

Prevalence of mental retardation among children in RS Pura town of Jammu and Kashmir

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Abstract

Objective: To determine the Prevalence of mental retardation in children 3 to 10 years of age. **Materials and Methods:** The study was conducted in the framework of a population based, single centre, cross-sectional study at R.S.Pura town, 22 kms south- west of Jammu city. **Results:** A total of 61 (0.79 percent) of the 7,707 children surveyed had positive screening results on the Ten Questions instrument. 56 (0.72percent) children were diagnosed as suffering from mental retardation. Serious mental retardation was diagnosed in 48 children and mild mental retardation was diagnosed in 8 children. The combined prevalence estimates of mild and serious mental retardation were 7.2/1000. No notable sex differences were observed for either serious or mild retardation. **Interpretation:** The prevalence rates of mental retardation among children less than 19 years of age in R. S. town compares favorably with studies from developed world.

Key Words

Children, mental retardation, prevalence

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Introduction

Mental retardation is defined by the American Association on Mental Retardation (AAMR) as "significantly sub average intellectual functioning existing concurrently with related limitations in two or more of the following applicable adaptive skill areas: communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure and work," with such limitations manifested "before age 18."^[1]

Mental retardation is one of the most common disabilities occurring in childhood.^[2] Studies of the frequency of and risk factors for cognitive disorders in children have almost been entirely restricted to developed countries, where service records and registries provide a feasible means of case identification.^[1-3] The aim of the present study was to estimate the prevalence of mental retardation in RS Pura town of district

Jammu. Earlier, we reported on the prevalence of cerebral palsy from the same area.^[4]

Materials and Methods

The study was conducted in RS Pura town of RS Pura health block, of district Jammu. Jammu happens to be the winter capital of J and K state of India, with an estimated population of 4.5 million and diverse topography. Block RS Pura is located in the south west of Jammu city, adjacent to the Indo-Pak border, with a total area of 273 sq kms and average density of 658/sq km. There are 176 villages and one town (RS Pura town) in the block, with an estimated population of 1,79,636.^[5] Majority of the population comprises of Hindus. The town is spread over 11 wards and has a population of 17,245.^[5]

During the first phase of the study, the Anganwadi workers (AWWs') were trained in the detection of neurological complaints and in completing a screening questionnaire written in the local vernacular that had been prepared in accordance with Ten Questions screen for disability. The interviewers' training and supervision was overseen by the study's first and second investigator.

The AWWs' subsequently carried out a house-to-house screening in the town and census, in which no one refused to participate. Usually, the older members of a family would give

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the details of neurological disease. The evidence was correlated with the help of interview carried out by the epidemiologist on all those suspected as suffering from a neurological disorder. The medical team comprising of a Neurologist and epidemiologist interviewed and examined all suspect cases by home visits to verify findings on invalids.

In phase 2, all children who were screened positive and a systematic sample of 10% of those who were screened negative were referred for clinical evaluations. The sample that was screened negative was included in phase 2 to allow ascertainment of false-negative screening results and estimation of the prevalence of disability in children screened negative.^[6]

Phase 1: Ten questions screen for disability

The Ten Questions instrument is a brief questionnaire designed to screen for serious cognitive, motor, seizure, vision and hearing disabilities among young children in surveys of culturally diverse populations^[7-11] (see Appendix). Five of the questions focus specifically on cognitive development, two questions relate to movement disability and one question each focuses on seizures, vision and hearing, respectively.

Using a global rather than a disability-specific interpretation of the Ten Questions,^[11] a child was considered to have screened positive for any disability if a response to any one question indicated potential disability. The questionnaire was translated into local language and administered during a personal interview with a parent or guardian by the AWWs'. Using the global definition, the Ten Questions screen has been shown to have good reliability^[10] and validity (sensitivity = 85%) for detecting severe neurodevelopment disabilities.^[9] In addition to the Ten Questions, the interviewers administered a structured form to collect demographic information about each child and household.

