



Parental Bipolar Disorders: effects on children

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Abstract

Background: Children of parents with bipolar disorder appear to have an increased risk of early-onset bipolar disorder, mood disorders and other psychiatric disorders. The aim of this study was to compare the mental health of school-age children of parents with/without bipolar disorder.

Methods: In this case control study following One hundred Offspring aged 6 to 12 years who have parents with bipolar disorder and 200 offspring of 163 demographically matched control parents. Parents with bipolar disorder were recruited from Farshchian psychiatric hospital in Hamadan, Iran in 2014. The parent version of Child Symptom Inventory-4 questionnaire was used to measure mental health. Mean comparisons were performed using Student's *t* test while effect sizes were estimated by Cohen's *d* coefficient. The Chi-Square test was used to assess the significant difference between frequency distribution of demographic variables in both groups. The significance level was considered less than 0.05.

Results: There were statistically significant differences between children of parents with/without bipolar disorder on attention deficit hyperactivity disorder, oppositional defiant disorder, conduct, generalized anxiety disorder, schizophrenia, major depression, separation anxiety ($p < 0.001$) and social phobia ($p < 0.05$). Offspring of parents with BP are at high risk for psychiatric disorders.

Conclusions: These findings support the carefully evaluating and prospectively following the psychopathology of offspring of parents with bipolar disorder are critical for early identification and treatment.

Key Words: Parent, School-Age, Bipolar Disorder



1. Background

Bipolar disorder is a severe, chronic and costly disorder that causes critical disruptions in mood, and impairs functioning in multiple life domains, in particular psychosocial and occupational [1]. Even patients receiving optimal medication are likely to have multiple recurrences, and to have trouble keeping their jobs, maintaining relationships, and getting along with significant others [2, 3]. Bipolar disorder not only creates stress for the patient, but also concerns the patient's family and sometimes results in severe disturbances [4]. The vulnerability of children and adolescents is higher in this regard, but they receive much less support and care than adults [5].

In recent years, researchers have focused on high risk populations such as children and adolescents of parents with bipolar disorder and the risk of developing bipolar disorder or other psychiatric disorders [6, 7]. In addition to psychiatric disorders in children of parents with bipolar disorder, studies suggest an increased risk of developing behavioral-emotional disorders in these children. Lapalme et al. (1997) reported that the psychosocial effects of developing bipolar disorder in parents besides genetic predisposition can double the risk of developing mental disorders and behavioral problems in children of these people [8]. Furthermore, Carlson and Weintraub (1993) state that high rates of behavioral problems and attention problems in children of patients with bipolar disorder are predictors of mood disorders in future. So the symptoms can be debilitating for the patient and destructive to the family. Hence, identifying these symptoms can help diagnose and treat these people and prevent developing mood disorders, particularly bipolar disorder [9].

Reichart et al. (2001) reported that girls and boys of parents with bipolar disorder suffer from extensive behavioral problems compared to normal subjects [10]. Chang et al. (2000) also reported that a high percentage of children of parents with bipolar disorder suffered from major depression, bipolar disorder and attention deficit hyperactivity disorder [11]. Birmaher et al. (2009) found that children of parents with bipolar disorder are at increased risk of mental disorders and there is a need for early detection [12]. Duffy et al. (2013) also showed that anxiety disorders in children of bipolar parents are far more than children of healthy parents [13]. Study on children of parents with bipolar disorder can help in the detection of predictive factors and prodromal symptoms of bipolar disorder as it can have a major effect on the formation of child's personality and performance in the future. The early onset can especially have more destructive effect in this regard. Therefore, early diagnosis and prompt intervention can be very important in preventing future negative consequences and improving the performance level in this group of children [14].

It seems that children of parents with bipolar disorder are at risk from two aspects, first genetic vulnerability they inherit from their parents and second, psychosocial factors around them due to living with parents with mental illness. Thus, children of people with bipolar disorder should receive special attention as a high risk group. As these children are vulnerable to poor environmental conditions due to their cognitive, physical, social limitations and furthermore, constant changes and adaptability are the main characteristics of childhood, prompt diagnosis and appropriate interventional programs are effective [15]. So this paper aim to compare the mental health of school-age children of parents with/without bipolar disorder.



