



Socio-Demographic and Clinical Features of Children with Intellectual Disability and Their Parents-an Indian Study

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Authors' contributions

This work was carried out in collaboration between all authors. Authors RTG and RS designed the study and wrote the protocol. Author MPU performed the statistical analysis, and managed the literature search. Author RTG wrote the first draft of the manuscript with assistance from authors RS and MPU. All authors read and approved the final manuscript.

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ABSTRACT

Aim: Intellectual disability often referred to as a mental, cognitive or mental retardation is a lifelong condition that affects intellectual functioning and adaptive behaviors. Information about children with intellectual disability attending regular schools is limited in India as there are no mandatory screening procedures used to detect these children while starting their schooling. Hence the purpose of the study was to examine the demographic and clinical features of children in regular schools with intellectual disability and also to explore their parental demographic and clinical features.

Study Design: Cross sectional study

Sample: The sample (N=382) was collected from regular school going children within the age range of 5 to 16 years who were referred by special educators.

Methodology: Clinical diagnosis and psychological assessments were conducted individually for 382 children and their parents.

Results: Results of the clinical evaluation and assessment indicate that intellectual

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disability was associated with male gender (61.3%), poor socio-economic status (78.8%), pre-natal, peri-natal and post-natal complications (74%), family history of intellectual disability (11.2%), mental illness (22.2%) and increased maternal age. High rates of comorbidity with psychiatric disorders (48.17%), especially with externalizing disorders were noticed.

Conclusion: Intellectual disability is associated with psychosocial adversities and psychiatric comorbidities.

Keywords: Intellectual disability; demographic features clinical features; psychosocial adversities.

1. INTRODUCTION

Intellectual disability, previously referred to as mental retardation (MR) occurs in 2-3% of the general population. Prevalence of mild level of intellectual disability is seven to ten times more than severe level of intellectual disability. Prevalence of intellectual disability in India is around 2% for mild level of intellectual disability and 0.5% for severe level of intellectual disability (defined as IQ less than 50) [1]. The causes of severe level of intellectual disability can be determined in 60-70% of cases, as compared to mild level of intellectual disability where 35-55% remain idiopathic [2].

Intellectual disabilities are correlated with male gender, rural back ground and socioeconomic disadvantage [3,4]. Several complications and diseases of pregnancy, delivery, and infancy have been found to be more prevalent among the intellectually disabled than among normal children [5].

Intellectual disability is often seen as a predisposing factor for psychiatric disorders, but research data on risk factors are insufficient and partially conflicting. Recent studies indicate that this population presents significantly more emotional and behavioral problems, impulse control disorders and psychosis [6]. The risk of psychopathology was found to be significantly increased by moderate intellectual disability, limitations in adaptive behavior, impaired language development, poor socialization, living with one biological parent, and low socio-economic status of the family [7]. Child's physical symptoms, family dysfunction, and previous parental mental health are also related to increased psychopathology [8].

Long-term follow-up studies indicate that the adverse consequences of low birth weight are apparent even in adolescence. Adverse socio-demographic factors negatively affect developmental outcomes across the continuum of low birth weight and appear to have far greater effects on long-term cognitive outcomes than most of the biological risk factors. In addition, the cognitive defects associated with social or environmental risks become more pronounced as the child ages [9]. Socioeconomic disadvantage remained as having the largest impact on the incidence of intellectual disability [4] and epidemiological studies have consistently reported a significant association between poverty and the prevalence of intellectual disabilities [10].

Studies on parental intellectual abilities have found that being raised by a mother with intellectual disability can have detrimental effects on child development. Children born to mothers with intellectual disability had lower IQs and academic achievement [11]. Higher prevalence of psychiatric morbidity was also found among parents of intellectually disabled children [12,13].

Most of the studies in intellectual disability have been conducted in clinical or community settings. Moreover, in India developmental screening procedures to identify children with developmental disabilities (including intellectual disability) and other psychiatric problems are rarely used when children start their formal schooling in government schools. Many of the cases with intellectual disabilities go undetected until their high school years and continue to be in regular education system without any provision of special education and other related services. Though the research studies about school going children with intellectual disability are scant, the available research results have indicated a high prevalence rate of intellectual disability among school going children [14]. Hence, limited knowledge is available on their demographic and clinical features, and how it is different from clinical or community sample. Therefore, the present study aimed at delineating the demographic and clinical features of school going children with intellectual disability and their parents.

