



## BEHAVIORAL DISORDERS AMONG CHILDREN IN DIYALA PROVINCE

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### ABSTRACT

**Background:** Behavioral disorders in children have a negative effect on education and social skills and may end in early termination of education, anti-social behaviors, and substance misused. **Patients and methods:** This study was conducted for determining the rate of behavioral disturbances in children among preschool and school age children; and the relation of these disorders with the socio-demographic characters of the children's family. A cross-sectional study was conducted among (300) children, (156) males, (144) females, obtained from six primary schools and four kindergartens in Diyala province from February to July 2017. **Results:** The results were statistically analyzed. The result revealed that (14%) of study sample were disturbed, (72.7%) males (27.2%) females. The highest percentage Of behavioral disturbance reported between (6-9) years old (68%), who live in urban areas, (77%), those who come from family with insufficient income (68.1%) and big family Size "more than 7 members" (40.9%). Attention deficit Hyper activity disorders was identified in (4%) of the study sample ,(75%) males ,(25%) females ,highest percentage reported between (6-9)years old (66.6%),Those who live in rural area (66.6%) ;Conduct disorder in (3.3%) of study sample ,(80%) males and (20%)females and highest percentage reported between (6-9) years old (70%), Who are lived in urban (80%)

**KEYWORDS:** Behavioral disorders, Attention deficient hyper activity disorders, conduct disorders, Diyala.

### 1.1 - INTRODUCTION

Behaviors are the range of mannerisms made by people, organisms or systems in conjunction with themselves or their surrounded environment (Hemakumara, GPTS. and Rainis, R. 2018). This includes the other systems or organisms around as well as the (inanimate) physical environment. It is the reflex of the system or organism to various inputs, whether internal or external, conscious or in conscious, overt or covert, and voluntary or involuntary (Elizabeth A. Minton, Lynn R. Khale (2014). Person behavior affected by the central nervous system and endocrine system. The complexity of the behavior is correlated to the complexity of its nervous system. Generally, humans with more complex nervous systems have a more ability to learn new responses and thus adjust their behavior (Gregory, Alan, 2015).

### 2.2-Child development and developmental milestone

Child development is emotional, cognitive, experimental and organic, variation occurs in people starting from labor and forward, as the human change from dependency toward self-direction. It continues course with a known cycle, till having a special chain for each

kid. It does not passage at the equal rate and every phase is influenced by the prior developmental experiences. By reason of

These variation is hardly affected by genetic factors and problem during early period of life, genetics and prenatal development are usually included as part of the study of child development. Developmental change may occur as a result of processes that genetically controlled known as maturation, or as a consequence of environmental factors and Learning, but most commonly involve an interaction between the two. It may also occur as a result of people nature and capacity to learn from environment (Toga AW, Thompson PM, Sowell ER; 2006)

### 2.3- Theories of Development

The study and understanding of the developmental theories in order to explain why people are motivated to behave in certain ways at certain times and no other behavior (John Wiley & Sons; 2006)

### 2.3.1-Piagets theory

Piaget reported in his theory that humans pass through four stages of cognitive advancement this stages: the sensorimotor stage, preoperational stage, concrete operational stage and formal operational stage (Berger; Kathleen Stassen, 2008).

### 2.3.2 - Attachment theory

IS a psychological model describe the nature of long term and short term interpersonal relationship between humans, Mean tie between a child and an attachment figure usually caregiver.

(Waters, E.; Corcoran, D.; Anafarta, M. 2005).

### 2.3.3 - Erik Erikson Theory

Is a psychoanalytic theory that consist of eight stages that normal person passes through it through the natural developmental process from birth and forward. All stages are present at birth, but only begin to spread out according to both a natural scheme and ecological and cultural upbringing. During every stage, the person faces, and tries to adapt with new Challenges. If the stage not successfully completed it may be return as problems in the future (Crain, William; 2011).

### 2.4 - Risk factors of delay normal child milestone

1. Maternal depression
2. Maternal substance abuse
3. Poisoning such as lead intoxication
4. Obesity

### 2.5 - Behavioral disorders (Types and causes)

Child behavioral issue is common and cause high costs (Paula CS, et al, 2012). If these behavioral problems are detected and treated at an early age of childhood, their possibility of turning to chronic disorders in adults will be reduced (Paula CS, et al .2008).

