



RESEARCH ARTICLE

Comorbidity in mentally retarded children**Dr. Ambrish mishra¹, Dr. sanjay Laharia²**

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retardation .***Corresponding Author****Dr. Ambrish mishra****Abstract**

There Is a lacuna of studies on co morbidity in children with MR in Indian context. Present study is taken as a cross sectional study of 100 children under 12 year of age with MR coming to the OPD and diagnosis was made as per DSM IV TR after taking the consent from their parents. IQ assessment was done by clinical psychologist and co morbidity with MR was assessed by clinical interview as per DSM IV TR. Clinical Interview was followed by psychiatric and physical examination findings and diagnostic conclusion. Data was analyzed using med calc- version 11.1.0.0 and appropriate tests were prepared to analyze the data of 72% subjects with co-morbidity 54% were having medical co morbidity 10% were having both psychologist co-morbidity was found more significant in mild and moderate MR. while medical co-morbidity was more in severe MR. Epilepsy was the most common co-morbidity found in the subjects. Unspecified behavioral disturbance were the most common psychiatric co-morbidity found followed by ADHD and Autism.

*Copy Right, IJAR, 2015., All rights reserved***INTRODUCTION**

Person with intellectual disability have been considered as 'les enfants du Bon Dieu' (children of God) (Barksdale, 2012)

Mental Retardation is the most disabling of all disabilities with significant consequences for the individual themselves, their families and the society. It is often regarded as a devastating and very stigmatizing disability. The societal responses to MR may make problems more complicated for these individuals. History is replete with instances of their neglect, abuse, and victimization.

These lessons from the history have taught us that they must be treated ,with respect and dignity and their rights have to be recognized like any other human being.

Mental retardation is a condition of arrested or incomplete development of the mind, which is especially characterized by impairment of skills manifested during the developmental period, which contribute to the overall level of intelligence, i.e. cognitive, language, motor, and social abilities. (ICD-10).

Over the last 40 years, public policy regarding individuals with mental retardation (MR) has changed dramatically, from emphasizing isolation to focusing on normalization and inclusion. As a result, much debate and research has centered around the prevention of MR, deinstitutionalization, and the education and employment of individuals with MR. In this new environment, concern has also arisen for the mental health of those with MR. For instance, a Surgeon General's conference on this issue was held in 2002.

It is important for service and treatments planning to understand how many people with MR have mental health conditions. In order for resources to be allocated appropriately, it is also important to know how these prevalence estimates compare to estimates for the general population.

AIMS AND OBJECTIVES

This study was conducted with the following aims and objectives:

- To study the prevalence of severity of MR in study population.
- To study prevalence of psychiatric and medical co-morbidity in mentally retarded children.
- To compare occurrence of co-morbidity with degree of mental retardation.
- To study prevalence of pattern of co-morbidity in study population.

MATERIALS AND METHODS

The study sample was taken from the OPD of Gwalior Mansik Arogya shala and consisted of 100 patients having MENTAL RETARDATION as per DSM-IV-TR criteria the study was carried out between JAN 2015 to MARCH 2015.

INCLUSION CRITERIA

- Patients coming to OPD for consultation and diagnosed as Mentally Retarded as per DSM -IV- TR criteria ..
- Patients up to 12 yrs of age,
- Parents who gave informed consent to participate in the study

EXCLUSION CRITERIA

- Patients above 12 yrs of age.
- Parents who have not given informed consent to participate in the study.
- Patients having concurrent significant issues that could hamper psychological and psychiatric evaluation ..

STUDY MATERIAL

Study material included clinical interview of patient and parents and consent form. The interview details consisted of following parts

- Demographic data
- Assessment of the severity of Mental Retardation
- Assessment of comorbidity as per DSM-IV-TR criteria

Demographic data consisted of basic information such as name, age, sex, education, SE status of family and residential area of the family .

Severity of Mental Retardation was assessed with help of Clinical

Psychologist by determining the IQ level and adaptive functioning capacity of the child by using standardised tests.

