Prevalence of anxiety disorders in children

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Abstract

The aims of this study were to determine the prevalence of anxiety disorders among children 7-12 years old by purposive sampling of all lecturers (mothers and fathers) who had this group of child's age at second part of Mosul University from November 2006 - February 2007. The study enrolled that out of 149 children are assessed, 49 had anxiety disorders making a point prevalence of (32.9%) with a female to male ratio of (1.2:1). In age group 7-8 years the highest prevalent disorders are separation anxiety disorders and specific phobia. While at the age group 9-10 years PTSD shows a highest fraction. At the age group 11-12 years the most common disorders is generalized anxiety disorder. The present study revealed that anxiety disorders are significantly influenced by multiple factors from those were; age of the child; parents who had any psychological and organic diseases; stressful life events; negative temperament; any disease in a child him\herself; education of a father and family history of psychiatric illnesses. Whereas education of mother, family types, socioeconomic status, crowding index, unemployed fathers, and working mothers played no significant role in modifying the occurrence of anxiety disorders.

Key Word: anxiety in children, PTSD in children, separation anxiety disorder, phobia in children, specific phobia, OCD in children

Introduction

The presence of anxiety is common in children and adolescent. The entire spectrum of anxiety symptoms from typical developmentally appropriate anxiety, to clinical anxiety syndromes which may cause impairment and sever subjective suffering is encountered by most mental health professionals who work with children and adolescents[1]. Since anxiety can interfere with concentration and can affect school performance and socialization. When persistent there is a risk of depression, suicide attempts and substance abuse in adulthood [2,3].

Anxiety is characterized by a subjective feeling of apprehension dread or foreboding, accompanied by a variety of physical symptoms mediated by the autonomic nervous systems. Anxiety is not only a common human experience, but it is also present or may co-exist with many medical or psychiatric disorder such as asthma and attention deficit hyperactivity disorder (ADHD)[2,4]. The prevalence rates for the different anxiety disorders vary according to the study. In USA study in children 3-13 years old anxiety prevalence were 7.7%. However, there is general agreement among investigators that anxiety disorders are one of the most prevalent categories of child and adolescent psychopathology[5].

Separation anxiety disorder (SAD): Is the most common anxiety disorder in children the essential feature of SAD is excessive anxiety about separation from home or parent or attachment figures[1,2]. SAD can occur at any age but is seen most often in prepubertal children. The gender ratio is poorly understood some study shown equal number of girls and boys, whereas other report more female with this disorder[2].

Generalized anxiety disorder (GAD): It involves a worry of general nature. Children with GAD display excessive anxiety and worry about various aspects of their live. They may worry excessively about their own competence. GAD present different demographic characteristics compared to children with

SAD. Children with GAD are older at the time of initial intervention. In addition GAD is observed more in older, rather than younger children and adolescents[5].

Panic disorder (PD): The essential feature of PD is the presence of panic attack. Panic attack is characterized by a discrete period of intense fear or discomfort that develops acutely. Spontaneous panic attacks appear to be rare before puberty. The age of onset of the first panic attack in patients with PD peaks between 15 and 19 years of age[5].

Specific Phobias (SP): In contrast to normal fear, which are developmentally appropriate, phobias are excessive and out of proportion to the demands of the situation, are beyond voluntary control, cannot be reasoned away, lead to avoidance, persist over time and are maladaptive. It appears that girls report fears more than boys[5].

Obsessive-Compulsive Disorder (OCD): The most common reported obsession in children and adolescents are fear of contamination (35%) and thought of harming oneself and familiar figure (30%). The most frequent compulsion are washing and cleaning rituals (75%), checking behavior (40) and straightening (35%). The average age of onset in psychiatrically referred population is between 10 to 12 years[5].

Post-traumatic Stress Disorder (PTSD): The onset can occur at any age, as it is precipitated by an extreme trauma or stresses. Intrusive re-experiencing of the event, avoidance of factors related to the trauma and chronically increased arousal, disruption in various aspects of their lives[5].