#### Causes of behavioral disorders

##### 1. Maternal psychopathology (mental health status)

Low mother education, parents with depression, antisocial behavior, smoking, psychological distress, major depression or alcohol problems, an antisocial personality, substance misuse or criminal activities, teenage parental age, marital conflict, disruption or violence (Bagner DM; et al, 2012).

**2. Factors related to perinatal period:** this includes alcohol consumption, smoking during perinatal period, drugs misused, preterm labor, medical problems in pregnancy (Murray J, Burgess S, et al, 2016).

**3. Poor child-parent relationship:** this includes Poor parental supervision, conflict between father and mother, refusal of the child, and minimal family interest in the child's concerns (Webster-Stratton C, Reid MJ, Hammond M, 2004).

**4. Adverse family life:** - low parents skills, Drugs and substances misused, domestic violence and minimal

response to child's requirement and low parental support cause disturbed psychological functioning of the parents (Brody GH, et al, 2002).

**5-Household tobacco exposure:-**There is powerful band between appearance of mental problems among children and second-hand smoke exposure (Padrón A, 2016).

**6- Socio-economic factors:** -Lowe socioeconomic state, overcrowding, extreme need, signs of homelessness, social isolation, Insecticides , air pollution, exposure to lead and childhood malnutrition often leads to poor mental health. Chronic exposure to stressful condition in children cause abnormal behavior model (McLloyd V, 2011).

**2.6- Attention deficit hyper activity disorder (ADHD):** is one of the most common neurobehavioral disorders in the world, making its diagnosis and treatment by cooperation of physicians and parents. In the US, ADHD is the most dangerous behavioral disorder among children and adolescents (Brown L; et al, 2011)

### 2.7- Conduct disorder

Is a common and disabling disorder that causes a lot of problems for the families, teacher and other children in schools This disorder clearly has negative effects on the children's educational, social and professional performance. This disorder will increase the possibilities of occurring of other emotional problems such as: anxiety attacks, abusing drugs, mood and neurology for the individual in their adult life (Pandina et al, 2007).

## 3. SUBJECTS AND METHODS

### 3.1 –Study sample

The study sample includes (300) child from both sex `s males (156) and (144) females in six schools and four kindergartens in Diyala province

### 3.2 –Place and date

This study was conducted from the February to July 2017

### 3.3– Study design

Across- sectional study was used to achieve the aims of study.

### 3.4– Methods

The data was collected by special data sheet of three types of information for each child enrolled in this study  
**1 – Information obtained from child`s parent:** This information is about child and about socio-demographic characters of the child`s family including: class, age, gender, residency, income and family size

**2 –Information obtained from class teacher:** as regard his or her assessment about child`s behavior during last six months of educational year, by using of (Ontario child health questionnaire, teacher version).

**3. Information completed by cooperation between researcher and teacher:** By using another form of questionnaire in order to confirmed the diagnosis of behavioral disorders. This questionnaire was Conner for (ADHD) and conduct disorder questionnaire.

### 3.5- Target group

This study was restricted to children aged 3-9 years that were chosen randomly from schools and kindergartens in rural and urban area in Diyala Province

### 3.6- Exclusion group

Children below 3 years

Children above 9 years

Children those already diagnosed with autism and mental retardation.

### 3.7- statistical analysis

Data analysis was done by computer. The results were presented in simple measures for frequency distribution, percentage and rate

## 4. RESULTS

### 4.1- Distribution of children in study sample according to socio-demographic characters

The total number of participant children in this study is (300) children in Diyala province Percentage of children according to age, those whose age range from (3-5) year old 158 (52.6%); (6-9) years old 142 (47.3 %).According to gender of children ; 156(52%) males and 144 (48%) females ,regarding to the residency of children`s family ;160 (53.3%) lived in urban area while 140 (46.6%) lived in rural area .Regarding to economic state of children`s family ;180 (60%) of children from family with sufficient income and 120 (40%) of children from family with insufficient income . By talking about family size 120 (40%) of children lived in big family (family members more than 7) and 120 (40%) of children lived in medium family (Family members range 3-7) while 60 (20%) lived in small family (family member less than 3) as show in **table (1)**.