2. MATERIALS AND METHODS

2.1 Participants

Participants were 382 *regular school attending children with intellectual disabilities from Calicut district of Kerala state in India. A total of 400 children were referred by special educators (who were specially trained for teaching of mentally challenged children) from 1st grade to 10th grade. The sample was initially screened for intellectual disabilities by special educators using Seguin Form Board. They used the standard procedure as described [15]. The total time and shortest time to perform the test were noted. They also interviewed the parents and collected brief case histories. Thus, 400 children who suspected to have intellectual disabilities were referred to the mental health team which was comprised of psychiatrists and clinical psychologists for making formal diagnosis. Among them 382 children were identified to have intellectual disabilities based on ICD-10 criteria and Binet-Kamat test of intelligence. Eighteen children were found to have specific learning disabilities. The inclusion criterion for the study was children with below average levels of intellectual functioning attending regular school and their both parents. Three hundred eighty-two children and their both parents were participated in the study.

*Regular school attending children mean students who attend government school with general education curriculum without any special education program or support.

2.2 Instruments

The following instruments were used for the assessment: NIMHANS Case History Performa, Binet-Kamat Test of intelligence, General Health Questionnaire (GHQ) and Socio-Demographic Inventory.

2.2.1 NIMHANS Case history performa

Case history was taken from parents and teachers as per NIMHANS (National Institute of Mental Health And Neuro Sciences) Performa for the detailed assessment of mentally retarded persons. The information was collected regarding family history, parental details, developmental history, psychiatric disorders and medical illness.

2.2.2 Binet-Kamat test of intelligence (BKT) [16]

This is an Indian adaptation of the Stanford Binet scale of intelligence. This scale is comprised of 78 main test items and 21 alternate items. The entire scale is graded and covers ages from 3 to 22 years. At each level there are six main items and alternative items range from one to three items. The test was individually administered.

2.2.3 General health questionnaire (GHQ) [17]

Parents were screened by using General Health Questionnaire (GHQ) for psychological morbidity. Those who scored a total of 13 or above were considered to have psychological morbidity. Detailed psychiatric examination was carried out for them and diagnosis was made as per ICD-10 criteria.

2.2.4 Socio-demographic inventory

The tool was developed for the present study to collect socio-demographic details of index children, their parents and siblings.

2.3 Procedure

The study was conducted under Sarva Shiksha Abhiyan (SSA) project. The Sarva Shiksha Abhiyan project was sponsored by the Central Government of India. One of the objectives of the SSA project was to identify and detect children with intellectual disabilities, physical disabilities, sensory impairments and neurological problems and to take appropriate corrective measures. The medical team was comprised of psychiatrists, clinical psychologists, special educators, neurologists, pediatricians, ophthalmologists and Ear, Nose and Throat (ENT) specialists from medical colleges and government hospitals. The study was organized and conducted in collaboration with the school authorities, and the first author was in charge of Psychological assessment for the children in Calicut district.

Children were initially screened for intellectual disabilities by special educators using Seguire Form Board. The special educators collected brief case histories from parents of those children for whom intellectual disability was suspected (N=400) and were referred to the medical team. As a part of confidentiality protocol, informed consents were obtained from parents before being included in the study. Clinical evaluations and I.Q tests were administered individually, and 382 children were found to have intellectual disabilities. Socio-demographic details were obtained from parents. Both parents were screened for psychological morbidity by using GHQ, and detailed clinical evaluations were carried out for those who scored above cutoff point (13 and above). Clinical diagnosis was made as per (International Classification of Disease) ICD-10 criteria. IQ assessment was carried out to examine the intellectual abilities of the suspected cases of parents and their siblings. The data was examined and analyzed by using mean, percentages and correlations.

3. RESULTS AND DISCUSSION

Results and Discussion have been presented in three categories. (1) Index children: Demographic details, clinical features, developmental history and family history (2) Parental: Demographic details, clinical features and marital history: (3) Sibling history.

3.1 Index Children

3.1.1 Socio-demographic details

The mean age of the children was found to be 9.48 years and the age ranged from 5 to 16 years. There were 234(61.3%) boys and 148(38.7%) girls. The mean education was found to be 3.66 years and education ranged from 1 to 10 years. Children came from urban (n=47, 12.3%), semi-urban (n=105, 27.5%) and rural (n=230, 60.2%) backgrounds. The participants belonged to three major religions; Muslim (n=209, 54.7%), Hindu (n=163, 42.7%) and Christian (n=10, 2.6%). Most of the children (N=301, 78.8%) were from poor socio-economic status (1000-4999 Rs /month). Seventy one children (18.6%) were from middle class (5000-10000Rs) and ten children (2.6%) were from upper class (>10,000Rs/month) (Tables 1 and 2).