Phase 2: Clinical evaluation

Clinical evaluations of children referred to phase 2 were performed (without knowledge of the screening results) by a team of a Neurologist and epidemiologist assisted by an educationist.

The diagnosis of mental retardation was made by the neurologist after he had independently examined the child and evaluated all findings. Psychological assessment of mental retardation was based on nonverbal scales from the 1985 revision of the Stanford-Binet intelligence test.^[12] The neurologist's assessment of mental retardation was based on the child's developmental history and a structured observation of the child's functioning in language, in following instructions and in motor skills and behavior. Classification of a child as mentally retarded implied "significantly sub average intellectual functioning existing concurrently with related limitations in two or more of the following applicable adaptive skill areas: communication, self-care, home living, social skills, community use, self-direction, health and safety, functional academics, leisure and work," with such limitations manifested "before age 18."^[13]

Statistical analyses

Prevalence estimates was calculated by using, as the

Table 1: Demographic profile of children of RS Pura town

Age (Years)	Male N (%)	Female N (%)	Total N (%)
0-4	994 (24.8)	902 (24.1)	1,896 (24.6)
5-9	1,068 (26.6)	1,002 (26.7)	2,070 (26.8)
10-14	1,057 (26.3)	1,012 (27)	2,069 (26.8)
15-19	846 (21.1)	826 (22)	1,672 (21.6)
Total	3,965	3,742	7,707

Females per 1,000 males 943

denominator, the number of children up to 19 years of age residing in the survey area. Prevalence results are reported per 1000 children.

Results

Table 1 records the demographic profile of children screened during the period of study from RS Pura town of J and K state. Consistent with the demographic profile of India, children less than 19 years of age constitute a significant proportion of the population, and males' represent a higher proportion of the population. The female:male ratio in RS Pura town is 943:1000.

A total of 7707 children of age less than 19 years (up to 18 years and 364 days) were screened.

A total of 61 (0.79%) of the 7,707 children surveyed had positive screening results on the Ten Questions instrument [Table 1]. All 61 of these children and 770 (10%) of those children screening negative were clinically evaluated in phase 2. A total of 56 (0.72%) children were diagnosed as suffering from mental retardation, yielding five false-positive cases. No case was found among children screened negative in the first phase. Serious mental retardation was diagnosed in 48 children, and mild mental retardation was diagnosed in eight children.

The combined prevalence estimates of mild and serious mental retardation were 7.2/1000 (95% CI 5.92-9.08). [Table 2] No notable sex differences were observed for either serious or mild retardation. Among children with serious mental retardation, 69% had other neurodevelopment disabilities (including motor, seizure, vision and/or hearing disorders) as compared with 10% of the children with mild retardation and 2% of those with normal cognition. Among children with serious retardation, specific causes were identified by the assessment team in only nine children (23%).

These included six cases attributed to brain infection during infancy or childhood (i.e., postnatal), one case attributed to cretinism and two cases attributed to traumatic brain injury during childhood.

Discussion

According to our literature review, this study appears to be one of the few studies on the prevalence of mental retardation (MR) from our part of the world.^[14] According to the literature reviewed, the prevalence rate of MR in the United States lies between 41.66/1,000 in South Carolina^[15] and 12.0/1,000

Table 2: Distribution of children with neurological disorders

Age (Years)	Distribution						Prevalence rate/1,000		
	Total		Males		Females		Total	Males	Females
	N	n	N	n	N	n			
0-4	1,896	06	994	02	902	04	3.16	2.01	4.43
5-9	2,070	17	1,068	09	1,002	08	8.21	8.42	7.98
10-14	2,069	21	1,057	12	1,012	09	10.15	11.35	8.90
15-19	1,672	12	846	08	826	04	7.17	9.45	4.84
Total	7,707	56	3,965	31	3,742	25	7.26	7.81	6.68