2. Materials and methods

2-1. Study design and setting

This case-control study was conducted from 1 September to 30 February, 2013, in a psychiatric hospital in Hamadan, Iran.

The sample size included 100 children of a parent with bipolar disorder type I. Inclusion criteria included a history of bipolar disorder type I in one of the parents based on diagnostic criteria, age 6-12 years, no mental retardation and chronic physical diseases. The subjects were selected by convenience sampling and then every child of ill parents was matched for age, gender, education and birth order with two children of parents without bipolar disorder as control.

2-2. Instruments

In this study, three questionnaires included demographic Child Symptom Inventory-4 (CSI-4) and mood disorder questionnaire (MDQ) were used to collect data.

Demographic questionnaire included children's personal variables such as age, gender, birth order, education and parents personal variables such as age, gender, educational degree, marital status, occupation, relationship of the ill person with the child (mother or father), history of mental illness, history of psychiatric medication use or any other diseases, the frequency of hospitalization in psychiatric ward. The case and control groups were matched in terms of demographic variables.

To assess children's mental health, Child Symptom Inventory-4 was used. This inventory is a behavior rating scale designed by Sprafkin and Gadow to screen behavioral and emotional disorders in children aged 5 to 12 years [16]. CSI-4 has two forms, one for parents and one for teachers; we used the parent form.

The Child Symptom Inventory-4 (CSI-4) is a DSM-IV-referenced rating scale that screens for emotional and behavioural symptoms of childhood disorders. There are both parent (97 items) and teacher versions (77 items). The CSI-4: Parent Checklist contains screens for 15 emotional and behavioral disorders, and the CSI-4: Teacher Checklist contains screens for 13 emotional and behavioral disorders [17]. The CSI-4 can be scored to derive Symptom Count Scores or Symptom Severity scores. Validity and reliability of the parent form of the questionnaire were assessed in Iranian children and results showed appropriate validity and reliability [18, 19].

To assess the health of parents participating in the study, the Persian version of mood disorder questionnaire was used. This questionnaire is a useful screening tool for the diagnosis of bipolar disorders spectrum designed by Hirschfield et al. [20]. Validity and reliability of the Persian version of MDQ questionnaire were an Iranian sample. Results showed MDQ questionnaire is a reliable and valid instrument to use in studies on Iranian sample [21, 22].



Questionnaires were completed as self-report by the healthy parent in the case group and by one of the parents in the control group after they met the inclusion criteria and were matched for demographic variables.

2-3. Ethics approval

Approval to conduct the studies was provided by the Hamadan University of Medical sciences Ethics Committee (No: P/15/35/9/933). Written informed consent has been obtained from the subject. It is also noteworthy that the results of the study were anonymously reported to comply with the ethical criteria.

2-4. Statistical analysis

Data were analyzed using descriptive statistics of frequency, percentage, mean, standard deviation, and inferential statistics in SPSS software version 18. Kolmogorov-Smirnov test was used to evaluate the normal distribution of the quantitative data. Assuming the normality of data collected, independent t-test was used to compare the mean scores of the two groups, otherwise U Mann-Whitney was used. The Chi-Square test was used to assess the significant difference between frequency distribution of demographic variables in both groups. The significance level was considered less than 0.05.

3. Results

In terms of demographic characteristics, the mean age of children was 9.6 years, 51% were girls, and 52% were the second child and were in the three grade. (Table 1)

Using independent t-test, the comparison of the mean score of GSI-4 among children of parents with bipolar disorder and children in the control group showed a significant difference between the two groups in terms of attention deficit hyperactivity disorder, oppositional defiant disorder, conduct, generalized anxiety disorder, schizophrenia, major depression, separation anxiety ($p < 0.001$), social phobia ($p < 0.05$) in that the mean scores of these disorders was more in the case group. Using the Mann-Whitney test, there was also a significant difference between the two groups in terms of certain panic disorders, obsessive thoughts, compulsive activity, depression, pervasive developmental disorders and the mean of these disorders was higher in the case group ($p < 0.05$). However, the mean score of tic was higher in the control group than in the case group ($p < 0.001$). (Table 2)

4. Discussion

Mental health of children is of special importance. Children of parents with bipolar disorder, as a high risk group, should be noted and their early and prodromal symptoms of the disease should be known and prompt interventions should be conducted. The findings of this study showed that the mean scores on the subscales of hyperactivity, disobedience, conduct, generalized anxiety,



social phobia, separation anxiety, specific phobia disorders in children of parents with bipolar disorder is higher than in children of parents without bipolar disorder.