Table 1. Age, education and income of index children and their parents

Variables		Sample (n=382) Mean±SD	
Index children	Age		9.48±2.76
	Education		3.66±2.19
Parent	Age	Father	41.25±7.36
		Mother	34.27±5.85
	Education	Father	7.81±3.30
		Mother	8.51±3.06
Total family income (per month)			1232.21±2718.89

Most of the children (68.2%) were from 5-12 years category (n=321) and only 16.1% were from the 13-16 years category (n=61). Predominance of male children was noticed in the sample (61.3%) over female children (38.7%). The mean education was found to be 3.66 years (ranged from 1 to 10 years). Most of the children in the sample were in 1st to 7th grades (n=358, 94.5 %) and only 6.3% (n=24) were from high school category. Most of the children had rural background (60.2%) over urban-semi-urban background (39.8%), and 78.8% of the sample had poor socio-economic background. The findings support the literature that intellectual disabilities are correlated with male sex, rurality and socioeconomic disadvantage [18,19,14,3,4].

3.1.2 Clinical features

The average I.Q of the sample was found to be 54.83 which ranged from 35 to 86. The categories of intellectual disabilities were made based on Binet-Kamat test of intelligence which is as follows: Mild level of intellectual function (I.Q 38-63) (n= 236, 61.8%), Moderate level of intellectual function (I.Q 19-37) (n=24, 6.2%), Borderline (I Q 63-74) (n=81, 21.2%) and Dull normal intellectual functioning (IQ 75-86) (n=40, 10.5%). Psychiatric comorbidities were found in 48.17% (n=184) of children; neurological problems were found in 17.5 % (n= 67) and physical disabilities were found in 6.8% (n=26) of children (Table 3). High comorbidity was found with externalizing disorders (15.97%), and 3.93% had comorbidity with internalizing disorders. Seizure disorder (5.5%) and speech problems (27%) were present in the sample. Hydrocephaly (1.83%), Microcephaly (1.57%), Down's syndrome (1.83%) and cerebral palsy (0.785%) together made 6.02 % (n=23) of the sample.

Table 2. Socio-demographic variables

Variables	Numbers	%
Gender		
Male	234	61.3
Female	148	38.7
Religion		
Hindu	163	42.7
Muslim	209	54.7
Christian	10	2.6
Background		
Urban	47	12.3
Semi-urban	105	27.5
Rural	230	60.2
Professional		
Father	25	6.5
Mother	41	10.7
Skilled /semi-skilled		
Father	62	16.2
Mother	9	2.4
Manual work		
Father	249	65.2
Mother	28	7.3
Unemployed		
Father	26	6.8
Mother	303	79.3
Income/month		
1000-4999 Rs (Low SES)	301	78.8
5000-10000 Rs(Middle SES)	71	18.6
>10,000 Rs(Upper SES)	10	2.6

The psychiatric comorbidity rate was found to be 49.58% for mild level of intellectual disability category, 65% for moderate level of intellectual disability category, 51.85% for borderline category and 30% for dull normal category. Presence of co-morbidity with psychiatric disorders (48.17%) and high rate of co-morbidity with externalizing disorders (15.97%) in the sample were supported by findings of other studies [20,21,22,23,6]. Studies have found social incompetence, inadequate daily living skills, childhood health problems, negative life events, emotional and behavioral problems, and parental mental health problems were strongest precursors for psychiatric disorders in children with intellectual disabilities [2]. The presence of such adversities in the sample could be a reason for the high rate of psychiatric comorbidities.

The rates of medical disorders were less compared to other reports of other studies [24] that could be due to the differences in the source of the sample.