Co-morbidity with mental retardation was assessed by clinical interview s per SM-IV-TR criteria clinical interview includes information regarding history of present complaints, past history, family history, personal history with details of birth and developmental history & physical and psychiatric examination findings with diagnostic conclusion.

Analysis:

Data thus collected was entered in the master chart and was analyzed using MedCalc - version 11.1.0.0. Appropriate statistical tests were performed to analyze the data.

Limitations Of The Study

No specifically designed instrument for the retarded was used to assess psychopathology in study subjects.

This study was conducted at the general hospital setting of teaching institute and so results can not be applied directly to general population.

Small sample size

RESULTS

A total of 100 patients coming to OPD with diagnosis of Mental Retardation and with age of less than 12 yrs were selected for study. All of them were subjected to detail psychiatric and medical evaluation to find out psychiatric and medical comorbidities. Results obtained are as follows.

Demographic Characteristics :

Of the 100 patients with mental retardation included in the study, 62 were males and 38 were females. 24 of all were of under 6 yrs and 76 were of 6-12 yrs of age. Majority of the patients were studying in primary school, few were illiterate and less than few were in preschool and special training school. With reference to socio-economic status major portion of study population was of middle class followed by lower and then upper class.

Table 1: Demographic Characteristics

Group	Subgroup	N=100 n, %
Age	0-6yrs	24
Sex	Male	62
	Female	38
Education	Illiterate	24
	Preschool	04
	Primary School	63
	Special Training , School	09
SE Status	Upper	16
	Middle	57
	Lower	27
Residence	Urban'	54
	Rural	46

Distribution of Degree of Mental Retardation in study population:

Of the 100 patients with mental retardation included in the study, 47 were having mild mental retardation, 31 were having moderate mental retardation, 18 were having severe mental retardation and 4 were having profound mental retardation. Mental retardation was diagnosed as per DSM-IV-TR criterion which includes measurement of IQ and adaptive function by standardized tests. Patients were categorized in four categories of MR as per their IQ level and DSM-IV-TR ranges.

Distribution of Comorbidity in study population:

All subjects with mental retardation were examined and assessed for psychiatric and medical comorbidity.

Psychiatric comorbidity was assessed by clinical interview with patients and their parents where as medical comorbidity was diagnosed by physical examination, appropriate investigations and opinion of pediatrician. Psychiatric comorbidity was diagnosed as per the DSM-IV-TR criteria.

In our study, out of 100 subjects 39 were found to have psychiatric comorbidity, 26 were having medical comorbidity and 7 were having both medical and psychiatric comorbidity. 28 of all subjects were found having no any comorbidity.

Table 2: Distribution of comorbidity in study subjects.

Co-morbidity	N,%
Psychiatric	39
Medical	26
Both	07
None	28

Study of Co-morbidity in different age group in study subjects:

Table 3: Correlation of age with comorbidity.

Age Group	Psy-Comorbidity %	Med-comorbidity %	Total %
0-6yrs	10(50)	12(60)	20
6-12 yrs	36(69.2)	21(40.4)	52

Chi square (trend) = 1.664 p= 0.1971

Of the 100 patients coming to opd for consultation, age wise they are broadly stratified in two categories of under 6 yrs and above 6 yrs up to 12 yrs. In both categories percentage prevalence of comorbidity was assessed. Among 24 patients who belonged to under 6 yrs age group, 20 patients were having comorbidity of which 10 (50%) patients were found having psychiatric comorbidity and 12(60%) patients were found having medical comorbidity.

Among 76 patients who belonged to 6-12 yrs age group, 52 patients were having comorbidity of which 36 (69.23%) were found having psychiatric comorbidity and 21 (40.38%) patients were found having medical comorbidity.

