Epidemiology of Severe Mental Retardation

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ABSTRACT:
Mental retardation is a lifelong disability which causes a lot of burden to the individual and society. Mental retardation is grouped on the basis of IQ scores by ICD-10. Individuals with IQ (21-35) were placed in the severe mental retardation category. This study investigated to find out the epidemiology of severe mental retardation in Haryana. The incidence of disability is essential tool for planners to decide the amount of services needed. Owing to various social, demographical patterns in the state, the way in which prevalence varies can give clues about the possible causes. One hundred and seven severely mentally challenged patients were studied from Arpan institute of mentally retarded children Rohtak and Pandit Bhagwat Dayal Sharma University of Health Sciences, Rohtak. A questionnaire was framed for collection of data. Information was asked from the parents and guardians. In our study the outdoor patients reaching the local medical care services were in the age group 0 to 15 years showed peak values below 16 years and a sharp decline up to 50 years of age. The occurrence of severe mental retardation was found more significant amongst the urban population. Similarly males were found more in the group of these severe intellectually disable people. The study showed lower socio economic status like daily wages laborers to be at higher risk as compared to middle and higher income group. More cases in urban population with low socio economic status is an indication of some certain risk factors associated in severe mental retardation. Nutrition deprivation and environmental conditions also seem to be relevant predisposing factors. Sex ratio is shows a possibility of X Linked Mental retardation in group of lower IQ people.

Key words: X Linked Mental retardation, lower socio economic status, Nutrition deprivation, risk factors, severe mental retardation.

INTRODUCTION

Mental retardation is a disability characterized by significant limitations both in the intellectual functioning and in adaptive behaviour as expressed in conceptual, social, and practical adaptive skills [1].

Different levels of Intellectual quotient are mild IQ (50-70), moderate IQ (35-50), severe IQ (20-35) and profound (IQ< 20) as given by WHO, 1993.Categories of mental retardation are based on scores obtained. Psychiatric diagnosis was classified according to the International Classification of Disease (ICD-10). Intellectual disability has no permanent cure as it brings in a lifelong disability and causes a lot of burden to the family, society and medical care system. Therefore primary interventional services are needed for its prevention.

An important characteristic of a civilized and developing nation should be accessed by ways in which it deals with the individuals who are unlike others or are intellectually disabled. Studies of incidence and occurrence among various categories and correlations with other demographic factors can prove to be a useful tool for the planners. Prevalence score of each category like socio economic class, urban and rural may reveal close to the underlying cause of mental disability.

Although severe mental handicap is mostly characterized by gross brain anomalies and is therefore generally considered to be due to specific environmental or genetic factor [2]. The ratio of more males to females can also be an indication of the X linked genetic factors being involved as a cause of the severe mental impairment in a population.The development of the individual also depends upon the environmental conditions including nutritional conditions during early gestation time various prenatal, neonatal, postnatal risk factors [3]. The various factors analyzed in the present study were sex, age, various ethnic groups and socio economic class of severely mentally retarded patients.

MATERIALS AND METHODS

One hundred seven severely mentally retarded patients IQ (21-35) were studied from Arpan institute of Mental retardation and Pt. B.D.S University of Health Sciences, Rohtak. These were identified by IQ examinations using senguin board test [4] and Vineland social maturity test [5].

A questionnaire was framed keeping in mind the required data for the study. Parents and guardians were asked to give the information after their consent. Frequency of each section of age group was calculated and the data was analyzed using standard soft ware SPSS V 17.0 and STATS V 2.0. Although no references of past years were found regarding prevalence of severe mental retardation in Haryana state, data from census of India 2001 and 1991 and statistical abstract on Haryana of various issues was

referred for a clearer incite into the pattern of occurrence within the population [6].

Calculation of one way and two ways ANOVA was done on the data of male and female under different age groups and urban and rural population. The mean values were calculated among the severely retarded patients coming from different ethnic groups and socioeconomic background of the state of Haryana. Two tailed Pearson's correlation was calculated in the male, female, urban and rural population .The data of male and female was subjected to paired sample ' t 'test to measure its deviation from mean of total population.

RESULTS

Haryana has a diverse population, therefore the analysis of severe intellectual mental retardation varied diversely among the various sections of the population.

Severe mentally retarded individuals in rural and urban background

The present data of severely retarded individuals clearly showed a strong correlation between the individuals from urban population and male population r at 0.918 (95%CI), whereas the female from urban background were found less significant r is at 0.675 (95% CI).