3.1.3 Developmental history

Full-term (n=306, 80.1%), premature (n=46, 12%), and post-term (n=9, 2.4%) births were present in the sample. Majority of the children (N=361) were born by normal vaginal delivery, and twenty one children were born by caesarian mode. Presence of pre-natal (21.7%), perinatal (18.8%) and post-natal (33.5%) complications were also noticed. Delayed birth cry was

present for 20.4% of the sample (n=78). Average birth weight of the sample was found to be 2.519 gms. Normal birth weight was observed in 59.2% of the sample (n=226), underweight was observed for 36.9% (n=141), and overweight was observed in 3.9% (n=15) of the sample. Mode of delivery was normal for 80.1% (n=306) of the sample while 19.6% (n=75) were caesarian deliveries. There were 11 sets of twins (2.9%) among them. Presence of maternal mental illness (n=14, 3.7%) and mental stress (n=77, 20.2%) during pregnancy were reported in the sample. Malnutrition during pregnancy (n=93, 24.3%) and the post-natal period (n=90, 23.6%) were also reported in the sample (Table 4). Mean age of mother at the time of delivery of the index child was 25.16 years (ranged from 15 years to 41 years) and mean age of the father was 32.27 years (ranged from 22 years to 64 years). Consanguinity was present for 8.4% (n=32) of the sample.

Table 3. Clinical features of index children, parents and siblings

Variables	Subjects	Numbers	%
Neurological	IC	67	17.5
Psychiatric	IC	184	48.17
Physical	IC	26	6.8
Speech	IC	103	27.0
Neurological	F	9	2.4
	M	8	2.1
Psychiatric	F	20	5.2
	M	18	4.7
Physical	F	10	2.6
	M	9	2.4
Alcohol	F	40	10.5
	M	0	0
Drug	F	6	1.6
	M	0	0
MR	F	8	2.1
	M	3	0.8
Psychiatric	Sib	23	6.0
Physical	Sib	4	1.0
ID	Sib	20	5.2
ID in	Fm	40	10.5
Mental illness in	Rel	24	6.3
ID in	Rel	12	3.1

IC= Index Child, ID= Intellectual Disability Fm= Family, Rel= Relatives

Compared to other studies, the rate of pre-term birth (12 %) and pre-, peri-and postnatal complications (74%) in the present study were found to be high [25,26] and more or less the same [27,28]. This could be due to the differences in the source of the sample.

Lower birth weight (36.9%), caesarian mode of delivery (19.6%), pre-term birth (12%), maternal stress (20.2%) and mental illness (3.7%) during pregnancy, malnutrition during pregnancy (24.3%) and post-natal period (23.6%) were noticed in the sample. It is evident from the sample that most of the children had low socio-economic status, and possibly might have been exposed to malnutrition during pregnancy and postnatal periods. Research findings support the observation that environmental causes such as severe malnutrition in pregnancy and early childhood, peri-natal brain damage and postnatal encephalitis account for a greater proportion of mental retardation in third world countries than in industrialized

countries [29]. Studies have reported that women with poor psychosocial profiles and depression during pregnancy are at increased risk of giving birth to low birth weight and pre-term infants [30] that was noticed in the current sample.

Table 4. Developmental variables

Variables	Sample (N=382)		
	n	%	
Child's birth	Single	371	97.1
	Twin	11	2.9
Term of pregnancy	Full term	326	85.3
	Premature	46	12.0
	Late	9	2.4
Kind of delivery	Vaginal	306	80.1
	Cesarean	75	19.6
Complications present at	Pre-natal	82	21.7
	Peri- natal	72	18.8
	Post-natal	128	33.5
Delayed birth cry	Present	78	20.4
Birth weight	Average	126	59.2
	Under weight	141	36.9
	Over weight	15	3.9
Birth order	First	150	39.3
	Second	144	37.7
Menral illness of mother during pregnancy	Present	14	3.7
Malnutrition during pregnancy	Present	93	24.3
Malnutrition after delivery	Present	90	23.6
Maternal stress during pregnancy	Present	77	20.2

3.1.4 Family history

Presence of intellectual disability in mothers was found to be 0.8%, in fathers 2.1%, in siblings 5.2% and in relatives 3.1% that leads to a total of 11.2%. Mental illness in fathers was found to be 5.2%, in mothers 4.7%, in siblings 6%, and in a first degree relative 6.3% for a total of 22.2% (Table 3).

Intellectual disabilities in the families of the index children were significantly correlated. High rates of family history of mental illness and intellectual disability (33.4%) and consanguinity (8.4%) were noticed in the sample. A similar trend was found in other studies and supported the findings that when there is a history of intellectual disability in the family, and if the parents are consanguineously married, the risk of intellectual disability in the offspring is significantly high [31,32,33,34].