Study of Comorbidity based on severity of MR:

Table 4 : Correlation of Degree of MR & Co-morbidity :

Degree of MR	Psy-Comorbidity (%)	Med-Comorbidity (%)	Both Comorbidity(%)	None (%)	Total
Mild	19(40.4)	06(12.8)	02(4.3)	20(42.6)	47
Moderate	12(38.7)	07(22.6)	04(12.9)	08(25.8)	31
Severe	07(38.9)	10(55.6)	01 (5.6)	00(0)	18
Profound	01 (25)	03(75)	00(0)	00(0)	04
Total	39	24	09	28	100

Chisquare= 4.825 p=0.028

As above, table explains, out of 100 study subjects 47 were having mild mental retardation. Among them 19 patients (40.4%) were having one or other psychiatric comorbidity, 6 patients (12.8%) were having medical comorbidity and 2 patients (4.3%) were having both psychiatric and medical comorbidity while 20 patients (42.6%) were found having no any comorbidity.

Among study population 31 subjects were having moderate mental retardation. Among them 12 patients (38.7%) were having one or other psychiatric comorbidity, 7 patients (22.6%) were having medical comorbidity and 4

patients (12.9%) were having both psychiatric and medical comorbidity while 8 patients (25.8%) were found having no any comorbidity.

Among study population 18 subjects were having severe mental retardation. Among them 7 patients (38.9%) were having one or other psychiatric comorbidity, 10 patients (55.6%) were having medical comorbidity and 1 patients (5.6%) were having both psychiatric and medical comorbidity. There was no subject found without comorbidity and having severe mental retardation.

Among study population 4 subjects were having profound mental retardation. Among them 1 patient (25%) was having one or other psychiatric comorbidity, 3 patients (75%) were having medical comorbidity. There was no subject found without comorbidity and having profound mental retardation.

This data when analyzed statistically, it was found significant ($p=0.028<0.05$).

Table 5: Correlation of Psychiatric Co-morbidity & Degree Of Mental Retardation:

Degree of MR	Psychiatric-Comorbidity		Total N=100
	Present N=48 N (%)	Not Present n=52 n (%)	
	Mild	21 (44.7)	26 (55.3)
Moderate	16(51.6)	15(48.4)	31
Severe	08 (44.4)	10 (55.6)	18
Profound	01 (25)	3 (75)	04

Chi square (trend) = 0.496 p= 0.4812

As above data explains, out of 100 subjects that was included in the study 48 were having psychiatric comorbidity. Among these 48 patients with psychiatric comorbidity 21 patients (44.7%) were having mild mental retardation. 16 patients (51.6%) were having moderate, mental retardation, 8 patients (44.4%) were having severe mental retardation and 1 patient (25%) were having profound mental retardation.

This data was analysed with chi square for trend and found statistically insignificant. ($p=0.4812>0.05$)

Table 6 : Correlation of Medical Co-morbidity & Degree Of Mental Retardation :

Degree of MR	Medical-Comorbidity(%,)		Total N = 100
	Present N=33 N (%)	Not Present n=77 n (%)	

Mild	08 (17.02)	39 (82.98)	47
Moderate	11 (35.48)	20 (64.52)	31
Severe	11 (61.11)	7 (38.89)	18
Profound	03 (75)	1 (25)	04

chi square (trend) = 14.98 p= 0.0001

As above data explains, out of 100 subjects that was included in the study 33 were having medical comorbidity. Among these 33 patients with medical comorbidity 8 patients (17.02%) were having mild mental retardation, 11 patients (35.48%) were having moderate mental retardation, 11 patients (61.11%) were having severe mental retardation and 3 patients (75%) were having profound mental retardation.

This data was analysed with chi square for trend and found statistically significant. (p=0.0001 <0.05)

Percentage Prevalence of Individual comorbidity in study population:

Table 7 : Distribution of Psychiatric comorbidity in study Subjects.

Psychiatric comorbidity	N=100 %
ADHD	11
Autism	09
LD	02
BD	12
ODD	02
Pica	01
Enuresis	04
Tics	01
Psychotic Disorder	03
BMD	01
Depression	02
Anxiety	01

Table 8 : Distribution of Medical comorbidity in study subjects

Medical comorbidity	N=100%
epilepsy	28
CP	04
Down syndrome	03
Hearing	01

In this study, among psychiatric comorbidity, ADHD was found in 11 patients, autism in 9 patients, learning disorder in 2 patients, behavioral disturbance in 12 patients, oppositional defiant disorder in 2 patients, pica in 1 patient, enuresis in 4 patients, tics in 1 patient, psychotic disorder in 3 patients, bipolar mood disorder in 1 patient, depression in 2 patients and anxiety in 1 patient.