Our findings are consistent with other similar studies such as that of Moosavi et al. (2009) which aimed to evaluate “the effect of mothers’ obsessive-compulsive disorder on children’s abnormal behaviors” in psychiatric center in Bandar Abbas and showed that the total score of behavioral disorders in children with mothers suffering from obsessive-compulsive disorder was significantly higher than the control group [23]. Also, Stallard et al. (2004) in evaluating The Effects of Parental Mental Illness upon Children reported that schizophrenia in parents can affect children’s emotional and behavioral states [24].

Although in two above studies, children of parents with obsessive-compulsive disorder and schizophrenia and in this study, children of parents with bipolar disorder were studied, all three studies show that parents’ mental illness in any form can have different effects on children and cause mental and behavioral disorders in children of parents with mental illnesses. The present study is consistent with these studies. A meta-analysis and more recent studies have reported rates of BP between 4% and 15% in the offspring of parents with BP and between 0% and 2% in the offspring of healthy parents [12]. So parents’ bipolar disorder can affect children’s mental health and cause mental disorders in them. This finding can be explained in that there is a risk of psychiatric disorders in children in a family with bipolar disorder patients as they model their parents and they are also influenced by the environment where they grow.

Henin et al. (2005) evaluated mental disorders in children of parents with bipolar disorder and concluded that psychiatric disorders such as anxiety, depression, behavioral disorders and social phobias in children of these patients are significantly higher than healthy group [25]. Giles et al. (2007) reported that the most frequent mental disorders in children of parents with bipolar disorder are aggressive behaviors, anxiety disorder, depression and attention problems [26]. Richart et al. (2004) found similar disorders in subscales of anxiety, depression and aggressive behaviors [10]. The results of the present study also indicate higher mean score of depression and anxiety in children of parents with bipolar disorder. Brook and Schmidt (2008) also state that the environmental effects of living with a parent with bipolar disorder besides genetic vulnerability can increase the risk of mental disorders and behavioral problems in children of these patients [27].

Conclusion

Children whose parents have a bipolar disorders are at higher risk than other children of having emotional, behavioural or mental health problems at some stage in their lives. The risk may be due to a combination of factors such as genetics, family situation and early life experiences.

Mental health or social service professionals working with mentally ill adults need to inquire about the children and adolescents, especially about their mental health and emotional development. If there are serious concerns or questions about a child, it may be helpful to have an evaluation by a qualified mental health professional.

Individual or family psychiatric treatment can help a child toward healthy development, despite the presence of parental bipolar disorders. The child and adolescent psychiatrist can help the family work with the positive elements in the home and the natural strengths of the child. With treatment, the family can learn ways to lessen the effects of the parent’s mental illness on the child.



Competing interests

The authors declare that they have no competing interests.

Authors' contributions

FS and MD designed the study, collected data, FC and LJ conducted the statistical analysis. FC and FS wrote the manuscript. All authors have read and approved the final manuscript.