95% confidence interval around prevalence rates (5.92-9.08) (5.07-10.53) (4.01-9.19)

among 10-year-old children in Metropolitan Atlanta.^[16] The prevalence of MR in Atlanta was barely one-quarter of the South Carolina rate. The causes of this discrepancy are not clear, even though the different methodologies employed and the different socioeconomic status of the children in the two studies might have played a role. In a report from the National Health Interview Survey, the combined prevalence of MR and/or developmental disabilities from 1994/1995 in the United States was 14.9 per 1,000.^[17] On the other hand, Fernell reported a prevalence rate of 12.8 per 1,000 in school-aged children from a Swedish suburban municipality.^[18] According to the reports from developing countries, Durkin *et al.* estimated the prevalence of MR at 19.0/1,000 for serious retardation and at 65.3/1,000 children for mild retardation in Pakistan.^[19] In Bangladesh, according to Islam *et al.*, the prevalence of serious MR in 2- to 9-year-old children was 5.9/1,000, which is slightly higher than the prevalence range observed in developed countries.^[20]

The MR prevalence obtained in the present study may reflect social and demographic features unique to the study society and, therefore, should be used with caution in making comparisons with those from populations reported by other investigators.

Even with this caution, the prevalence of MR in RS Pura is close to the levels reported in the 1994/1995 National Health Interview Survey in the United States, Atlanta and the Swedish suburban municipality.^[16-18] Thus, as far as the prevalence of MR is concerned, RS Pura shows the features of developed countries, not those of developing countries. The findings are almost similar to what we observed about prevalence of cerebral palsy in RS Pura. We think that the continuing economic growth in RS Pura may partly explain this comparatively low prevalence of MR.

Because a common case-finding procedure was used in the Bangladeshi study and in the present study, it is likely that the observed differences in prevalence are real rather than due to a methodological artifact. Children with mental retardation are generally at increased risk of mortality.^[21] It is possible that the mortality of children with disabilities is higher in Bangladesh than in India, because the child mortality rates, overall, are higher in Bangladesh than in India.^[22] Thus, a mortality differential between India and Bangladesh may explain the lower prevalence of mental retardation in Bangladesh relative to India. The cross-sectional data available from these studies do not allow ascertainment of the mortality experienced by disabled and nondisabled children in these populations.

An important limitation of this study is the cross-sectional nature of the data, which limits their utility for causal inference. It is not possible to determine the directionality of many of the relations observed. Despite these limitations, the prevalence estimates reported here from one population in the less-developed world begin to fill a major gap in our information about the epidemiology of mental retardation. In doing so, they begin to provide a needed epidemiologic basis for indices of quality of life and disability in low-income populations.

The demand for such indices is increasing, along with recognition of the limitations of mortality as the primary or sole basis for planning and evaluating public health interventions.^[23]

Limitation of the study

The fact that older members of the family served as the first screening step may have resulted in under-reporting of cases, and this could perhaps be the reason that serious mental retardation was more common than mild mental retardation.

APPENDIX

The ten questions screen

1. Compared with other children, did the child have any serious delay in sitting, standing, or walking?
2. Compared with other children, does the child have difficulty seeing, either in the daytime or at night?
3. Does the child appear to have difficulty hearing?
4. When you tell the child to do something, does he/she seem to understand what you are saying?
5. Does the child have difficulty in walking or moving his/her arms, or does he/she have weakness and/or stiffness in the arms or legs?
6. Does the child sometimes have fits, become rigid, or lose consciousness?
7. Does the child learn to do things like other children his/her age?
8. Does the child speak at all (can he/she make himself/herself understood in words; can he/she say any recognizable words)?
9. For 3- to 9-year-olds, ask: Is the child's speech in any way different from normal (not clear enough to be understood by people other than his/her immediate family)? For 2-year-olds, ask: Can he/she name at least one object (for example, an animal, a toy, a cup, a spoon)?
10. Compared with other children of his/her age, does the child appear in any way mentally backward, dull, or slow?

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