Among medical comorbidity, epilepsy was found in 28 patients, cerebral palsy in 4 patients, down syndrome in 3 patients and hearing impairment in 1 patient.

DISCUSSION

There was a higher prevalence of medical comorbidity among under 6 age group and higher prevalence of psychiatric comorbidity among 6-12 yrs age group. This could be read as children with medical comorbidity have younger age of presentation and those with psychiatric comorbidity have later age of presentation. This could be due to two possible reason. Firstly, medical illness might have been more easily recognised by family members as compared to psychiatric disorder. Secondly this age group patients (0-6 yrs) have greater degree of mental retardation due to underlying medical illness making them seek health care services early in life. While children with psychiatric comorbidity usually have lesser degree of retardation and become manifest later in life when demand increases making them to present later in life.

This data was not found significant when analysed with statistical tests. (p=0.1971=-0.05)

Christoday R.J. Khess, Indrani Dutta, Indrani Chakrabarty, Piyali Bhattacharya, Jnanamay Das & Sonia Kothari (1998) had reported in their study that mean age of the patients with medical disease was found to be lower than patients with psychiatric disorder. (Christoday R.J. Khess, COMORBIDITY IN CHILDREN WITH MENTAL RETARDATION, 1998).

In our study we found that out of 16 patients who belong to upper SES 13 patients (81.25%) were having comorbidity. In middle SES out of 57 patients 42 patients (73.68%) were having comorbidity where as in lower SES out of 27 patients 17 patients (62.96%) were having comorbidity. So as per this data comorbidity was found highest among upper SES compared to middle & lower SES.

SE status	Comorbidity present (%)	Comorbidity Not present (%)	Total (%)
Upper	13(81.25)	3(18.75)	16
Middle	42(73.68)	15(26.32)	57
Lower	17(62.96)	10(37.04)	27

Chi square (trend) = 1.82 p= 0.176

When this data analysed statistically it was found insignificant ($p=0.176>0.05$). This finding is opposite to result of other study.

Dekker and Koot (2003) found that there were no significant differences in the prevalence of psychiatric disorders between children classified as "low SES" and those classified as "medium to high SES". (Dekker M. C., DSM-IV disorders in children with borderline to moderate intellectual disability. I: Prevalence and impact, 2003); (Dekker M. C., Emotional and behavioral problems in children and adolescents with and without intellectual disability Journal of, 2002).

Emerson and Hatton (2007) found an association between SES and mental disorder. In a sample of 641 children and adolescents with intellectual disability and 17,774 without intellectual disability, they found that a number of SES variables (including income poverty, households with no paid employment, and primary carers with no educational qualifications) were associated with psychopathology. (Emerson E., Poverty and people with intellectual disability., 2007); (Emerson E. &., Mental health of children and adolescents with intellectual disabilities in Britain, 2007)

This opposite result in our study might be due to greater awareness regarding mental disorders and sound financial status in upper SES compared to middle and lower SES where economic instability & little awareness hinders the approach to health care facility.

In our study we found out of 62 males 40 patients (64.51%) were having comorbidity while out of 38 females 32 patients (84.21%) were having comorbidity. So females are found to have a greater rate of comorbidity.

SE status	Comorbidity present (%)	Comorbidity Not present (%)	Total (%)
Male	40(64.51)	22(35.49)	62
Female	32 (84.21)	6(15.79)	38

Chi square (trend) = 3.609 p=0.0575

When this data analysed statistically it was found insignificant ($p=0.0575>0.05$).

Three studies reported no statistically significant association between gender and mental disorder (Dekker & Koot, 2003 (Dekker M. C., 2003), (Dekker M. C., Emotional and behavioral problems in children and adolescents with and without intellectual disability, 2002); (Einfeld S. L., 1996a), (Einfeld S. L., Population prevalence of psychopathology in children and adolescents with intellectual disabilities: II. Epidemiological findings., 1996b); al., 2001 (Molteno G. M., 2001).

