



Psychological Problems in Pakistani Children with Intellectual Disabilities only and Comorbid Attention Deficit /Hyperactivity Disorder

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Authors' contributions

This work was carried out in collaboration between both authors. They jointly read and approved the final manuscript.

Original Research Article

Received 8th November 2013
Accepted 12th March 2014
Published 8th April 2014

ABSTRACT

Aim: The study investigated psychological problems in children with intellectual disabilities (ID) with and without co-morbid Attention Deficit/ Hyperactivity Disorder (ADHD) in Pakistan. On the basis of available literature following hypotheses were formulated: Children with Intellectual Disabilities (ID) co-morbid Attention Deficit/ Hyperactivity Disorder will score higher on the domain of a) internalizing, b) externalizing behaviors and c) clinical pathology as compare to children with Intellectual disabilities only.

Study Design: Cross-sectional research design.

Place and Duration of Study: Different special schools from the scattered areas of Karachi, Pakistan were selected by purposive sampling during the year 2009-2010.

Methodology: In order to test hypotheses, a sample of 100 children (50 with Intellectual Disabilities (ID) only and 50 with Intellectual Disabilities (ID) co-morbid ADHD); with age ranging between 6 to 12 years (mean age:8.96;SD=1.5), belonging to middle socioeconomic status was selected from various special schools of Karachi, Pakistan. After taking the permission from authorities of schools and informed consents from parents, Demographic Information Sheet was filled by the researcher and Devereux Scale of Mental disorders was administered on participants (mothers or teachers).

Results: Descriptive statistics and t- test for Independence mean were calculated through SPSS version 12.0. Findings suggest that children with intellectual disabilities co-morbid

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ADHD scored higher on externalizing behavior problems and clinical pathology as compared to intellectual disabilities only. However, no differences were found on scores of children with ID with and without ADHD on the variable of internalizing behavior problems. **Conclusion:** Children with ID comorbid ADHD in Pakistan are more like to exhibit disturbances in psychological and behavior domain as compared to children with intellectual disabilities only.

Keywords: Intellectual disability; internalizing behaviors; externalizing behaviors; clinical pathology.

1. INTRODUCTION

The aim of the present study was to investigate the comorbidity of mental disorders such as internalizing, externalizing behavior problems and clinical pathology among children with intellectual disabilities (ID) with and without attention deficit hyperactive disorder (ADHD). ID is a condition in which individual showed deficit range of scores on Intelligence Test (IQ score should below 70-75) with concurrent deficit scores on at least two domains of adaptive behavior scales. Adaptive skills refer to skills needed to perform daily life functions. Such skills include the ability to produce and understand language (communication); skills to perform tasks at home; use of community resources ; care of health and safety, spending leisure time, self-care, personnel hygiene and social skills, self-direction; functional academic skills (reading, writing and arithmetic); and job-related skills [1].

Pakistan is a developing country where few researches have been conducted during the past 10 years, despite the fact that it is one of the most populated countries of the world [2]. According to Patel, Kieling, Maulik and Davan developmental disabilities, emotional disorders and disruptive behavior disorders play a significant role in the development of mental health in children below 10 years [3]. Mirza, Davidson and Rahman suggested that Pakistan is the one of the highest reported rates of childhood Intellectual disability (ID) in the world. Prevalence estimated varies from 19.1/1000 for severe and 65/1000 for mild ID. They have also reported that there is a very significant delay in the detection of ID especially in rural setting where more than 70% of Pakistani population is residing [4]. Previously a survey was conducted on 6-10 years old Pakistani children having mild Intellectual disability by Bashir et al. they identified this problem in 6.2% children after using the Ten Questions Screening in 649 families, Wechsler Intelligence scale for children was also administered for categorization. Moreover, it was found that there was a difference of prevalence regarding socioeconomic status, i.e 1.2% among children from upper-middle class, 4.8% in the rural areas, 6.1% in the urban slum and 10.5 % in the poor peri urban slum areas. Additional impairments were found in 75% of the children with mind Intellectual disability and speech problem was most common [5]. Recently Azeem et al. investigated the prevalence of psychological disorders in parents of children with ID in Pakistan; they found that 89% mothers suffer from anxiety, depression or (both) as compared to their father who reported to be 77%. Significant association was also evident between mother's anxiety, depression or both and degree of ID of the children [6].