Parameters	Subgroup	NO.	%
Age	3-5	158	52.6%
	6-9	142	47.3%
Total	300	100%	
Gender	Male	156	52%
	Female	144	48%
Total	300	100%	
Residency	Urban	160	53.3%
	Rural	140	46.6%
Total	300	100%	
Economic state	Sufficient	180	60%
	IN Sufficient	120	40%
Total	300	100%	
Family size	Big family >7member	120	40%
	Medium family 3-7 member	120	40%
	Small family 1-3 member	60	20%
Total	300	100%	

### 4.2 – Distribution of children according to the result of Ontario child health questionnaire (OCH-Q)

After the application of (OCH\_Q) to all (300) child in six primary schools and four kindergarten in Diyala province, 42(14%) children had a positive psychiatric disturbances (positive sample); therefor, these were admitted in this study. From this 42 child; 20 child have others behavioral disorders rather than (ADHD and Conduct disorder) so these were excluded from this study and 22 child diagnosed by special scales as either ADHD or conduct disorder. The remaining 258 (86%) had a negative psychiatric disturbances so excluded from this study as normal children (negative sample), as show in **table (2)**.

%	NO.	OCHS-Q
14	42	Positive
86	258	Negative
100	300	

### 4.3- Distribution of positive cases according ADHD and Conduct disorders scales

After applying of both (Conner scale and conduct disorder scale) on positive sample, 12 children have had positive ADHD their prevalence was (54.5%).While 10 (45.4%) children reported a conduct disorders (CD) as show in **table (3)**.

%	NO.	Disorder
54.5	12	Positive ADHD
45.4	10	Positive CD
100	22	Total

### 4.4 – Distribution of positive ADHD cases in total study sample

After diagnosis of (ADHD) in study sample; 12 children from (300) children had a positive ADHD, their prevalence was (4%) while remainder 288 (96%) children reported negative ADHD, as show in **table (4)**.

ADHD	NO.	%
4	12	Positive
96	288	Negative
100	300	Total

#### 4.5–Distribution of positive (ADHD) cases according to socio-demographic characters

The distribution of (12) children with ADHD according to age ranged (3-5) years old 4 (33.3%) children had ADHD positive ; (6-9) years old 8 (66.6%) children had ADHD positive. Regarding the gender of children with

ADHD ; males 9 ( 75%) while female was 3 ( 25%) .By talking on the residency of children`s family those who had ADHD; 8 (66.6%) of them lived in urban area and 4 (33.3%) of them lived in rural area . 4 (33.3%) children lived in family with sufficient income while 8 (66.6%) children lived in family with in sufficient income. Regarding to family size; 7 (58 %) of children with ADHD lived in big family, 3 (25%) of children who lived in medium families and only 2 (16.6%) lived in small families as show in **table (5)**.

Subgroup	NO.	%
Age	3-5	33.3%
6-9	8	66.6%
Total	12	100%
Gender	Male	75%
Female	3	25%
Total	12	100%
Residency	Urban	66.6%
Rural	4	33.3%
Total	12	100%
Economic state	Sufficient	33.3%
IN Sufficient	8	66.6%
Total	12	100%
Family size	Big family >7member	58.3%
Medium family 3-7 member	3	25%
Small family 1-3 member	2	16.6%
Total	12	100%

**4.6 – Distribution of positive conduct disorder (CD) in total study sample :-** From the total study sample 10 (3.3 %) children had positive conduct disorders (CD) ; While the remainder 290 (96.6%) children reported negative conduct disorder as show in **table(6)**.

