single risk factor^{13,16}. Multivariate analysis done in many studies identify what factors act independently and may be responsible for initiation of process leading to cerebral palsy. This type of analysis identifies only first cry delayed more than 5 minutes after birth, major birth defects and abnormal pregnancy interval ^{8,13,18}.. Improve survival rates of very small babies tend to be associated with increase in the prevalence of cerebral palsy^{13,16,18,19,20}. In industrial nations such as Canada about 10-15% of cerebral palsy reflects post neonatal events such as motor vehicle accidents, drowning, poisoning, infections and other trauma¹³. In this study only 2.8% of the cases had history of head injury & 2.7% cases with meningitis contributing to cerebral palsy.

Conclusion

It can be concluded from this study that there are significant number of cases of childhood disabilities in the community. Prevalence of cerebral Palsy is also high in the communities of Bangladesh .This study also shows that socio demographic and obstetric risk factors are contributing to the development of childhood disabilities and cerebral Palsy in the community. It is also obvious from the study that these cases do not come to the medical attention always.

Acknowledgements

This research was funded by research grant Bangladesh Medical Research council (BMRC)

References

1. Aneja S. Evaluation of a child with cerebral palsy. *Indian J pediatric* 2004; 71:627-634
2. Cerebral Palsy Resource center Bissell Home <http://twinenterprises.com:cp> 4/3/05
3. Berhrman RE, Kliegman Robert M, Jenson, Hal B. Cerebral Palsy Nelson text Book of Paediatrics. W.B Saunders Company. 17. Ed, 2004, p 2024-2025.
4. Islam S, Durkin M, Zaman S.S. Socioeconomic studies and the prevalence of mental retardation in Bangladesh, *Mental Retardation* (1993) vol 31 No 6 P 412-417.
5. Joav Merrick, Eli carmeli: A Review on the prevalence of Disabilities in children: The internet journal of pediatrics and Neonatology 2003 vol.3 No.1 P 2-14.
6. Jacqui couper, prevalence of childhood disability in rural kwazulu- Natal. *South African Medical Journal*, 2002 vol 92 No. 7, P 1-2.
7. Helander, EAS (1993) Prejudice and dignity: An introduction of community based rehabilitation. New York: United Nation Development program..
8. Sultana S Zaman, Rapid Epidemiological Assessment of childhood Disabilities in Bangladesh preliminary Report (1992), Research on Mental Retardation in Bangladesh. Edited by: Sultana S Zaman.
9. Davidson LL, Durkin M, Khan NZ studies of children in developing countries. How soon can we prevent neurodisability in childhood? *Dev Med child Neural suppl*, 2003, 95: 18-24.
10. Ferdous Shamim, Zaman Sultana S, Khan Naila Z, Durkin Maureen, Berg Abbey L. Prevalence of Childhood Disability: The TQP Study in Bangladesh in Creating Barrier Free Inclusive Community and Rights based Society for Children with Disability, Proceedings of the Second Regional Seminar on Childhood Disability Dhaka, Bangladesh 4-6 December, 2004., 2005, P16-26 (a).
11. Naila Z.Khan.Aklima Begum, Leslie Davidson: Experience in the use of the ten Questions in Bangladesh: From awareness to action ensuring health, Education and rights of the Disabled: Edited by Sultana S.Zaman. Naila Z. Khan, Shaheen Islam 1996.
12. SA Hemidah, SM Sami, Salma S, EI Rafie. Community screening, Risk factors and impact of childhood Disability: paper presented in the 23rd international congress of paediatrics September 9-14, 2001, Beijing, China P 181
13. Disabilities and cerebral Palsy: Causes and prevalence .Report from Thames Valley Children Centre , Canada,10.08.2007
14. R Sundrum, S Logan, A Wallace and N Spencer Cerebral palsy and socioeconomic status: a retrospective cohort study, *Archives of Disease in Childhood* 2005;90: 15-18
15. Woodroffe C , Abra A. A special conditions register. *Arch Dis Child* 1991;66:927-30

- 16 .Spencer N , Bambang S, Logan S, *et al.* Socioeconomic status and birth weight: comparison of an area-based measure with the Registrar General's social class. *J Epidemiol Community Health* 1999; **53**:495-8.
17. Emond A , Golding J, Peckham C. Cerebral palsy in two national cohort studies. *Arch Dis Child* 1989;64:848-52.
- 18 Pattenden S , Dolk D, Vrijheid M. Inequalities in low birth weight: parental social class, area deprivation, and "lone mother" status. *J Epidemiol Community Health* 1999;53:355-8.
19. Elmen H , Høglund D, Karlberg P, *et al.* Birth weight for gestational age as a health indicator: birth weight and mortality measures at a local area level. *Eur J Public Health* 1996; 6:137-41.
20. Dolk H , Pattenden S, Johnson A. Cerebral palsy, low birthweight and socio-economic deprivation: inequalities in a major cause of childhood disability. *Paediatr Perinat Epidemiol* 2001;15:359-63