Moreover, it was very difficult to understand the co occurring symptoms among persons with ID [7]. But now globally the focus has been shifted to understand the epidemiology of intellectual disability co-occurring mental disorders. Einfeld, Ellis and Emerson after reviewing nine published studies with prevalence of mental disorders in children and

adolescents with ID reported that there is a relative risk of mental disorder associated with ID, was ranging between 2.8 %to 4.5% [8].

Previously Philip and Williams investigated the presence of psychological disorders in 100 children with ID and found that 38% of children were psychologically disturbed whereas 13% did not have any psychological problem. However, 49% of them showed neurotic and behavioral disorders. Some other studies also suggest that there are associated psychological problems and disorders present in children with ID [9]. In this regard a study carried out by Roeleveld et al. in which they discussed the association of emotional and behavioral problem with ID, and suggested that they may interfere with the child's progress. For example, most children with ID do recognize that they are behind others of their own age because of which they may feel more frustrated, become withdrawn or anxious, or may show undesirable behavior to get the attention of other people. There is an indication that adolescents and young adults with ID also sometimes become depressed. They generally do not have the ability to communicate their feelings to others therefore, their depression is manifested in the form of other symptoms and behaviors like disturbances in eating and sleeping [10].

These children also show aggression both verbal/physical and some might show low frustration tolerance. Out of frustration sometimes they become aggressive and engage in self-injurious behavior. Every individual with ID is not easily frustrated; however, some of them are impulsive, stubborn, and immature while others are passive. Moreover, they also suffer from low self-esteem and inattention. Depression is also found to co-occur with ID; however, many individuals with ID show no sign of mood disorder and appear happy and amiable [11].

According to Jaen attention deficit hyperactivity disorder (ADHD) is a common condition in children with ID [12]. According to American Psychological Association Attention-Deficit/Hyperactivity Disorder is a persistent pattern of inattention, impulsivity, and hyperactivity-impulsivity that is more frequent and severe and is typically observed in individuals at a comparable level of development [1].

Attention deficit hyperactivity disorder (ADHD) is childhood behavior disorders that include problems related to inattentiveness and hyperactivity-impulsivity. Inattentiveness is characterized by behavior such as carelessness, forgetfulness in daily activities, and problems related to attention. Children suffering from inattention commonly lose their belongings, are easily distracted, cannot follow through instructions, and have difficulty in organizing tasks. Fidgeting, restlessness, running about inappropriately, difficulty in playing quietly, and talking excessively are characteristics of hyperactivity. Impulsivity is evident in children, who blurt out answers, cannot wait for their turn, and interrupt or intrude on others [13].

Further, Biederman, Newcorn and Sprich, have suggested that children with ADHD is a heterogeneous disorder, the available literature supports that there is a considerable amount of comorbidity of ADHD with conduct disorder, oppositional defiant disorder, mood disorder, anxiety disorder, learning disabilities and other conditions like Intellectual disability [14]. Moreover, Pliszta wrote that children with ADHD suffer from conduct disorder and have a higher risk of developing antisocial personality disorder as adults, they also have anxiety and bipolar disorders. However the comorbidity of ADHD and major depression is not much studied. 20% to 25% children also have problem related to learning disability [15].

In an investigation by Pearson, Yaffee, Loveland and Lewin compared children with ADHD and intellectual disability to children with intellectual disability without ADHD on tasks assessing and selective attention. Their findings suggested that children with both ID and ADHD made few correct target detections and more commissions on a vigilance task, however no completing evidence emerged that was suggestive of selective attention deficits in these children. Further they showed that girls with intellectual disability may be at a higher risk for ADHD than are girls in the general population [16]. Another study conducted by Pearson et al. suggest that ID children with hyperactivity also show symptoms of depression, family conflicts, non-compliance, anxiety, inadequate social skills and academic problems [17].

Severe mental disorders i.e schizophrenia [18] and developmental disorder i.e autism [19] have also been reported in studies as comorbid conditions in children having ID. Morgan, Leonard, Bourke and Jablensky indicated that overall 31.7% of persons with ID reported to have psychiatric disorders. 1.8 % of individuals with psychiatric illnesses had ID. Moreover they reported that pervasive developmental disorders were identified through the files of persons with ID [18]. Mc Carthy reported that children and adolescents with autism spectrum disorders and intellectual disability have a high prevalence of ADHD, mood disorders, catatonia and repetitive behaviors as compared with children without autism [19].