Two studies reported significantly higher prevalence rates among males of mental disorders (Emerson E. &., Mental health of children and adolescents with intellectual disabilities in Britain, 2007); (Stromme, Prevalence of psychiatric diagnoses in children with mental retardation: Data from a population-based study, 2000).

Prevalence of MR in Study Population :

In our study we have found that 47% patients are suffering from mild mental retardation, 31% from moderate MR, 18% from severe MR and 4% from profound MR. This finding is inconsistent with general population data obtained from standard reference book where mild MR is found up to the extent of 85%, moderate MR up to 10%, severe MR up to 4% and profound MR up to 1-2%. This could be explained on the basis that this data is derived from hospital based population. So children with greater degree of severity are expected to come more frequently for consultation to the hospital compared to the children with lesser degree of retardation.

Prevalence of Comorbidity in Study Population :

In our study we found that 39 % patients were suffering from psychiatric comorbidity, 26% were having medical comorbidity while 7% were found to have both medical and psychiatric comorbidity. Overall 72% patients were found to have one or other comorbidity. This finding is consistent with most of other following studies.

Prashant Jauhari, Roli Bhargava, Anupama Bhawe, Chandrakanta kumar & Rashmi Kumar (March-2012) (Prashant Jauhari R. B., 2012) had found that 97.5% patients had one or more associated comorbidities and 58.2% had two or more comorbidities.

Amaral, Pinto, Pimentel, Martins, and Vale (2010) found comorbidities in 66% of children with ID. (Amaral, 2010).

Christoday R.J. Khess, Indrani Dutta, Indrani Chakrabarty, Piyali Bhattacharya, Jnanamay Das & Sonia Kothari (1998) had found that psychiatric disorder was present in 56.17% of the cases and medical disease in 35% cases while 13.3% cases had both psychiatric and medical illnesses. (Christoday R.J. Khess, COMORBIDITY IN CHILDREN WITH MENTAL RETARDATION, 1998).

Bonnie D. Kerker, PhD, Pamela L. Owens, PhD, Edward Zigler, PhD, Sarah M. Horwitz, PhD (2004) had found that available data reveal inconsistent estimates of the prevalence of mental health disorders among those with MR, but suggest that some mental health conditions are more common among these individuals than in the general population. They found that prevalence estimates of specific mental health condition among individual with MR range from 0-45% depending up on the condition being studied. (Bonnie D. Kerker P. P., Mental Health Disorders Among Individuals with Mental Retardation: Challenges to Accurate Prevalence Estimates, 2004).

Simon Whitaker and Stephen Read (2006) had conducted literature review and found that the prevalence of psychiatric disorder is greater in children with intellectual disabilities, compared with children with normal IQs and it is higher in children with severe intellectual disabilities compared with children with mild or no intellectual disability and the rate of problematic behaviour is higher in children having intellectual disabilities, than in their non-disabled peers. (Simon Whitaker and Stephen Rea, 2006).

Stewart L. Einfeld, Louise A. Ellis & Eric Emerson (june -2011) had conducted literature review and came to the result that the findings in this studies are consistent in reporting high prevalence rates of mental disorder among participants with intellectual disability (range 30-50%) and, among children and adolescents, a high relative risk of mental disorder associated with intellectual disability (range 2.8-4.5). (Stewart L. Einfeld L. A.).

E. Emerson (2003) had conducted study and found that overall prevalence of psychaitric disorder in his study among children with ID was 39% and it was consistent with result of previous population based studies. Overall, children with ID were over seven times more likely to have a diagnosed psychiatric disorder than their non- ID peers. (Emerson E. , Prevalence of psychiatric disorders in children and adolescents with and without intellectual disability, 2003).