High anxiety in a child is closely related to frequent negative feedback and parental restriction (behavioral inhibition). This is studied by Castellanos and Hunter (1999), they discovered that children who remain inhibited throughout childhood would have an increased risk for an anxiety disorder relative to children who were not persistently inhibited so this appears to be a predictor of a predisposition to an anxiety disorder. This is usually associated with tendency to be unusually shy, or to show fear and to withdraw in unfamiliar situations which is called temperamental trait. Evidence also suggests that anxiety disorders are familial5, a large population based study support the influence and association of genetic factors as risk factors for anxiety disorders and psychopathology in general. In addition, various environmental factors play a prominent role in development of anxiety disorders. Recent reports in the literature demonstrate an association between autoimmune processes and OCD may be associated with viral and group A B-hemolytic streptococcus infection in children.

Aim and Specific Objectives of the study are to determine point prevalence of anxiety disorders, to calculate type and age specific point prevalence of anxiety disorders and to specify the possible risk factors for the development of anxiety disorders among study population, which include child temperament, familial tendency, stressful life events and diseases in a child.

Subjects and Methods

Selection of the children and their families was done by using purposive sampling technique of all lecturers of second part of Mosul University which is located in hai-Al-Shurta in Mosul city in left bank of River Tigris. This part of Mosul University is including five colleges: College of Fine Arts, College of Law, College of Political Scince, College of Basic Education and College of Nursing. The unit of the present study was lecturers who had children (7-12 years of age) were considered in the interview. The information was collected by direct interview with either mother or father in all children, while child interview and family interview done when the investigator diagnosis of

anxiety disorders by using The Depression Anxiety Stress Scales[6]. All the information needed to evaluate the different risk factors for anxiety disorders in children are collected through use of questionnaire form prepared by the investigator. The diagnosis of GAD, OCD, SP, are depending on ICD 10 Checklists[7] while SAD, PTSD & PD depending on the diagnostic criteria from DSM- IV- TR, 2000 scale published by American Psychiatric Association[8].

Calculation of socioeconomic status scored by three parameters related to the head of the family were considered (i.e.educational level, job and ownership of the house) each parameter is scored as follows: Educational level: (0=illiterate, 1=primary and secondary, 2=university). Job: (0=unemployed, 1=unskilled, 2=skilled, 3=professional). Ownership of the house: (0=rent, 1=owned). Scores of the three parameters were added together, then the socioeconomic level was stratified into: Low=0-3. Intermediate=4-6. High=6[9]

Data collection was conducted during November 2006- February 2007. Statistical analysis was carried out by using SPSS software, Chi-square (X^2) test computed for contingency tables to find the statistical association or differences between diseased and not diseased children. For the presence or absence of the significance, p-value as < 0.05 was considered to be significant throughout the analysis[10].

Results

During the two months period spent on data collection (202) number of either mothers or fathers were included, which yielded a total 149 children (7-12 years).

Table (1) portrays the demographic characteristic of the study population. Almost (34.9%) were children 7-8 years of age and (29.5%) among 11-12 years of age. Regarding sex distribution the same table depicts that

there are 49.7% males and 50.3% females. The table also indicates that the largest number had 6 or more family members (47%).

Table (2) depicts the family characteristic of study sample. About the occupation of both mothers and fathers, the results showed that majorities of mothers are housewives (69.1%) and the majority of fathers are employed (87.9%). The general educational level for both mothers and fathers is shown in the same table same number of mothers falls in the primary and secondary level (29.5% & 18.8%) as in college level. About fathers' educational level, almost nine-tenth (87.9%) had university educational certificates compared to almost half (51.7%) of mothers. The lowest distribution of study sample fall in low crowding index (14.8%), children who lived in an overcrowded homes (>4 person/room) had a (38.9%) in study population. Other characteristic of study population is socioeconomic status (SES), it is clear in same table that two third had intermediate SES (60.4%).

Distribution of study population according to presence or absence of diseases among mothers and fathers were almost the same in fathers and mothers who had no disease (71.1% &71.8% respectively). On the other hand more than one quarter of mothers had psychiatric conditions (27.5%) & more than one tenth of fathers had organic diseases (11.4%). About family type almost three quarters of children lived in nuclear family (75.2%).