In Pakistan an inclusive education and mainstreaming have not been practicing as compare to more developed countries. The dilemma is that most of the people in our society even don't know about the importance of these issues. Thus the present research is a step forwarding the existing research which was done by Hasan, Rauaf and Hamdani in which children with intellectual disabilities showed high scores on the emotional indicators of aggression, low self esteem, helplessness, impulsiveness and poor coordination and anxiety [20]. Recently the importance of investigation of psychosocial aspects of quality of life of children with intellectual disabilities was reported by Murphy. He indicated that modern services are still not good at providing these people with challenging behavior with the opportunities for making relationship, employment and social inclusion [21]. This research was done in U.K a developed country, where there is a need to improve professional ability to target these areas. Considering this scenario, Pakistan is a developing country where these practices have not been started yet. If professionals want to mainstream these children, first of all they have to explore their maladaptive behavior which can be challenging to the parents and teachers in general. After getting knowledge of psychological aspect of special children, we are better able to make strategies for the awareness, treatment and inclusion in society. Moreover, there will be a great implication of the findings of this study especially for research to understand the phenomena, for special educators, psychologists and psychiatrists to develop proper interventions to cater the occurring mental illnesses.

Research Questions: Whether there would be any difference of scores on Internalizing, externalizing behavior and clinical pathology in Pakistani children with ID comorbid ADHD and ID only? Whether Pakistani children with ID comorbid ADHD likely to score higher on these mental illness? To answers these research questions which were raised after literature review, following hypotheses were formulated: Children with Intellectual Disabilities (ID) comorbid Attention Deficit/ Hyperactivity Disorder will score higher on the domain of a) internalizing, b) externalizing behavior problems and c) clinical pathology as compare to children with Intellectual disabilities only.

2. METHODS

2.1 Participants

A sample of 100 children (ID; n=50) [there were 35 with mild level of ID (IQ 50–55 to 69)], and 15 with moderate level of ID (IQ 35–40 to 50–54)] and ID co-morbid ADHD, (n=50); [there were 44 with mild level of ID (IQ 50–55 to 69)] and 06 with moderate level of ID (IQ 35–40 to 50–54)]. Their age was ranging between 6 to 12 years (mean age is 8.96; SD is 1.5), belonging to middle socioeconomic status were selected through purposive sampling technique. The diagnosed cases of Intellectual Disability with and without ADHD were selected from various special schools of Karachi, Pakistan. (i.e Quidien National Special Education Complex Karachi Government of Sindh, n=50; Horizon School for Children with Special Needs, Karachi, n=33, Dewa Academy learning disability Section Karachi, n=8 and Aziz Begum Memorial School (Inclusive Education School=9). Hence the 50% sample was selected by Public sector and 50% from private sector organization.

Children with ID were already diagnosed by trained Clinical psychologist (minimum training period of 3 years under the supervision of (Ph.D) Clinical psychologist at Institute of Clinical Psychology, University of Karachi) on the basis of the criteria given in DSM-IV-TR [1]. The procedure of making diagnosis in Institutes of Pakistan involves detailed Clinical interviews, observational sessions, formal assessment such as Intelligence Testing (Wechsler Intelligence Scales for children, Slosson Intelligence Test and Draw A person Test) and, Vineland adaptive behavior Scale. If they have to make differential diagnosis of ADHD, they used ADHD test also. Only those children were selected who met the criteria of this diagnostic Procedure.

2.1.1 Characteristics of the participants

3 % children with ID comorbid ADHD suffer from Asthma, 2 % children with ID suffer from asthma and 3% with epileptic fits, 6% children had speech problem. There wasn't any child diagnosed with cerebral palsy. The mean no. of siblings was 2 in both the groups.

The minimum qualification to administer the scale under study was Intermediate. Out of N=100; 34% mothers were Intermediate, and 15% mothers were graduate, while all teachers of Special Children School were graduate and above, they were also included in the data collection, hence 57% data was collected by mothers and 43% by teachers, depending upon the availability and understanding of the language of the scale.

Although fathers were not included in data collection, but the educational level was noted. 20% had the qualification of 10th grade, 24% till 12th grade, 30 % till graduation, 2% MBBS doctors and 24 % till masters.

Out of entire sample 17 % mothers were working women and 83% were non working. 99% Fathers were employed either Government (28%) or private organizations (71%) and 1% was jobless at that time.

2.2 Research Measures

2.2.1 Demographic information sheet

Demographic Information Sheet included participant's age, gender, socioeconomic status, birth order, number of siblings, parents education level and occupation, and family history of mental illness, any physical illness in child, medication, or substance taking.