Petter Stromme MD PhD, Trond H Diseth MD PhD (2000) (Petter Stromme MD PhD T. H., 2000) had conducted study found 37% prevalence of psychiatric disorder among subjects with MR. McQueen et al.(1987) (McQueen PC, 1987) estimated that 32 to 41% of children with MR had behavioural or other types of psychiatric disorders. Corbett 1979 (JA., 1979), (Scott, 1994) have also reported prevalences of psychiatric disorders of 30 to 50% of the total population with MR, while Gillberg et al. (1986) (Gillberg C P. E., Psychiatric disorders in mildly and severely retarded children and adolescents: epidemiological aspects. Bri, 1986) found that 64% of those with SMR and 57% of those with MMR had psychiatric diagnoses with overall 54.3% had psychiatric disorder. Steffenburg et al. (1996) (Steffenburg S, 1996) found that at least 57% of children with MR and active epilepsy had received a psychiatric diagnosis, the most common being autistic disorders.

Stromme & Diseth (2000) (Stromme, Prevalence of psychiatric diagnoses in children with mental retardation: Data from a population-based study, 2000) found in their study that 36.5% patients had a ICD-10 diagnosis, Linna et al. (1999) (Linna S.-L., 1999)had found that 50% of the intellectual disabilities children had possible psychiatric disorders on at least one questionnaire, (Molteno G. M., Behavioural and emotional problems in children with intellectual disability attending special school in Cape Town, South Africa. , 2001) had found that 31% of the children had a total score of 30 or more and so were considered to have a dual diagnosis, (Rutter M., 1976) found 23.6% showed a marked disorder, (Einfeld S. L., Population prevalence of psychopathology in children and adolescents with intellectual disabilities: I. Rationale and methods, 1966a), (Einfeld S. L., Population prevalence of psychopathology in children and adolescents with intellectual disabilities: II. Epidemiological findings. Journal of Intellectual Disability Research,, 1996b) found 40.7% had a definite psychiatric disorder or major emotional/behavioural disturbance (Dekker M. C., DSM-IV disorders in children with borderline to moderate intellectual disability. I: Prevalence and impact., 2003) found 38.6% were having any DSM-IV diagnosis, (Birch H. G. R. S.) had found overall rate of 30% had a clear psychiatric abnormality & 20% had a possible abnormality.

Correlation of Degree of MR & Co-morbidity in Study Population:

Among patients with mild mental retardation psychiatric comorbidity was present in 40.4% of cases and medical comorbidity was in 12.8% cases. Among patients with moderate MR 38.7% cases have psychiatric comorbidity and

22.6% have medical comorbidity. Among patients with severe MR 38.9% have psychiatric comorbidity and 55.6% have medical comorbidity. Among subjects with profound mental retardation 25% was found with psychiatric disorder and 75% with medical illness. This data when analysed found statistically significant ($p=0.028<0.05$). So patients with mild to moderate mental retardation had greater occurrence of psychiatric disorder compared to severe to profound MR subjects who had greater occurrence of medical comorbidity.

When psychiatric comorbidity was correlated with degree of MR, it has been found that 44.68% of mildly retarded, 51.61% of moderately retarded, 44.44% of severely retarded and 25% of profoundly retarded children had psychiatric comorbidity. So when degree of retardation increased psychiatric comorbidity had not changed significantly. This data when analysed found statistically insignificant ($p=0.04812>0.05$).

When medical comorbidity was correlated with degree of MR, it has been found that 17.02% of mildly retarded, 35.48% of moderately retarded, 61.11% of severely retarded and 75% of profoundly retarded children had medical comorbidity. So when degree of retardation increased medical comorbidity had also increased. This data when analysed found statistically highly significant ($p=0.0001 <0.05$).

So as obvious, patients with mild to moderate mental retardation had greater occurrence of psychiatric disorder compared to severe to profound MR subjects who had greater occurrence of medical comorbidity. And as degree of mental retardation increases medical comorbidities also increases.