%	NO.	OCHS-Q
3.3	10	Positive
96.6	290	Negative
100	300	Total

**4.7 – Distribution of positive conduct disorder cases according to socio –demographic characters :-** Regarding age ; range (3-5 ) years old 3 (30%) children

had positive conduct disorder while 7 (70% ) children with conduct disorder at age range (6-9 ) . Regarding the gender of children reported conduct disorder; 8(80 %) was males and only 2 (20%) children was females. The highest rate 8 (80%) of children with conduct disorder lived in urban area while 2 (20%) of them lived in rural area.Regarding the economic state of children`s family; 3 (30%).children had positive conduct disorder come from families with sufficient income and 7 (70 %) children of them come from families with insufficient income. regarding to the family size; 5 (50%) children lived in big families; 3 (30%) children lived in medium family and 2 (20%) children with positive conduct disorder lived in small family as show **in table (7)**.

Subgroup	NO.	%
Age	3-5	30%
6-9	7	70%
Total	10	100%
Gender	Male	80%
Female	2	20%
Total	10	100%
Residency	Urban	80%
Rural	2	20%
Total	10	100%
Economic state	Sufficient	30%
IN Sufficient	7	70%
Total	10	100%

Family size Big family >7member	5	50%
Medium family 3-7 member	3	30%
Small family 1-3 member	2	20%
Total	10	100%

## 5. DISCUSSION

**5.1-42** (14%) children developed positive Ontario child health–Questionnaire which means they had psychiatric disturbance. The prevalence in this study was higher than the results of study done in Ethiopia (3.5%) by Ashenafi Y, Kebede D, Desta M and Alem A in 2001 (Ashenafi Y, Kebede D, Desta M, Alem A 2001). Norway (7.0%) (Einar H.; et al, 2007), and Malaysia (6.1%) done by Kasmini K, 1993. This discrepancy between studies may have been caused by the economic state of countries, different culture and stress life events of families. In this study prevalence of psychiatric disorders in children is less than another study done in Ontario by offord DR., Links PS. and Boyle MH., that they determine the prevalence of one or more of four psychiatric disorders (conduct disorder, hyperactivity, emotional disorder, and somatization), in children aged 4-16 years old by using the same questionnaire and they found that have been was 18.1% (Offord DR, Links PS, Boyle MH, 1989). This variation was related to several factors Such as various screening and diagnostic tool and related to questionnaire that used by teachers and families (not very well educated about it).

### 5.2 – According to prevalence of ADHD in study sample

The Prevalence rate of ADHD in this study (4%) was similar to the pooled worldwide prevalence (4.29–5.79%) for children and adolescents (Polanczyk G, et al, 2007). Also it was similar to a study done by (Kessler RC, in 2012) who reported that prevalence of ADHD (4.5 %). Our results was slightly at variance to other study in China (5.7%) done by (Tong L, Shi H, Zang J.; 2013).

### 5.3-According to socio-demographic characters of children with ADHD

In this study the prevalence of attention deficit hyperactivity disorders reported at a higher rate among children aged 6–9 years (66.6%) and lowest rate among children aged 3-5 years (33.3%). This result is similar to those of other studies in Arab countries such as a study conducted by Aboul-Ata MA for reported prevalence of ADHD in fayom city among school age children (Aboul-Ata MA, Amin FA.;2015), which reported that ADHD symptoms occur more among children aged 6–9 years (30.5%) and regress after children 11 years old and same resulted have been reported in many studies done by (Alhraiwil NJ.; 2015 ); ( Homidi M, Obaidat Y, Hamaidi D.; 2013). Researchers have explained this by stating that Preschool children show behavior or symptoms that resemble ADHD as part of their normal development. To confirm the diagnose of a child with ADHD, most of features should be found before child

age of 12 years , and these features child must appear in at least two of the following settings (e.g., at house , school or job; with peer or relatives; or in other activity)(Barkley RA.; 2014.)

Regarding gender this study revealed a strong variation in ADHD prevalence between males and females, higher prevalence rate reported in boys (75%) and lowest prevalence rate reported in female (25%), Male: Female ratio 3:1, which is similar to the results reported by Ramtekkar UP.; in which male: female ratio ranging from 2:1 to 9:1 (Ramtekkar UP.; et al; 2010). Polanczyk et al also reported a results similar to that in our study (Polanczyk; et al; 2007). The symptoms of hyperactivity and impulsivity are more likely in boys with ADHD, as well as aggression, disciplinary violations and other behaviours violating social norms, which are make teachers and parents easily identified ADHD in boy more than in girls .In girls, ADHD are less likely to have aggression symptoms and report higher prevalence of inattention which less obvious than hyperactivity and impulsivity (Biederman J, Faraone SV; 2004).