2.2.2 Devereux scales of mental disorders

It is a likert type rating scale that consists of 101 items divided in different subscales including Internalizing Composite with Anxiety and Depression scale, Externalizing Composite with Conduct, Inattention and Delinquency scales and Clinical Pathology with Autism and Acute problems scale. This scale can be administered on 5 to 12 years old children. Respondents are required to select one of the five options ranging from Never, to Very frequently for behaviors that occurred during past 4 weeks. The total scale internal reliability is .98 [22].

2.3 Procedure

In the initial stage researchers made the arrangements of scales which can measure the variables used in the study. Permission from publisher was taken and original forms were purchased. The present study was conducted following the ethical standards of research with human participants. Permission was also taken from the research committee of Institute of Clinical Psychology, University of Karachi and from the Board of Advanced Studies and Research, University of Karachi-Pakistan. Before collecting the data from the participants a letter of consent was provided to the Principals of schools which included description of research project, purpose of the study and issue of confidentiality. The participants were also asked for their voluntary participation in the study.

After getting permission from authorities of the Special Educational Institutions of Karachi-Pakistan, researcher met teachers to study the files of children so that purposive sample can be selected. Then teachers were briefly explained the purpose of the study by using native language (Urdu, Pakistan's National language) and they were asked to arranged the meeting with parent (mothers), hence the data collection procedure was started.

After establishing the rapport with parents (mothers), Informed consent form was given to be signed in. Confidentiality of their identity was also assured; further they were also given the right to withdraw the study if they wanted. The demographic information was given by mothers; as they were asked by the researcher in Urdu. Those mothers, who could not understand the English language, were not included in the administration of the Devereux scales of mental disorders. DSMD was administered by the researcher herself (trained clinical psychologist) on selected mothers and teachers. After the data collection they were thanked by the researchers.

Scoring of Demographic information was done by frequency distribution and scoring of DSMD was done by calculating the raw scores of subscales and domains. Further t test for independence mean was done through SPSS version 12.

3. RESULTS

The present study is an attempt to investigate the comorbidity of mental disorders in Pakistani children with Intellectual disabilities with and without Attention Deficit Hyperactive Disorder. After reviewing the researches conducted in Pakistan and all over the world; following hypotheses were formulated in the direction to investigate the significant mean differences of raw scores of different variables given in the Inventory. Broadly speaking it was hypothesized that children with ID comorbid ADHD score higher on Internalizing, Externalizing behavior and clinical pathology as compare to children with ID only.

Since researchers wanted to evaluate the differences of raw scores on the variables, t-test for independence mean is the most appropriate parametric test of inferential statistics, through which researchers can generalize the findings to the similar population within similar culture.

Through statistical analyses it has been shown that there is statistically significant difference of mean in Externalizing behavior in children having ID, with and without ADHD. Results show that mean score of ID with ADHD is 71.64 and ID only is 34.80 with significant level of .000 ($p < .000$) (Table 2); there is significant difference of mean score on clinical pathology in children having ID, with and without ADHD. Results show that mean score of ID with ADHD is 25.6 and ID only is 15.14 with significant level of .004 ($p < .05$) (Table 3); however there is no significant difference of mean in Internalizing behavior in children having ID, with and without ADHD. Results show that mean score of ID with ADHD 32.46 and ID is 25.62 with significant level of .066 ($p < .05$) (Table 1).

Supplementary findings showed that there is a statistically significant difference of mean scores in sub domain of Externalizing behavior i.e conduct and inattention; and also on clinical pathology i.e autism and acute problem. There is a significant difference of mean score on conduct in children having ID, with and without ADHD. Results show that mean score of ID only with ADHD is 62.10 and ID is 29.80 with significant level of .000 ($p < .000$) (Table 6). There is a significant difference of mean score on inattention in children having ID, with and without ADHD. Results show that mean score of ID with ADHD is 9.56 and ID only is 5.98 with significant level of .000 ($p < .000$) (Table 7). There is a significant difference of mean score on autism in children having ID, with and without ADHD. Results show that mean score of ID with ADHD is 15.82 and ID is 10.22 with significant level of .004 ($p < .05$) (Table 8). There is a significant difference of mean score on acute problem in children having ID, with and without ADHD. Results show that mean score of ID with ADHD is 8.50 and ID only is 5.50 with significant level of .044 ($p < .05$) (Table 9).

Further it showed that there is no significant difference of mean in sub domain of Internalizing behavior i.e Depression and Anxiety. There is no significant difference of mean score on depression in children having ID, with and without ADHD. Results show that mean score of ID with ADHD is 16.60 and ID only is 13.50 with significant level of .133 ($p > .05$) (Table 5). There is no significant difference of mean score on anxiety in children having ID, with and without ADHD. Results show that mean score of ID with ADHD is 15.90 and ID is 12.04 with significant level of .056 ($p > .05$) (Table 4).