This finding could partly be a reflection of the fact that distinguishing a behaviour disturbance from a psychiatric disorder is easier in patients with a milder degree of retardation, hence using an operational criteria for diagnosis is more feasible in such cases. On the other hand while dealing with more severely retarded patients we need to make concessions for diagnostic overshadowing (i.e., mental retardation decreasing the significance of the accompanying behaviour (Szyszko, 1983)). The other explanation for this could be the fact that patients with medical illness might have suffered from a cerebral damage which was responsible for the retardation as well as the medical illness (like epilepsy), hence the degree of retardation was more in such cases. (Christoday R.J. Kness, COMORBIDITY IN CHILDREN WITH MENTAL RETARDATION, 1998) Another explanation suggest subjects with mild and moderate MR are more likely to be aware of their limitations and more likely to be rejected by their parents so they are at higher risk for reacting to stressful life events by psychiatric disorders. [Bonnie D. Kerker P. P., Mental Health Disorders Among Individuals with Mental Retardation: Challenges to Accurate Prevalence Estimates, 2004), (Eaton LF, 1982)

This finding is consistent with the result of other studies. Overall, there is a inconsistency in results of all studies.

Prashant Jauhari, Roli Bhargava, Anupama Bhave, Chandrakanta kumar & Rashmi Kumar had conducted study on comorbidities associated with ID at a teaching hospital at northern India and found that prevalence of most of the neurological and medical problems increased with severity of ID while ADHD, autism & behavioral problems decreased. (Prashant Jauhari R. B., 2012) Birch et al. (1970), Rutter et al. (1970), Gillberg et al. (1986), and Stromme & Diseth (2000) had found that the rate of mental illness is higher in children

with severe intellectual disability than either children with mild intellectual disabilities or those without intellectual disabilities. (Birch H. G. R. S., 1970); (Rutter M G. P., 1970); (Gillberg C P. E., Psychiatric disorders in mildly and severely retarded children and adolescents, 1986); (Scandinavia, 1985); (H., 2000)

Gillberg et al. (1986) found that 64% of those with SMR and 57% of those with MMR had psychiatric diagnoses. (Gillberg C P. E., Psychiatric disorders in mildly and severely retarded children and adolescents, 1986)

Petter Stromme MD PhD, Trond H Diseth MD PhD (2000) had found that psychiatric diagnoses were present in 42% of the population with SMR and 33% of the population with MMR. (Petter Stromme MD PhD T. H., Prevalence of psychiatric diagnoses in children with mental retardation: data from a population-based study., 2000)

Christoday R.J. Kness, Indrani Dutta, Indrani Chakrabarty, Piyali Bhattacharya, Jnanamay Das & Sonia Kothari (1998) had observed that patients with a psychiatric disorder had a milder level of retardation compared to patients with a medical illness. (Christoday R.J. Kness, COMORBIDITY IN CHILDREN WITH MENTAL RETARDATION, 1998)

Molteno et al. (2001) had found higher rates of mental disorder in participants with more severe intellectual disability. (Molteno G. M., Behavioural and emotional problems in children with intellectual disability attending special school in Cape Town, South Africa, 2001)

Bonnie D. Kerker, PhD, Pamela L. Owens, PhD, Edward Zigler, PhD, Sarah M. Horwitz, PhD (2004) (Bonnie D. Kerker P. P., Mental Health Disorders Among Individuals with Mental Retardation: Challenges to Accurate Prevalence Estimates, 2004) had conducted literature review and found that studies based on administrative data report more mental health conditions among individuals with mild MR [66-69] and studies using population-based data report a higher prevalence among those with severe MR (Borthwick-Duffy, 1994); (Gillberg C & 1) (Birch HG, 1970)

Prevalence of Individual Comorbidity in Study Population:

Among psychiatric comorbidity, Unspecified behavioral disturbance(12%) was the most frequent disorder followed by ADHD (11%), autism (9%), enuresis (4%), psychotic disorder (3%), learning disorder (2%), oppositional defiant disorder (2%), depression (2%), pica (1%), tics (1%), BMD (1%) and anxiety disorder (1%).

Among medical comorbidity, epilepsy (28%) was the most frequent disorder followed by cerebral palsy (4%), down syndrome (3%) and hearing impairment (1%).

Finding of this study is consistent with some of the other studies.