3.2 Parental

3.2.1 Socio-demographic details

The mean age of the father was found to be 41.26 years (ranged from 28 to 75 years). The mean age of the mother was found to be 34.27 years (ranged from 24 to 59 years). The mean education of the father was found to be 7.81 years (ranged from 0 to 18 years). The

mean education of the mother was found to be 8.51 years (ranged from 0 to 20 years). Current maternal age (maternal age at the time of the study) and maternal age at the time of delivery of the index child were significantly correlated with intellectual abilities of the child ($p=.024$, $p=.011$ respectively). The mean education of the mother was found to be 8.51 years in the sample, and 34.55% of the mothers had below high school education. The findings of the previous studies have indicated that increased maternal age and low levels of education increase the risk for intellectual disability in children [35,36,5].

Job category of the father was as follows: 65.2% ($n=249$) were manual laborers, 6.8% ($n=26$) were unemployed, 16.2% ($n=62$) had lower level of jobs. Most of the mothers were housewives 79.3% ($n=303$). Paternal lower level of job category and unemployment (88.21%) and maternal unemployment (79.3%) supported the observation that 78.8% of the current sample had low socio-economic status. Studies have consistently reported a significant association between poverty and the prevalence of intellectual disabilities [10].

3.2.2 Clinical features

Presence of psychiatric disorders in fathers were found to be 20(5.2%), paternal alcohol dependence was 10.5% ($n=40$), paternal drug dependence was 1.6% ($n=6$) and made a total of 17.28%. Presence of psychiatric disorders in mothers was found to be 4.7% ($n=18$). Presence of intellectual disability in fathers was found to be 2.1% ($n=8$) and that of mothers was 0.8% ($n=3$). Presence of physical disabilities in fathers was 2.6% ($n=10$) where as in mothers it was 2.4% ($n=9$) (Table 3). The rate of psychological morbidity was found to be high in fathers compared to mothers, but the rate was more or less the same (5.2% vs 4.7%) when not included the alcohol and drug dependency. The most common psychiatric disorder was found to be moderate depression in both parents (4%) which was found in other studies, too [12,13]. Alcohol and drug dependence in fathers could be a coping method for their psychological distress. None of the mothers used alcohol or drugs in their lifetime possibly due to the socio-cultural factors that use or abuse of drugs or alcohol is less common in women compared to men.

3.2.3 Marital history

Mean age of fathers at the time of marriage was 27.90 years (ranged from 21 years to 63 years). Mean age of mothers at the time of marriage was 21.08 years (ranged from 14 years to 39 years). Remarriage for fathers was 11%, and that of mothers was 5%. Marital conflict was present for 20.2% ($n=77$) of the cases.

3.3 Sibling History

Birth order of the index child was first born for 39.3% of the sample. Intellectual disability was present for 5.2% of siblings; psychiatric illness was found to be 6% and physical disability was present for four (1%) cases (Table 3). Conflict with index children was present in 180 cases (47.1%). The majority of the index children were first or second born which was noticed in other studies also [18]. Sibling had problems such as intellectual disability, psychiatric disorders and physical disabilities (12.2%) and 47.1% had conflict with index children. Behavior problems in the sibling were more often found if the retarded child had highly disturbed behaviors which may be true with the current sample because of the high comorbidity with externalizing disorders [37]. It is also possible that the multiple caretaking responsibilities of the siblings toward the retarded children would lead to conflicts as they have decreased opportunities for peer contacts and out-of-home activities [38].

Correlation analysis was carried out and found that intellectual disabilities are associated with maternal age (.024)*, maternal age at the time of delivery of the index children, post-natal complications (.007*), intellectual disability in the family (.020)*and siblings (.042)*, neurological (.00) *and physical disabilities (0.027)* (Table 5).

Table 5. Correlation of intellectual quotient with socio-demographic and clinical variables

Variable		Correlation pearson (ρ)	P- value <0.05
Maternal age	At present	.1155	.024
	At child birth	.1652	.011
Postnatal complications		.1387	.007
Genetic influences	ID in sibling	.1044	.042
	ID in family (first degree)	.1193	.020
Index children	Neurological problems	.2228	.001
	Physical disabilities	.1133	.027

4. CONCLUSION

The study found that intellectual disability was associated with male gender, poor socio-economic status, pre-peri-and post-natal complications, family history of mental illness, and intellectual disability and increased maternal age. Increased comorbidity with psychiatric disorders, especially with externalizing disorders was noticed.

4.1 Implications

The study highlights the facts that adverse socio-economic conditions and pre-natal, perinatal and post-natal complications would limit the development of intellectual abilities that are further supported by the predominance of mild level of intellectual disability in the sample. The study is also supported the findings that poverty contributes to intellectual disabilities, an effect mediated through the association between poverty and exposure to a range of environmental and psychosocial hazards [10]. These factors would throw lights on to our understanding of increased prevalence of intellectual disability reported in India compared to western countries. Preventive measures of social adversities could reduce the rate of intellectual disability.