Table 1. Comparison of internalizing behavior between children with ID comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	32.46	19.14	98	1.85	.066
ID	50	25.62	17.65			

Note: ($p > .05$)

There is a no significant difference in internalizing behavior between Children with ID comorbid ADHD and ID only

Table 2. Comparison of externalizing behavior between children with ID comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	71.64	23.73	98	8.60	.000
ID	50	34.80	18.77			

Note: ($p < .000$)***

There is a significant difference in externalizing behavior between Children with ID comorbid ADHD and ID only, where ID comorbid ADHD score higher than ID only

Table 3. Comparison in clinical pathology between children with ID comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	25.6	16.92	98	2.94	.004
ID	50	15.14	16.75			

Note: ($p < .05$)*

There is a significant difference in clinical pathology between Children with ID comorbid ADHD and ID only, where ID comorbid ADHD score higher than ID only

Table 4. Comparison in Anxiety (sub-scale of internalizing behavior domain) between children with ID comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	15.90	9.20	98	1.93	.056
ID	50	12.04	10.05			

Note: ($p > .05$)*

There is no significant difference in anxiety between Children with ID comorbid ADHD and ID only

Table 5. Comparison in depression (sub-scale of internalizing behavior domain) between children with ID and comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	16.60	12.03	98	1.51	.133
ID	50	13.50	8.03			

Note: ($p < .05$)*

There is no significant difference in depression between Children with ID comorbid ADHD ID only

Table 6. Comparison in conduct (sub-scale of externalizing behavior domain) between children with ID and comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	62.10	21.08	98	8.63	.000
ID	50	29.80	17.30			

Note: ($p < .05$)*

There is a significant difference in conduct between Children with ID comorbid ADHD and ID only, where ID comorbid ADHD score higher than ID only

Table 7. Comparison in inattention (sub-scale of externalizing behavior problem) between children with ID comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	9.560	3.74	98	5.306	.000
ID	50	5.980	2.95			

Note: ($p < .05$)*

There is a significant difference in inattention between Children with ID comorbid ADHD and ID only, where ID comorbid ADHD score higher than ID only

Table 8. Comparison in autism (sub-scale of critical pathology domain) between children with ID comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	15.82	9.05	98	2.96	.004
ID	50	10.22	9.79			

Note: ($p < .05$)*

There is a significant difference in autism between Children with ID with ID comorbid ADHD and ID only, where ID comorbid ADHD score higher than ID only

Table 9. Comparison in acute problem (sub-scale of critical pathology domain) between children with ID comorbid ADHD and ID only

Groups	N	M	SD	df	t	Sig
ID with ADHD	50	8.64	6.56	98	2.03	.04
ID	50	5.50	8.68			

Note: ($p < .05$)*

There is a significant difference in acute problem between Children with ID comorbid ADHD and ID only, where ID comorbid ADHD score higher than ID only

4. DISCUSSION

The present study was carried out to determine psychological problems in Pakistani children with Intellectual disabilities with and without Attention Deficit Hyperactivity Disorder (ADHD). It was hypothesized that children with Intellectual Disabilities (ID) co-morbid Attention Deficit/Hyperactivity Disorder will score high on the domain of internalizing, externalizing behavior and clinical pathology scale as compare to children with ID without ADHD.

Findings of the this study are consistent with previous researches conducted in other countries for instance Wilens et al. showed that psychological problems were found to be more frequently associated with ADHD and the co-morbidity rates ranged up to 90 [23].

Result of current study showed that children with ID comorbid ADHD are more likely to exhibit externalizing behaviors such as conduct and inattention as compare to children with ID without ADHD (Table 2, 6 and 7).

However, on the variable of internalizing behavior no such differences are found indicating that there is no difference in the level of depression and anxiety among children with ID comorbid ADHD and ID only (1, 4 and 5).

Previously, Jensen et al. suggest that the comorbidity rate of internalizing disorder in intellectually disabled children with and without ADHD was 50% for internalizing disorders [24]. Moreover, there were also significant difference of scores on clinical pathology scale that measures autism and acute problem, in this domain again children with ID comorbid ADHD more likely to score higher as compare to children with ID without ADHD (Table 3, 8 and 9).

