Prevalence of Intellectual Disability in Vellore District

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ABSTRACT

The National scenario of community approach in the area of health care for physically and mentally challenged is of great concern. Tamil Nadu, like other states, is faced with major challenges in providing comprehensive and up-to-date health services to these children and their families. In our state Intellectual disability is probably due to consanguinity. With many high risk newborn surviving, disablement is coming to the fore and becoming a major health problem. Genetic disorders and congenital abnormalities constitute a major health burden worldwide. Causes of disabilities differ with situations and so will the solutions. When these causes impact the early life (Intra-Uterine and early Child Hood), they have the potential to create severe and multiple disabilities. This study analysed the prevalence of Intellectual disability in Vellore District. An extensive community-based survey of disability covering 513670 children in Vellore District, Tamil Nadu state was conducted during the years 2014-18 using a specially designed questionnaire. Percentage of disabled children against total child population 24.63%, Family history in 27%, Consanguinity in 63%. 2628 children found to have intellectual disability. The current work will be an eye-opener for several studies to bring to light the burden of Intellectual Disability at the community level so that we can commence treatment early and prevent further deterioration in children.

Keywords: Intellectual disability, consanguinity, New Born Screening.

1. INTRODUCTION

In India, surveys of disabilities have been undertaken from time to time by various agencies. It is estimated that in India 2% are physically impaired and 2% are visually impaired. As per WHO estimate 6.3% are suffering from significant auditory impairment. Mental handicaps like Mental Retardation, Cerebral Palsy and developmental disorders (Autism spectrum of disorders, Learning disorders and others) not included in the survey may account for 2%. The UN manual for Developmental statistical information for disability programmes and policies 1996 put disability at 6% and predicted a double digit figure later. A major portion of these disabilities can be prevented and rehabilitated with early intervention and cured [1-4]. There is a general agreement that the
detection of disabilities if done earlier with full assessment and earlier interventions would provide more hope in the prognosis for amelioration or complete rehabilitation [5-6].

1.1. Real scenario in Vellore District:

After being born with a genetic disorder, Waardenburg Syndrome, and abandoned by her mother, a one-and-a-half month-old baby has found a new home. District officials have handed over the baby to an NGO home based in Tirupattur. The baby was born at the Government Vellore Medical College Hospital (GVMCH), Adukkamparai. She was born with Waardenburg Syndrome that is characterized by absence of melanocytes and congenital deafness.

2. METHODOLOGY:

   Study area: Vellore District
   Study type: Cross sectional study
   Study period: 2014-2018

2.1. Inclusion Criteria:

The children age between 6yrs to 14yrs with Mental Retardation, Cerebral Palsy and Autism were identified using study questionnaire, physical examination, Doctor Certificates and DDRO certificates verification.

2.2. Exclusion criteria:

Other disabilities like low vision, totally blind, hearing impairment, speech, loco motor, multiple disability, learning disability were excluded.

According to the 2011 census Vellore district has a population of 39,36,331 with a growth rate of 13.20%. An extensive community-based survey of disability covering 513670 children in Vellore District, Tamil Nadu state was conducted during the years 2014-18 using a specially designed questionnaire. Ethical clearance obtained from Institutional Ethical Committee (IEC), The TamilNadu Dr.MGR Medical University. All the children are physically verified from schools, Early Intervention centre, Day care centers and houses. Children were identified via key person of villages (School teachers, Anganwadi teacher, Panchayat leader, and Vaalvadharar Iyakam). Previous medical
3. RESULTS AND DISCUSSION

A door-to-door survey was done in 743 village (22 Blocks). 513670 children screened for this project. It took more than 4 years to collect the data. All children between the ages of 5 and 14 years were seen. Percentage of disabled children against total child population 24.63%, Family history in 27%, Consanguinity in 63%. Approximately 5% mothers had taken some medication in the first trimester of pregnancy out of which anti-convulsants were 3.4%.

