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# Comparing Mental Health of School-Age Children of Parents With/Without Bipolar Disorders: A Case Control Study

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**Abstract**

**Background:** Children of parents with bipolar disorder appear to have an increased risk of early-onset Bipolar Disorder (BP), mood disorders and other psychiatric disorders.

**Objectives:** The aim of this study was to compare the mental health of school-age children of parents, with/without bipolar disorder.

**Materials and Methods:** This case-control study included one hundred children aged six to twelve years, who had parents with bipolar disorder and 200 children of 163 demographically-matched control parents. Parents with bipolar disorder were recruited from Farshchian Psychiatric Hospital of Hamadan, Iran, during year 2014. The parent version of the 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 significant differences 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 and those without bipolar disorder regarding attention deficit hyperactivity disorder, oppositional defiant disorder, conduct, generalized anxiety disorder, schizophrenia, major depression, separation anxiety ($P < 0.001$) and social phobia ($P < 0.05$). Children of parents with BP are at high risk for psychiatric disorders.

**Conclusions:** These findings support that the careful evaluation and prospective following of the psychopathology of children of parents with bipolar disorder are critical for early identification and treatment.

*Keywords:* Mental Health, Bipolar Disorder, School-Age, Children

## 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 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, yet they receive much less support and care than adults (5).

In the recent years, researchers have focused on high-risk populations such as children and adolescents of parents with bipolar disorder and their risk of developing bipolar disorder or other psychiatric disorders (6, 7). In addition to the development of psychiatric disorders in children of parents with bipolar disorder, studies suggest an increased risk of developing behavioral and 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 their children (8). Furthermore, Carlson and Weintraub (1993) stated that high rates of behavioral problems and attention problems in children of patients with bipolar disorder are predictors of mood disorders in the future. Therefore, 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 development of 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 had 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 that of children of healthy parents (13).

Study of children of parents with bipolar disorder can help in the detection of predictive factors and prodromal symptoms of bipolar disorder, as these can have a major effect on the formation of child's personality and performance in the future. Furthermore, early onset can especially have more destructive effects in this regard. Therefore, early diagnosis and prompt intervention can be very important in preventing future negative consequences and improving the performance level of this group of children (14).

It seems that children of parents with bipolar disorder are at risk of two variables, the first is the genetic vulnerability inherited from their parents and second, psychosocial issues that surround 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 and social limitations, and since, constant changes and adaptability are the main characteristics of their childhood, prompt diagnosis and appropriate interventional programs can be effective (15).

## 2. Objectives

The aim of this study was to compare the mental health of school-aged children of parents with and those without bipolar disorder.

## 3. Materials and Methods

### 3.1. Study design and setting

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

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

### 3.2. Instruments

In this study, three questionnaires, including demographic child symptom inventory-4 (CSI-4) and mood disorder questionnaire (MDQ), were used to collect data.

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

To assess children's mental health, the child symptom inventory-4 (CSI-4) was used. This inventory is a behavior rating scale designed by Gadow and Sprafkin and to screen behavioral and emotional disorders in children aged five to twelve years (16). The 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 behavioral 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 questions for 13 emotional and behavioral disorders (17). The CSI-4 can be scored to determine 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 the mood disorder questionnaire was used. This questionnaire is a useful screening tool for the diagnosis of bipolar disorders spectrum, designed by Hirschfeld et al. (20). Previous studies have shown that the MDQ questionnaire is a reliable and valid instrument for use in studies on Iranian samples (21, 22).

Questionnaires were completed as self-reports 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.

### 3.3. 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 was obtained from the subjects. It is also important to note that the results of the study were anonymously reported to comply with the ethical criteria.

### 3.4. Statistical analysis

Data were presented by descriptive statistics of frequency, percentage, mean, standard deviation, and inferential statistics using the SPSS software version 18. Kolmogorov-Smirnov test was used to evaluate the normal distribution of the quantitative data. Assuming the normality of data, independent t-test was used to compare the mean scores of the two groups; otherwise the U Mann-Whitney was used. The Chi-square test was used to assess significant differences between frequency distribution of de-

mographic variables in both groups. The significance level was considered less than 0.05.

## 4. 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 third grade (Table 1).

The independent t-test, which compared 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 ($P < 0.001$) and social phobia ($P < 0.05$), in that the mean scores of these disorders was more in the case group. The Mann-Whitney test indicated 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 tics was higher in the control group than in the case group ($P < 0.001$) (Table 2).

**Table 1.** Characteristics of Children of Parents With/Without Bipolar Disorder[a]

| Variables | Cases Group | Control Group | Test Results | P Values |
|---|---|---|---|---|
| **Gender** | | | $\chi^2 = 0.032$ | 0.8 |
| Female | 49 (49) | 100 (50) | | |
| Male | 51 (51) | 100 (50) | | |
| **Birth order** | | | Z = 1.44 | 0.1 |
| 1 | 38 (38) | 73 (36.5) | | |
| 2 | 40 (40) | 80 (40) | | |
| 3 | 16 (16) | 34 (17) | | |
| 4 ≥ | 6 (6) | 13 (6.5) | | |
| **Education level** | | | $\chi^2 = 3.12$ | 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) | | |
| **Age, y** | 9.6 ± 1.6 | 9.6 ± 1.9 | T = 0.35 | 0.7 |

[a]Data are presented as mean SD or No. (%).

**Table 2.** Compression of the Child Symptom Inventory Results Between Children of Parents With/Without Bipolar Disorder[a]

| Disorders | Cases | Controls | Test Results | P Values |
|---|---|---|---|---|
| **Attention deficit/ hyper activity 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 |
| **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 |

[a]Data are presented as mean (SD).

## 5. Discussion

Mental health of children is of special importance. Children of parents with bipolar disorder, as a high-risk group, should be identified and their early and prodromal symptoms of disease should be investigated, followed by prompt interventions. The findings of this study showed that the mean scores on the subscales of hyperactivity, disobedience, conduct, generalized anxiety, social phobia, separation anxiety and 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 Mousavi et al. (2009), which aimed to evaluate "the effect of mothers' obsessive-compulsive disorder on children's abnormal behaviors" at a psychiatric center in Bandar Abbas, and showed that the total score of behavioral disorders in children of mothers with 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 could affect children's emotional and behavioral states (24).

In the two above studies, children of parents with obsessive-compulsive disorder and schizophrenia, and in this study, children of parents with bipolar disorder, were studied, and all three studies showed that parents' mental illness in any form could have different effects on children and cause mental and behavioral disorders in their children. 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 children of parents with BP and between 0% and 2% in the children of healthy parents (12). Therefore, parents' bipolar disorder can affect children's mental health and cause mental disorders. This finding can be explained by the claim that there is a risk of psychiatric disorders in children of a family with bipolar disorder parents as they model their parents and they are also influenced by the environment, in which 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 controls (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). Reichart et al. (2004) found similar disorders in subscales of anxiety, depression and aggressive behaviors (10). The results of the present study also indicated higher mean scores of depression and anxiety in children of parents with bipolar disorder. Brook and Schmidt (2008) also stated 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).

Children whose parents have bipolar disorders are at higher risk than other children regarding emotional, behavioral or mental health problems at some stage in their lives. This 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 patient's 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. A child and adolescent psychiatrist can help the family work with positive elements at 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.

## Footnotes

**Authors' Contribution:**Farshid Shamsaei and Maryam Dehghani designed the study and collected the data. Fatemeh Cheraghi and Leyla Jahangard conducted the statistical analysis. Fatemeh Cheraghi and Farshid Shamsaei wrote the manuscript. All authors read and approved the final manuscript.

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