These findings also support the results of White, Chant, Edwards, Townsend and Waghorn they wrote in their article that there was a high prevalence of Australians affected by ID and co morbidity of serious mental disorders i.e psychosis, anxiety and depression [25]. Like other researches [14,15,8,18]; they also focused on the prevalence rate, and indicated the limitations in individual capacity to participate in a clinical assessment. Regarding research findings on Pakistani sample prevalence rate of ID has been identified. For instance Bashir et al. identified mild IDs through the administration of Wechsler Intelligence scale and Ten questions screening with the identified sampled of 132 [5].

Moreover, Mirza et al. surveyed with caregivers of individuals with ID and found several factors contributed to decreased opportunity for these children and their families to actively take part in the community; one of them was stigma [4]. They showed that there was 2.92 to 4.17 years delay period between detection of ID and seeking care. Delayed identification and rehabilitation are some of the causative factors in the increase of distress for caregivers. Azeem et al. reported that parents of children with ID suffer from anxiety and depression, where mothers suffer more often than fathers. The severity of ID was associated with these problems in mothers [6]. As Ilyas mentioned in her dissertation that maternal depression is associated with the emotional indicator of aggression, and low self concept in children [26]. It is also evident from the study of Maedgen and Carlson that children with ADHD combined type showed aggressive behavior more often and they exhibit emotional regulation characterized by high intensity and high levels of undesirable behavior. In contrast children with ADHD inattentive type were perceived as displayed social passivity and showed deficits in social knowledge as compare to control group [27].

According to Costello and Bouras, there is an increased vulnerability to developing mental health problems in person with intellectual disabilities. They suggest that person with ID present mental health problems in the similar way as indicated by members of general population [28], the same hold by the diagnostic and classification systems of Mental disorder [1], however the manifestation of problems or behavior might be differed due to the limitation in verbal expression [28].

It has been observed during clinical practice through interviews with parents and teachers that they are often astonished and overwhelmed when they observe their children exhibiting symptoms of ADHD and showing poor performance at school. We also found that children with ADHD have more behavioral and psychological problems as compared to children with Intellectual Disabilities (ID) without ADHD problems. But, most of the time this impairment in

intellectual disabilities goes unnoticed by parents and teachers due to their behavioral issues and they punish the children for their deficient academic performance. Considering the occurrence of comorbid mental illness and behavior problems exhibited by individual with ID, it is very important to investigate these issues, using valid and reliable measures so that the accurate diagnosis can be made and proper interventions and rehabilitation plans can be tailored. In this connection the caregivers can play the significant role, they can have observations of possible mental health issues. When there is no information about the manifestation of mental health problem in persons with ID, there would be chances that mental illness could be overlook. It is utmost important for the public and private sector Training Institution to arrange workshops and seminars for the caregivers and parents [28].

Findings of this study suggests that children with intellectual disability co-morbid ADHD are more likely to exhibit externalizing behavior and clinical pathology as compare to children with ID. The presentation of symptoms of ID with ADHD and other symptoms are overlapping. Therefore, clinicians should be very careful while diagnosing such cases. Furthermore, in our culture parents and teachers are not usually aware of the presence of intellectual disability and ADHD symptoms until the child passes kindergarten level and enters into the first standard. These children usually lack adequate social exposure, [17] parental training and school based learning up to their potentials, thereby aggravating their problems. Thus, there is a dire need to develop awareness based programs and workshops for parents and teachers in order to help them deal with the problem of intellectually disabled children at initial level.

It has been highlighted in other researches and from current research that both the conditions i.e intellectual disability and comorbid mental illness lead to significant impairment in the functioning [17]. In these conditions their carers/families and service providers all have to share the responsibilities and burdens, hence the betterment can be expected.

5. CONCLUSION AND RECOMMENDATION

It is concluded from the findings that children with intellectual disabilities co-morbid ADHD are more likely to exhibit externalizing behaviors and clinical pathology as compared to ID children without ADHD. Hence, behavioral management of these problem as well as parental training workshop should be mandatory. Further it is also recommended that a multidisciplinary approach should be used to gain better results after their rehabilitation. Further study should be conducted to investigate the comorbidity of mental illness regarding categories of ID, categories of ADHD and severity of illness. In this paper differences regarding gender were not included; hence further studies should be done on these variables.

ACKNOWLEDGEMENTS

We are very much thankful to the authorities of special school for their cooperation in data collection. Further we would like to grateful to the Director Dr. Riaz Ahmad, Prof Seema Munaf, Ms. Hina Ayaz and Ms. Muneba Shakeel for their support during research period.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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