Oeseburg et al., 2011; Saemundsen et al., 2010 have documented a high prevalence of autism in children with ID ranging from 10-20% (Oeseburg; Prevalence of chronic health conditions in children with intellectual disability: A systematic literature review., 2011).[70, (Saemundsen E. J., 2010)

Voigt et al., 2006; Baker et al., 2010 have reported high prevalence of ADHD up to 30% among mild to moderately retarded subjects. (Voigt R. G., 2006), (Baker, Mental disorders in five-year-old children with or without developmental delay: Focus on ADHD, 2010)

Pearson et al., 2000; Johnson et al., 1995; Parkes et al., 2008 have reported higher prevalence of behavioural disorder in children with ID. (Pearson, 2000) (Johnson, 1995) (Parkes, 2008).

Stromme & Diseth (2000) found hyperkinesia in 16%; pervasive developmental disorders in 8%, autism in 4.5%, behavioural or emotional conditions in 6%, conduct in 3%, Anxiety/phobias/obsessive-compulsive in 3% & Tics in 1% of patients. (H., 2000)

Petter Stromme MD PhD, Trond H Diseth MD PhD (2000) had found hyperkinesia (16%) as most common psychiatric diagnosis followed by pervasive developmental disorder (8%) and autism. (Petter Stromme MD PhD T. H., Prevalence of psychiatric diagnoses in children with mental retardation: data from a population-based study., 2000)

Emerson (2003) found anxiety disorder in 8.7%, depression in 1.5%, conduct disorder in 25.0%, hyperkinesia in 8.7%, PDD in 7.6%, Tic disorder in 0.8%, eating disorder in 0.4% & psychosis in 0.0% of patients. (Emerson E. , Prevalence of psychiatric disorders in children and adolescents with and without intellectual disability, 2003)

Dekker & Koot (2003) found anxiety disorder in 21.9% (specific phobia-17.5% ,social phobia- 2.5%, separation anxiety disorder- 2.1%), mood disorder in 4.4% (major depressive disorder- 1.7%, dysthymic disorder-2.3%), any disruptive disorder in 25.1% (ADHD- 14.8%, oppositional defiant disorder -13.9%) of patients. (Dekker M. C., DSM-IV disorders in children with borderline to moderate intellectual disability. I: Prevalence and impact., 2003)

E. Emerson (2003) had found in his study emotional disorder in 9.5%, anxiety disorder in 8.7%, ODD in 13.3%, hyperkinesia in 8.7% & PDD in 7.6% of cases. (Emerson E. , Prevalence of psychiatric disorders in children and adolescents with and without intellectual disability, 2003)

Christoday R.J. Khess, Indrani Dutta, Indrani Chakrabarty, Piyali Bhattacharya, Jnanamay Das & Sonia Kothari (1998) found in their study unspecified behavioural and emotional disorders as commonest disorder followed by mood disorders, hyperkinetic disorder, autism and psychosis (unspecified). Epilepsy was the commonest medical illness found in their study. (Christoday R.J. Khess, COMORBIDITY IN CHILDREN WITH MENTAL RETARDATION, 1998)

Prashant Jauhari, Roli Bhargava, Anupama Bhave, Chandrakanta kumar & Rashmi Kumar (March-2012) found high prevalence of cerebral palsy (56%), malnutrition (58%) and epilepsy (33%) compared to behavioral disturbance (26%), ADHD (4%) and autism (1.6%). (Prashant Jauhari R. B., March 2012).

SUMMARY

On summarising the study, 100 patients coming to OPD of Gwalior mansik arogya shala diagnosis of mental retardation as per DSM-IV-TR criteria and under 12 yrs of age were included for study and assessed for comorbid psychiatric and medical disorder as per DSM-IV-TR criteria. Study was carried out between JAN 2015 to March 2015 Appropriate statistical tests were applied to the result obtained and found that of 72% subjects with comorbidity 54% subjects were having psychiatric comorbidity, 36% were having medical comorbidity while 10% were found to have both comorbidities. It was also found that psychiatric comorbidity was more prevalent among children with mild to moderate MR while medical comorbidity was more prevalent among children with severe to profound MR. Unspecified behavioral disturbance was the most common psychiatric comorbidity where as epilepsy was the most common medical comorbidity found in this study,

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