The rural background patients showed however less significance both in males as well in females. The data is in favor of the urban males being more in the severely retarded individuals as compared to the urban or rural females (Fig 1)
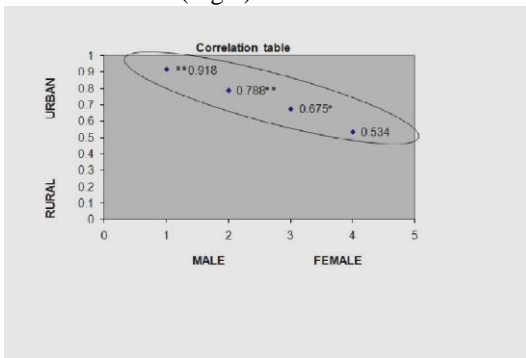

Fig 1 Correlation between rural, urban and male, female intellectual disabled individuals

Age and gender variation

The individuals suffering from severe intellectual disability were divided into ten different age groups. The sum of the individuals was obtained in different age groups. The mean value of the total number of individuals was found to be at 10.7.

The males as well as females showed a peak value in the age group 6 years to10 years and 11 years to15 years. Whereas a decrease was found around 16 years

to 20 years. There seem to have a great decline in both males and females with the increase in age group from thirty years to fifty years. No individual was found beyond 50 years of age (fig 2).A paired sample significant p value for males $p < 0.001$ at 95% CI. Two way Anova between groups of various age groups showed significant values of 0.023 for males, 0.066 for females at 95% CI.
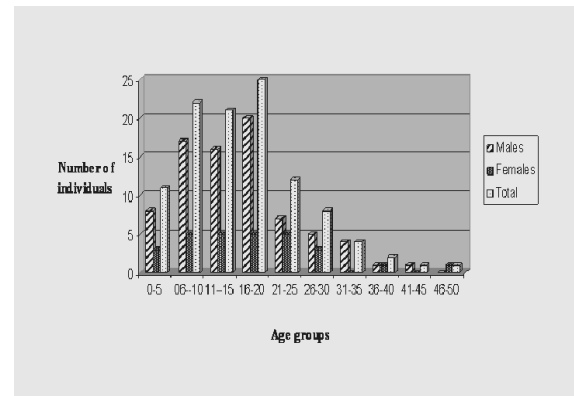

Fig 2 Sex ratio and age group in severe mental retardation.

Socio economic sections variation

The total numbers of patients were divided into major sections of socio economic classes. There were 34% cases of severe mental retardation from lower socio economic class like agriculture labourers, construction, labourers and other daily wages workers. Ten percent patients were prevailing among the people with their own shops or running family business. Nineteen and twenty percent were from people employed in private sector and Government sector respectively (fig 3).
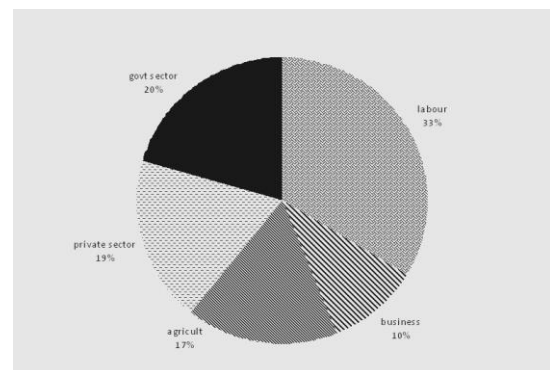

Fig 3 Severe mental retardation in various socio economic sections.

Ethnic variation

The population of severely mentally retarded individuals was grouped on the basis of the races and ethnic groups that are prevailing in the State. The highest number of individuals at twenty six percent was reported from the Jat community. Second highest frequency was at twenty one percent shown by community of Yadavs. Punjabi community had 15%, other backward classes (as given by State government) including ethnic groups like Kumhar, Nai, Khati etc showed 11% (fig 4). As compared to all the other

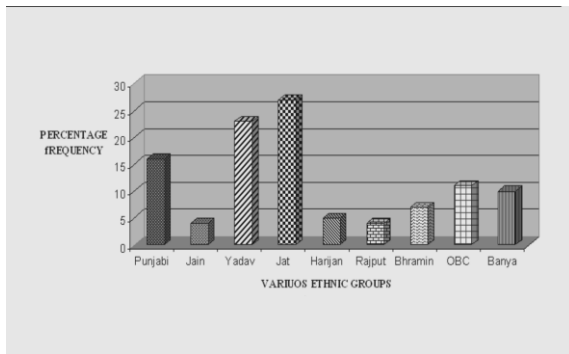groups Rajput, Bhramin, Harijan and Jain showed the lesser number of patients of mental retardation.

Fig 4 Frequency of various severe mental retardation in various ethnic groups.

DISCUSSION

According to census of India 2001, total population of Haryana state is 21,144,564 in number [7]. Even though the population of Rural folk is more (75.37 percent) as compared to Urban population of Haryana state [8]. Present study showed that urban population is at much more risk for severe mental retardation as compared to rural population. A study done in south India also showed that urban population is at a greater risk of the severe mental impairment [9]. However worldwide, there were reports of higher risk of severe mental impairment in rural population [10,11].