Table (3) provides quantitative estimates of point prevalence of anxiety disorders among study children. At the time of the survey there were 49 diseased children out of 149 children examined. The overall point prevalence of anxiety disorders in children was 32.9%. The prevalence breaks down according to the specific psychiatric disorder is documented in same table. The prevalence rate was (10.7%) in GAD.

The prevalence of SP is (8.1%), the same figure was reported for PTSD (8.1%), SAD (4.7%), OCD and PD is (0.7%) in each.

Table (4) shows gender specific point prevalence of anxiety disorders. Almost all gender specific prevalence rates were higher in females than in males except in SAD

Table (5) depicts the age specific point prevalence of anxiety disorders among study population. Overall the highest prevalence is shown among the age group 7-8 years (14.8%). While the lowest one was among 11-12 years (6%). Considering the older children i.e. age group 11-12 years, GAD were in top of the list (5.4%) while for the age 9-10 years PTSD and GAD had the highest fraction (4.7% and 4% respectively). SAD were the highest prevalence in the age group 7-8 years (4.7%) followed by SP (4%). The difference according to the age is highly significant.

Table (6) clarifies social background. An intermediate socioeconomic state and high crowding index carried no significant association with anxiety disorders and also there is no an evident effect (P≤0.093) of the family type with anxiety disorders.

Table (7) shows no significant association of mother's, father's job and education of mothers with the development of anxiety disorders (P=0.347). Furthermore comparing education of father with occurrence of anxiety disorders revealed significant association (p=0.034). The same table shows that a child who had a diseased mother and father were more prone to develop anxiety disorders (p=0.001 & p=0.000 respectively).

Table (8) shows that positive family history of anxiety disorders among family members increased the risk of developing anxiety disorders in a significant way (P=0.000). An important point is recorded that the presence of two and more stress factors in child home increased the risk of developing anxiety disorders in a very highly significant way (P=0.000). The same table shows that negative temperament is seen in almost one quarter (24.8%) of diseased children and (11.4%) of not diseased children had a significant degree (P=0.000). While history of diseases in child (psychological & organic) showed also significant difference between diseased and not diseased children.

Discussion

Nothing is known about the morbidity of anxiety disorders of children per unit population in our country, since neither a regional nor the national register of these children exists. What is taken for granted in Iraq could not be assumed neither in western countries, higher income countries and more developed countries nor in other developing countries, because of impact of wars, embargo and disasters. Therefore, the figure of point prevalence of anxiety disorders is 32.9% in this study which could be quite helpful indicator of the problem of childhood psychiatric disorders in Mosul City. For many children who face uncertain future, including those who are traumatized by disasters, the burden of serious emotional and behavioral disorders afflicts their lives11. Furthermore, this may help in planning a preventive strategy to reduce the adverse outcomes of psychiatric disorders in children.

A study was done in Palestine by Thabit and Vostanis, (2001) on 959 children from Gaza Strip ages ranged from 6-12 years trying to detect the prevalence of behavioral and emotional problem among Palestinian children, concluded that the incidence in boys was 54.9%, while in girls it was 49.4%. Other study on American children shows that anxiety disorders occurring in 5-20% of all children and adolescents3. In this study PTSD point prevalence was estimated; where more than 10% of

children had this disorder. A study done in North of Iraq showed that at the time of trauma children reported PTSD in very high percentage (87%) while life time PTSD was diagnosed in 12.5% only12,13 this may be due to over diagnosis at the time of trauma. This difference may be due to fact that a traumatic exposure interacts with child vulnerability14.