3.1. Environmental issues to be addressed very soon in Vellore district:

Waste disposal facilities were not established properly. Heavy metal waste was being dumped in an unscientific manner by the industries in Ranipet, Walaja East & West and leather industries in Ambur and Vaniyambadi block.

Table 1. Shows the data of waste disposal facilities [Source: TNPCB Year book (2016-2017)].

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>BOYS</th>
<th>GIRLS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tannery Industry</td>
<td>600 Odd</td>
<td></td>
</tr>
<tr>
<td>Waste generating units</td>
<td>118 Odd</td>
<td></td>
</tr>
<tr>
<td>Biomedical waste</td>
<td>4651kg/day</td>
<td></td>
</tr>
<tr>
<td>Plastic Waste</td>
<td>560.15Tonnes/Annum</td>
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</tbody>
</table>

There is increasing evidence from both experimental and epidemiological studies that the prenatal period is a critical window for harmful effects from environmental pollution. The most serious aspect of water pollution is caused by sewage, industrial / trade wastes, drainage from agricultural areas which are the results of human activity, urbanization and industrialization. The dyeing industrial effluents affects the physical, chemical and biological properties of environment that is harmful to public health, livestock, wildlife, fish and other biodiversity.

3.2. ICMR NBS STUDY – Preventing – Intellectual Disability:

ICMR study: (1 in 727) children were born with Congenital Hypothyroidism (CH) developed countries report incidence as one in 3,000 births. However, the treatment for this disorder is simple hormone replacement therapy. “These children have to be given inexpensive tablets that make up for the inadequate thyroid hormone. If they are not treated on time children, over a period, develop Intellectual Disability (ID) and abnormal growth”.

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>BOYS</th>
<th>GIRLS</th>
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<tbody>
<tr>
<td>Intellectual Disability (including Down Syndrome)</td>
<td>1509</td>
<td>1119</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2628</td>
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Genetic study is becoming an essential part of most medical specialties. Increased awareness about the role of genetics in diseases and great advances made in medical genetics in recent years has a considerable impact on the practice of clinical Genetics. Once the burden is known, we can identify the causes using advanced genomic tools like array CGH, exome study or metabolic screening, chromosome analysis can be used than can provide precise details to provide specific genetic counseling and its prevention [7-12].

Generally, prevention of genetic and congenital disorders can be addressed at three levels:

Primary prevention: Premarital screening, counseling and preconception counseling.

Secondary prevention: Prenatal counseling, screening, and testing with the option of termination of affected fetus or prenatal and neonatal management.

Tertiary prevention: Newborn screening with proper management can be considered as secondary or tertiary prevention.

Care of the affected, prevention of complications and Rehabilitation of the handicapped can be done at the primary health care or at Tertiary care centers. Genetic counseling and prenatal diagnosis related to mental handicap raises sensitive ethical issues, especially for the milder forms of cognitive dysfunction or for carrier females who manifest subtle cognitive deficits. Assessing cognitive function is complex. Academic performance and social behavior can be subject to profound social and environmental factors in the family and in schools. Early detection of disablement with early intervention paves the way for a more inclusive life in the community. Greater care should be exercised in the diagnostic and genetic counseling applications in this fascinating research domain. [13-18]
The valuable experiences and information that gained and gathered will be used to execute the research in a successful way to help the needy. The report will be made available to the Health care officials to improve facilities for the benefit of the children and their families.

4. CONCLUSION

No study has been done at the community level for the past twenty years. The state has no database of genetic, endocrine or metabolic disorders that occur at birth in the 11 lakh children born in the state every year. Such conditions lead to death within the first four weeks, or it stunts growth and causes irreparable damage to the brain. Our report will show new path to the Community Genetic workup to prevent Intellectual Disability (ID). Preventable measures are New Born Screening (NBS), for all babies, Improving Maternal and Child Health and Control of environmental pollution. “Genetic conditions are not rare; they are commonly under-diagnosed or ignored”. The current work will be an eye-opener for several studies to find the extent of Intellectual Disability at the community level so that we can initiate early treatment and prevent further damage in children health.

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Conflicts of Interest

There are no conflicts of interest.

References