The current study indicated a high rate of ADHD among children with large family size (> 7 members) it was (58.3%) and less prevalence among children with medium family size (3-7 members) it was (25%), while fewest rate recorded among children with small family (1-3 members) it was (16.6%). These results are similar to those reported in Saudi Arabia about the prevalence of ADHD Among primary school Children in Jeddah city by (Homidi M, Obaidat Y, Hamaidi D;2013) explanation of this fact that children living in large families receives less care, and in low socioeconomic stat which results in behavioral problems being observed more often among these children.

**5.4 – According to prevalence of conduct disorder in study sample:** This study showed the prevalence of CD disorders (3.3%). This result is similar to that of another study done by Perou in United States among children aged 3–17 years to estimate prevalence of conduct disorder it was (3.5 %).(Perou, et al., 2013). In comparison to results of another study done by Mishra Ambrish in India, the prevalence of CD among primary school children was found to be 5.48 % (Mishra Ambrish ; et al ; 2014). This conclusion is lower than conclusion of the statistical and diagnostic collection of the United States’ Psychiatric associations which has estimated the rate of boys under the age of 18 to be between 6 to 16 percent and the girls in the same age to be between (2 % to 9%). Also, this finding is lower than the conclusion attained from Moradi’s research in Tehran (2.2%) (Moradi, Shahram; 2004).

**5.5 – According to socio –demographic characters of children diagnosed with conduct disorder:-** this study showed the highest rate of conduct disorder have reported at age rang (6-9) , This was in agreement with several Indian studies that found trends of increasing prevalence in 5-10-year-olds such as study done by kapour M. in India (**Kapur M. ;1985** ). (80%) of children with conduct disorder were males and 20% were girls, this similar to study of Malhotra S, Aga VM, Balraj in which prevalence of conduct disorders among males was (82%) and among females was (18%). The ratio between boys and girls with CD in our study was found to be 4:1 which was similar to findings of Rutter et al. (**Rutter; et al; 1970**). Also similar to a study done on Ontario city (**Offord DR, Boyle MH, Szatmari P, 1987**) Current evidence suggests both biological factor and psychological predisposition is relevant .Thus boy more liable to some syndromes which rose from biological factors that increase the risk of vagrancy (**Goodman.R; scott S., 1998**). In this study conduct disorder reported in highest rate among children who lived in urban (80%), while lowest rate was reported in children who lived in rural area (20%). This is similar to the another study in India by **Jayaprakash, K Rajamohanam, P Anil**, to analyze the determinants of symptom profile and severity among childhood and adolescent onset CD, they found, prevalence of conduct disorder among the study population, the rural (60%), and urban (36.7%). might speculate that low awareness of the importance of psychiatric disorders, increased tolerance for deviance, the presence of multiple stressors could have combined to decrease the focus on children's problems. But another study showed that children with CD, while present in all economic levels it is more common among urban low income communities (**Steiner H.1997**).

### 6.1 – CONCLUSIONS

- 1- The highest percentage of behavioral disorders among children at age (6-9) years old.
- 2- The highest percentage of behavioral disorders among children especially males.
- 3- Most of children has a behavioral disorders lived in urban area.
- 4- Most of children has a behavioral disorders lived inside families with Lowe socioeconomic stat and big family size.

### 6.2– Recommendation

Based on the study finding, the following recommendation can be put forward

1. Conduction similar studies in other cities and on larger samples.
2. Educating all families through TV and social media about these disorders and how to diagnose these cases at early time to prevent complication.
3. Advisement to schools and kindergartens to make a workshop in cooperation with health-care establishments to help them to early diagnosis and management of behavioral disorder as early as possible.

4. Holding workshop for manager of schools and kindergarten on early diagnosis and management of these disorders.

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