One of the distinctive features of the present study is its source of sample (data), which is drawn from regular school attending children. However, in most of the available literature of the similar research shows that data was collected either from community or clinical samples. It is surprising to notice a relatively increased prevalence of intellectual disability among regular school attending children, which is a precursor to the necessity of cognitive assessment of children prior to sending them to elementary schooling so as to examine their readiness to scholastic work and learning and their appropriate educational placements. The study throws light on the nature of clinical features associated with school going intellectually disabled children which are useful for the treatment purpose.

It is noticed in the present study that the rate of comorbid neurological and medical disorders was relatively low compared to clinical or community samples. The study underscores an

important fact that the clinical features of the regular school going children with intellectual disability may be different from that of clinical or community sample.

The study also highlights the importance of monitoring parental and sibling mental health as they are more vulnerable group if intellectual disability is present in the family. The intellectual disability is known to increase the marital distress and conflicts in families. Marital conflicts may lead to a development of new psychopathology in children with intellectual disability [8] therefore, it is imperative to deal with such issues to reduce risk of emergent psychopathology.

The present study provides valuable information in terms of prevention of intellectual disability. The result indicated an association between intellectual disability and pre-natal, peri-natal, and post-natal complications. Therefore, it is important to promote appropriate pre-natal care by improving nutritional intake including vitamin supplementation; pre-natal screening for congenital malformation and genetic disorders especially if there is a family history of intellectual disability /mental illness. Utilization of advanced facilities of labor and delivery would reduce risk of peri-natal complications. Providing optimum health care facilities and education about mental retardation would reduce the post-natal complications. Public awareness programs would help to enhance understanding of the need for regular medical checkups and intake of vitamin supplements especially during pregnancy. It is important to ensure the availability of free vitamin supplements and medical checkups by government and other agencies to reduce the risks.

Studies have found that low maternal education increases the risk of mild and moderate/severe mental retardation [33] and a similar trend was observed in the present study. Maternal education and mental health are crucial to ensure healthy practices during pregnancy and child rearing. In the present study, 23.9% of the mothers had mental illness and stress during pregnancy. Public awareness and health education especially for adolescent girls would reduce the risk of intellectual disability. Conducting health education programs at schools and colleges would also reduce the risk. Health education should address the need of both physical and mental health of parents, risks of increased maternal age, and adolescent pregnancy. It is also important to address issues of consanguinity as a risk factor for intellectual disability. Government policies are required to promote girls education and nutritional intake at the community level. Policies are also required to reduce poverty and other social disadvantages which would prevent the risk for mental retardation.

The finding of increased rate of comorbid disorders with intellectual disability in the present study is important with regard to prevention of intellectual disability. The mental health needs of children and adolescents with intellectual disability are multiple, complex, persistent, and costly; and for various reasons, they are not adequately met. Prevention of mental health problems, or early recognition through better screening followed by appropriate treatment are essential, in order to ensure better psychosocial adaptation of young people with intellectual disability. Families can be helped through support and counseling, along with psychotherapeutic and psychopharmacological interventions for the children [6]. Government and other related agencies can play a vital role in promoting the use of these facilities.

The study highlights the existing view of prevention of intellectual disability as required collaborative work with multiple agencies, public awareness programs, health promotion, emphasis on both biological and social perspectives of etiological factors, and by providing specialized mental health services.

5. LIMITATION AND RECOMMENDATION

One of the limitations of the study is that clinical diagnosis was made mainly by clinical evaluation instead of standardized diagnostic interview schedules, which might have influenced the true prevalence of psychopathology for index children, parents, and siblings. Absence of a comparison group in the present study would limit the understanding of disabilities, psychopathologies, and impact of social adversities. In future, the study can be replicated with increased sample size by using standardized tools and a comparison group. Future studies need to address the question of whether children with the similar disabilities benefit from regular schooling, especially for mild intellectual disabilities. Comparison between intellectually disabled children who are attending regular and special schools would give valuable information on impacts of attending regular school on cognitive development such as social and language skills. It is also important to look into the changes in psychopathologies and other risk factors as these children grow up.

CONSENT

All authors declare that informed consents were obtained from parents before being included in the study.

ETHICAL APPROVAL

Allowed by Sarva shiksha Abhiyan, Calicut division.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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