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References

1. Judd LL, Schettler PJ, Solomon DA, Maser JD, Coryell W, Endicott J, Akiskal HS. Psychosocial disability and work role function compared across the long-term course of bipolar I, bipolar II and unipolar major depressive disorders. *J Affect Disord* 2008; 108 (1-2): 49-58.
2. Merikangas KR, Akiskal HS, Angst J, Greenberg PE, Hirschfeld RMA, Petukhova M, Kessler RC. Lifetime and 12-Month Prevalence of Bipolar Spectrum Disorder in the National Comorbidity Survey Replication. *Arch Gen Psychiatry* 2007; 64(5):543-552.
3. Shamsaei F, MohamadKhan Kermanshahi S, Vanaki Z, Grosse Holtforth M. Family caregiving in bipolar disorder: Experience stigma. *Iran J Psychiatry* 2013; 8(4):188-194.
4. Rouget BW, Aubry JM. Efficacy of psychoeducational approaches on bipolar disorders: a review of the literature. *J Affect Disord* 2007; 98(1-2): 11-27.
5. Cohen J, Onunaku N, Clothier S, Poppe J. Helping Young Children Succeed: Strategies to Promote Early Childhood Social and Emotional Development. National Conference of State Legislatures, Sept 2005.
6. Farchione TR, Birmaher B, Axelson D, Kalas C, Monk K, Ehmann M, et al. Aggression, hostility, and irritability in children at risk for bipolar disorder. *Bipolar Disord* 2007; 9(5): 496-503.
7. Nurnberger JI, McInnis M, Reich W, Kastelic E, Wilcox HC, Glowinski A, et al. A high-risk study of bipolar disorder. Childhood clinical phenotypes as precursors of major mood disorders. *Arch Gen Psychiatry*. 2011; 68(10):1012-20
8. Lapalme M, Hodgins S, LaRoche C. Children of parents with bipolar disorder: A met analysis of risk for mental disorders. *Can J Psychiatry*.1997; 42: 623-631.
9. Carlson GA, Weintraub S. Childhood behavior problems and bipolar disorder relationship or coincidence. *J Affect Disord* 1993; 28(3):143-53.
10. Reichart CG, Wals M, Hillegers MH, Ormel J, Nolen WA, Verhulst FC. Psychopathology in the adolescent offspring of bipolar parents. *J Affect Disord* 2004; 78(1): 67-71.
11. Chang KD, Steiner H, Ketter TA. Psychiatric phenomenology of child and adolescent bipolar offspring. *J Am Acad Child Adolesc Psychiatry* 2000; 39, 453-460.
12. Birmaher B, Axelson D, Goldstein B, Monk K, Kalas C, Obreja M, et al. Lifetime Psychiatric Disorders in School-aged Offspring of Parents With Bipolar Disorder. *Arch Gen Psychiatry* 2009; 66(3):287-296.
13. Duffy A, Horrocks J, Doucette S, Stoneman C, McCloskey Sh, Grof P. Childhood anxiety: An early predictor of mood disorders in offspring of bipolar parents. *J Affect Disord* 2013; 10(2): 363-369.
14. Hirshfeld-Becker DR, Biederman J, Henin A, Faraone SV, Dowd ST, De Petrillo LA, Markowitz SM, Rosenbaum JF. Psychopathology in the young offspring of parents with bipolar disorder: a controlled pilot study. *Psychiatry Res* 2006; 145(2-3): 155-167.
15. Leibenluft E, Rich BA. Pediatric bipolar disorder. *Annu Rev Clin Psychol* 2008; 4:163-187.