Child vulnerability may be strong in Iraqi children that resulted in less prevalence rate of this disorder in Mosul City. In this study has been reported that girls had same scores like boys, this was not supported by Ahmad et al, (1999) study in which female had more scores. Rothe & Castellanos (2001) and Castellanos & Hunter (1999) studied the prevalence of SAD in USA. They found that it was 5-7% in children 9-13years old.. This is almost similar to the finding of the present study (4.7%). Wars, embargo and disasters in Iraq are affecting the result of the present study, which revealed an increase in the prevalence of SP (8.1%). This finding is not like a study that has been done by Rothe & Castellanos (2001) on American children which showed that only 1% met the criteria for this disorder but it is similar to a study done in Spine show the prevalence was 3-13% 15. Rothe & Castellanos, (2001) concluded that SAD had an equal gender distribution until adolescent age (18years), after which the disorder appeared to predominate in girls, while SP and PTSD were more in girls. This is correlated with the present study. Regarding that is no significant statistical association of the present study with male sex that anxiety disorders occur more in female.

The present study showed that there was a statistical association of age and anxiety disorders and this is explained that anxiety disorders have a high percent of remission rate. It has been found that remission rate of SAD at 4-5 years follow up, was 77%. While the 8 years follow up of anxiety disordered

children suggested that they are relatively well adjusted in young adulthood5. Background of the Parents the result of this study showed that being a working and not working mother and father, poor socioeconomic status, and overcrowded homes carries no risk for children to develop anxiety disorders. In fact most of the study population is from highly educated, and usually good socioeconomic status compared with other people in community. Earlier, Eapen et al, (2001) in United Arab Emirates showed no significant association between crowding index, socioeconomic state and prevalence of behavioral and emotional problems in children.

About extended families a study carried out by Mir et al, (2001) showed that although extended family is provided as a supported structure for children of South Asian communities, in fact extended family has been greatly modified through other factors such as inappropriate housing and low income, which are equally may result in adversity of value system within these communities. These suggestions can be applied to the results of the present study. Reviewing the results of the present study showed that parents with organic and psychiatric disorders carried a high significant association with development of anxiety disorders. Castellanose & Hunter (1999) reported a higher significant prevalence of anxiety disorders among monozygotic twines than dizygotic twines. Furthermore, Rothe & Castellanose, (2001) studied the "informational transmission" of anxiety and fears from parent to children in (89%) while anxiety and fears attributed to "modeling" their parent behavior in (65%).

Regarding the present study a persistent highly significant risk association exists between anxiety disorders and stressful life events. This result simulates two studies carried out in

United Arab Emirates16,17. Several investigators examined the relationship between early temperamental traits and predisposition to the development of anxiety disorders5,18 this correlated with the present study.

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Table (1) Demographic characteristic of study sample

Demographic criteria		No. of children	%
Age	7-8	52	34.9
	9-10	53	35.6
	11-12	44	29.5
Gender	Male	74	49.7
	Female	75	50.3
Number of family members	3	1	0.7
	4	45	30.2
	5	33	22.1
	6 or more	70	47

Table (2) Family characteristic of the study sample

Family characteristic		No. of children	%
Occupation of mother	Housewife	103	69.1
	Working	46	30.9
Occupation of father	Working	131	87.9
	Not working	18	12.1
Educational level of mother	Primary or less	44	29.5
	Secondary	28	18.8
	University	77	51.7
Educational level of father	Primary or less	6	4
	Secondary	14	9.4
	University	129	86.6
Crowding index	High	58	38.9
	Intermediate	69	46.3
	Low	22	14.8
Socioeconomic state	Intermediate	90	60.4
	High	59	39.6
Mothers disease	Psychological	41	27.5
	Organic	1	0.7
	No Disease	107	71.8
Fathers disease	Psychological	26	17.4
	Organic	17	11.4
	No Disease	106	71.1
Family type	Nuclear	112	75.2
	Extended	37	24.8

Table (3) Type specific point prevalence (%) of anxiety disorders

Disorders	No. of children	%
GAD	16	10.7
SP	12	8.1
PTSD	12	8.1
SAD	7	4.7
OCD	1	0.7
PD	1	0.7
Total Diseased	49	32.9
No Disease	100	67.1
Total	149	100.0