In another study a Pakistan the children in rural areas to be at greatest risk of retardation. Most of the factors shown by them were indicators of socioeconomic disadvantage and/or risk factors for mental retardation. The study identified 13 of these factors a priori as potential antecedents to mental retardation . Because some of the specific causes and risk factors for mental retardation that are now uncommon in developed countries mental retardation remain highly prevalent in less developed countries [12].The study showed lower socio economic status like daily wages laborers to be at higher risk as compared to middle and higher income group. Nutrition deprivation and environmental conditions seem to be relevant predisposing factors. Socio-environmental factors particularly the role of the mother can be very important in influencing the level of mental functioning and development.

Most of the studies done so far on prevalence of severe mental retardation on basis of sex ratio studies have indicated that males are at risk of having the intellectual disability much more significant than females [13,14,15 and 16] . Prevalence of males at 0.9 per 1000 as compared to females 0.5 per 1000 was reported from spain [10]. Whereas studies from Finland reported almost equal male to female ratio [17].

However in another study the male excess rate ratio was 1.6 and an increased relative risk for psychiatric diagnosis in boys as compared with girls was demonstrated . Children with psychiatric diagnosis in same had 32 cases of severe mental retardation [40% of the total population with SMR [18].Young reported 20% excess of males in severe mental retardation cases [19]. A significant excess of affected males in the present study strongly suggested additional potentially important, contribution from non specific X linked mental retardation. Higher percentage of males in the present group of population can be explained by the tendency of the community based social setup to nurture a male child more as compared to the female child expecting future financial contributions from the male children once they grow up [16].

The finding in the study is in accordance with a analysis conducted by Ganguli who concluded that intellectual disability occurs mostly in the urban areas than rural areas with a ratio of 243/100 [20]. Lack of awareness is also a possible reason for the lesser number of patients from villages. According to traditional clinical approach mental retardation is a permanent condition which originates from birth or shortly after birth, therefore prevalence of retardation should be about the same in all age groups. However the case is different practically, many of the cases of mental retardation remain undiagnosed among the preschool and young children go undiagnosed. Petter Stomme supported the association of individuals with severe mental retardation and age factor. He has pointed out that individuals at and below 15 years of age have sharp increase in prevalence of severe mental impairment [18].

Most other prevalence studies reported a similar phenomenon. A small prevalence of retardation among preschool going children, a gradually increasing number of mentally retarded among school age children, reaching a peak at about age 13, then a sharp decrease in prevalence among the population older than 16 years of age was observed in the literature [21].

However, severe mental retardation as indicated by a number of the Indian studies showed a higher comparable figure among the children less than 14 years of age [22,23].

In our study the outdoor patients reaching the local medical care services were in the age group 0 to 15 years showed peak values below 16 years and a sharp decline up to 50 years of age. Durkin suggested that variables associated with the prevalence of mental retardation could be etiologic factors or they could simply be factors associated with the survival of mentally retarded children[12] .These two explanations

cannot be distinguished using the available cross-sectional data. Systematic studies on the prevalence of severe mental retardation are not available due to unique characteristic of the condition, variable economics, lack of trained manpower and scattered nature of population.

Still much is needed to achieve the level where the society can be rendered with less of the disadvantages carried by the severely intellectually disabled population. Various Non Government Organisation and Social Welfare Departments must be intervened to produce more impact programs in addition to existing schemes for the empowerment and reduction of severe intellectual disability in the State of Haryana. The initiation of early intervention may limit later learning problems and potentially enhance the ability and quality of life for a group of children who face adversity in the form of enormous physical and emotional challenges.

ACKNOWLEDGEMENT

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A Meeting of Ethic Committee for biomedical research for animal and human system was held on 11th Oct. 2007 in the office of the chairperson and following member s were present:

Prof. Veena Gahalawat
Head, Deptt. of Biochemistry
Pt. BDS PGIMS, Rohtak

Prof. Madan Gopal
Deptt. of Surgery
Pt. BDS PGIMS, Rohtak

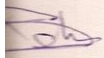Dr. S.S. Dahiya
Deptt. Of Pharmacy
Pt. BDS PGIMS, Rohtak

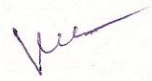Dr. R.K. Goyal
Deptt. Of Pharmacy
Pt. BDS PGIMS, Rohtak

Mrs. Asha Sharma
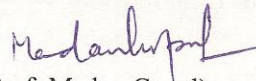Social Scientist
1031/23 DLF colony, Rohtak

Mrs. Sarita Narayana
Person from Community
Double Railway crossing, Rohtak

The committee has gone through in detail the project submitted by Dr. Meenakshi Vashist to ICMR, entitled "Evaluation of mental retardation cases in Haryana population by morphogenetic and cytogenetic analysis"
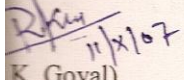For the above purpose the PI may be allowed to take blood sample directly from the patient. For the above purpose she should appoint well trained and qualified person. The syringe should be disposable type with sterile conditions.

(B.K.Behera)   (Prof. Veena Gahalawat)   (Prof. Madan Gopal)   (Dr. S.S. Dahiya) 11-10-07

(K. Goyal)   (Mrs. Asha Sharma)   (Mrs. Sarita Narayana)