16. Gadow KD, Sprafkin J. Child symptom inventory-4 Screening and norms manual. Stony Brook, NY: checkmate Plus, Ltd, 2002.
17. Dulcan MK, Mina K. Dulcan's Textbook of Child and Adolescent Psychiatry. American Psychiatric Pub.; 2010.
18. Jafari N, Mohammadi MR, Khanbani M, Farid S, Chiti P. Effect of Play Therapy on Behavioral Problems of Maladjusted Preschool Children. Iran J Psychiatry 2011 6(1): 37-42.
19. Dodangi N, Habibi Ashtiani N, Valadbeigi B. prevalence of DSM-IV TR Psychiatric Disorders in Children and Adolescents of Paveh, a Western City of Iran. Iran Red Crescent Med J 2014; 16(7):e16743.
20. Hirschfeld RM, Williams JB, Spitzer RL, Calabrese JR, Flynn L, Keck PE, et al. Development and validation of a screening instrument for bipolar spectrum disorder: the Mood Disorder Questionnaire. Am J Psychiatry 2000; 157(11): 1873-5.
21. Ghoreishizadeh MA, Amiri S, Pezeshki MZ, Bakhtshadi F, Ranjbar F. Validity of Persian Version of Mood Disorder Questionnaire in Diagnosis of Bipolar Mood Disorder in Depressive Phase. Iran J Psychiatry Behav Sci 2011; 5 (1):50-55.
22. Shabani A, Akbari M, Dadashi M. Reliability and Validity of the Bipolar Depression Rating Scale on an Iranian Sample. Arch Iran Med 2010; 13(3): 217-222.
23. Mousavi S.M, Ahmadi M. A Comparative Survey on Children Behavior Problems from Obsessive Compulsive and Healthy Mothers. J Mazand Univ Med Sci. 2012; 22(86): 94-99. [Persian].
24. Stallard P, Norman P, Huline-Dickens S, Salter E, Cribb J. The Effects of Parental Mental Illness upon Children: A Descriptive Study of the Views of Parents and Children. Clin Child Psychol Psychiatry 2004; 9: 39-52.
25. Henin A, Biederman J, Mick E, Gary S, Sachs Dina R. Hirshfeld-Becker et al. Psychopathology in the Offspring of Parents with Bipolar Disorder: A Controlled Study. Biol Psychiatry 2005; 58:554 -561.
26. Giles LL, Delbello MP, Stanford KE, Strakowski SM. Child Behavior Checklist profile of children and adolescents with and at high risk for developing bipolar disorder. Child Psychiatry and Hum Dev. 2007; 38:47-55.
27. Brook CA, Schmidt LA. Social anxiety disorder: a review of environmental risk factors. Neuropsychiatr Dis Treat. 2008; 4(1):123-43.



Table 1. Characteristics of offspring of parents with/without bipolar disorder

Variables	Cases group	Control group	P.value
Sex	N (%)	N (%)	$X^2=0.032$ P=0.8
Female	49 (49)	100 (50)	
Male	51 (51)	100 (50)	
Birth Order			Z=1.44 P= 0.1
1	38 (38)	73 (36.5)	
2	40 (40)	80 (40)	
3	16 (16)	34 (17)	
4 \geq	6 (6)	13 (6.5)	
Education Level			$X^2=3.12$ P= 0.8
1	19 (19)	39 (19.5)	
2	14 (14)	27 (13.5)	
3	23 (23)	44 (22)	
4	10 (10)	19 (9.5)	
5	16 (16)	32 (16)	
6	18 (18)	39 (19.5)	T= 0.35 P=0.7
Age (year)	Mean (SD)	Mean (SD)	
	9.6 (1.6)	9.6 (1.9)	



Table 2. Compression of Child Symptom Inventory-between offspring of parents with/without bipolar disorder

Disorders	Cases	Controls	Test	P. value
	Mean (SD)	Mean (SD)		
Attention Deficit/hyper disorder	39.5 (10.3)	26.2 (6.1)	T=8.76	<0.001
Oppositional defiant disorder	18.3 (5.7)	11.8 (3.1)	T=7.8	<0.001
Conduct disorder	18.2 (4.2)	15.6 (1.1)	T=4.7	<0.001
Generalized anxiety disorder	13.7 (3.4)	9.2 (2.2)	T=7.34	<0.001
Social phobia	8.9 (2.2)	6.9 (1.6)	T=3.12	<0.05
Separation anxiety disorder	16.4 (5.4)	11.9 (3.6)	T=5.47	<0.001
Obsessive compulsive disorder	1.68 (0.9)	1.25 (0.5)	Z=-2.42	<0.05
Special phobia	1.9 (0.9)	1.5 (0.6)	Z=-2.33	<0.05
Post-traumatic stress disorder	1.7 (0.9)	1.2 (0.4)	Z=-3.5	0.001
Major depression	10.5 (3.8)	7.7 (1.1)	T= 5.5	<0.001
Dysthymic Disorder	8.7 (1.43)	9.7 (0.53)	Z= -5.2	<0.05
Schizophrenia	6.2 (1.4)	5.1 (0.4)	T= 5.4	<0.001
Pervasive Developmental Disorder	18.7 (5.7)	14.8 (3.1)	T= 5.3	<0.001



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Motor Tics	1.2 (0.49)	1.7 (0.89)	Z= -3.8	<0.001
Vocal Tics	1.1 (0.61)	1.5 (0.68)	Z= -3.1	<0.001