Table (4) Gender specific point prevalence of anxiety disorders

Gender / Disorders	Male		Female		Total	
	No.	%	No.	%	No.	%
GAD	7	4.7	9	6	16	10.7
SP	5	3.4	7	4.7	12	8.1
PTSD	6	4	6	4	12	8.1
SAD	4	2.7	3	2	7	4.7
OCD	0	0.0	1	0.7	1	0.7
PD	0	0.0	1	0.7	1	0.7
Total diseased	22	14.8	27	18.1	49	32.9
No disease	52	34.9	48	32.2	100	67.1
Total	74	49.7	75	50.3	149	100

$X2 = 2.880$, P NS

Table (5) Age specific point prevalence of anxiety disorders

Age / Disorders	7-8		9-10		11-12		Total	
	No.	%	No.	%	No.	%	No.	%
GAD	2	1.3	6	4	8	5.4	16	10.7
SP	6	4	5	3.4	1	0.7	12	8.1
PTSD	5	3.4	7	4.7	0	0.0	12	8.1
SAD	7	4.7	0	0.0	0	0.0	7	4.7
OCD	1	0.7	0	0.0	0	0.0	1	0.7
PD	1	0.7	0	0.0	0	0.0	1	0.7
Total diseased	22	14.8	18	12.1	9	6	49	32.9
No disease	30	20.1	35	23.5	35	23.5	100	67.1
Total	52	34.9	53	35.6	44	29.5	149	100

$X2 = 31.270$, P is 0.01

Table (6) Social background component of parent in anxiety disorders

Social background	Not Diseased n=100		Diseased n=49		Total n=149		X2	P-value
	No.	%	No.	%	No.	%		
Socioeconomic state								
Intermediate	59	39.6	31	20.8	90	60.4	0.250	0.617
High	41	27.5	18	12.1	59	39.6		
Crowding index								
High	34	22.8	24	16.1	58	38.9		
Intermediate	48	32.2	21	14.1	69	46.3	4.239	0.120
Low	18	12.1	4	2.7	22	14.8		
Family type								
Nuclear	71	47.7	41	27.5	112	75.2	2.830	0.093
Extended	29	19.5	8	5.4	37	24.8		

Table (7) Mothers', and fathers' characteristics in anxiety disorders

Variables	Not Diseased n=100		Diseased N=49		Total n=149		X2	P-value
	No.	%	No.	%	No.	%		
Mother's job								
Working	71	47.7	32	21.5	103	69.1	0.5	0.480
Housewife	29	19.5	17	11.4	46	30.9		
Father's job								
Not working	89	59.7	42	28.2	131	87.9	0.334	0.563
Working	11	7.4	7	4.7	18	12.1		
Education of mother								
Primary	29	19.5	15	10.1	44	29.5		
Secondary	22	14.8	6	4	28	18.8	2.116	0.347
University	49	32.9	28	18.8	77	51.7		
Education of father								
Primary	6	4	0	0.0	6	4		
Secondary	6	4	8	5.4	14	9.4	6.743	0.034
University	88	59.1	41	27.5	129	86.6		
Mother's Diseases								
Psychological	18	12.1	23	15.4	41	27.5		
Organic	1	0.7	0	0.0	1	0.7	14.073	0.001
No Disease	81	54.4	26	17.4	107	71.8		
Father's diseases								
Psychological	9	6	17	11.4	26	17.4		
Organic	8	5.4	9	6	17	11.4	21.551	0.000
No Disease	83	55.7	23	15.4	106	71.1		

Table (8) Family history of anxiety, life stress, temperament, and diseases in a child as risk factors in anxiety disorders

Variable	Not Diseased n=100		Diseased n=49		Total n=149		X2	P-value
	No.	%	No.	%	No.	%		
Family history of same condition								
Present	78	52.3	14	9.4	92	61.7	34.015	0.000
Absent	22	14.8	35	23.5	57	38.3		
Life stress								
Present	59	39.6	7	4.7	66	44.3	26.647	0.000
Absent	41	27.5	42	28.2	83	55.7		
Temperament								
Negative	17	11.4	37	24.8	54	36.2	48.722	0.000
Positive	83	55.7	12	8.1	95	63.8		
Diseases in child								
Present	16	10.7	26	17.4	42	28.2	22.315	0.000
Absent	84	56.4	23	15.4	107	71.8		